

2017-2018 GRADUATE AND UNDERGRADUATE  
**COURSE CATALOG**



**MCPHS**  
UNIVERSITY

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**MCPHS**  
UNIVERSITY

**www.mcphs.edu**

MCPHS University

179 Longwood Avenue, Boston, Massachusetts 02115

Telephone 617.732.2800; students outside Massachusetts and within the continental United States may call toll-free 1.800.225.5506.

### **Nondiscrimination Policy**

MCPHS University ("MCPHS" or the "University") is committed to maintaining a positive learning, working, and living environment. The University does not discriminate on the basis of race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, ancestry, genetic information, military service, or veteran status in admission and access to, and treatment and employment in, its educational programs and activities and actively complies with the requirements of Federal Executive Orders 11246 and 11375 as amended; the Civil Rights Act of 1964 as amended; Title IX of the Educational Amendments of 1972; Sections 503 and 504 of the Rehabilitation Act of 1973; Section 402, Vietnam Era Veterans Readjustment Assistance Act of 1974; the Age Discrimination Act of 1975; the Americans with Disabilities Act of 1990 (as amended by the ADA Amendments Act of 2008); and pertinent laws, regulations, and executive directives of the Commonwealth of Massachusetts and other applicable state and federal statutes. The University will not tolerate acts of discrimination or harassment based upon Protected Classes, or related retaliation against or by any employee or student. For purposes of this policy, "Protected Classes" refers to race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, ancestry, genetic information, military service, or veteran status or any other category protected by applicable law.

This policy (1) provides a definition of discrimination and harassment based upon protected classes and related retaliation; (2) prohibits discrimination and harassment based upon protected classes and related retaliation; and (3) sets out procedures to follow when a member of the MCPHS University community believes a violation of the policy has occurred.

Individuals who violate this policy shall be disciplined or subjected to corrective action, up to and including termination or expulsion.

Inquiries regarding the University's compliance with equal opportunity and affirmative action laws may be directed to Richard Lessard, Executive Vice President, at 617.732.2132.

### **Sexual Harassment**

Title VII of the 1964 Civil Rights Act and Title IX of the Education Amendments of 1972 specifically prohibit sexual harassment. All members of the University community, including faculty, administration, staff, and students, have a right to be free from sexual harassment by any member of the University community. Any member of the MCPHS community who has a complaint or concern about sexual harassment, or would like more information about the University's policies regarding sexual harassment, should contact Dawn M. Ballou, JD, Title IX Coordinator, Office of the President, 179 Longwood Avenue, Boston, MA 02115; 617.732.2077; [Dawn.Ballou@mcphs.edu](mailto:Dawn.Ballou@mcphs.edu).

### **Occupational Health and Safety Master Plan**

MCPHS strives to provide a learning, teaching, working, and research environment free from recognized health and safety hazards. Pursuant to the requirements of the U.S. Occupational Safety and Health Administration, the City of Boston, the Federal Emergency Management Agency, and the Nuclear Regulatory Commission, MCPHS has established protocols and procedures to protect its students and employees from potential occupational, health, safety, and radiation hazards. For further information, please contact the Director of Environmental Health and Safety at 617.732.2861.

## **Annual Notification of Student Rights under FERPA**

The Family Educational Rights and Privacy Act (FERPA) of 1974 as amended affords students certain rights with respect to their own education records. These rights include the following:

**1. The right to inspect and review student education records within 45 days of the day the University receives a request for access.** Students should submit to the Office of the Registrar written requests that identify the record(s) they wish to inspect. The registrar will make arrangements for access within 45 days from the date of such request, and will notify the students of the time and place where the records may be inspected. The University reserves the right to deny a copy of a student education record (including, without limitation, a transcript) for which a financial hold exists (a hold is imposed if the student fails to pay bills, fees, or fines owed to the University). A hold will not interfere with the right to visually examine student education records. Questions about the University's policies and practices relating to the Act should be addressed to the Office of the Registrar.

**2. The right to request an amendment of student education records that students believe are inaccurate or misleading.** Students should write the University registrar, clearly identify the part of the records they want changed, and specify why the records are inaccurate or misleading. If the University decides not to amend the records as requested, it will notify the students of the decision and advise the students of their right to a hearing. Additional information regarding the hearing procedures will be provided to the students when they are notified of the right to a hearing.

**3. The right to consent to disclosures of personally identifiable information contained in student education records, except to the extent that FERPA authorizes disclosure without consent.** One exception that permits disclosure without consent is disclosure to appropriate parties in connection with a health or safety emergency. Another exception that permits disclosure without consent is disclosure to school officials with legitimate educational interests. A school official is a person employed by the University in an administrative, supervisory, academic or research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the University has contracted (such as an attorney, auditor, or collection agent); a person serving on the Board of Trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review a student education record in order to fulfill his or her professional responsibility. Upon request, the University may disclose student education records without consent to officials of another school in which a student seeks or intends to enroll if the disclosure is for purposes related to the student's enrollment or transfer. Education records may be compelled and disclosed without consent by, or notice to, the student pursuant to a valid subpoena issued under the USA Patriot Act. Finally, personally identifiable "directory information" may be released freely unless the student files the appropriate form requesting that such information not be released. This form is available at the Office of the Registrar. Directory information includes the following:

- Name
- Gender
- Student ID
- Local address
- Permanent address
- University email address
- Major and minor field(s) of study, including the division or program in which a student is enrolled
- Classification as a freshman, sophomore, junior, senior, or graduate, or by number referring to such classes
- Course load—full time or part time
- Participation in officially recognized activities
- Dates of attendance and graduation, and degrees received
- Most recent previous educational institution attended
- Honors and awards received, including selection to a dean's list or an honorary organization
- New England School of Acupuncture Clinical Internship Schedule

**4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by the University to comply with the requirements of FERPA.** The office that administers FERPA is:

Family Policy Compliance Office  
U.S. Department of Education  
400 Maryland Avenue, SW  
Washington, DC 20202-5920

### **Clinical Rotations and Background Screenings**

For some MCPHS programs, placement in clinical rotations at healthcare providers is a required part of the MCPHS curriculum. Some healthcare providers require background screenings, and a conviction for a criminal offense might present an issue. It is possible that certain types of criminal convictions, whether prior to being a student at MCPHS or while attending MCPHS, could preclude a student from being able to complete a required clinical rotation. For additional information, please contact the MCPHS Chief Compliance Officer.

### **MCPHS University Complaint Procedure Regarding University Licensure Requirements; Violation of State Law, etc.**

United States Department of Education Regulation 34 CFR 600.9, the "Program Integrity Rule," was adopted to ensure that students have the opportunity to voice concerns through a state governmental process relating to programs offered by postsecondary educational institutions authorized under Title IV of the Higher Education Act, as amended. The regulations require states to have a process to review and appropriately act on complaints about the University such as violation of (i) the University's licensure requirements, or (ii) state laws; and allegations of state consumer protection violations, including, but not limited to fraud and false advertising, among other things.

Students may direct complaints to the following, as applicable:

#### **Office of the Attorney General**

Consumer Advocacy & Response Division

One Ashburton Place

Boston, MA 02108

Consumer Advocacy & Response Division Hotline: 617.727.8400

<http://www.mass.gov/ago/consumer-resources/consumer-assistance/consumer-complaint.html>

#### **New Hampshire Department of Education**

##### **Division of Higher Education – Higher Education Commission**

Edward R. MacKay

Division Director

101 Pleasant Street

Concord, NH 03301

603.271.0256

[Edward.MacKay@doe.nh.gov](mailto:Edward.MacKay@doe.nh.gov)

<http://education.nh.gov/highered/compliance-allegation.htm>

#### **New England Association of Schools and Colleges (NEASC)**

##### **Commission on Institutions of Higher Education**

3 Burlington Woods, Suite 100

Burlington, Massachusetts 01803

781.425.7785

[cihe@neasc.org](mailto:cihe@neasc.org)

<https://cihe.neasc.org/information-public/comments-and-complaints>

## Table of Contents

Letter from President Charles F. Monahan .....	8
Introduction, Mission Statement, and Core Values Outcomes .....	9
University Learning Outcomes .....	9
The Boston Campus .....	9
The Worcester Campus .....	10
The Manchester Campus .....	10
The Newton Campus .....	10
Center for Online Learning and Academic Innovation .....	11
Degree and Certificate Programs Listing .....	12
Accreditation .....	15
Facilities .....	18
Interinstitutional Cooperation .....	24
Institutional Agreements .....	25
Student Services .....	36
Protection from Harassment Policy (Title IX) .....	46
The Interprofessional Education (IPE) Plexus .....	52
Center for International Studies .....	52
International Programs .....	52
Immigration and International Support Services .....	52
International Academic Services .....	52
International Student Services .....	52
Admission .....	53
Tuition, Room and Board, Fees .....	74
Student Financial Services .....	80
Academic Policies and Procedures .....	87
Course Policies .....	96
General Education Requirements .....	114
MCPHS University–Boston	
School of Arts and Sciences .....	127
Bachelor of Science in Chemistry / Master of Science	
in Pharmaceutical Chemistry .....	128
Bachelor of Science in Health Psychology .....	131
Bachelor of Science in Health Sciences .....	133
Bachelor of Science in Health Sciences, Completion, Online .....	136
Bachelor of Science in Medical and Molecular Biology .....	138
Bachelor of Science in Premedical and Health Studies .....	141
Bachelor of Science in Public Health .....	145
Bachelor of Science in Public Health/ Master of	
Public Health (MPH), Online .....	149
Bachelor of Science in Public Health/Master of Science in	
Occupational Therapy .....	150
School of Arts and Sciences Honors Program .....	150
School of Arts and Sciences Graduate Programs .....	152
Master of Science in Pharmaceutical Chemistry (Boston) .....	152
Master of Public Health (Boston and Online) .....	153
Division of Health Sciences .....	156
Forsyth School of Dental Hygiene .....	157
Bachelor of Science in Dental Hygiene, Accelerated .....	159
Bachelor of Science in Dental Hygiene, Fast Track .....	162
Bachelor of Science in PreDental/Dental Hygiene .....	163
Dual Bachelor of Science in Health Science/Bachelor	
of Science in Dental Hygiene .....	166
Bachelor of Science in Dental Hygiene Completion, Online .....	168
Master of Science in Dental Hygiene, Online .....	169
AS to MS in Dental Hygiene Bridge Program, Online .....	170

Master of Science in Dental Hygiene/ Master of Public Health, Online.....	171
Graduate Certificate in Oral Health Professions Education, Online .....	173
School of Medical Imaging and Therapeutics .....	174
Bachelor of Science in Diagnostic Medical Sonography, General (Accelerated).....	174
Bachelor of Science in Diagnostic Medical Sonography, Echocardiography (Accelerated) .....	174
Bachelor of Science in Magnetic Resonance Imaging (MRI) (Accelerated).....	179
Bachelor of Science in Nuclear Medicine Technology (Accelerated).....	182
Bachelor of Science in Radiation Therapy (Accelerated) .....	184
Bachelor of Science in Radiography (Accelerated) .....	188
Bachelor of Science in Diagnostic Medical Sonography, General (Fast Track).....	191
Bachelor of Science in Diagnostic Medical Sonography, Echocardiography (Fast Track) .....	194
Bachelor of Science in Magnetic Resonance Imaging (MRI) (Fast Track).....	195
Bachelor of Science in Nuclear Medicine Technology (Fast Track) .....	197
Bachelor of Science in Radiation Therapy (Fast Track).....	198
Bachelor of Science in Radiography (Fast Track) .....	199
Advanced Certificate Programs in Medical Imaging .....	200
School of Nursing	
Bachelor of Science in Nursing (Accelerated) .....	203
School of Physician Assistant Studies .....	208
Master of Physician Assistant Studies (MPAS) .....	210
Doctor of Science in Physician Assistant Studies (DScPAS).....	212
School of Pharmacy (Boston).....	215
Doctor of Pharmacy (PharmD) .....	216
Doctor of Pharmacy (PharmD) Honors Program .....	222
Doctor of Pharmacy (PharmD)/Master of Public Health, Online ...	223
Doctor of Pharmacy (PharmD) Postbaccalaureate Pathway, Online .....	224
Certificate in Advanced Pharmacy Practice Studies (CAPPS).....	226
Bachelor of Science in Pharmaceutical and Healthcare Business	227
Bachelor of Science in Pharmaceutical Sciences/ Master of Pharmaceutical Sciences .....	230
Bachelor of Science in Pharmacology and Toxicology .....	233
School of Pharmacy-Boston Division of Graduate Studies .....	236
Master of Science in Regulatory Affairs and Health Policy, Boston and Online .....	241
Graduate Certificate in Regulatory Affairs, Health Policy, Boston and Online .....	242
Master of Science/Doctor of Philosophy in Medicinal Chemistry ..	242
Master of Science/Doctor of Philosophy in Pharmaceutical Economics and Policy .....	245
Master of Science/Doctor of Philosophy in Pharmaceutics.....	251
Master of Science/Doctor of Philosophy in Pharmacology .....	253
Master of Science in Clinical Research, Boston and Online .....	254
Graduate Certificate in Clinical Research, Boston and Online.....	255
Master of Pharmaceutical Sciences .....	257
MCPHS University–Worcester	
Division of Health Sciences.....	259
School of Dental Hygiene	
Bachelor of Science in Dental Hygiene (Fast Track) .....	259



School of Rehabilitation Sciences	
Doctor of Physical Therapy (DPT).....	261
School of Medical Imaging and Therapeutics .....	268
Bachelor of Science in Diagnostic Medical Sonography- General (Fast Track).....	271
Bachelor of Science in Diagnostic Medical Sonography – Echo (Fast Track).....	272
New England School of Acupuncture .....	273
Master of Acupuncture (MAc).....	273
Master of Acupuncture and Oriental Medicine (MAOM) .....	278
Certificate of Advanced Graduate Study, Chinese Herbal Medicine (CAGS CHM).....	281
Doctor of Acupuncture and Integrative Health (DAIH) .....	282
MAc and MAOM Curriculum (Newton Campus) .....	283
School of Nursing	
Bachelor of Science in Nursing (Postbaccalaureate).....	285
Bachelor of Science in Health Sciences / BSN (Dual Degree), Online .....	286
Bachelor of Science in Nursing Completion (RN to BSN), Online .....	290
RN to MS in Nursing Bridge Program (MSN Family Nurse Practitioner & Nurse Educator), Online.....	290
Master of Science in Nursing, Family Nurse Practitioner, Online or Worcester .....	292
Master of Science in Nursing, Psychiatric/Mental Health Nurse Practitioner (PMHNP), Online .....	292
Master of Science in Nursing, Nurse Educator, Online .....	292
Certificate of Advanced Graduate Studies (CAGS) Family Nurse Practitioner .....	293
Certificate of Advance Graduate Studies (CAGS) Psychiatric/Mental Health Nurse Practitioner.....	293
Graduate Certificate Nurse Educator .....	293
School of Optometry,	
Doctor of Optometry (OD) .....	294
Doctor of Optometry (OD)/Master of Public Health, Online.....	300
School of Physician Assistant Studies	
Master of Physician AssistantStudies (MPAS) (Accelerated) .....	301
School of Pharmacy (Worcester/Manchester)	
Doctor of Pharmacy (PharmD) (Accelerated) .....	304
Doctor of Pharmacy (PharmD) (Accelerated)/Master of Public Health, Online.....	309
Doctor of Pharmacy (PharmD)/Graduate Certificate of Public Health, Online .....	312
Graduate Certificate in Medication Safety, Online .....	314
Master of Patient Safety, Online.....	314
MCPHS University–Manchester	
School of Nursing,	
Bachelor of Science in Nursing (Postbaccalaureate).....	316
Master of Science in Nursing.....	317
School of Rehabilitation Sciences	
Master of Science in Occupational Therapy (MSOT).....	321
School of Physician Assistant Studies	
Master of Physician Assistant Studies (MPAS) (Accelerated) .....	327
School of Pharmacy(Worcester/Manchester)	
Doctor of Pharmacy(PharmD) (Accelerated) .....	332
Center for Online Learning and Academic Innovation.....	333
Master of Healthcare Administration, Online .....	335
Graduate Certificate in Healthcare Management, Online.....	335
Bachelor of Science in Biomedical Informatics .....	336
Bachelor of Science in Global Healthcare Management.....	338



Master of Health Sciences (MHS), Online .....	340
Doctor of Health Sciences (DHS), Online .....	341
MCPHS University Center for International Studies	
English Language Services Academic Bridge Program (Boston) .....	344
Course Descriptions .....	345
Corporation and Administration .....	456
Corporation Officers and Trustees.....	456
Administration .....	457
Faculty .....	459
Index .....	482

Fall 2017

Dear Student,

On behalf of the administration, faculty, and staff of MCPHS University (MCPHS), I want to extend our warmest greetings and best wishes.

You are entering MCPHS at a particularly exciting time in our long and distinguished history.

Enrollment is more than 7,000 students, which is an all-time high for the University and a ringing endorsement of our position as a global leader in preparing graduates for rewarding careers in the health professions.

In order to support this unprecedented growth, the University continues to expand and enhance the buildings on our campuses in Boston, Newton, Worcester, and Manchester. These new and renovated facilities feature state-of-the-art technology and laboratories that ensure the best possible educational experience for students. MCPHS is truly a learner-centered institution.

As a graduate of the University, I know the importance of developing strong professional relationships with faculty and staff, whose primary goal is to help you succeed. I hope each of you will take advantage of the many educational and cocurricular activities that are available to you at MCPHS.

When you complete your course of studies, you will become one of more than 27,096 MCPHS alumni who are enjoying productive careers in the health sciences. I hope that each of you will develop a personal relationship with the University as your professional home away from home—your alma mater.

Once again, I wish you good luck with your studies, and I look forward to meeting many of you at various University functions in the years ahead.

Sincerely,

A handwritten signature in black ink that reads "Charles F. Monahan, Jr." with a stylized, cursive script.

Charles F. Monahan, Jr., Class of 1962

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## Introduction

### Mission Statement

MCPHS University (MCPHS) prepares students for successful careers in healthcare through excellence in teaching, scholarship, research, professional service, and community engagement.

### Core Values

The University embraces a set of core values that reflect a commitment to preparing competent, caring, ethical health professionals and scientists to meet the need for quality healthcare. As members of the University and the broader community, we are committed to the following core values:

- Learner-centered teaching and student engagement that fosters intellectual vitality, critical thinking, and lifelong responsibility for learning and continuing professional development
- Honesty, integrity, professionalism, and personal responsibility
- Respecting diversity and appreciating cross-cultural perspectives
- Adaptability and flexibility in response to the ever-changing external environment
- Effectively and efficiently using resources to maximize value to those we serve
- Excellence and innovation in education, scholarship/research, and service, including outreach to the community
- A productive, satisfying work and learning environment that is built upon cross-disciplinary and cross-campus collaboration
- Integration of liberal arts and basic sciences with professional studies
- Scholarship that contributes to developing knowledge, enhancing health sciences education, and improving healthcare and health outcomes
- Education that fosters developing the whole person

### University Learning Outcomes

With a tradition of excellence in health care and science education since its founding in 1823, MCPHS University offers its students degree programs and co-curricular activities that are focused on knowledge and skills development. The University's mission statement affirms its primary goal of preparing students for successful careers in health care through excellence in teaching, scholarship, professional service and community engagement.

MCPHS University prepares its graduates to:

1. Possess interpersonal, oral, and written communication skills to effectively interact with a diverse population including patients, clients, customers, and colleagues.
2. Create and sustain positive and productive professional relationships with patients, clients, customers, and colleagues.
3. Apply technical knowledge, information literacy, cultural sensitivity, critical thinking skills, and problem solving strategies necessary in professional settings to provide comprehensive services to patients, clients, and others.
4. Collaborate effectively as a team member to bring projects to successful completion.
5. Behave in a responsible manner and hold oneself and colleagues to the professional and ethical standards of their profession.
6. Engage in lifelong learning and regular self-assessment to achieve continuous professional growth.

### The Boston Campus

Founded in 1823, MCPHS is the oldest institution of higher education in the city of Boston, and its pharmacy program is the second oldest in the United States. The main campus is located in Boston's Longwood Medical and Academic Area, and the University enjoys working affiliations with some of the world's finest health institutions, including Beth Israel Deaconess Medical Center, Brigham and Women's Hospital, Boston Children's Hospital, Boston Medical Center, Tufts Medical Center, and Massachusetts General Hospital. Among its neighbors are Emmanuel College; Massachusetts College of Art and Design; Simmons College; Wentworth Institute of Technology; Wheelock College; and Harvard University's medical school, dental school, and school of public health. In this invigorating and stimulating environment, students have access to unsurpassed educational resources.

Undergraduate degree programs offered at the Boston campus include biology, chemistry, dental hygiene, health psychology, premedical and health studies, pharmaceutical sciences, public health, medical imaging, and radiologic sciences. First professional degrees are offered in pharmacy, physician assistant studies, and nursing. Each of these

programs combines the basic sciences with liberal arts and provides an education for lifelong enrichment. Graduate programs are offered in chemistry, regulatory affairs, pharmaceuticals, pharmacology, clinical research, pharmaceutical economics and policy, nursing, and dental hygiene.

### **The Worcester Campus**

MCPHS has expanded its degree programs on its Worcester campus, with its newest additions in acupuncture education (see The Newton Campus for further information). In fall 2016, the New England School of Acupuncture (NESA) at MCPHS University had its inaugural class start their program on the Worcester campus in a newly renovated facility at 19 Norwich Street. This five-story building contains state of the art classrooms, practice labs, a store, an herbal dispensary, student lounge, study space, and a Teaching Center, where patients are offered a range of treatments.

Students have the option of pursuing two graduate degrees: the Master's in Acupuncture (MAc) degree and a Master's in Acupuncture and Oriental Medicine (MAOM) degree. All students complete a core curriculum based on study of medical theory, diagnostic and treatment skills of Traditional Chinese Medicine. Students enrolled in MAc programs focus on acupuncture in 3- or 4-year pathways, while MAOM students also learn Chinese Herbal Medicine. At the end of the first year of study, students may elect to focus on Chinese Acupuncture Studies (CAS), or add concentrations in Japanese Acupuncture Styles (JAS) and/or Chinese Herbal Medicine (CHM). The Chinese Herbal Medicine curriculum is also offered as a Certificate of Advanced Graduate Study for licensed acupuncturists who previously completed a master's degree. Beginning in January 2018, licensed acupuncturists may enroll in a new clinical doctorate program, Doctor of Acupuncture & Integrative Health, which prepares them to work collaboratively in integrative care teams in hospitals.

The Pain Management track provides an opportunity to earn dual Master's degrees from NESA at MCPHS and Tufts University School of Medicine. This innovative Tufts program in Pain Research Education and Policy (PREP) trains pain specialists to be well prepared to meet the challenges of managing patients' chronic pain.

The Worcester campus is also home to an accelerated 33-month PharmD program for students who have already completed their preprofessional requirements; a Fast Track Bachelor of Science in Dental Hygiene program for individuals with a prior baccalaureate degree in another field or has completed pre-requisite coursework; a Fast Track Bachelor of Science degree program in Diagnostic Medical Sonography (General or Echo); a postbaccalaureate Bachelor of Science in Nursing program for individuals with a prior baccalaureate degree in another field; a 24-month Master of Physician Assistant Studies program; a Master of Science in Nursing (Family Nurse Practitioner); Postgraduate certificate advance practice nurse (CAGS-FNP); a three-year Doctor of Physical Therapy degree program; and a four-year Doctor of Optometry (OD) program.

Worcester is the second largest city in New England and is well known for its premier educational and healthcare institutions. The Worcester campus is located adjacent to Saint Vincent Hospital and in close proximity to the Fallon Clinic, University of Massachusetts Memorial Medical Center, and the medical school of the University of Massachusetts.

### **The Manchester Campus**

MCPHS–Manchester became an entity of the University in May 2002 when MCPHS assumed responsibility for the Physician Assistant (PA) Studies program and its faculty and staff from Notre Dame College upon its closing. The new campus building at 1260 Elm Street was purchased in November 2002, and the first class of PA students, faculty, and staff occupied the building in January 2003. In conjunction with the School of Pharmacy–Worcester, the accelerated Doctor of Pharmacy degree program admitted its first class in Manchester in the fall of 2004. A postbaccalaureate 16-month Bachelor of Science in Nursing degree program for individuals with a prior baccalaureate in another field admitted its first cohort in September 2007.

Manchester is New Hampshire's largest city and is the center of the state's diversified industrial and service economy, which developed in response to the decline of the mill dynasty in the 1930s. The University is situated parallel to the historic Amoskeag Mills, which house educational institutions, businesses, and small industry.

### **The Newton Campus**

In March 2016, New England School of Acupuncture (NESA) became part of MCPHS University. NESA has been synonymous with excellence in acupuncture education since 1974, making NESA the oldest acupuncture program in the US. By joining MCPHS, NESA connects Eastern medicine with Western health sciences to create the next generation of healthcare providers who embody integrative medicine. Students who matriculated prior to the fall 2016 semester will complete their program at the Newton Campus.

The facility in Newton has a Teaching Center and Chinese Herbal Medicine Center, servicing area acupuncture patients with low cost treatments.

Newton, one of the largest cities in Massachusetts, is approximately 7 miles west of Boston making it a desirable community to live and work. It is served by three modes of mass transit run by the Massachusetts Bay Transportation Authority (MBTA); light rail, commuter rail and bus service.

**Center for Online Learning and Academic Innovation, formerly MCPHS Online**

The Center for Online Learning and Academic Innovation, formed in May 2016, serves as the University's incubator for new, cross-disciplinary programs and incorporates the development and oversight of online programs. MCPHS Online was formally created in January 2011 and grew from 5 online programs to more than 30. Most of these programs are fully online and affiliate with the various schools. Some of the online programs have residency components, which include orientation, clinical assessment, and/or capstone research experiences. In addition, the Center now owns several programs: Doctor of Health Sciences, BS in Biomedical Informatics, BS in Global Healthcare Management, Master of Healthcare Administration, and the Graduate Certificate in Healthcare Management. Several other programs are under development or revision.

All of the programs offered by the Center for Online Learning and Academic Innovation are designed to give students opportunities to reach greater potential as healthcare professionals through online and/or campus-based learning in convenient and accessible formats. For the online programs, students are educated by the same faculty, are immersed in the same professional environment, and earn the same sought-after degrees as if they were on our physical campus.

## **Degree and Certificate Programs**

### **School of Arts and Sciences**

Bachelor of Science in Chemistry/Master of Science in Pharmaceutical Chemistry  
Bachelor of Science in Health Psychology (4 Pathways)  
Bachelor of Science in Health Sciences (2 Pathways)  
Bachelor of Science in Health Sciences Completion\*  
Bachelor of Science in Health Sciences to BSN (Postbaccalaureate)\*  
Bachelor of Science in Medical and Molecular Biology (5 Pathways)  
Bachelor of Science in Premedical and Health Studies (17 Pathways)  
Bachelor of Science in Public Health (2 Pathways)  
Bachelor of Science in Public Health/ Master of Public Health\*  
Master of Public Health\*  
Graduate Certificate in Public Health\*

### **Forsyth School of Dental Hygiene**

Bachelor of Science in Dental Hygiene (Accelerated)  
Bachelor of Science in Pre dental/Dental Hygiene  
Bachelor of Science in Dental Hygiene (Fast Track)  
Bachelor of Science in Dental Hygiene Completion\*  
AS to MS in Dental Hygiene Bridge Program\*  
Master of Science in Dental Hygiene\*  
Graduate Certificate in Health Professions Education\*

### **School of Medical Imaging and Therapeutics**

Bachelor of Science in Diagnostic Medical Sonography-General (Accelerated)  
Bachelor of Science in Diagnostic Medical Sonography-General (Fast Track)  
Bachelor of Science in Diagnostic Medical Sonography-Echo (Accelerated)  
Bachelor of Science in Diagnostic Medical Sonography-Echo (Fast Track)  
Bachelor of Science in Magnetic Resonance Imaging (Accelerated)  
Bachelor of Science in Magnetic Resonance Imaging (Fast Track)  
Bachelor of Science in Nuclear Medicine Technology (Accelerated)  
Bachelor of Science in Nuclear Medicine Technology (Fast Track)  
Bachelor of Science in Radiation Therapy (Accelerated)  
Bachelor of Science in Radiation Therapy (Fast Track)  
Bachelor of Science in Radiography (Accelerated)  
Bachelor of Science in Radiography (Fast Track)  
Advanced Certificate in Computed Tomography  
Advanced Certificate in Magnetic Resonance Imaging (MRI)\*

### **School of Nursing**

Bachelor of Science in Nursing (Accelerated)  
Bachelor of Science in Nursing (Postbaccalaureate)  
Bachelor of Science in Nursing Completion (RN to BSN)\*  
Certificate of Advanced Graduate Studies in Nursing (Family Nurse Practitioner Track)\*  
Certificate of Advanced Graduate Studies in Nursing (Psychiatric/Mental Health Nurse Practitioner Track)\*  
Graduate Certificate in Nursing (Nurse Educator)\*  
RN to Master of Science in Nursing Bridge Program (Nurse Educator Track)\*  
RN to Master of Science in Nursing Bridge Program (Family Nurse Practitioner Track)\*  
Master of Science in Nursing (Nurse Educator Track)\*  
Master of Science in Nursing (Family Nurse Practitioner Track)\*  
Master of Science in Nursing (Psychiatric/Mental Health Nurse Practitioner Track)\*

### **School of Rehabilitation Sciences**

Doctor of Physical Therapy  
Master of Science in Occupational Therapy

### **School of Optometry**

Doctor of Optometry

Doctor of Optometry/Master of Public Health\*

**New England School of Acupuncture**

Master of Acupuncture

Master of Acupuncture and Oriental Medicine

**School of Pharmacy - Boston**

Doctor of Pharmacy

Doctor of Pharmacy/Master of Public Health\*

Doctor of Pharmacy (Postbaccalaureate Pathway)\*

Bachelor of Science in Pharmaceutical and Healthcare Business

Bachelor of Science in Pharmaceutical Sciences/Master of Pharmaceutical Sciences

Bachelor of Science in Pharmacology and Toxicology

Certificate in Advanced Pharmacy Practice Studies

Graduate Certificate in Clinical Research\*

Graduate Certificate in Health Policy\*

Graduate Certificate in Regulatory Affairs\*

Master of Science in Clinical Research\*

Master of Science/Doctor of Philosophy in Medicinal Chemistry

Master of Science/Doctor of Philosophy in Pharmaceutical Economics and Policy

Master of Science/Doctor of Philosophy in Pharmaceutics

Master of Science/Doctor of Philosophy in Pharmacology

Master of Science in Regulatory Affairs and Health Policy\*

**School of Pharmacy - Worcester/Manchester**

Doctor of Pharmacy (Accelerated)

Doctor of Pharmacy (Accelerated)/Master of Public Health\*

Doctor of Pharmacy (Accelerated)/Graduate Certificate in Public Health\*

Master of Patient Safety\*

Graduate Certificate in Medication Safety\*

**School of Physician Assistant Studies - Boston**

Master of Physician Assistant Studies

Doctor of Science in Physician Assistant Studies\*

**School of Physician Assistant Studies – Worcester/Manchester**

Master of Physician Assistant Studies (Accelerated)

**Center for Online Learning and Academic Innovation**

RN to MS in Nursing Bridge Program ( Nurse Educator Track)\*

RN to MS in Nursing Bridge Program (Family Nurse Practitioner Track)\*

Advanced Certificate in Magnetic Resonance Imaging (MRI)\*

Bachelor of Science in Biomedical Informatics

Bachelor of Science in Dental Hygiene Completion\*

Bachelor of Science in Global Healthcare Management

Bachelor of Science in Health Sciences Completion\*

Bachelor of Science in Health Sciences to BSN (Postbaccalaureate)\*

Bachelor of Science in Nursing Completion (RN to BSN)\*

Certificate of Advanced Graduate Studies in Nursing (Family Nurse Practitioner Track)\*

Certificate of Advanced Graduate Studies in Nursing (Psychiatric Mental Health Nurse Practitioner Track)\*

Graduate Certificate in Clinical Research\*

Graduate Certificate in Health Policy\*

Graduate Certificate in Medication Safety\*

Graduate Certificate in Nursing (Nurse Educator)\*

Graduate Certificate in Public Health\*

Graduate Certificate in Regulatory Affairs\*

Graduate Certificate in Healthcare Management

Graduate Certificate in Health Professions Education\*

Master of Health Sciences\*



Master of Healthcare Administration  
Master of Patient Safety\*  
Master of Public Health\*  
AS to MS in Dental Hygiene Bridge Program\*  
Master of Science in Clinical Research\*  
Master of Science in Dental Hygiene\*  
Master of Science in Dental Hygiene/Master of Public Health\*  
Master of Science in Nursing (Nurse Educator Track)\*  
Master of Science in Nursing (Family Nurse Practitioner Track)\*  
Master of Science in Nursing (Psychiatric/Mental Health Nurse Practitioner Track)\*  
Master of Science in Pharmaceutical Economics and Policy\*  
Master of Science in Regulatory Affairs and Health Policy\*  
Doctor of Pharmacy (Postbaccalaureate Pathway)\*  
Doctor of Health Sciences  
Doctor of Science in Physician Assistant Studies\*

\*Center for Online Learning and Academic Innovation Programs are affiliated with individual Schools at MCPHS University.

## **Accreditation**

### **New England Association of Schools and Colleges**

MCPHS University is accredited by the New England Association of Schools and Colleges, Inc. (NEASC), through its Commission on Institutions of Higher Education. Accreditation of an institution of higher education by NEASC indicates that it meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer review process. An accredited college or university is one that has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity also is addressed through accreditation.

Accreditation by NEASC is not partial but applies to the institution as a whole. As such, it is not a guarantee of every course or program offered or of the competence of individual graduates. Rather, it provides reasonable assurance about the quality of opportunities available to students who attend the institution.

Inquiries regarding the accreditation status by NEASC should be directed to the Office of the Vice President for Academic Affairs at 617.732.2854.

Individuals may also contact the Commission on Institutions of Higher Education, New England Association of Schools and Colleges, Inc. 3 Burlington Woods Drive, Suite 100, Burlington, MA 01803; tel.: 781.425.7785; fax: 781.425.1001; email: cihe@neasc.org.

### **Commonwealth of Massachusetts**

MCPHS University is approved by the Commonwealth of Massachusetts to grant the degrees and certificates awarded by programs on the Boston, Newton and Worcester campuses.

### **State of New Hampshire**

MCPHS University is approved by the New Hampshire Department of Education, Division of Higher Education – Higher Education Commission to award the Master of Science in Occupational Therapy, Master of Physician Assistant Studies, Doctor of Pharmacy, Bachelor of Science and Master of Science in Nursing degrees on the Manchester campus, contingent upon continuing accreditation by ACOTE, ARC-PA, ACPE, and CCNE, respectively.

### **Accreditation Commission for Acupuncture and Oriental Medicine**

The Master of Acupuncture and the Master of Acupuncture and Oriental Medicine programs of the New England School of Acupuncture are accredited by the Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM), which is the recognized accrediting agency for programs preparing acupuncture and Oriental medicine practitioners. Individuals may contact the ACAOM Office at 8941 Aztec Drive, Eden Prairie, MN 55347; tel: 952.212.2434; fax: 952.657.7068; email: info@acaom.org; website: www.acaom.org.

### **Accreditation Council for Occupational Therapy Education**

The Master of Science in Occupational Therapy program on the Manchester campus has been granted Candidacy Status by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 4720 Montgomery Lane, suite 200, Bethesda, MD, 20814-3449. ACOTE's telephone number c/o AOTA is 301.652.AOTA and its web address is www.acoteonline.org. The program has been approved for degree granting privileges by the Division of Higher Education – Higher Education Commission, Department of Education, and State of New Hampshire.

### **Accreditation Council on Optometric Education (ACOE)**

The Doctor of Optometry (OD) program on the Worcester campus has been granted the classification of Accredited with Conditions by the Accreditation Council on Optometric Education (243 N. Lindbergh Blvd., St. Louis, MO 63141; phone: 800.365.2219).

### **Accreditation Council for Pharmacy Education**

The School of Pharmacy–Boston Doctor of Pharmacy program and the School of Pharmacy–Worcester/Manchester Doctor of Pharmacy program are separately accredited by the Accreditation Council for Pharmacy Education (ACPE), 135 S. LaSalle Street, Suite 4100, Chicago, IL 60603-4810; tel.: 312.664.3575; fax: 866.228.2631; website: www.acpe-accredit.org.

**Accreditation Review Commission on Education for the Physician Assistant, Inc.**

The Master of Physician Assistant Studies program on the Boston campus and the Master of Physician Assistant Studies program on the Manchester/Worcester campuses are separately accredited by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA), 12000 Findley Road, Suite 150, Johns Creek, GA 30097; tel.: 770.476.1224; fax: 770.476.1738; website: [www.arc-pa.org](http://www.arc-pa.org).

**American Dental Association's Commission on Dental Accreditation**

The Forsyth School of Dental Hygiene is accredited by the American Dental Association's Commission on Dental Accreditation and has been granted the accreditation status of Approval Without Reporting Requirements. The Commission is a specialized accrediting body recognized by the United States Department of Education. Individuals may contact the Commission on Dental Accreditation at 211 East Chicago Avenue, Chicago, IL 60611; tel.: 312.440.4653; fax: 312.440.2915; website: [www.ada.org](http://www.ada.org).

**American Registry of Radiologic Technologists**

For MRI programs based in postsecondary degree-granting institutions, a current accreditation mechanism acceptable to the American Registry of Radiologic Technologists (ARRT) is accreditation by a regional institutional accrediting agency. MCPHS has been recognized by ARRT as meeting this requirement, and thus graduates of its MRI program are eligible to participate in the ARRT MRI examination. Individuals may contact ARRT at 1255 Northland Drive, St. Paul, MN 55120; tel.: 651.687.0048; website: [www.rrt.org](http://www.rrt.org).

**Commission on Accreditation in Physical Therapy Education**

The Doctor of Physical Therapy program at MCPHS University is accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE), 1111 North Fairfax Street, Alexandria, VA 22314; tel.: 703.706.3245; e-mail: [accreditation@apta.org](mailto:accreditation@apta.org); website: [www.capteonline.org](http://www.capteonline.org).

**Commission on Collegiate Nursing Education**

The Baccalaureate degree in Nursing (BSN), Master's degree in Nursing (MSN-FNP), and Post-graduate APRN certificate (CAGS-FNP) on the Boston, Worcester, and Manchester campuses of MCPHS University are accredited by the Commission on Collegiate Nursing Education (CCNE), One Dupont Circle, NW, Suite 530, Washington, DC 20036, tel.: 202.887.6791; fax: 202.877.8476; website: [www.aacn.nche.edu](http://www.aacn.nche.edu).

**Joint Review Committee on Educational Programs in Nuclear Medicine Technology**

The Nuclear Medicine Technology program is accredited by the Joint Review Committee on Educational Programs in Nuclear Medicine Technology, 820 W Danforth Rd, #B1 Edmond, OK 73003 Phone: (405) 285-0546 Fax: (405) 285-0579 email: [mail@jrcnmt.org](mailto:mail@jrcnmt.org) website: [www.jrcnmt.org](http://www.jrcnmt.org).

**Joint Review Committee on Education in Radiologic Technology**

The Radiation Therapy program and the Radiography program are accredited individually by the Joint Review Committee on Education in Radiologic Technology, 20 N. Wacker Drive, Suite 2850, Chicago, IL 60606-3182; tel.: 312.704.5300; fax: 312.704.5304; website: [www.jrcert.org](http://www.jrcert.org).

**Massachusetts Board of Registration in Nursing (MBORN)**

**Postbaccalaureate Bachelor of Science in Nursing (Worcester):** The Postbaccalaureate Bachelor of Science in Nursing (BSN) program in Worcester has received Full Approval from MBORN, 239 Causeway Street, Suite 200, 2nd Floor, Boston, MA 02114, tel.: 800.414.0168 or 617.973.0900; fax: 617.973.0984; website: [www.mass.gov/dph/boards/rn](http://www.mass.gov/dph/boards/rn).

**Bachelor of Science in Nursing (Boston):** The Bachelor of Science in Nursing (BSN) program in Boston has received Approval with Warning from MBORN, 239 Causeway Street, Suite 200, 2nd Floor, Boston, MA 02114, tel.: 800.414.0168 or 617.973.0900; fax: 617.973.0984, website: [www.mass.gov/dph/boards/rn](http://www.mass.gov/dph/boards/rn).

**New Hampshire Board of Nursing**

The Bachelor of Science in Nursing (BSN) and the Master of Science in Nursing programs offered on the Manchester campus have received Full Approval from the New Hampshire Board of Nursing, located at 121 South Fruit Street, Concord, NH 03301-2431; tel.: 603.271.2323; fax: 603.271.6605; website: [www.nh.gov/nursing](http://www.nh.gov/nursing). See more at: <https://www.cms.mcpchs.edu/academics/school-of-nursing/nursing#sthash.B6r52k3b.dpuf>



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## Facilities

### Boston, MA Campus Facility Information

#### **Ronald A. Matricaria Academic and Student Center**

To accommodate the growing number of students as well as the growth in program offerings, MCPHS added the 93,000-square-foot Ronald A. Matricaria Academic and Student Center on the Longwood campus in 2004. The center preserves the signature façade and columns of the George Robert White building within a dramatic glass atrium while enhancing the University's capacity for teaching, scholarly research, and student development. The building features:

- laboratory space for chemistry, professional pharmacy practice, and pharmaceuticals;
- a library making possible state-of-the-art learning and technology resources;
- three floors of apartment-style student residence space;
- a fully staffed technology center;
- seven large, modern classrooms; and
- extensive quiet study areas and several group study rooms.

#### **George Robert White Building**

Constructed through the generosity of Boston philanthropist George Robert White, the building bearing his name houses administrative and faculty offices, classrooms, laboratories, lecture halls, White Hall, and the Forsyth Dental Hygiene Clinic. The state-of-the-art dental hygiene clinic and teaching laboratory, opened in 2005 and occupying a large portion of the first floor, is named for benefactor and Forsyth alumna Esther M. Wilkins DH '39, DMD.

In addition to the dental hygiene clinic, the White Building houses several teaching and research laboratories, multiple classrooms, a second student technology center, and faculty and administrative office suites. In 2009, the Center for Academic Success and Enrichment was created to house an array of academic support services in a renovated suite on the first floor of this historic building. In 2011, a state-of-the-art diagnostic medical imaging suite was completed to support the University's new Diagnostic Medical Sonography program—the first in Massachusetts to offer a bachelor's degree in this discipline.

#### **John Richard Fennell Building and Theodore L. Iorio Research Center**

This building is an eight-story, mixed-use facility of approximately 230,000 square feet, completed in 1996. The John Richard Fennell Building occupies the east end; the west end is the Theodore L. Iorio Research Center. This structure offers classrooms, conference rooms, a student lounge, faculty offices, a residence hall, a coffee shop, and underground parking for faculty and staff. The Rombult Atrium adjoining the White Building is used for group study and social events.

Several research and teaching laboratories also are housed in the building, including laboratories for anatomy and physiology, biology and microbiology, cell culture, biology research, physiology research, pharmacology research, behavioral and neuropharmacology, chemistry, physics, and nuclear medicine. The Channing Laboratory division of Brigham and Women's Hospital occupies the building's west end through a long-term lease arrangement.

#### **Henrietta DeBenedictis Library, Boston**

The library occupies the second floor of the Matricaria Academic and Student Center. It houses general computers for research, Web searching, and word processing, as well as photocopiers and printers. The library also provides generous study areas including group study rooms.

The Henrietta DeBenedictis Library maintains research-level collections in pharmacy, pharmacy education, and drug information, as well as core collections in clinical medicine, nursing, and the allied health sciences. Most of the collections have been converted into an electronic format, enabling users to access material remotely and from all four campuses. More than 49,000 journals are made available through a combination of owned subscriptions and titles made accessible through the library's full-text databases. In addition to the electronic journal collections, the library has access to more than 202,000 e-books and 188 databases. Holdings are further extended through membership in the Fenway Library Organization (FLO), a group of 10 full-member libraries and 11 affiliate members that share resources and allows the MCPHS community to directly borrow material. In addition, FLO supports an online public catalog of more than one million volumes held by member institutions. Taking advantage of Boston's extensive research universities and colleges, the MCPHS libraries offer an interlibrary loan service that provides timely delivery of journal articles and books, usually at no cost to our students, faculty, and staff.

### **Richard E. Griffin Academic Center**

In 2009, the University opened the Richard E. Griffin Academic Center, at 670 Huntington Avenue. The center contains 50,000 square feet of classrooms, faculty and staff offices, teaching laboratories, a technology center, a 250-seat auditorium, and a multifunction room. Students from all degree programs on the Boston campus attend classes in the new facility. The upper floors of the six-story building house the University's Nursing, Physician Assistant Studies, and Medical Imaging and Therapeutics programs, as well as offices for Alumni, Advancement, Continuing Education, Community Relations, and the Center for Professional Career Development.

### **Brant House**

The Brant House, which serves as a private residence for the University President, was created in 2002 by joining two adjacent historic three-story brownstone buildings in to one building. The first and second floors, which are public floors, are used for receptions, meetings, and other events.

### **Crossroads Café and Student Lounge**

The Crossroads Café and Student Lounge is a hub of student life on the MCPHS–Boston campus. Members of the MCPHS community use the Student Lounge as a place to meet, study, and relax in a welcoming, supportive environment. At the Crossroads Café, students can grab a quick cup of coffee on their way to class or pick up a light lunch or an afternoon snack.

### **Dining Facilities**

The University's main dining facility for the Boston campus is located a short walk across Palace Road and is situated above the MCPHS bookstore. The dining hall is shared with Massachusetts College of Art and Design and Wentworth Institute of Technology, and is housed in MassArt's Kennedy Building. A wide range of hot and cold entrées, salad bar offerings, and specialty foods are available for breakfast, lunch, and dinner. The facility is generally open year-round, with some reduction in hours during summer and holiday breaks. A newer addition to the dining commons is a Peet's Coffee & Tea, which opened in the fall of 2010.

### **Bookstore**

The MCPHS bookstore is located on Palace Road, across the street from the main campus, and serves both MCPHS and neighboring Massachusetts College of Art and Design. Newly renovated and expanded in 2009, and located in the lower level of MassArt's Kennedy Building, the bookstore stocks new and used MCPHS textbooks, reference books, insignia clothing, and other college-related items. Textbooks may be ordered or rented online at [www.masspharmacy.bkstr.com](http://www.masspharmacy.bkstr.com). The bookstore's telephone number is 617.739.4772; the email is [masspharmacy@bkstr.com](mailto:masspharmacy@bkstr.com)

### **Computer Facilities**

A number of computer laboratories and classrooms are available to students, staff, and faculty. The laboratories contain personal computers and peripheral equipment for individual use. In addition to the physical computer laboratories, the University also maintains a virtual technology center (VTC). Accessing the VTC from the Internet provides students with access to all the applications and resources available in the libraries and physical computer labs. All campuses have complete wireless coverage for convenient access to the Internet and email. Additionally, a number of computer kiosks are located in various common areas. Faculty also may take advantage of the multiple netbook computer carts that can be deployed to most classrooms.

### **Public Transportation and Parking**

Students may purchase monthly Massachusetts Bay Transportation Authority (MBTA) passes from the University at a discount. For more information, contact the Office of Student Activities at 617.732.2871.

There is no daytime student parking on the Boston campus. Evening and weekend parking permits are available for purchase by certain students on a limited basis. For on-campus and off-campus parking information, contact Public Safety at 617.732.2900.

### **Residence Halls**

Fennell Hall adjoins the George Robert White building. It provides traditional corridor-style living arrangements with double, triple, and quad rooms. Each room is furnished with beds, dressers, wardrobes, desks, and desk chairs, and is equipped with wireless Internet and cable jacks. Students residing in Fennell have a mandatory full meal plan during the fall and spring semesters. Fennell is supervised by an Area Coordinator, who is a full-time professional staff member who lives on-campus as well as five student resident assistants (one on each floor). The building has 24-hour security

and houses first-year students.

Matricaria Residence Hall provides apartment-style living in two- to five-person apartments. Each unit has a common room with living area, a kitchen, a bathroom, and double and/or single bedrooms. The bedrooms are equipped with beds, dressers, wardrobes, desks, and desk chairs, as well as wireless Internet and cable jacks. The common room has a love seat, chairs, occasional tables, dining table and chairs, and a kitchen with storage space. Students living in this apartment residence hall are required to purchase a partial meal plan but have the option to purchase a full meal plan. This building is supervised by an Area Coordinator, who is a live-in, full-time professional staff member as well as six student resident assistants (two on each floor). The building has 24-hour security.

University-sponsored housing also is provided in local Colleges of the Fenway (COF) residence halls. The Treehouse residence hall at Massachusetts College of Art and Design houses approximately 250 MCPHS residents. The Tree House houses all first-year students participating in the Academic Living and Learning Community. Students live in a suite-style layout with single, double, and triple bedrooms with a shared suite bathroom. The layout of the building lends itself to a creative and community-focused learning environment. Public areas include common space on most floors, a game room, group study rooms, laundry facilities, a fitness room, a vending area, and a lobby with 24-hour security. Treehouse is supervised by an Area Coordinator, who is a full time professional staff member who lives on campus as well as nine student resident assistants (one on each floor).

In addition to the Treehouse, MCPHS also provides University-sponsored housing at Evans Way and Rodgers at the Wentworth Institute of Technology campus. Each unit house two or three students and is equipped with a kitchen and private bathroom to provide residents with a sense of independence while living in an environment that allows for personal growth and socialization. Evans Way & Rodgers are supervised by an Area Coordinator who is a live-in, full time professional staff member as well as five student resident assistants (one on every other floor). Students living in this apartment residence hall are required to purchase a partial meal plan for both the fall and spring semesters.

All residence halls and University-sponsored housing house male and female students and an area designated area as a wellness-themed living-learning community. All residents have access to laundry facilities and each resident is assigned an individual mailbox. Students taking courses during the summer may apply for summer housing.

The Office of Residence Life assists students in identifying off-campus housing resources; see [www.mcphs.edu/campuses/boston/housing/off-campus-housing](http://www.mcphs.edu/campuses/boston/housing/off-campus-housing). All questions regarding housing should be directed to the Office of Residence Life at 617.732.2866 or [residencelife@mcphs.edu](mailto:residencelife@mcphs.edu). For a description of the Boston residence halls, as well as additional information regarding residence life in Boston, refer to the website at [www.mcphs.edu/campuses/boston/housing](http://www.mcphs.edu/campuses/boston/housing).

## Worcester, MA Campus Facility Information

### **Henrietta DeBenedictis Building**

The Worcester campus opened in 2000 in a state-of-the-art facility located at 19 Foster Street, named after alumna and benefactor Henrietta DeBenedictis, which includes two auditoriums equipped for videoconferencing, classrooms, laboratories, the Blais Family Library, a computer lab, a student lounge, a help desk and study space, the Brant student services area, and faculty and staff offices.

### **Thomas Henry Borysek Living and Learning Center**

The Thomas Henry Borysek Living and Learning Center, located at 25 Foster Street, contains administrative and faculty offices, a conference room, classrooms, a technology center, patient assessment and clinical simulation laboratories, and six floors of suite-style student housing (all with private bedrooms). The basement provides comfortable group study / social (lounge) space for students. The first floor houses a 24-hour café/study space and wellness center. The wellness center has cardio and weight machines along with fitness on demand for access to yoga, spin, and a variety of other on demand classes. A portion of the ninth floor also houses the Fuller Conference Room, a spacious area designed for conferences, board meetings, receptions, and other University gatherings.

### **Lincoln Square Academic and Student Center**

The Lincoln Square Academic and Student Center, located at 10 Lincoln Square, is a state-of-the-art facility that contains administrative and faculty offices, conference rooms, classrooms, clinical labs, computer lab, an optometry clinic, an optical store, a dental hygiene clinic, a 24-hour café, a quiet study space, a spacious event space, and seven floors of student housing. The center provides facilities for academic programs in physical therapy, physician assistant studies, optometry, dental hygiene, and medical imaging.



### **Maher Academic Center**

Opened in 2009, the Maher Academic Center at 40 Foster Street houses 30,000 square feet of academic and student space. Two 250-seat auditoriums and three “smart” classrooms feature the latest instructional technology and interactive videoconferencing capability. The street-level multipurpose laboratory includes a model pharmacy that simulates community and institutional practice environments. A student lounge, student meeting rooms, quiet study areas, and faculty and administrative offices complete the fully renovated facility. The office for the Student Government Association and Student Activities is located on the first floor adjacent to the student lounge.

### **MCPHS Online, Brant Building, 28 Mechanic Street**

MCPHS Online, formed in January 2011, provides a formal structure for online programs offered at MCPHS. Now housed within the Center for Online Learning and Academic Innovation, MCPHS Online consists of more than 30 programs across seven disciplines. The goal of the Center for Online Learning and Academic Innovation is to serve as the University’s incubator for new, cross-disciplinary programs and to continue to build programs that will serve the educational needs of working healthcare professionals. The physical facility houses the staff members charged with the development and oversight of new face-to-face and online programs. This includes the operations staff, the instructional design team, program directors / faculty associates, faculty, and student support personnel. There is a small conference room on the first floor available for staff groups at the Worcester campus.

### **19 Norwich Street Building**

This newly renovated building opened in Fall 2016 for the inaugural class on the Worcester campus of the New England School of Acupuncture, and houses classrooms, practice labs, student lounge, study space, and faculty and administrative offices. The Acupuncture Treatment Center occupies the first floor, where Student Interns offer acupuncture and herbal services to the public, closely supervised by senior faculty. A small store and herbal dispensary supports students and providers.

### **Blais Family Library, Worcester**

A branch of the Henrietta DeBenedictis Library, which is located on the Boston campus, the Blais Family Library contains a core collection of pharmacy, clinical medicine, optometry, physical therapy, dental hygiene and nursing print material. Computers in the library provide students with access to all of Boston’s Henrietta DeBenedictis Library’s electronic resources. Professional librarians provide reference and library instruction. Interlibrary loan and document delivery are available from Boston’s collections as well as from the collections of many New England medical and academic libraries.

The Blais Family Library is a member of the Academic and Research Collaborative, a consortium of 18 libraries including that of the University of Massachusetts Worcester Medical School, which participates in free cross-borrowing services.

### **Computer Facilities**

A number of computer laboratories and classrooms are available to students, staff, and faculty. The laboratories contain personal computers and peripheral equipment for individual computing use. The campus is equipped with wireless technology for convenient access to the Internet and email. Additionally, a number of computer kiosks are located in various common areas. Faculty also may take advantage of the multiple netbook computer carts that can be deployed to most classrooms.

### **Parking**

Student parking on the MCPHS–Worcester campus is limited, provided based on availability, and not guaranteed to any individual. Parking on campus is an additional fee that is charged per semester. For information, please contact Administrative Services office for the Worcester campus at 508.373.5754.

### **Residence Halls**

The Thomas Henry Borysek Living and Learning Center (located at 25 Foster Street), with student residences on the fourth through ninth floors, offers apartment-, studio-, and suite-style housing options. All students enjoy the privacy of a single bedroom within an apartment/suite equipped with a kitchen. The building also has laundry, vending machines, two study rooms, and student mailboxes, and can accommodate 145 resident students. A full-time professional staff member and three resident assistants reside in the building. Additionally, there are 24-hour security personnel. The building adjoins the Henrietta DeBenedictis Building (19 Foster Street), which includes the Blais Family Library; the residence halls are located directly above classrooms, study space, and administrative offices.

The Lincoln Square Academic and Student Center (located at 10 Lincoln Square), with student residences on the third through ninth floors, offers private bedrooms and bathrooms. Lincoln Square is a short three-block walk from the Foster

Street end of campus. The building also houses a café, laundry facilities, vending machines, student mailboxes, classrooms, labs, faculty and administrative offices, a large meeting/event space, and a parking garage. The building can accommodate approximately 202 resident students. A full-time professional staff member and four resident assistants reside in the building. Additionally, there are 24-hour security personnel.

The Lancaster Street Apartments (located at 7, 11, and 15 Lancaster Street) are located within 10 minutes of the Lincoln Square Academic and Student Center and the academic buildings on Foster Street and offer two-bedroom apartments with a shared bathroom. Students have the privacy of an individual bedroom and share the common areas such as the living room, kitchen, and bathroom with one roommate. There is on-site laundry for resident students. Residents are responsible for setting up an account for cable, Internet, and electricity, but all other utilities are included. This building can accommodate 36 students. There is also one resident assistant residing in the living area.

The Apartments at 72 Salisbury Street (located at 72 Salisbury Street) are located within 10 minutes of the Lincoln Square Academic and Student Center and offer one- and two-bedroom apartments. Each apartment has personal bedrooms for each occupant and shared kitchen, living room, and bathroom for two-person apartments. These apartments have hardwood floors, laundry facilities on site, and one resident assistant assigned to the building. Students are responsible for cable, Internet, gas, and electricity accounts for this housing option.

The Apartments at 50 and 60 Salisbury Street (located at 50 and 60 Salisbury Street) are located within 10 minutes of the Lincoln Square Academic and Student Center, and offer single and two-person apartments with shared kitchen, living room, and bathroom(s). These very spacious apartments have unique features that vary between the specific apartments, including walk-in closets, second floors, patios, large kitchen areas, or living rooms. Each apartment is equipped with laundry machines. Students are responsible for setting up accounts for cable, Internet, and electricity. The resident assistant residing at 72 Salisbury Street also serves the residents at 50 and 60 Salisbury Street.

All residence hall rooms and apartments are gender-specific.

The Residence Life staff also plans programming focused on providing opportunities for stress relief, social justice and socializing with fellow MCPHS–Worcester students outside the classroom. The staff strives to create fun, relaxed events that encourage students to take a much-deserved break.

Contact a member of the Residence Life staff consisting of the Assistant Dean for Residential Living and Learning (508.373.5791), the Assistant Director of Residence Life (508.373.5628) or the Area Coordinator for Lincoln Square (508.373.5647) on the Worcester campus for more information regarding Residence Life or visit the website at [www.mcphs.edu/campuses/worcester/housing](http://www.mcphs.edu/campuses/worcester/housing). For questions related to housing placement or the housing process, please contact the Administrative Services office for the Worcester campus at 508.373.5754.

### **Student Lounge**

The National Association of Chain Drug Stores (NACDS) student lounge/café is located in the lower level of the Henrietta DeBenedictis Building. It contains student lockers and is a gathering place for students to meet, study, or have a meal in a relaxed atmosphere. Internet and email access is available.

## **Manchester, NH Campus Facility Information**

### **Joseph F. and Francis P. Brant Academic and Student Center**

Located in the heart of Manchester, New Hampshire, the Joseph F. and Francis P. Brant Academic and Student Center is a 33,000-square-foot, three-story space consisting of classrooms, a physical assessment laboratory, a clinical simulation laboratory, a professional pharmacy practice laboratory, a library / learning resource space, state-of-the-art videoconference classrooms linked to the Worcester campus, student lounge, seminar rooms, a student government office, a resource area, and faculty and staff offices.

### **Student Activity Center**

The Student Activity Center is more than 15,000 square feet. The first floor houses 2 student study rooms and Occupational Therapy faculty offices. The second floor includes two videoconference classrooms linked to the Worcester campus, a student lounge (with a large-screen TV, information monitor, chairs, and couches), lockers, and a small kitchen area. Wireless Internet is available.

### **Library and Computer Facilities, Manchester**

The Library and Learning Center houses the main computer resource area for students. The library also has two

computer-equipped rooms with larger wall-mounted screens for collaborative group study. The library, a branch of the Henrietta DeBenedictis Library in Boston, contains a core collection of pharmacy, clinical medicine, and nursing texts. Students have access to all of the Boston library's electronic resources, as well as interlibrary loan from Boston's collections and those of many New England medical and academic libraries. In addition, a quiet study room is available. Reference and library instruction is provided by a professional librarian. The library is a member of the New Hampshire College and University Council, providing access to the collections of its member libraries.

The campus is equipped with wireless technology for convenient access to the Internet and email. Additionally, a number of computer kiosks are located in various common areas. Faculty also may take advantage of the multiple netbook computer carts that can be deployed to most classrooms.

### **Laboratory Facilities**

The patient assessment laboratory is a multifunction laboratory serving courses such as physical assessment, anatomy, and clinical medicine. The laboratory houses 12 physical assessment stations, small medical equipment, and anatomical models and specimens. The professional pharmacy practice / pharmaceuticals laboratory simulates a working pharmacy to introduce students to pharmacy operations and the role of a pharmacist. The clinical simulation laboratory is designed to replicate a hospital environment and consists of six medical/surgical bays, one pediatric/infant bay, and two critical care units. Each bay contains a hospital bed, bedside table and chest, overhead lights, live medical gases at each station (vacuum, air, oxygen), and other patient-monitoring equipment. Sophisticated, computer-controlled simulated patients (adult and pediatric) are an important teaching aid in this lab.

The Department of Occupational Therapy learning laboratories consist of a Sensory-Based Pediatric Lab, a Functional Living Adult Lab, and an Upper-Extremity Orthopedic Lab. The pediatric lab houses a 3-point sensory suspension system and multimodal sensory equipment. The adult lab houses a training kitchen and living space and a training bathroom. The upper-extremity lab houses Bioness equipment, splinting area, and a therapeutic exercise training station.

### **Parking**

Limited student parking is available near the Manchester campus. For information, contact Administrative Services for the Manchester campus at 603.314.1760.

### **Brant Student Lounge**

The student lounge serves as the gathering place for students to study, converse, meet, share a meal, relax, and hold celebrations, and includes lockers, a small kitchen area, freestanding computers, a large-screen TV, an information monitor, and comfortable chairs and couches. It serves as the "living room" for the campus.

### **Brant Hub**

The heart of the Manchester campus is housed in the Brant Hub. This 10,000-square foot building houses a café, conference and multipurpose rooms, four group study rooms, a large computer/study room, classrooms, pediatric and adult labs for the Occupational Therapy program, and a large Adirondac style gathering and study space with a central stone fireplace.

## **Newton, MA Campus Facility Information**

In March 2016, New England School of Acupuncture (NESA) became part of MCPHS University. NESA has been synonymous with excellence in acupuncture education since 1974, making NESA the oldest acupuncture program in the US. By joining MCPHS, NESA connects Eastern medicine with Western health sciences to create the next generation of healthcare providers who embody integrative medicine. Students who matriculated prior to the fall 2016 semester will complete their program at the Newton Campus.

There are four classrooms equipped for clinical training, as well as a study area, reading room, computers, lockers, and kitchen facilities in 10,000 square feet of space. A comfortable lounge serves as a gathering place for students to relax or share a meal. The NESA Acupuncture Treatment Center operates 6 days/week offering acupuncture and herbal services to the public, provided by 3rd year Student Interns.

### **Parking**

Parking is available on site for students, faculty, and staff. The campus is also accessible by MBTA.

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## Interinstitutional Cooperation

### Consortia

#### **Colleges of the Fenway (COF)**

MCPHS is one of six institutions of higher education in the Longwood Medical and Academic Area of Boston that joined together in 1996 to form a consortium that includes MCPHS, Emmanuel College, Massachusetts College of Art and Design, Simmons College, Wentworth Institute of Technology, and Wheelock College. The six institutions, each with its own unique mission, offer a world of learning and experience on and off campus. Collectively, the COF represent more than 11,000 full-time undergraduate students, nearly 1,000 full-time faculty, and more than 3,000 course offerings. Shared initiatives among the six institutions are aimed at enhancing the quality of education, enriching student experiences, and reducing costs through the sharing of resources. Collaborative student opportunities include cross-registration, which broadens access to courses otherwise not available on the student's home campus; career centers; intramurals; performing arts; student life programs and activities; and study abroad opportunities. [www.colleges-fenway.org](http://www.colleges-fenway.org)

#### **Higher Education Consortium of Central Massachusetts (HECCMA)**

MCPHS is one of 12 institutions of higher education in the central Massachusetts area that joined together to form a consortium that includes Anna Maria College, Assumption College, Becker College, Clark University, College of the Holy Cross, Cummings School of Veterinary Medicine (Tufts University), Nichols College, Quinsigamond Community College, UMass Medical School, Worcester Polytechnic Institute, and Worcester State University. HECCMA's 12 member colleges and universities offer a diverse set of courses in many academic disciplines, adding to the rich cultural fabric of Worcester and Central Massachusetts. Students can take advantage of opportunities for sharing courses and facilities. This partnership provides opportunities to participate in college career fairs and internships through member institutions. [www.heccma.org](http://www.heccma.org)

#### **Manchester Area Colleges Consortium (MACC)**

MACC, an initiative of the Greater Manchester Chamber of Commerce and Manchester's 10 higher education institutions, was created to introduce the area's business community and citizens to the numerous opportunities their presence provides. Area institutions of higher learning work collaboratively to bring attention to the 21,000 students and college employees in the region. The 10 institutions that form the membership of the consortium include Franklin Pierce University at Manchester, Granite State College, Hesser College, MCPHS, Manchester Community College, New Hampshire Institute of Art, Saint Anselm College, Southern New Hampshire University, Springfield College, and the University of New Hampshire at Manchester. MACC provides many opportunities through academic programs, athletic and cultural events, and other activities in preparing an educated workforce for New Hampshire and the region.

#### **New Hampshire College and University Council (NHCUC)**

NHCUC is a consortium of 16 public and private institutions of higher education in the state of New Hampshire. MCPHS joined the council when it opened its Manchester, New Hampshire, campus in 2002. The council's mission is the advancement of higher education in the state through collaborative efforts among the 22 colleges and universities and the enhancement of educational opportunities for the more than 70,000 students who attend the council's member institutions. The council works to coordinate collaborative initiatives among academic, library, and informational technology offices; sponsors professional development conferences for faculty; and promotes awareness and understanding of higher education among legislators and the public. [www.nhcuc.org](http://www.nhcuc.org)

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## Institutional Agreements

MCPHS has entered into agreements with other health professions institutions to enable highly motivated students to begin studies at MCPHS that lead to opportunities to complete professional programs at other institutions and vice versa. These institutional agreements are summarized below. Interested students should consult the website, [www.mcphs.edu](http://www.mcphs.edu), for updated information, numbers of students who can be accommodated, and application criteria for each program. International students are not eligible for some of these affiliations and should consult the individual institutions for additional information.

### Entry from MCPHS to Other Health Professions Programs

#### **Drexel University College of Medicine (Philadelphia, Pennsylvania)**

##### *Interdepartmental Medical Science (IMS)*

Drexel University College of Medicine and MCPHS have an affiliation that provides reserved admission to MCPHS Premedical and Health Studies students who wish to complete the certificate in Interdepartmental Medical Science. Established in 1981, the Interdepartmental Medical Science (IMS) program has been successful in helping students gain entry into U.S. medical schools. The IMS program offers an interdisciplinary curriculum that integrates first-year medical school basic science courses and delivers them through clinical system-based modules. Students apply to medical or other health professional schools either during or after completion of the IMS program. Successful completion of the coursework (B grades or better) demonstrates to health professional schools the student's ability to handle medical school coursework.

#### **Lake Erie College of Osteopathic Medicine (Erie, Pennsylvania, or Bradenton, Florida)**

##### *Doctor of Osteopathic Medicine (DO)*

MCPHS and Lake Erie College of Osteopathic Medicine (LECOM) have established an early acceptance program agreement whereby MCPHS students are enrolled jointly by MCPHS and LECOM to facilitate the admission of MCPHS students into LECOM's Doctor of Osteopathic Medicine program. LECOM will interview students prior to their enrollment at MCPHS or within the first two years of study at MCPHS. Students who interview successfully will be offered a provisional acceptance to LECOM's Doctor of Osteopathic Medicine program. Provisionally accepted students may not apply to any other medical school. Application to another medical school will result in the loss of the student's provisional acceptance. Upon meeting the criteria for final acceptance, students will matriculate at the LECOM campus of their choice: Erie, Pennsylvania, or Bradenton, Florida. The early acceptance program offers two tracks: (1) The "4+4" track is the recommended pathway for most students. (2) The "3+4" track is available to all students but is typically utilized by the highly motivated student who wishes to enter medical school before receiving an undergraduate degree or a nontraditional student who already has a degree. Students enrolled in this track may receive a baccalaureate degree in an appropriate field from MCPHS upon successful completion of at least 30 credit hours at LECOM.

#### **Lake Erie College of Osteopathic Medicine (Bradenton, Florida)**

##### *Doctor of Dental Medicine (DMD)*

MCPHS and Lake Erie College of Osteopathic Medicine (LECOM) have established an early acceptance program agreement whereby MCPHS students are enrolled jointly by MCPHS and LECOM to facilitate the admission of MCPHS students into LECOM's Doctor of Dental Medicine program. LECOM will interview the student prior to his/her enrollment at MCPHS or within the first two years of study at MCPHS. Students interviewing successfully will be offered a provisional acceptance to LECOM's Doctor of Dental Medicine program. Provisionally accepted students may not apply to any other dental school. Application to another dental school will result in the loss of the student's provisional acceptance. Upon meeting the criteria for final acceptance, students will matriculate at the LECOM Bradenton, Florida, campus. Students complete four years of undergraduate education at MCPHS and four years of dental school education at LECOM and its associated clinical training sites.

#### **William James College (Newton, Massachusetts)**

##### *Health and Behavioral Medicine - Clinical Mental Health Counseling/Master of Arts (MA) Program*

The Health and Behavioral Medicine – Clinical Mental Health Counseling/Master of Arts program at William James College focuses on preparing students to work in patient-centered, community health environments in both the public and private health sector. Students will be prepared to become a key part of a medical team, conducting brief

assessments, consulting with colleagues from other healthcare disciplines and treating patients and families in both brief and extended models of care. This is a 60-credit program- completed full time by attending two academic years (including summers) with part-time options available. The integrated academic program includes intensive supervised clinical practice beginning in the first semester of training for full-time students (part-time students start clinical practice in year 2). Additional, College-wide concentrations are available in Latino Mental Health, African and Caribbean Mental Health, Global Mental Health, and Military & Veterans Psychology. MCPHS University Health Psychology students who fulfill and maintain the requirements and conditions of the articulation agreement with William James College will be given an assurance of consideration for placement in William James College's Health and Behavioral Medicine – Clinical Mental Health Counseling/MA program.

### **William James College (Newton, Massachusetts)**

#### *Clinical Psychology/Doctoral (PSYD) Program*

The Clinical Psychology/Doctoral (PSYD) Program at William James College prepares practicing clinicians through coordinated ongoing academic and applied experience. This 134 credit five-year program includes field placement experiences and internships, so students experience both academic and hands-on training. The curriculum is designed to provide broad and rigorous training in clinical knowledge and skills and is constructed in keeping with the requirements of the American Psychological Association (APA). In the Clinical Psychology PsyD Program course content is designed to provide a foundation for professional practice; courses are taught by practicing professionals; concentrations are available in Forensic Psychology, Health Psychology, Child, Family & Adolescent Psychology, Children and Families of Adversity and Resilience, Latino Mental Health, Military and Veterans Psychology; and students choose among a broad and creative range of research designs for their doctoral research projects. MCPHS University Health Psychology students who fulfill and maintain the requirements and conditions of the articulation agreement with William James College will be given an assurance of consideration for placement in William James College's Clinical Psychology Doctoral program.

### **Ross University School of Medicine (Dominica)**

#### *Doctor of Medicine (MD)*

This partnership joins the Bachelor of Science (BS) in Premedical and Health Studies program at MCPHS with the Doctor of Medicine (MD) degree at Ross University School of Medicine, Dominica. The goal of this alliance is to provide a professional pathway for the academically outstanding student who has a strong passion for medicine. The four years at MCPHS provide a challenging baccalaureate curriculum in premedical and health studies that prepares students for professional study. Upon graduation from MCPHS, the subsequent three years and eight months at Ross University provide the professional education required for the MD degree and a choice residency.

Founded in 1978, Ross University has a mission to help students become effective, successful physicians through its technologically advanced campus, exceptional faculty, and rigorous U.S.-style curriculum. Ross University offers an accelerated, U.S.-based trimester curriculum in which students study year-round. Students may begin their medical studies in the September, January, or May semester. Students complete the first four semesters of study (basic science requirements) in the Caribbean on the island of Dominica. Because Ross University operates on a three-semester schedule, students are able to complete the basic sciences curriculum in just 16 months. Students then return to the United States for the start of their clinical training and completion of their medical education. The fifth semester is spent at the Ross University campus in Miami, which provides an important bridge between the first four semesters of basic science education at the Dominica campus and the last five semesters of clinical rotations that take place at more than 70 U.S. teaching hospitals affiliated with Ross University. Graduates of Ross University are able to enter U.S. residency programs in every specialty of medicine if they are U.S. citizens. They are eligible to be licensed in all 50 states and Canada and to become leaders in their fields as practitioners, educators, and researchers.

### **Ross University School of Veterinary Medicine (St. Kitts)**

#### *Doctor of Veterinary Medicine (DVM)*

This partnership joins the Bachelor of Science (BS) in Premedical and Health Studies program at MCPHS with the Doctor of Veterinary Medicine (DVM) degree at Ross University School of Veterinary Medicine, St. Kitts. The goal of this alliance is to provide a professional pathway program and a unique educational opportunity for the highly motivated student with a professional goal of becoming a veterinarian. The program allows for completion of the BS degree at MCPHS and the DVM degree at Ross University School of Veterinary Medicine, St. Kitts, in seven years and four months.

Founded in 1982, Ross University's School of Veterinary Medicine was established on the island of St. Kitts in the

Caribbean to make it possible for qualified students to realize their dream of becoming veterinarians. Ross offers an accelerated, U.S.-based trimester curriculum in which students study year-round. Students may begin their veterinarian studies in the September, January, or May semester. Students complete the first seven semesters of study in St. Kitts, taking preclinical courses modeled on those taught in U.S. schools. Students complete their last three semesters of study at one of 22 American Veterinary Medical Association (AVMA)–accredited veterinarian schools affiliated with Ross University, located throughout the United States. Graduates of Ross University can be licensed in all 50 states and become leaders in their fields as practitioners, teachers, and researchers. Ross University School of Veterinary Medicine is fully accredited by the AVMA Council on Education.

#### **St. George's University School of Medicine (Grenada)**

##### *Doctor of Medicine (MD)*

MCPHS University and St. George's University (SGU) School of Medicine have an affiliation that offers qualified students the opportunity to pursue a career in medicine at Saint George's University, following successful graduation from MCPHS University. The qualified medical students will be eligible to complete the first two years of medical study in Grenada, and the final two years of a combined program in clinical rotations at affiliated hospitals in the United States and/or the United Kingdom. St. George's University School of Medicine pioneered the concept of international medical education. It was the first to be accredited by the Caribbean Accreditation Authority for Education in Medicine and Health Professions (CAAM-HP), and the leader in the first time scores on the United States Licensing Examinations. In its 35 years of academic achievement, St. George's University School of Medicine has graduated over 12,000 physicians to the global health care system. They have been licensed in all 50 states and Canada and have practiced in over 45 countries of the world.

#### **St. George's University School of Veterinary Medicine (Grenada)**

##### *Veterinary Medicine (DVM)*

MCPHS University and St. George's University (SGU) School of Veterinary Medicine have an affiliation that offers qualified students the opportunity to pursue a career in veterinary medicine at Saint George's University, following successful graduation from MCPHS University. St. George's School of Veterinary Medicine program offers students a unique, innovative, international approach to veterinary medicine. Great emphasis is placed upon clinical instruction as a method of formulating basic science curriculum into clinical practice with the use of simulation models, case-based teaching and outstanding student to faculty ratios. With state-of-the-art teaching and laboratory facilities, students receive exemplary experiences in preparation for clinical training rotations and for general veterinary practice following graduation. Students receive extensive opportunities designed to foster the understanding and confidence required for success as veterinary professionals, including research, practice management and responsibilities of veterinarians to local and global public health.

The program offers three years of didactic coursework in basic sciences and introductory clinical work in medicine and surgery in Grenada, followed by a fourth year of clinical training at one of twenty-nine AVMA-Accredited affiliated veterinary schools in the United States, United Kingdom, Ireland, Canada and Australia.

#### **A.T. Still University / Kirksville College of Osteopathic Medicine (Kirksville, Missouri)**

##### *Doctor of Osteopathic Medicine (DO)*

A.T. Still University / Kirksville College of Osteopathic Medicine (KCOM) and MCPHS have an affiliation that provides reserved admission to KCOM for highly qualified MCPHS students through the Still Scholars preosteopathic program. Students are admitted to KCOM at the beginning of their third year at MCPHS. If they continue to meet KCOM admission requirements, the MCAT exam is waived and, following completion of the four-year Bachelor of Science in Premedical and Health Studies degree, they have a reserved space at KCOM. This professional pathway provides an exceptional opportunity for the highly motivated high school student with a professional goal of becoming a Doctor of Osteopathic Medicine. A.T. Still founded the Kirksville College of Osteopathic Medicine in the late nineteenth century; it is the oldest school of osteopathic medicine in the United States.

The program allows for completion of the bachelor of science degree at MCPHS in four years and the doctor of osteopathic medicine degree at A.T. Still University / Kirksville College of Osteopathic Medicine in another four years. The osteopathic curriculum involves four years of postbaccalaureate academic study. Reflecting the osteopathic philosophy, the curriculum emphasizes preventive medicine and holistic patient care. Medical students learn to use osteopathic principles and techniques for the diagnosis and treatment of disease.



### **Temple University School of Podiatric Medicine (Philadelphia, Pennsylvania)**

#### *Doctor of Podiatric Medicine and Surgery (DPM)*

MCPHS and Temple University School of Podiatric Medicine have an affiliation that provides reserved admission to qualified students. MCPHS students who complete the Bachelor of Science in Premedical and Health Studies or the BS in Medical and Molecular Biology must meet Temple's admission standards in effect at the time of their application to Temple, including coursework, grades, standardized test scores, and any other admission criteria. Students spend four years working toward the Doctor of Podiatric Medicine and Surgery degree.

### **University of Massachusetts Boston (Boston, Massachusetts)**

#### *Business Administration (MBA)*

Through this agreement, qualified students in the Bachelor of Science in Pharmaceutical and Healthcare Business program at MCPHS may be admitted into the Master of Business Administration (MBA) program at the University of Massachusetts Boston and earn an MBA in 12 to 16 months, following the completion of their BS degree program at MCPHS.

## **Entry from Other Institutions to MCPHS Health Professions Programs**

### **Assumption College (Worcester, Massachusetts)**

#### *Nursing (BSN)*

Assumption College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Assumption College, earning a Bachelor of Science degree in Biology (or related field), and concludes with 16 months in the accelerated Bachelor of Science in Nursing (Postbaccalaureate) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at Assumption College offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Assumption, and the specified preprofessional coursework for entry to the BSN program.

#### *Optometry (OD)*

Assumption College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Assumption College, earning a bachelor of arts degree in biology (or related field), and concludes with four years in the Doctor of Optometry (OD) program on the MCPHS–Worcester campus. The curriculum at Assumption College offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Assumption, and the specified preprofessional coursework for entry to the OD program.

#### *Pharmacy (PharmD)*

Assumption College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Assumption College, earning a bachelor of arts degree in biology (or related field), and concludes with three years in the Doctor of Pharmacy (Accelerated PharmD) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at Assumption College offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Assumption, and the specified preprofessional coursework for entry to the PharmD program.

#### *Physical Therapy (DPT)*

Assumption College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Assumption College, earning a bachelor of arts degree in biology (or related field), and concludes with three years in the Doctor of Physical Therapy (DPT) program on the MCPHS–Worcester campus. The curriculum at Assumption College offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Assumption, and the specified preprofessional coursework for entry to the DPT program.

#### *Physician Assistant Studies (MPAS)*

Assumption College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Assumption College, earning a bachelor of arts degree in biology (or related field), and concludes with two years in the Master of Physician Assistant Studies (Accelerated MPAS) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at Assumption College offers a blend of liberal arts and

sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Assumption, and the specified preprofessional coursework for entry to the MPAS program.

### **Cape Cod Community College (West Barnstable, Massachusetts)**

#### *Dental Hygiene (MSDH)*

Cape Cod Community College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with earning an Associate of Science degree in dental hygiene and concludes with three years in the AS to MS in Dental Hygiene Bridge Program at MCPHS Online. Qualified students must meet the GPA requirement, present proof of current licensure as a dental hygienist, and give evidence of one year of work experience in any healthcare field in order to be eligible for entry to the MSDH program.

### **Clark University (Worcester, Massachusetts)**

#### *Nursing (BSN)*

Clark University and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Clark University, earning a Bachelor of Arts degree in Biology (or related field), and concludes with 16 months in the accelerated Bachelor of Science in Nursing (Postbaccalaureate) program on the MCPHS–Worcester campus. The curriculum at Clark University offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Clark University, and the specified preprofessional coursework for entry to the BSN program.

#### *Pharmacy (PharmD)*

Clark University and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Clark University, earning a Bachelor of Arts degree in Biology (or related field), and concludes with three years in the Doctor of Pharmacy (Accelerated PharmD) program on the MCPHS–Worcester campus. The curriculum at Clark University offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Clark University, and the specified preprofessional coursework for entry to the PharmD program.

#### *Physician Assistant Studies (MPAS)*

Clark University and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Clark University, earning a Bachelor of Arts degree in Biology (or related field), and concludes with two years in the Master of Physician Assistant Studies (Accelerated MPAS) program on the MCPHS–Worcester campus. The curriculum at Clark University offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Clark University, and the specified preprofessional coursework for entry to the MPAS program.

### **College of the Holy Cross (Worcester, Massachusetts)**

#### *Nursing (BSN)*

College of the Holy Cross and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Holy Cross, earning a Bachelor of Arts degree in Biology (or related field), and concludes with 16 months in the accelerated Bachelor of Science in Nursing (Postbaccalaureate) program on the MCPHS–Worcester campus. The curriculum at Holy Cross offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Holy Cross, and the specified preprofessional coursework for entry to the BSN program.

#### *Pharmacy (PharmD)*

College of the Holy Cross and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Holy Cross, earning a Bachelor of Arts degree in Biology (or related field), and concludes with three years in the Doctor of Pharmacy (Accelerated PharmD) program on the MCPHS–Worcester campus. The curriculum at Holy Cross offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Holy Cross, and the specified preprofessional coursework for entry to the PharmD program.

#### *Physical Therapy (DPT)*

College of the Holy Cross and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Holy Cross, earning a Bachelor of Arts degree in Biology (or related field), and

concludes with three years in the Doctor of Physical Therapy (DPT) program on the MCPHS–Worcester campus. The curriculum at Holy Cross offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Holy Cross, and the specified preprofessional coursework for entry to the DPT program.

*Physician Assistant Studies (MPAS)*

College of the Holy Cross and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Holy Cross, earning a Bachelor of Arts degree in Biology (or related field), and concludes with two years in the Master of Physician Assistant Studies (Accelerated MPAS) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at Holy Cross offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Holy Cross, and the specified preprofessional coursework for entry to the MPAS program.

**Middlesex Community College (Bedford, Massachusetts)**

*Dental Hygiene (MSDH)*

Middlesex Community College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with earning an Associate of Science degree in Dental Hygiene and concludes with three years in the AS to MS in Dental Hygiene Bridge Program at MCPHS Online. Qualified students must meet the GPA requirement, present proof of current licensure as a dental hygienist, and give evidence of one year of work experience in any healthcare field in order to be eligible for entry to the MSDH program.

**Mount Wachusett Community College (Gardner, Massachusetts)**

*Nursing (MSN)*

Mount Wachusett Community College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with earning an associate of science degree in nursing and concludes with three years in the RN to MSN Bridge Program at MCPHS Online. Qualified students must meet all prerequisite and GPA requirements and have a current RN license prior to matriculation in order to be eligible for entry to the MSN program.

**New England College (Henniker, New Hampshire)**

*Nursing (BSN)*

New England College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at New England College, earning a Bachelor of Science degree and completing successfully all courses in the prenursing program, and concludes with 16 months in the accelerated Bachelor of Science in Nursing (Postbaccalaureate) program on the MCPHS–Manchester campus. The curriculum at New England College offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at New England College, and the specified preprofessional coursework for entry to the BSN program.

*Pharmacy (PharmD)*

New England College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at New England College, earning a Bachelor of Science degree and completing successfully all courses in the prepharmacy program, and concludes with three years in the Doctor of Pharmacy (Accelerated PharmD) program on the MCPHS–Manchester campus. The curriculum at New England College offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at New England College, and the specified preprofessional coursework for entry to the PharmD program.

*Physician Assistant Studies (MPAS)*

New England College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at New England College, earning a Bachelor of Science degree and completing successfully all courses in the pre-physician assistant studies program, and concludes with two years in the Master of Physician Assistant Studies (Accelerated MPAS) program on the MCPHS–Manchester campus. The curriculum at New England College offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at New England College, and the specified preprofessional coursework for entry to the MPAS program.

**Quinsigamond Community College (Worcester, Massachusetts)***Nursing (MSN)*

Quinsigamond Community College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with earning an Associate of Science degree in Nursing and concludes with three years in the RN to MSN Bridge program at MCPHS Online. Qualified students must meet all prerequisite and GPA requirements and have a current RN license prior to matriculation in order to be eligible for entry to the MSN program.

**Saint Anselm College (Manchester, New Hampshire)***Nursing (BSN)*

Saint Anselm College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Saint Anselm, earning a Bachelor of Arts degree in Biology (or related field), and concludes with 16 months in the accelerated Bachelor of Science in Nursing (Postbaccalaureate) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at Saint Anselm offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Saint Anselm, and the specified preprofessional coursework for entry to the BSN program.

*Optometry (OD)*

Saint Anselm College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Saint Anselm, earning a Bachelor of Arts degree in Biology (or related field), and concludes with four years in the Doctor of Optometry (OD) program on the MCPHS–Worcester campus. The curriculum at Saint Anselm offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Saint Anselm, and the specified preprofessional coursework for entry to the OD program.

*Pharmacy (PharmD)*

Saint Anselm College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Saint Anselm, earning a Bachelor of Arts degree in Biology (or related field), and concludes with three years in the Doctor of Pharmacy (Accelerated PharmD) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at Saint Anselm offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Saint Anselm, and the specified preprofessional coursework for entry to the PharmD program.

*Physical Therapy (DPT)*

Saint Anselm College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Saint Anselm, earning a Bachelor of Arts degree in Biology (or related field), and concludes with three years in the Doctor of Physical Therapy (DPT) program on the MCPHS–Worcester campus. The curriculum at Saint Anselm offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Saint Anselm, and the specified preprofessional coursework for entry to the DPT program.

*Physician Assistant Studies (MPAS)*

Saint Anselm College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Saint Anselm, earning a Bachelor of Arts degree in Biology (or related field), and concludes with two years in the Master of Physician Assistant Studies (Accelerated MPAS) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at Saint Anselm offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Saint Anselm, and the specified preprofessional coursework for entry to the MPAS program.

**Salem State University (Salem, Massachusetts)***Optometry (OD)*

Salem State University and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Salem State, earning a Bachelor's degree in biology, chemistry, or related field, and concludes with four years in the Doctor of Optometry (OD) program on the MCPHS–Worcester campus. The curriculum at Salem State offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Salem State, and the specified preprofessional coursework for entry to the OD program.

*Pharmacy (PharmD)*

Salem State University and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Salem State, earning a Bachelor's degree in biology, chemistry, or related field, and concludes with three years in the Doctor of Pharmacy (Accelerated PharmD) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at Salem State offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Salem State, and the specified preprofessional coursework for entry to the PharmD program.

*Physical Therapy (DPT)*

Salem State University and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Salem State, earning a Bachelor's degree in biology, chemistry, or related field, and concludes with three years in the Doctor of Physical Therapy (DPT) program on the MCPHS–Worcester campus. The curriculum at Salem State offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Salem State, and the specified preprofessional coursework for entry to the DPT program.

*Physician Assistant Studies (MPAS)*

Salem State University and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Salem State, earning a Bachelor's degree in biology, chemistry, or related field, and concludes with two years in the Master of Physician Assistant Studies (Accelerated MPAS) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at Salem State offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Salem State, and the specified preprofessional coursework for entry to the MPAS program.

**Stonehill College (Easton, Massachusetts)**

*Nursing (BSN)*

Stonehill College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Stonehill College, earning a Bachelor of Science degree in Biology (or related field), and concludes with 16 months in the accelerated Bachelor of Science in Nursing (Postbaccalaureate) program on the MCPHS–Worcester campus. The curriculum at Stonehill College offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Stonehill, and the specified preprofessional coursework for entry to the BSN program.

*Pharmacy (PharmD)*

Stonehill College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Stonehill College, earning a Bachelor of Science degree in Biology (or related field), and concludes with three years in the Doctor of Pharmacy (Accelerated PharmD) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at Stonehill College offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Stonehill, and the specified preprofessional coursework for entry to the PharmD program.

*Physical Therapy (DPT)*

Stonehill College and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at Stonehill College, earning a Bachelor of Arts degree in Biology (or related field), and concludes with three years in the Doctor of Physical Therapy (DPT) program on the MCPHS–Worcester campus. The curriculum at Stonehill College offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at Stonehill College, and the specified preprofessional coursework for entry to the DPT program.

**University of Maine (Orono, Maine)**

*Nursing (BSN)*

University of Maine and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at University of Maine, earning a Bachelor of Science degree in Biology (or related field), and concludes with 16 months in the accelerated Bachelor of Science in Nursing (Postbaccalaureate) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at University of Maine offers a blend of liberal arts

and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at University of Maine, and the specified preprofessional coursework for entry to the BSN program.

#### *Pharmacy (PharmD)*

University of Maine and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at University of Maine, earning a Bachelor of Science degree in Biology (or related field), and concludes with three years in the Doctor of Pharmacy (Accelerated PharmD) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at University of Maine offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at University of Maine, and the specified preprofessional coursework for entry to the PharmD program.

#### *Physician Assistant Studies (MPAS)*

University of Maine and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at University of Maine, earning a Bachelor of Science degree in Biology (or related field), and concludes with two years in the Master of Physician Assistant Studies (Accelerated MPAS) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at University of Maine offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at University of Maine, and the specified preprofessional coursework for entry to the MPAS program.

### **University of New Hampshire at Manchester (Manchester, New Hampshire)**

#### *Pharmacy (PharmD)*

University of New Hampshire at Manchester (UNH Manchester) and MCPHS–Manchester have a formal affiliation agreement that admits students into an articulated program that begins with three years of prepharmacy study at UNH Manchester and concludes with the three-year Doctor of Pharmacy (Accelerated PharmD) program on the MCPHS–Manchester campus. After successfully completing the first year of required coursework in the PharmD program at MCPHS, students will earn a Bachelor of Science (BS) or Bachelor of Arts (BA) degree (as applicable) from UNH Manchester. The first three years at UNH Manchester offer a blend of liberal arts and sciences that meets both the MCPHS general education curriculum requirements and the specific science track requirements at UNH Manchester. MCPHS provides the coursework needed for the student to earn the BS or BA degree from UNH Manchester at the end of the first year of professional study, as well as the professional education required to earn the doctor of pharmacy degree at the end of three years at MCPHS–Manchester.

#### *Physician Assistant Studies (MPAS)*

University of New Hampshire at Manchester (UNH Manchester) and MCPHS–Manchester have a formal affiliation agreement that admits students into an articulated program that begins with four years at UNH Manchester, earning a Bachelor of Science (BS) or Bachelor of Arts (BA) degree (as applicable) and completing successfully all courses in the pre-physician assistant studies program, and concludes with two years in the Master of Physician Assistant Studies (Accelerated MPAS) program on the MCPHS–Manchester campus. The curriculum at UNH Manchester offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at UNH Manchester, and the specified preprofessional coursework for entry to the MPAS program.

### **Worcester Polytechnic Institute (Worcester, Massachusetts)**

#### *Optometry (OD)*

Worcester Polytechnic Institute (WPI) and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at WPI, earning a Bachelor of Science degree in biology, chemistry, or a related field, and concludes with four years in the Doctor of Optometry (OD) program on the MCPHS–Worcester campus. The curriculum at WPI offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at WPI, and the specified preprofessional coursework for entry to the OD program.

#### *Pharmacy (PharmD)*

Worcester Polytechnic Institute (WPI) and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at WPI, earning a Bachelor of Science degree in biology, chemistry, or a related field, and concludes with three years in the Doctor of Pharmacy (Accelerated PharmD) program on the MCPHS–Worcester campus. The curriculum at WPI offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at WPI, and the specified preprofessional

coursework for entry to the PharmD program.

*Physical Therapy (DPT)*

Worcester Polytechnic Institute (WPI) and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at WPI, earning a Bachelor of Science degree in biology, chemistry, or a related field, and concludes with three years in the Doctor of Physical Therapy (DPT) program on the MCPHS–Worcester campus. The curriculum at WPI offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at WPI, and the specified preprofessional coursework for entry to the DPT program.

*Physician Assistant Studies (MPAS)*

Worcester Polytechnic Institute (WPI) and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at WPI, earning a Bachelor of Science degree in biology, chemistry, or a related field, and concludes with two years in the Master of Physician Assistant Studies (Accelerated MPAS) program on the MCPHS–Worcester campus. The curriculum at WPI offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at WPI, and the specified preprofessional coursework for entry to the MPAS program.

**Worcester State University (Worcester, Massachusetts)**

*Nursing (BSN)*

Worcester State University (WSU) and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins at WSU with the completion of 80 credits toward a Bachelor of Science (BS) degree in Public Health at WSU and concludes with 16 months in the accelerated Bachelor of Science in Nursing (Postbaccalaureate) program on the MCPHS–Worcester or MCPHS–Manchester campus. Under this agreement, students will earn a BS in public health degree from WSU and a BSN degree from MCPHS after completion of the entire program. The curriculum at WSU offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at WSU, and the specified preprofessional coursework for entry to the BSN program.

*Optometry (OD)*

Worcester State University (WSU) and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at WSU, earning a Bachelor of Arts degree in Biology (or related field), and concludes with four years in the Doctor of Optometry (OD) program on the MCPHS–Worcester campus. The curriculum at WSU offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at WSU, and the specified preprofessional coursework for entry to the OD program.

*Pharmacy (PharmD)*

Worcester State University (WSU) and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with three years at WSU in one of four science tracks—biology, biotechnology, chemistry, or natural science—and concludes with the three-year Doctor of Pharmacy (Accelerated PharmD) program on the MCPHS–Worcester or MCPHS–Manchester campus. After successfully completing the first year of required coursework in the PharmD program at MCPHS, students will earn a Bachelor of Science (BS) degree from WSU. The first three years at WSU offer a blend of liberal arts and sciences that meets both the MCPHS general education curriculum requirements and the specific science track requirements at WSU. MCPHS provides the coursework needed for students to earn the BS degree from WSU at the end of the first year of professional study, as well as the professional education required to earn the Doctor of Pharmacy degree at the end of three years at MCPHS.

*Physical Therapy (DPT)*

Worcester State University (WSU) and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at WSU, earning a Bachelor of Arts degree in Biology (or related field), and concludes with three years in the Doctor of Physical Therapy (DPT) program on the MCPHS–Worcester campus. The curriculum at WSU offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at WSU, and the specified preprofessional coursework for entry to the DPT program.

*Physician Assistant Studies (MPAS)*

Worcester State University (WSU) and MCPHS have a formal affiliation agreement that admits students into an articulated program that begins with four years at WSU, earning a Bachelor of Arts degree in Biology (or related field), and concludes with two years in the Master of Physician Assistant Studies (Accelerated MPAS) program on the MCPHS–Worcester or MCPHS–Manchester campus. The curriculum at WSU offers a blend of liberal arts and sciences that meets the MCPHS general education curriculum requirements, the specific degree requirements at WSU, and the specified preprofessional coursework for entry to the MPAS program.



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## Student Services

### **Center for Academic Success and Enrichment (CASE)**

The goal of the Center for Academic Success and Enrichment (CASE) on all three campuses, is to assist students in maximizing their potential by introducing them to strategies that will make them more efficient, effective, and independent learners. The CASE seeks to develop the whole student by enhancing integrity, professionalism, and self-responsibility. Students who are willing to make a commitment to their academic success and are serious about pursuing their educational and professional goals will learn how academic support outside the classroom contributes to that success. These University resources are designed to provide students with the tools that they will need to succeed in their academic programs and that they can ultimately use to enhance their professional careers. Services are described below, and more information is available on the MCPHS website.

The CASE Boston offers several key services to assist students with exploring majors, minors and careers, managing course registration each semester, and acquiring new learning and study strategies. At the CASE Boston, students can interact regularly with their major-specific MAC Team, which consists of a Faculty Mentor (M), an Academic Advisor (A), and a Student Success Coach (C).

### **Faculty Mentoring (CASE Boston)**

The Faculty Mentor program on the Boston campus was created to provide additional support for our students in the areas of career discernment, long-term course planning and goal-setting. Faculty Mentors are full-time faculty members who have weekly drop-in office hours within the CASE. The Mentors represent each major at MCPHS University and students are paired with a Faculty Mentor within their own major. The Mentors work in conjunction with the Advisors and Coaches to make up MAC teams, which work together to provide more well-rounded guidance and support for our students.

### **Academic Advisement (CASE Boston)**

Within the CASE, Academic Advisement is committed to shaping a dynamic advising environment designed to meet the educational needs of the student body. The professional staff and faculty who work in the center are available to assist students with goal setting, course registration, referral to campus resources, and other services designed to contribute to their academic experience. They provide focused advising for each degree program by helping students understand their specific program requirements and policies.

### **Student Success Coaching (CASE Boston)**

Professional staff members meet with individual students to help them assess their learning styles, to develop goals for their academic programs, and to assist them in implementing strategies that will maximize their academic performance. In addition to building study skills and time management strategies, Student Success Coaches work with students to problem solve around specific academic issues and to help students identify the resources and services that will help them achieve their goals.

The CASE Worcester and Manchester works in collaboration with faculty and deans to provide students with the tools they need to succeed in the accelerated professional programs. Academic counselors on both campuses hold workshops during the first semester on study skills, time management, test-taking strategies, academic reading, and critical thinking to help students maximize their performance. All students are encouraged to meet with an academic counselor with any questions concerning the curriculum or if they are looking for academic assistance with their coursework. Writing support is also available.

**The CASE also offers support to students on the Boston, Worcester, and Manchester Campuses via the University Learning Network (ULN), which provides peer tutoring, supplemental instruction, peer mentoring, the Writing Center, and the Math and Physics Center.**

### **The University Learning Network – ULN**

In line with current trends within higher education, the ULN was created in July of 2016 to centralize key academic support resources such as Peer Mentor/Tutoring, Supplemental Instruction, The Writing Center and Math & Physics Center in Boston. The ULN falls under the CASE on all three campuses.

**Peer Tutoring (Boston, Worcester and Manchester)**

Peer or small-group tutoring is one tool available to students interested in reinforcing the material presented in the classroom. Small groups of students meet regularly with a student peer tutor to clarify and reinforce course materials in many of the more challenging courses at the University. The CASE staff members work in collaboration with faculty to provide peer tutoring that facilitates and enriches students' learning and understanding of course content. Peer tutors are students who excel in their areas of study and who enjoy helping their fellow students achieve academic success. Free online tutoring is available through NetTutor. There are no additional fees for group or online tutoring services.

**Peer Mentoring and Enrichment Tutors (Boston, Worcester and Manchester)**

Peer mentors are upper-level students who work with first-year students to acquaint them with the University and to help them make a smooth transition to MCPHS. On the Boston campus, peer mentors provide workshops and advice and participate in the Introduction to the Major (ITM) course required for all first-year students in the fall semester. On the Worcester and Manchester campuses, each student is assigned an enrichment tutor at Orientation. Enrichment Tutors acquaint the new cohorts with the campus, program expectations and the adjustment to an accelerated professional curriculum. Following orientation, Enrichment Tutors serve as tutors to students in their cohort, helping students to understand difficult course material with individual or group meetings.

**Writing Center (Boston)**

The Writing Center offers free individual consultation on an appointment or drop-in basis to MCPHS students, staff, and faculty. Located in the Center for Academic Success and Enrichment, the Writing Center is staffed by professionals with extensive experience in classroom teaching, writing, and editing. Clients include first-year students in the required writing sequence; upper-division students writing course papers and preparing for essay exams; and anyone working on résumés, cover letters, or personal statements. For more information, call 617.732.2091 or email [writingcenter@mcphs.edu](mailto:writingcenter@mcphs.edu).

**Math and Physics Center (Boston)**

Mathematics lies at the foundation of all sciences. Proficiency in mathematics is essential for success in all MCPHS degree programs. The Math Center is located in the White Building and provides guidance in learning mathematics, assistance with homework, and help in preparing for exams. The Math Center offers free drop-in tutoring (no appointment necessary) and individual tutoring by appointment. For more information, please refer to the MCPHS website or email [mathcenter@mcphs.edu](mailto:mathcenter@mcphs.edu).

**English Language Resource Center (Boston, Newton, Worcester and Manchester)**

The English Language Resource Center (ELRC) provides support to multilingual students in studying effectively in English. ESL faculty members offer tutoring, workshops, and other forms of support to students in writing, understanding texts/reading, pronunciation, presentation preparation, TOEFL test prep, and other areas of need. For more information, email [sunniako.davis@mcphs.edu](mailto:sunniako.davis@mcphs.edu).

**Pharmacy Learning Groups (Worcester and Manchester)**

Worcester and Manchester pharmacy students are organized into assigned learning groups, which are designed to enhance learning and group support. Each learning group consists of students who remain together as a unit throughout the curriculum, and each group is assigned a faculty member as an academic mentor. Peer mentors are assigned to learning groups to further facilitate peer support.

**Center for Professional Career Development**

The Center for Professional Career Development provides all students with individualized advising, industry-specific information and resources, development of job search skills, and the opportunity for hands-on professional experiences to support personal goals and career success. Through workshops, job fairs, alumni and community networking, and employer partnerships, students have access to a range of programs to meet their needs and their schedules. The center works in collaboration with academic departments, student services, student organizations, and professional associations to ensure quality engagements and timely information. By utilizing the services of the Center, students will become proficient in defining their goals and equipping themselves with the tools to gain access to industries and careers of their choice.

**Counseling Services**

The mission of Counseling Services is to support the intellectual, emotional, social, and cultural development of students in a multicultural environment. Counseling Services offers varied services to students of the Boston, Worcester, and Manchester campuses. These include short-term counseling (four to eight sessions); crisis management;

psychoeducational workshops and programs; a resource and referral service; and consultation to student groups, faculty, and the University community. The staff values an atmosphere that is welcoming and comfortable for all students regardless of race, gender, ethnic background, age, sexual orientation, religion, citizenship, or disability.

Counseling Services offers treatment based on a short-term model. Following an initial intake appointment, clients are matched with a counselor and offered counseling sessions or, if appropriate, referred to an outside treatment provider. Upon completion of these sessions, treatment needs are reviewed to determine whether continued treatment with Counseling Services or referral to an outside provider is indicated. Counselors typically work with students troubled by specific problems or general concerns, such as stress management, adjustment to college, anxiety, depression, eating disorders, family and relationship problems, substance abuse, sexuality, sexual orientation, and cultural issues.

Please refer to <https://my.mcphs.edu/departments/counseling-services> for more detailed information about services available at each campus, as well as interactive screenings, questions, and answers about Counseling Services, and other helpful links.

### **Disabilities Support Services**

In accordance with the Americans with Disabilities Act (ADA), the ADA Amendments Act of 2008, and Section 504 of the Rehabilitation Act of 1973, the Disabilities Support Services Office within Student Affairs (Boston) and the Center for Academic Success and Enrichment assists students with physical, psychological, and learning or other disabilities in fulfilling the fundamental requirements of the curriculum by accessing and providing reasonable accommodations. Students wishing to request accommodations should meet with the Director for Disability Support Services (Boston) or the Assistant Dean for the Center for Academic Success and Enrichment at the beginning of each semester to review their documentation and determine their accommodations. Those students requesting academic accommodations must first submit a copy of a recent evaluation, assessment, or report completed by a qualified professional to the Disability Support Services Office (Boston) or the Center for Academic Success and Enrichment. The evaluation should include a diagnosis, the impact of the disability on the student's learning, the credentials of the evaluator, and recommendations for accommodations. All information related to the student's disability will remain confidential and will not be shared with faculty, administration, or MCPHS staff without the student's written consent. The Office of Disability Support Services for all campuses may be contacted at 617.879.5995.

### **Health Insurance**

According to the Commonwealth of Massachusetts and MCPHS policy, all matriculated students (regardless of enrollment) must be covered by a health insurance program. The University makes available a general health insurance program that meets these standards. This policy is provided by an independent carrier beginning September 1 and continuing for 12 months. University student health insurance information is located on the MCPHS website under Student Health. Students will be automatically enrolled in this plan unless a waiver is completed and received by Student Financial Services prior to the first day of classes. Students registering late must submit the waiver at that time. The waiver stipulates that personal coverage will be maintained during the enrollment period. If Student Financial Services does not receive the waiver prior to the first day of classes, the student will be billed for the insurance premium and will remain responsible for payment of said premium. The waiver must be renewed annually.

All international students will be enrolled in the University student health insurance plan automatically, with the exception of those international students whose sponsoring institutions have a signed agreement with MCPHS that complies with the University's health insurance waiver requirements, or international students with a plan for which the insurer's primary home office is based in the United States *and* the policy provides comparable coverage to the University student health insurance plan. International students who do not fall under one of the two conditions above *must* purchase the University student health insurance plan.

### **Financial Responsibility of Students Following an Injury, Accident, Exposure, or Needle Stick**

Students are responsible for all costs and expenses resulting from any injuries, accidents, exposures, or needle sticks in which they are involved on campus or during any clinical rotation.

When seeking treatment for any such injury, accident, exposure, or needle stick, a student must present his/her own health insurance information to the healthcare provider. Any deductible or copayment is the student's responsibility. All students must follow the claims procedures required by their respective insurance companies.

Students are not eligible for workers' compensation benefits from MCPHS University or any affiliated teaching hospital or clinical site to which they are assigned while completing their clinical requirements because students are not employees of either the University or such clinical facilities.

## Health Services

For routine healthcare while on the Boston campus, MCPHS students utilize the Massachusetts College of Art and Design / Harvard Vanguard Medical Associates (HVMA) Student Health Services located on the second floor of the 578 Huntington Avenue residence hall. Students utilize their personal health insurance for these visits. HVMA accepts a large number of health insurance plans. For more information about the array of medical services, directions, and the small list of nonaccepted health insurance plans at Student Health Services, please visit <https://my.mcphs.edu/departments/health-services/boston>.

Health Services for Worcester and Manchester students are available through many local healthcare providers.

## Identification Policy

For reasons of safety and security, all students must be readily identifiable while they are on campus and/or engaged in required off-campus activities, including internships and clinical rotations. Therefore, any head covering that obscures a student's face may not be worn, either on campus or at clinical sites, except when required for medical or religious reasons. In addition, all students are required to wear their University-issued ID at all times when on campus and/or engaged in required off-campus activities, and to show it upon request of a properly identified official or member of the MCPHS staff, and to remove any covering that obscures the student's face in order to verify the student's identity for security purposes. Loss of an ID card should be reported immediately to the MCPHS Department of Public Safety. The fee to replace an ID card—for any reason—is \$25; application and payment for replacement is made at the Office of the Registrar. The ID card also serves as the University library card.

## Immunization Requirements

In accordance with state law and University policy, students must show proof of required immunizations. Non-compliance with University immunization requirements will result in administrative withdrawal from the University or might negatively impact progression in an academic program.

### How and when to report your immunizations to MCPHS:

Compliance with required immunizations must be documented and submitted prior to the first day of the first semester of admission to the University. MCPHS University works with external companies, SentryMD and CastleBranch, to support immunization tracking and management.

- All existing MCPHS students enrolled prior to the 2013 summer semester should continue to submit their immunization documentation to SentryMD.
- All new students to MCPHS beginning with the 2013 summer semester should submit their immunization documentation to CertifiedProfile as instructed by the Admissions Office.

### The following MCPHS students must show proof of required immunizations:

- All full-time students, including students attending MCPHS while on a visa;
- All part-time students, including students attending MCPHS while on a visa;
- All online students who might be in contact with patients; and
- All students attending or visiting MCPHS as part of a formal academic visitation or exchange program.

### Students in the following programs must have the immunizations set forth below:

#### Dental Hygiene

- Measles vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Mumps vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Rubella vaccinations (2 immunizations at least 4 weeks apart) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Tetanus-diphtheria-pertussis vaccination (1 dose of Tdap **within last 10 years**). Please note that a Tdap is required. When a Tdap vaccination expires after 10 years, a Td booster is required.
- Hepatitis B immunization series (3 doses) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Varicella vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Annual Tuberculosis skin test. If results are positive, a clear chest x-ray (with laboratory report or physician verification of results) or a physician letter verifying the student is symptom free is required each year.
- Annual influenza shot (Must be obtained as soon as the vaccine for the annual flu season becomes available each fall).

- Meningococcal vaccine (1 dose within the past 5 years) – Required only of those students living in University sponsored housing.

#### **Doctor of Pharmacy**

- Measles vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Mumps vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Rubella vaccinations (2 immunizations at least 4 weeks apart) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Tetanus-diphtheria-pertussis vaccination (1 dose of Tdap **within the last 10 years**). Please note that a Tdap is required. When a Tdap vaccination expires after 10 years, a Td booster is required.
- Hepatitis B immunization series (3 doses) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Varicella vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Annual Tuberculosis skin test. If results are positive, a clear chest x-ray (with laboratory report or physician verification of results) or a physician letter verifying the student is symptom free is required each year. \*
- Annual influenza shot (Must be obtained as soon as the vaccine for the annual flu season becomes available each fall). \*
- Meningococcal vaccine (1 dose within the past 5 years) – Required only of those students living in University sponsored housing.

**\*Doctor of Pharmacy-Boston students** must complete these requirements by the start of Year III (First Professional Year of the curriculum) and annually thereafter.

#### **Diagnostic Medical Sonography, Magnetic Resonance Imaging, Nuclear Medicine Technology, Radiation Therapy, and Radiography**

- Measles vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Mumps vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Rubella vaccinations (2 immunizations at least 4 weeks apart) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Tetanus-diphtheria-pertussis vaccination (1 dose of Tdap **within last 10 years**). Please note that a Tdap is required. When a Tdap vaccination expires after 10 years, a Td booster is required.
- Hepatitis B immunization series (3 doses) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Varicella vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Annual Tuberculosis skin test. If results are positive, a clear chest x-ray (with laboratory report or physician verification of results) or a physician letter verifying the student is symptom free is required each year.
- Annual influenza shot (Must be obtained as soon as the vaccine for the annual flu season becomes available each fall).
- Meningococcal vaccine (1 dose within the past 5 years) – Required only of those students living in University sponsored housing.

#### **Medical Imaging and Therapeutics**

- Measles vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Mumps vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Rubella vaccinations (2 immunizations at least 4 weeks apart) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Tetanus-diphtheria-pertussis vaccination (1 dose of Tdap **within last 10 years**). Please note that a Tdap is required. When a Tdap vaccination expires after 10 years, a Td booster is required.
- Hepatitis B immunization series (3 doses) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Varicella vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Annual Tuberculosis skin test. If results are positive, a clear chest x-ray (with laboratory report or physician verification of results) or a physician letter verifying the student is symptom free is required each year.
- Annual influenza shot (Must be obtained as soon as the vaccine for the annual flu season becomes available each fall).
- Meningococcal vaccine (1 dose within the past 5 years) – Required only of those students living in University sponsored housing.

### **Nursing**

- Measles vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Mumps vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Rubella vaccinations (2 immunizations at least 4 weeks apart) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Tetanus-diphtheria-pertussis vaccination (1 dose of Tdap **within last 10 years**). Please note that a Tdap is required. When a Tdap vaccination expires after 10 years, a Td booster is required.
- Hepatitis B immunization series (3 doses) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Varicella vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Annual Two-step Tuberculosis skin test (Two tests within the last 12 months, completed 1-3 weeks apart). If results are positive, a clear chest x-ray (with laboratory report or physician verification of results) or a physician letter verifying the student is symptom free is required each year.\*
- Annual influenza shot (Must be obtained as soon as the vaccine for the annual flu season becomes available each fall).\*
- Meningococcal vaccine (1 dose within the past 5 years) – Required only of those students living in University sponsored housing.

**\*Bachelor of Science in Nursing-Boston** students must complete this requirement by the start of year two of the curriculum and annually thereafter.

### **Occupational Therapy**

- Measles vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Mumps vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Rubella vaccinations (2 immunizations at least 4 weeks apart) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Tetanus-diphtheria-pertussis vaccination (1 dose of Tdap **within last 10 years**). Please note that a Tdap is required. When a Tdap vaccination expires after 10 years, a Td booster is required.
- Hepatitis B immunization series (3 doses) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Varicella vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Two-step Tuberculosis skin test (Two tests within the last 12 months, completed 1-3 weeks apart). If results are positive, a clear chest x-ray (with laboratory report or physician verification of results) or a physician letter verifying the student is symptom free is required each year.
- Annual influenza shot (Must be obtained as soon as the vaccine for the annual flu season becomes available each fall).
- Meningococcal vaccine (1 dose within the past 5 years) – Required only of those students living in University sponsored housing.

### **Optometry**

- Measles vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Mumps vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Rubella vaccinations (2 immunizations at least 4 weeks apart) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Tetanus-diphtheria-pertussis vaccination (1 dose of Tdap **within the last 10 years**). Please note that a Tdap is required. When a Tdap vaccination expires after 10 years, a Td booster is required.
- Hepatitis B immunization series (3 doses) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Varicella vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Annual Tuberculosis skin test. If results are positive, a clear chest x-ray (with laboratory report or physician verification of results) or a physician letter verifying the student is symptom free is required each year.
- Annual influenza shot (Must be obtained as soon as the vaccine for the annual flu season becomes available each fall).
- Meningococcal vaccine (1 dose within the past 5 years) – Required only of those students living in University sponsored housing.

### **Physical Therapy**

- Measles vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Mumps vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.

- Rubella vaccinations (2 immunizations at least 4 weeks apart) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Tetanus-diphtheria-pertussis vaccination (1 dose of Tdap **within the last 10 years**). Please note that a Tdap is required. When a Tdap vaccination expires after 10 years, a Td booster is required.
- Hepatitis B immunization series (3 doses) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Varicella vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Two-step Tuberculosis skin test (Two tests within the last 12 months, completed 1-3 weeks apart). If results are positive, a clear chest x-ray (with laboratory report or physician verification of results) or a physician letter verifying the student is symptom free is required each year.
- Annual influenza shot (Must be obtained as soon as the vaccine for the annual flu season becomes available each fall).
- Meningococcal vaccine (1 dose within the past 5 years) – Required only of those students living in University sponsored housing.

### **Physician Assistant Studies**

- Measles vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Mumps vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Rubella vaccinations (2 immunizations at least 4 weeks apart) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Tetanus-diphtheria-pertussis vaccination (1 dose of Tdap **within the last 10 years**). Please note that a Tdap is required. When a Tdap vaccination expires after 10 years, a Td booster is required.
- Hepatitis B immunization series (3 doses) followed by laboratory evidence of immunity; or laboratory evidence of immunity.
- Varicella vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Annual Tuberculosis skin test. If results are positive, a clear chest x-ray (with laboratory report or physician verification of results) or a physician letter verifying the student is symptom free is required each year.
- Annual influenza shot (Must be obtained as soon as the vaccine for the annual flu season becomes available each fall).
- Meningococcal vaccine (1 dose within the past 5 years) – Required only of those students living in University sponsored housing.

### **The following immunizations are required of all MCPHS Students not enrolled in one of the programs listed above:**

- Measles vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Mumps vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Rubella vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Tetanus-diphtheria-pertussis vaccination (1 dose of Tdap **within the last 10 years**). Please note that a Tdap is required. When a Tdap vaccination expires after 10 years, a Td booster is required.
- Hepatitis B immunization series (3 doses) or laboratory evidence of immunity.
- Varicella vaccinations (2 immunizations at least 4 weeks apart) or laboratory evidence of immunity.
- Meningococcal vaccine (1 dose within the past 5 years) – Required only of those students living in University sponsored housing.

### **Waivers/Exemptions**

All MCPHS students who live in University sponsored housing or who subsequently move into University sponsored housing must provide documentation of having received a meningococcal vaccine (within the last five years), unless they qualify for one of the exemptions allowed by the law. Students living in University sponsored housing may begin classes without a certificate of immunization against meningococcal disease if: 1) the student has a letter from a physician stating that there is a medical reason why he/she can't receive the vaccine; 2) the student (or the student's parent or legal guardian, if the student is a minor) presents a statement in writing that such vaccination is against his/her sincere religious belief; or 3) the student (or the student's parent or legal guardian, if the student is a minor) signs a waiver stating that the student has received information about the dangers of meningococcal disease, reviewed the information provided and elected to decline the vaccine.

If a student has a medical reason why he/she cannot receive a specific immunization, such immunization may be waived if the student submits a letter (on official letterhead with a signature) from the student's health care provider explaining the reason/s the student is unable to receive the required vaccination/s.

Immunizations may be waived for religious reasons if a student submits a statement in writing that such immunization is against a sincere religious belief.

### **Additional Requirements**

Certain health care agencies and clinical training and service learning sites may have additional immunization requirements. In order to be eligible for clinical placements or service learning experiences, students must meet all University immunization requirements and any additional site requirements. In cases where the site does not pay for the completion of additional immunization requirements, the student is responsible for paying any associated fees, if it is not covered by their personal health insurance. Without clearance with respect to all University and site immunization requirements, students will not be permitted to begin clinical or service learning placements, and therefore, would be unable to meet program requirements.

Students who change academic programs must become compliant with all immunization requirements of their new academic program. Students must contact the Office of Student Affairs for necessary steps to review their immunization compliance with the new academic program. MCPHS works with a confidential health information service company that maintains and processes all student immunization records and monitors compliance with state law immunization requirements. Authorized officials at MCPHS have access to student immunization records to monitor compliance.

### **Internships, Licensure, and Certification**

Students graduating from the Dental Hygiene, Nursing, Optometry, Pharmacy, Physical Therapy, and Physician Assistant programs at MCPHS University will seek professional licensure in conjunction with a national examination in order to practice in their chosen profession. Regulations governing licensure (and internship) differ from state to state and country to country. The Registrar's Office completes application materials for licensure candidates and assists students in navigating the overall licensing process. Licensure application preparation sessions are offered for students prior to graduation.

Licensure application materials for all programs will not be released by the Registrar's Office until the degree and date awarded have been posted to student records. Only materials with a submission deadline required for specific state board testing will be released prior to degree posting.

Students enrolled in the Doctor of Pharmacy program will take part in practical experience overseen by a registered pharmacist. National Association of Boards of Pharmacy guidelines require that pharmacy students complete 1,500 clock hours of practical pharmacy experience prior to applying for licensure. Students completing their practical experience must register as a pharmacy intern (as applicable) with the state in which they complete their internship experience. Internship hours must be documented as specified on the internship application form or state board of pharmacy website. As with licensure, intern eligibility criteria and paperwork differ from state to state. Mandatory intern preparation sessions are scheduled for students before they can apply for internship.

Further information regarding the licensure and internship process can be found on the Registrar's Office page of the University website, including application materials for Massachusetts (all professions) and New Hampshire (Physician Assistant, Nursing).

### **Residence Life (Boston)**

The Office of Residence Life seeks to empower students and staff to create a safe, welcoming, and inclusive residence hall community that supports the academic mission of the University. We provide a living and learning environment in which all students can be successful in their personal and academic pursuits. The cooperative effort of each resident student ensures that life in the residence halls is a positive learning experience, contributing to both personal and professional growth. Living on campus provides each resident the opportunity to strengthen interpersonal skills and enhance awareness of differences. The Office of Residence Life provides a safe, clean, and affordable living and learning environment.

For a description of the Boston residence halls, see the Facilities section. For additional information regarding residence life in Boston, refer to the website at <https://my.mcphs.edu/departments/housing-residence-life/boston>.



### **Residence Life (Worcester)**

For a description of the Worcester residence halls, see the Facilities section. For additional information regarding residence life in Worcester, refer to the website at [www.mcphs.edu/campuses/worcester/housing](http://www.mcphs.edu/campuses/worcester/housing).

### **Schumann Fitness Center (Boston)**

The Schumann Fitness Center, located in the Flanagan Campus Center on the Wentworth Institute of Technology (WIT) campus, offers fitness opportunities to MCPHS, WIT, and Massachusetts College of Art and Design students. The Schumann Fitness Center offers an array of Nautilus, cardiovascular, and free-weight equipment. In addition, group exercise and wellness classes such as kickboxing, Pilates, yoga, and Zumba are offered to meet campus needs.

The Schumann Fitness Center houses the Colleges of the Fenway (COF) intramurals program, which promotes team sports activities between and among the six COF campuses. Students participate in recreational sports, including basketball, volleyball, flag football, and soccer (for both men and women). The COF intramural program achieves the benefits of a large university setting while still catering to the diverse needs of each institution. For more information, refer to the COF website at [www.colleges-fenway.org](http://www.colleges-fenway.org).

### **Recreation and Wellness (Worcester)**

All students have free 24 hour, 7 day a week access to the University wellness center located at 25 Foster St. The gym includes cardio and strength training equipment and a state of the art computerized Fitness-On-Demand space for interactive classes tailored to individual needs.

### **Recreation and Wellness (Manchester)**

Students have the opportunity to obtain University-subsidized memberships to the Fit Lab, located within half a mile of the campus. All students have free access to the Currier Museum of Art with student ID, located within half a mile from campus.

### **Campus Life and Leadership (Boston)**

The Office of Campus Life and Leadership enhances and supports the academic mission of the University. Through participation in cultural, educational, and social programming, as well as a variety of student groups and clubs, students can develop leadership and organizational skills to function in a diverse society.

The office strategically coordinates programs that foster a campus environment that recognizes, celebrates, and values diversity of religion, race, ethnicity, gender, age, disability, sexual orientation, and nationality. Students at MCPHS–Boston are members of the Colleges of the Fenway Consortium and have access to the resources at the other five colleges in the area.

### **Office of Campus Life and Student Leadership (Worcester and Manchester)**

Student Activities on the Worcester and Manchester campuses supports the University's academic mission while connecting students with educational, social, spiritual, and recreational opportunities designed to enhance their overall experience at MCPHS. Programs and initiatives offered encompass a myriad of topics, ranging from diverse cultural, educational, and social events to interclass athletic competitions. Additionally, the Office of Student Activities functions with the goal of fostering the development of students' leadership and professional skills, preparing them for achievement in their future careers. Often, events will be held in collaboration with other departments to further the University's mission and promote holistic success.

In addition to providing the student body with programs and connections to resources in the community, the Office of Student Activities supports the Student Government Association and numerous student organizations that exist on campus. These groups celebrate cultural and professional diversity, nurture leadership development, and cater to a variety of student interests.

### **Orientation (Boston, Manchester and Worcester)**

The University holds mandatory Orientation programs during the summer and in January on the Boston, Newton, Manchester, and Worcester campuses for newly enrolled students. Orientation provides an opportunity for students to be introduced to the University's facilities, faculty, and staff, and to their new peers. The mission of student Orientation is to prepare incoming students to be successful members of the MCPHS community. Orientation programs emphasize academic excellence, successful transition to the healthcare profession, and an opportunity to familiarize oneself with

campus resources and meet colleagues early on in the program.

### **Student Organizations**

There are more than 95 recognized student organizations at the University that provide the campus communities with many options for activities and programming. Contact resources for student organizations are the Office of Campus Life and Leadership in Boston, the Office of Student Affairs in Worcester, and the Office of Student Affairs in Manchester. The University encourages and promotes participation in student organizations. Involvement in cocurricular programs and activities helps students develop leadership skills that support the achievement of personal and professional goals. MCPHS recognizes, appreciates, and supports the contributions made by student organizations to enhance the quality of student life at the University.

A list of currently recognized student organizations can be found on the MCPHS website at <https://my.mcphs.edu/clubs-and-organizations>.

## Protection from Harassment Policy (TITLE IX)

### POLICY STATEMENT

MCPHS University ("MCPHS" or the "University") is committed to maintaining a positive learning, working, and living environment. The University does not discriminate on the basis of race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, ancestry, genetic information, military service, or veteran status in admission and access to, and treatment and employment in, its educational programs and activities and actively complies with the requirements of Federal Executive Orders 11246 and 11375 as amended; the Civil Rights Act of 1964 as amended; Title IX of the Educational Amendments of 1972; Sections 503 and 504 of the Rehabilitation Act of 1973; Section 402, Vietnam Era Veterans Readjustment Assistance Act of 1974; the Age Discrimination Act of 1975; the Americans with Disabilities Act of 1990 (as amended by the ADA Amendments Act of 2008); and pertinent laws, regulations, and executive directives of the Commonwealth of Massachusetts and other applicable state and federal statutes. The University will not tolerate acts of discrimination or harassment based upon Protected Classes, or related retaliation against or by any employee or student. For purposes of this policy, "Protected Classes" refers to race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, ancestry, genetic information, military service, or veteran status, or any other category protected by applicable law.

This policy (1) provides a definition of discrimination and harassment based upon protected classes and related retaliation, (2) prohibits discrimination and harassment based upon protected classes and related retaliation, and (3) sets out procedures to follow when a member of the MCPHS University community believes a violation of the policy has occurred.

Individuals who violate this policy shall be disciplined or subjected to corrective action, up to and including termination or expulsion.

Inquiries regarding the University's compliance with equal opportunity and affirmative action laws may be directed to Richard Lessard, Executive Vice President, at 617.732.2132.

### DEFINITIONS

**Appointing authority**—The individual with the authority or delegated authority to make ultimate personnel decisions concerning a particular employee.

**Disciplinary authority**—The individual who, or office that, has the authority or delegated authority to impose discipline upon a particular employee or student.

**Complainant**—A person who is subject to alleged protected class discrimination, harassment, or related retaliation.

**Respondent**—A person whose alleged conduct is the subject of a complaint.

**False complaints or false information**—The knowing or reckless alleging of a false complaint of discrimination, harassment, or related retaliation or the providing of false information during the course of an investigation.

**Discrimination**—An adverse consequence suffered by an individual, such as failure to be hired or promoted, denial of admission to an academic program, and so on, on the basis of her/his protected class. Sexual harassment and sexual violence are forms of sexual discrimination. Title IX prohibits sexual discrimination in all University programs and activities.

**Harassment**—Verbal or physical conduct that unreasonably interferes with an individual's work or academic performance or creates an intimidating or hostile work or educational environment (see Hostile Environment below).

**Sexual harassment**—A form of sex discrimination that is a violation of University policy and federal and state statutes. For purposes of this policy, sexual harassment, whether between people of different sexes or the same sex, is defined to include, but is not limited to, unwanted sexual advances, unwelcome requests for sexual favors, and other behavior of a sexual nature when the following apply:

- Submission to or rejection of such advances, requests, or conduct is made either explicitly or implicitly a term or condition of an individual's employment or academic status
- Submission to, or rejection of, such conduct by an individual is used as a basis for employment or academic decisions affecting him or her
- Such advances, requests or conduct have the purpose or effect of unreasonably interfering with an individual's work performance by creating an intimidating, hostile, humiliating, or sexually offensive work or learning environment.

Sexual Harassment may occur regardless of the intention of the person engaging in the conduct. While it is not possible to list all those additional circumstances that may constitute sexual harassment, the following are some examples of conduct which if unwelcome, may constitute sexual harassment depending upon the totality of the circumstances, including the severity of the conduct and its pervasiveness:

- Sexual advances whether they involve physical touching or not;
- Requests for sexual favors in exchanges for actual or promised job or academic benefits such as favorable reviews, salary increases, promotions, grades, increased benefits, or continued employment;
- Punishment for not complying with requests for sexual favors, such as unfavorable reviews, denial of promotion;
- Sexual epithets, jokes, written or oral references to sexual conduct, gossip regarding one's sex life; comment on an individual's body, comment about an individual's sexual activity, deficiencies, or prowess;
- Displaying sexually suggestive objects, pictures, cartoons;
- Leering, whistling, touching, brushing against the body, sexual gestures, suggestive or insulting comments;
- Inquiries into one's sexual experiences;
- Discussion of one's sexual activities;
- Assault or coerced sexual acts.

**Hostile environment**—An environment that may be created when there has been unwelcome conduct by an individual(s) against another individual based upon her/his protected class that is sufficiently severe or pervasive that it alters the conditions of education or employment and creates an environment that a reasonable person would find intimidating, hostile, or offensive. The determination of whether an environment is "hostile" must be based on all of the circumstances. These circumstances could include the frequency of the conduct, its severity, and whether it is threatening or humiliating. Simple teasing, offhand comments, and isolated incidents (unless extremely serious) will not amount to hostile environment harassment.

**Retaliation**—A causal connection between an individual's experiencing material adverse action and his/her (1) reporting an allegation of discrimination or harassment; or (2) participating in support of an investigation of discrimination or harassment.

**Materially adverse action**—An action that would dissuade a reasonable person from reporting an allegation of discrimination or harassment, or participating in support of an investigation of an allegation of discrimination or harassment. A determination of whether an action is materially adverse is made on a case-by-case basis.

**Office of Student Affairs**—The office that investigates allegations of discrimination, harassment, and related retaliation when the respondent is a student. This office is also the disciplinary authority for student respondents.

**Office of Human Resources**—The office that investigates allegations of discrimination, harassment, and related retaliation when the respondent is an employee.

**Title IX Coordinator**—The University officer responsible for oversight on all Title IX allegations and/or violations. For allegations involving respondents who are employees, the Title IX Coordinator will assign direct oversight to the Office of Human Resources. For allegations involving respondents who are students, the Title IX Coordinator will assign direct oversight to the Office of Student Affairs.

**Title IX deputies**—University employees who report to and assist the Title IX Coordinator on all allegations of Title IX violations.

**Supervisor**—Anyone who has the authority to hire, promote, discipline, evaluate, grade, or direct faculty, staff, or students. This includes anyone who manages or supervises others, including, but not limited to, faculty, teaching assistants, resident advisors, coaches, and anyone who leads, administers, advises, or directs University programs.

## REPORTING OBLIGATIONS

### **Supervisor's Obligation to Report**

Any supervisor who witnesses, receives, or has knowledge of a complaint of discrimination, harassment, or related retaliation that occurs in MCPHS University employment and educational programs and activities *shall* immediately report it to his/her supervisor. A failure to report this information is a violation of this policy, except in the case of a supervisor whose profession and University responsibilities requires him/her to keep certain communications confidential (e.g., a professional counselor). Such a supervisor is not required to report confidential communications received while performing those University responsibilities.

### **Obligation to Report**

In order to take appropriate corrective action, MCPHS must be aware of discrimination, harassment, and related retaliation that occur in MCPHS employment and educational programs and activities. Anyone who believes that she/he has experienced or witnessed discrimination, harassment, or related retaliation should immediately report such behavior to one of the designated Title IX officers: the Title IX Coordinator, a Title IX deputy, the Dean of Students, or his/her own supervisor.

### **Confidentiality**

The University will maintain the confidentiality of the complaint, and the privacy of the persons involved, to the greatest extent possible, consistent with its goal of conducting a thorough and complete investigation and to the extent permitted by law.

### **Retaliation**

The University will not in any way retaliate against an individual who reports a perceived violation of this policy, participates in any investigation, or otherwise opposes perceived discrimination, harassment, or retaliation, including as a witness. It will also not retaliate against anyone associated with the individual who engages in such protected conduct, such as a family member. MCPHS further will not tolerate retaliation by any employee or student. Retaliation is a serious violation of this policy, as well as of federal, state, and local law. Anyone who believes he/she is a victim of retaliation should report the matter immediately according to the same procedure provided in this policy for making complaints of discrimination, harassment, or sexual assault. Any person found to have retaliated against another individual will be subject to the same disciplinary action provided under this policy for other violations.

## PROCEDURES

Reports or complaints pursuant to this policy will be addressed and resolved as promptly as practicable after the complaint or report is made.

Allegations or complaints may be directed to any one of the following:

- Title IX Coordinator
- Title IX deputy
- Dean of Students
- Chief Human Resources Officer
- Dean, department chair, or program director
- Supervisors
- Vice Presidents for Academic Affairs / Provost
- Vice President Legal Affairs / Chief Compliance Officer

The initial complaint will immediately be forwarded to the Title IX Coordinator, who has oversight of the investigation. An investigation will be concluded and reports submitted to the Title IX Coordinator no later than 90 days following the receipt of a complaint. A determination will be finalized no later than 30 days after the receipt of the report of the investigation.

- Investigation Process

- The Title IX Coordinator shall determine the most appropriate means for addressing the report or complaint.

The Title IX Coordinator may designate another individual (from within MCPHS, including an administrator) to conduct or assist with the investigation. Anyone designated to address an allegation must adhere to the requirements of this policy and confer with the Title IX Coordinator throughout the investigation.

- All reports or complaints shall be made as promptly as possible after the occurrence.
- If an investigation is conducted, the complainant and respondent shall have the right to
  - receive written notice of the report or complaint, including a statement of the allegations, as soon after the commencement of the investigation as is practicable and to the extent permitted by law;
  - present relevant information to the investigator(s); and
  - receive, at the conclusion of the investigation and appropriate review, a copy of the investigator's report, to the extent permitted by law.
- The Title IX Coordinator and only necessary University officials shall be notified that an investigation is taking place.
- At the conclusion of an investigation, the investigator shall prepare a written report that shall include a statement of factual findings and a determination of whether this policy has been violated. The draft report shall be presented for review to the Title IX Coordinator.
- The Title IX Coordinator may consult with the investigator, consult with the parties, request that further investigation be done by the same or another investigator, and/or request that the investigation be conducted again by another investigator. Once the Title IX Coordinator is satisfied that a complete investigation has been completed and once the appropriate University officers have approved the findings of the investigation, the Title IX Coordinator shall send the final report to the complainant and respondent, to the extent permitted by law. The final report shall also be sent to the respondent's supervisor, the appointing authority / disciplinary authority, and the President.
- The appointing authority / disciplinary authority must initiate formal action against the respondent if she/he was found to have violated this policy or acted inappropriately or unprofessionally. The appointing authority/disciplinary authority, and other administrators with a need to know, may have access to the investigative records and may consult with the investigator in order to take appropriate action. The appointing authority / disciplinary authority shall inform, in writing, the Title IX Coordinator of the action taken against the individual(s) who have violated this policy or who have behaved inappropriately or unprofessionally. The Title IX Coordinator will keep the President and the vice presidents informed of the final disposition of all Title IX cases.
- In all cases, the Title IX Coordinator shall retain the investigator's report for a minimum of three (3) years or for such longer period as any administrative or legal action arising out of the complaint is pending. In the case of a student respondent(s), records will be retained according to policies administered by the Office of Student Affairs.
- All records of discrimination and harassment and related retaliation reports and investigations shall be considered confidential and shall not be disclosed publicly except to the extent required by law.
- Complaints Involving Two or More MCPHS University Campuses

The Title IX Coordinator has oversight for all Title IX cases. When an alleged violation of this policy involves more than one MCPHS University campus, the complaint may be handled by individual(s) approved by the Title IX Coordinator at the campus with disciplinary authority over the respondent.

- Complaints By and Against University Employees and Students Arising in an Affiliated Entity

MCPHS employees and students sometimes work or study at the worksite or program of another organization affiliated with MCPHS. When a violation of this policy is alleged by or against MCPHS employees or students in those circumstances, the complaint should immediately be directed to the Title IX Coordinator. The Title IX Coordinator will consult the affiliation agreement between MCPHS and the other entity for any language relating to the handling of the allegation. In the absence of an affiliation agreement or a provision addressing this issue, MCPHS will follow the designated protocol for all Title IX allegations.

- No Limitation on Existing Authority

No provision of this policy shall be construed as a limitation on the authority of an appointing authority / disciplinary authority under applicable policies and procedures to initiate appropriate action. However, the Title IX Coordinator always has oversight of Title IX cases and will work with the appropriate University authorities where appropriate. If an investigation is conducted under this policy and no policy violation is found, that finding does not prevent discipline of the respondent for inappropriate or unprofessional conduct under other applicable policies and procedures.

- Annual Report

The Office of Public Safety shall maintain an annual report documenting (1) the number of reports or complaints received pursuant to this policy, (2) the categories of those involved in the allegations, (3) the number of policy violations found, and (4) examples of sanctions imposed for policy violations.

- Education

MCPHS will broadly disseminate this policy; distribute a list of resources available to respond to concerns of protected class discrimination, harassment, and related retaliation; and develop and present appropriate educational programs for students and employees.

#### STATE AND FEDERAL REMEDIES

In addition to the above, if a student or employee believes that he/she has been subjected to discrimination or harassment, he/she may file a formal complaint with any of the governmental agencies set forth below. Using MCPHS University's complaint process does not prohibit a student or employee from filing a complaint with these agencies.

Suffolk County District Attorney's Office  
1 Bullfinch Place  
Boston, MA 02114  
617.619.4000

Boston Police Department  
1 Schroeder Plaza  
Boston, MA 02120  
617.343.4500 or 911

Worcester County District Attorney's Office  
225 Main Street, G-301  
Worcester, MA 01608  
508. 755.8601

Worcester Police Department  
9-11 Lincoln Square  
Worcester, MA 01608  
508.799.8606 or 911

Massachusetts Commission Against Discrimination (MCAD)  
One Ashburton Place, Room 601, Boston, MA 02108, 617.994.6000  
436 Dwight Street, Room 220, Springfield, MA 01103, 413.739.2145  
484 Main Street – Room 320, Worcester, MA 01608 (508) 799-8010  
800 Purchase Street – Room 501, New Bedford, MA 02740 (508) 990-2390

Hillsborough County Attorney's Office  
300 Chestnut Street  
Manchester, NH 03101  
603.627.5605

Manchester Police Department  
405 Valley Street  
Manchester, NH 03103  
603.668.8711

New Hampshire Commission for Civil Rights  
2 Chenell Drive  
Concord, NH 03301-8501  
603.271.2767

U.S. Equal Employment Opportunity Commission (EEOC)  
John F. Kennedy Federal Building  
475 Government Center  
Boston, MA 02203  
800.669.4000

#### RELATED POLICIES

MCPHS University Professional Conduct in the Workplace Policy Statement provides that the University expects all its employees to respect the dignity of others and to show the same respect and concern for all community members. MCPHS University Student Conduct Policies and Procedures addresses student conduct that occurs on or as it relates to university property, or at official functions and university-sponsored programs conducted away from the campus.

For related complaint, grievance, or disciplinary processes, see the Student Code of Conduct and Student Discipline System.

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This policy complies with Titles VI and VII of the Civil Rights Act of 1964; Title IX of the Education Amendments of 1972; the Age Discrimination in Employment Act of 1976; the Equal Pay Act of 1963; sections 503 and 504 of the Rehabilitation Act of 1973; the Vietnam Era Veterans Adjustment Act; and the Americans with Disabilities Act.



### **The Interprofessional Education (IPE) Plexus**

The IPE Plexus for Teaching, Practice and Scholarship is a collaborative initiative of the University that supports and encourages all schools and departments to advance interprofessional education. Multidisciplinary faculty work together to develop, implement, and evaluate learning opportunities for students so that they will be competent leaders and practitioners in healthcare.

The IPE Plexus is committed to strengthening understanding and communication among the health disciplines through strategies and practices that will lead to improved patient safety, quality of care, and cost-effectiveness.

### **Center for International Studies**

The Center for International Studies (CIS) is a network of individuals and departments that provides a spectrum of services to international students drawn to MCPHS University from around the world, and to U.S. students seeking educational and professional opportunities abroad. The Center focuses on student success and global engagement, from enrollment through all aspects of the academic experience, and encourages collaboration among students, faculty, and alumni in achieving an international perspective on healthcare education, research, and practice.

### **International Programs**

The International Programs office serves as a resource for faculty and students who are interested in international service trips, exchange programs, clinical rotations, and travel courses.

### **Immigration and International Support Services**

Immigration Services provides immigration advice and assistance to international students both before and after their arrival in the United States. The office creates I-20 forms and provides information regarding visa guidelines, travel signatures, employment opportunities, and Social Security cards.

### **International Academic Services**

International Academic Services serves as a resource to faculty, staff and students for academic issues specific to international students and visitors. This office focuses on international student success efforts and internationally-focused collaborations on the MCPHS campuses.

### **International Student Services**

The goal of International Student Services is to help international students make the most out of their experiences at MCPHS University. Housed within the Center for Campus Life, this office provides resources that help facilitate the transition to MCPHS University student life. These resources include connecting newly arrived students with international student ambassadors, introducing them to an array of student clubs and organizations, and providing advice about living in Boston.

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## Admission

### General Admission Policies

General MCPHS University admission policies and application procedures that apply to all applicants are stated below.

- An application for admission must be complete in order to be evaluated. An application is considered complete when the Admission Office has received the completed admission application, all required credentials, and the nonrefundable application fee (if applicable).
- All credentials must be sent directly from the issuing agency to the Admission Office at the campus where the program to which the applicant is applying is offered. Transfer applicants to the Doctor of Pharmacy program (Transfers entering into the 1<sup>st</sup> and 2<sup>nd</sup> year of the PharmD program do not submit application through PharmCAS), or applicants to the Master of Physician Assistant Studies program, Doctor of Physical Therapy program, Master of Science in Occupational Therapy program, and Doctor of Optometry program should send official transcripts directly to the Pharmacy College Application Service (PharmCAS), Central Application Service for Physician Assistants (CASPA), Occupational Therapist Centralized Application Service (OTCAS), Physical Therapist Centralized Application Service (PTCAS), or Optometry Centralized Application Service (OptomCAS), respectively.
- Applicants may apply to only one MCPHS campus and/or program per academic year.
- A new application, complete with updated credentials, must be submitted each time a candidate reapplies for admission to the University.
- Preference is given to candidates whose application files are complete and received by the priority deadline. However, applications will continue to be reviewed until all available spaces are filled.
- Interviews are required for transfer applicants applying to the third year of the Doctor of Pharmacy program (Boston) who have met or plan to complete all required preprofessional courses prior to matriculation, the Physician Assistant Studies program (Boston, Manchester, and Worcester), the Doctor of Pharmacy (Accelerated) program (Worcester and Manchester), the Doctor of Optometry program (Worcester), and the Doctor of Physical Therapy program (Worcester), the Master of Acupuncture Program (Worcester), the Master of Science in Nursing programs (Worcester, Manchester, Online), the Certificate of Advanced Graduate Studies in Nursing programs (Worcester, Manchester, Online), and the PostBaccalaureate Doctor of Pharmacy program (Online). These interviews are by invitation only. Candidates who are invited are contacted by email or postal mail directly by the Admission Office.
- Upon notification of acceptance, all students are required to pay an enrollment deposit to secure a place in the entering class. The deposit must be in U.S. dollars, in the form of a credit card payment, money order, or check drawn on a U.S. bank (made payable to MCPHS). The University accepts credit card payments by Visa, Discover, or MasterCard. MCPHS does not accept cash. The deposit must be received by the specified deadline and is credited in full to the tuition cost of the first term of enrollment. Deposit amounts and deadlines vary according to campus and program, and are specified in the letter of acceptance. Deposits are non-refundable.

### Tests and Testing Agencies

FOR SAT, AP, CLEP, TOEFL, and GRE  
CONTACT Educational Testing Service, Princeton, NJ 08541  
Tel.: 609.921.9000  
www.ets.org  
MCPHS code number for all ETS tests is 3512.

FOR ACT  
CONTACT ACT National Office, P.O. Box 168, Iowa City, IA 52243-0168  
Tel.: 319.337.1000 / Fax: 319.339.3021  
www.act.org  
MCPHS code number for ACT tests is 1860.

FOR IELTS  
CONTACT IELTS Administrator, 777 Dedham St., Newton, MA 02459  
www.ielts.org

FOR OAT  
CONTACT Optometry Admission Testing Program, 211 East Chicago Ave, Chicago, IL 60611-2637  
Tel: 800.232.1694 /  
www.ada.org/en/oat

### **Priority Dates and Campus Mailing Addresses**

MCPHS establishes priority dates for admission to all academic programs. If space permits, the University continues to accept and review applications beyond the dates listed.

#### **Boston Campus**

MCPHS University  
Admission Office  
179 Longwood Avenue  
Boston, MA 02115  
Tel: 617.732.2850 / 800.225.5506 / Fax: 617.732.2118

#### Freshman Admission Priority Dates

Early action I—November 1  
Early action II—December 1  
Regular decision—February 1

#### Undergraduate Transfer Admission Priority Date

All programs—February 1

#### Fast Track Programs Priority Dates

Bachelor of Science in Diagnostic Medical Sonography (Fast Track)—February 1  
Bachelor of Science in Magnetic Resonance Imaging (Fast Track)—November 1  
Bachelor of Science in Nuclear Medicine Technology (Fast Track)—February 1  
Bachelor of Science in Radiation Therapy (Fast Track)—February 1  
Bachelor of Science in Radiography (Fast Track)—February 1

#### Advanced Medical Imaging Certificate Programs Priority Dates

Computed Tomography (CT)—February 1  
Magnetic Resonance Imaging (MRI)—February 1

#### Certificate in Advanced Pharmacy Practice Studies (CAPPS)—Rolling

#### Graduate Admission Priority Dates

Master of Physician Assistant Studies—October 1  
Master of Public Health—February 1  
Master of Science in Clinical Research—February 1  
Master of Science / PhD in Medicinal Chemistry—February 1  
Master of Science / PhD in Pharmaceutical Economics and Policy—February 1 (fall entry) and November 1 (spring entry)  
Master of Science / PhD in Pharmaceutics—February 1  
Master of Science / PhD in Pharmacology—February 1  
Master of Science in Regulatory Affairs and Health Policy—February 1 (fall entry) and November 1 (spring entry)

Graduate Certificate in Clinical Research – February 1 (fall entry) and November 1 (spring entry)

Graduate Certificate in Health Policy—February 1

Graduate Certificate in Regulatory Affairs—February 1 (fall entry) and November 1 (spring entry)

**Worcester Campus**

MCPHS University  
Admission Office  
19 Foster Street  
Worcester, MA 01608  
Tel.: 508.373.5607 / Fax: 508.890.7987

Doctor of Pharmacy (Accelerated)— March 1  
Doctor of Optometry— May 1  
Doctor of Physical Therapy— March 1  
Master of Acupuncture —May 1  
Master of Physician Assistant Studies (Accelerated)—December 1  
Master of Science in Nursing (Family Nurse Practitioner)—Rolling  
Bachelor of Science in Dental Hygiene (Fast track)— May 1  
Bachelor of Science in Diagnostic Medical Sonography (Fast track) May 1  
Bachelor of Science in Nursing (Postbaccalaureate)—October 1 (spring entry) and May 1 (fall entry)

**Manchester Campus**

MCPHS University  
Admission Office  
1260 Elm Street  
Manchester, NH 03101-1305  
Tel.: 603.314.1701 / Fax: 603.314.0213

Doctor of Pharmacy (Accelerated)— March 1  
Master of Physician Assistant Studies— December 1  
Master of Science in Occupational Therapy--- March 1  
Bachelor of Science in Nursing (Postbaccalaureate)—October 1 (spring entry) and May 1 (fall entry)

**MCPHS Online (a division of the Center for Online Learning and Academic Innovation)**

MCPHS Online Admission Office  
179 Longwood Avenue  
Boston, MA 02115  
Tel.: 508.373.5657 / Fax: 617.732.2118

AS to MS in Dental Hygiene Bridge Program—June 1  
RN to Master of Science in Nursing Bridge (Family Nurse Practitioner Track)—February 1  
RN to Master of Science in Nursing Bridge (Nurse Educator Track)—February 1  
Bachelor of Science in Dental Hygiene Degree Completion—June 1  
Bachelor of Science in Health Sciences Degree Completion—November 15 (spring entry) and June 1 (fall entry)  
Doctor of Pharmacy (Postbaccalaureate Pathway)—June 1  
Advanced Certificate in Magnetic Resonance Imaging—February 1  
Certificate of Advanced Graduate Studies in Nursing (Family Nurse Practitioner Track)—February 1  
Certificate of Advanced Graduate Studies in Nursing (Psychiatric Mental Health Nurse Practitioner Track)—February 1

Graduate Certificate in Clinical Research - November 15 and June 1  
Graduate Certificate in Healthcare Management—November 15 and June 1  
Graduate Certificate in Health Policy—November 15 and June 1  
Graduate Certificate in Medication Safety—November 15 and June 1  
Graduate Certificate in Oral Health Professions Education—June 1  
Graduate Certificate in Regulatory Affairs—November 15 and June 1  
Graduate Certificate in Nursing (Nurse Educator)—February 1  
Master of Science in Clinical Research—November 15 (spring entry) and June 1 (fall entry)  
Master of Healthcare Administration—November 15 (spring entry) and June 1 (fall entry)  
Master of Health Sciences—November 15 (spring entry) and June 1 (fall entry)  
Master of Patient Safety—November 15 (spring entry) and June 1 (fall entry)

Master of Public Health—November 15 (spring entry) and June 1 (fall entry)  
Master of Science in Dental Hygiene—June 1  
Master of Science in Nursing (Family Nurse Practitioner Track)—February 1  
Master of Science in Nursing (Nurse Educator Track)—February 1  
Master of Science in Nursing (Psychiatric/Mental Health Nurse Practitioner Track) – February 1  
Master of Science in Regulatory Affairs and Health Policy—November 15 (spring entry) and June 1 (fall entry)  
RN to BSN Completion—February 1  
Doctor of Health Sciences—November 15 (spring entry) and June 1 (fall entry)

## **Freshman Admission (Boston)**

### **Requirements**

An applicant's secondary school program of study must include at least 16 units of coursework in the following subject areas:

- 4 units of English
- 3 units of mathematics (algebra I and II; geometry)
- 2 units of social sciences (including 1 in history)
- 2 units of laboratory science (1 each in biology and chemistry)
- 5 units of additional college preparatory courses

Eligible applicants for first-year admission completing 12 or more credits following high school graduation, or having graduated more than two years ago from high school, will be classified as a transfer student for admission, unless the student was enrolled in a college prep or ESL program during those two years. Incoming freshmen students may transfer in no more than a total of 18 credits of work in combination of dual enrollment, AP, or IB credit. Dual-enrollment is defined as college-credit bearing coursework taken while enrolled in high school.

### **Early Action**

Early action is open to prospective first-year students only. Candidates with solid academic records who have decided that MCPHS is a "top choice" college are encouraged to apply under early action. Applicants must submit the application and all required materials by the deadlines listed above. The Admission Office makes decisions on early action applications by the middle of January. Accepted students have until May 1 to respond to the University's offer of admission.

### **Application**

An application for first-year admission is reviewed when the file is complete. To be considered complete, the applicant's file must contain all of the following:

- Completed Common Application (can be completed online at [www.commonapp.org](http://www.commonapp.org))
- Official high school transcript(s) from all secondary schools attended, including most recent grades (or official GED test scores)
- Official transcripts from colleges or universities attended, if applicable
- Official reports of standardized test scores: SAT I or ACT; ACT Compass, TOEFL, iTEP or IELTS, if applicable
- One letter of recommendation from a guidance counselor or teacher required.

### **Transcripts**

Transcripts must clearly indicate all credits and grades received and indicate coursework currently in progress. All transcripts must be official. If mailed in, they must be presented in a sealed envelope with the institution's stamp or a college/university official's signature across the closure. Photocopies and hand-carried documents not in a sealed, stamped envelope are not accepted.

All deposited students are expected to submit a final high school transcript by the first day of classes. The diploma awarded and the date of the award must be clearly indicated on the final transcript.

### **Standardized Tests**

First-year applicants are required to submit official reports of standardized test scores as follows:

- Applicants for first-year admission are required to submit official test scores from either the SAT or the ACT. Only the highest SAT or ACT scores will be considered as part of the final admission decision. MCPHS requires students to submit all scores from all exams taken. Each time a new score is submitted, the applicant's record will be updated with the new high scores. International applicants are not required to take the SAT or ACT.
- Candidates for whom English is not the primary spoken language are required to take the TOEFL, iTEP, IELTS or the English Proficiency exam offered on campus. This test requirement may be waived on an individual basis for applicants who have attended all four years of high school in the United States (exclusive of ESL courses) and who have scored 480 or higher on the Critical Reading section of the SAT. (Please refer to the International Applicants section.)

Official score reports must be sent directly to the Admissions Office from the high school, Common Application, Naviance, or the testing agency.

### **School of Nursing – Boston – Program-Specific Admission Requirements**

Freshman Applicants – Minimum Requirements:

- Class of 2020:
  - High School GPA – 3.0; High School Math/Science GPA – 2.7/2.7; SAT scores -  $\geq$  50<sup>th</sup> percentile (national) or equivalent ACT scores.
  - TOEFL – minimum proficiency level of 83 – candidates for whom English is not the primary language.
- Class of 2021:
  - High School GPA – 2.7; High School Math/Science GPA – 2.7; SAT scores -  $\geq$  60<sup>th</sup> percentile (national or equivalent ACT scores).
  - TOEFL – Minimum proficiency level of 83 – candidates for whom English is not the primary language.

Transfer Applicants [from colleges/universities outside of MCPHS] – Minimum Requirements

- Class of 2019:
  - Cumulative GPA – 2.7; Science and Math GPA – 2.7.
  - In order to be granted transfer credit for prerequisite courses, students must achieve a grade of C+/78 or better. Transfer credits will not be accepted for courses repeated more than one time.
  - TOEFL – Minimum proficiency level of 83 – candidates for whom English is not the primary language.
  - \*\*If applying directly for transfer into the professional nursing (NUR) courses – must achieve a minimum level of Proficient on the Test of Essential Academic Skills (TEAS). The test must have been completed within 3 years of the applicant's proposed enrollment date. The exam may only be taken 2 times (total) to achieve a score of Proficient.

Internal Transfer Applicants [from within other majors in MCPHS] – Minimum Requirements

- Class of 2019:
  - Cumulative GPA – 2.5
  - Completion of all prerequisite courses with a grade of C+/78 or better.
  - TOEFL - Minimum proficiency level of 83 – candidates for whom English is not the primary language.
  - Completion of an essay and interview with Nursing Faculty.
  - \*\*Qualified applicants are accepted on a space available basis.
- Class of 2020:
  - Cumulative GPA – 2.7
  - Completion of all prerequisite courses with a grade of C+/78 or better.
  - TOEFL - Minimum proficiency level of 83 – candidates for whom English is not the primary language.

- Completion of an essay and interview with Nursing Faculty.
- \*\*Qualified applicants are accepted on a space available basis.

### **Advanced Course Credit**

Freshmen may be awarded a limited amount of MCPHS course equivalency credit in transfer for Advanced Placement (AP) courses, International Baccalaureate (IB) courses, and/or college coursework taken during high school. Specific policies that govern MCPHS transfer credit equivalency are explained in detail in the Transfer Admission section of this catalog.

### **Delayed Enrollment for Accepted Students**

Students who are accepted for first-year admission may request approval of delayed enrollment (deferral) for one full academic year. To do so, they must

- submit a written request to the Admission Office and
- promise, in writing, that they will not attend any other college or university during the deferral period.

MCPHS reserves the right to deny requests for deferral. If a request for deferral is approved, the candidate must pay a \$500 nonrefundable enrollment deposit. This deposit will reserve a place in the class starting in the fall of the following academic year. If the student enrolls at that time, the deposit will be credited in full toward the first-semester tuition.

Students are canceled from the accepted applicant pool if

- they are denied deferral and choose not to enroll at the University in the fall for which they were admitted or
- they defer but do not enroll in the fall of the academic year following the deferral period.

Students who are canceled from the accepted applicant pool must forfeit the \$500 enrollment deposit and their accepted student status.

### **Institutional Agreements**

MCPHS has agreements with academic institutions that offer a seamless pathway of study from the Premedical and Health Studies or Medical and Molecular Biology major to a variety of graduate and professional degree programs (see details throughout the catalog or at [www.mcphs.edu](http://www.mcphs.edu)). The University also has an agreement for Health Psychology students and Pharmaceutical and Healthcare Business students who plan to seek a master's or doctoral degree.

Prospective first-year students should speak with an admission counselor at the University about prerequisites for admission into the Premedical and Health Studies, Medical and Molecular Biology, Pharmaceutical and Healthcare Business, or Health Psychology majors for these programs.

### **Transfer Admission (Boston)**

NOTE: All candidates must refer to the General Admission Policies section for additional information, including interviews, mailing address, and deadlines.

Candidates for transfer admission for BS degree programs have earned a high school diploma or equivalent. Attempted an equivalent of one or more semesters (a minimum of 12 semester hours) of college- or university-level courses following the conferral of their degree and are applying for admission to one of the MCPHS undergraduate (e.g., Bachelor of Science in Dental Hygiene), certificate, or first professional degree (e.g., PharmD) programs. This includes applicants to these programs who have one or more earned degree(s).

### **Requirements**

Candidates for transfer admission to BS programs must have a cumulative academic grade point average (GPA) of at least 2.5 or higher on a 4.0 scale attained at a regionally accredited college or university. Candidates for transfer admission to the Doctor of Pharmacy (PharmD) program must have at least a 3.0 GPA or higher (on a 4.0 scale), attained at a regionally accredited college or university. Preference is given to candidates who demonstrate

- consistent academic performance in a full-time program with above-average grades in mathematics and science without having to withdraw or repeat courses.

**Application**

An application for transfer admission is reviewed when the file is complete. To be considered complete, the transfer applicant's file must contain all of the following:

- Completed application, which may be found online for all programs (except PharmD) at [www.mcphs.edu](http://www.mcphs.edu)
- Official transcripts from all colleges or universities attended
- Official high school transcript(s) or official GED test scores
- Official reports of standardized test scores, if applicable (see below)
- One letter of recommendation (see below)

Transcripts must clearly indicate all credits and grades received and indicate coursework currently in progress. All transcripts must be official and presented in a sealed envelope with the institution's stamp or a college/university official's signature across the closure. Photocopies and hand-carried documents not in a sealed, stamped envelope are not accepted. Official transcripts reflecting prerequisite courses must be received in the Admission Office no later than the add/drop deadline of the term of entry. Students failing to submit these documents by this deadline will be dropped from all classes.

**Standardized Tests**

- Applicants for transfer admission are required to submit official reports of standardized test scores as indicated below:
- Candidates who have completed fewer than 30 semester or 45 quarter hours of college or university credit are required to submit official score reports of either the SAT I or the ACT.
- Candidates for whom English is not the primary spoken language are required to take the TOEFL, ITEP, MCPHS on-campus English Proficiency Exam, or IELTS. This test requirement may be waived on an individual basis for applicants who have attended all four years of high school in the United States (exclusive of ESL courses) and have scored 480 or higher on the Critical Reading section of the SAT, or who have an earned degree (bachelor's or higher) from a U.S. college or university (exclusive of ESL courses). (Please refer to the International Applicants section.)
- Official score reports must be sent directly to the Admission Office from the appropriate testing agency.

**Recommendations**

Candidates for transfer admission should submit one letter of recommendation. For candidates currently attending a college or university (full time or part time), at least one recommendation must be from a professor (preferably mathematics or science; a recommendation from an academic advisor may substitute). Candidates who are not enrolled in college or university courses may substitute recommendations from work supervisors, although at least one faculty recommendation is preferred.

**Interview**

On-campus interviews are required for transfer applicants applying to the Doctor of Pharmacy program who intend to enter the first professional year (Year III). These interviews are by invitation only. Candidates who are invited are contacted directly by the Admission Office.

**Transfer of Credit**

Candidates who are accepted as transfer students may receive a limited number of course credits in transfer. Please refer to Residency Requirement in the section Academic Policies and Procedures. Transfer credit is not awarded for life experience or work experience. Transfer credit can be achieved through

- coursework taken prior to enrollment at other colleges and universities,
- successful passing of Advanced Placement (AP) and/or College-Level Examination Program (CLEP) examinations (see below), and
- successful passing of International Baccalaureate (IB) examinations.



Transfer credit for professional coursework is very limited and is awarded on a case-by-case basis through special petition to the dean of the school in which the program is offered. All petitions must be processed through the Admission Office and initiated by August 1 prior to fall enrollment or by January 1 if entering in the spring semester.

Policies that determine the amount of transfer credit awarded and that identify courses accepted in transfer vary among programs. Candidates interested in transfer credit should contact the Admission Office about their particular program of interest.

The Admission Office conducts a transfer credit evaluation on all transcripts in a candidate's file during the application review process. Accepted students receive a written transfer credit evaluation in their acceptance package. Courses considered for transfer credit must meet the following requirements:

- Comparable in breadth and depth to those in the preprofessional phase of the specific program to which the candidate is applying. Comparability is determined by the Admission Office in collaboration with the Office of the Registrar, school deans, program directors, and faculty in related discipline(s).
- Successfully completed with a grade of C (2.0) or better at a regionally accredited college or university. Transfer credits for Nursing prerequisites will only be accepted if a grade of C+ or higher is earned.
- Completed within the last 10 years at the time of enrollment. This restriction is limited to courses in the area of mathematics and the natural, physical, and behavioral sciences.
- Submitted with an official transcript by the end of the student's first add/drop period, held the first week of classes. Courses not submitted by that time will not be awarded transfer credit.

AP examination results are accepted for transfer credit for selected coursework. Students must achieve a score of 4 or better on an AP examination for transfer credit to be awarded. Credit in transfer for AP coursework is limited to 18 semester hours of credit, depending on the subject. No AP credit will be awarded for Chemistry or Biology.

CLEP results are accepted as transfer credit for selected subject matter. Candidates must receive a score of 50 or better per subject to be awarded CLEP credit. Transfer is limited to 18 CLEP credits, and the examination(s) must be taken before the student's first semester of enrollment at MCPHS. Those who achieve a score below 50 may not repeat the examination and must take the course. CLEP is an opportunity for students whose coursework is comparable but not otherwise transferable (e.g., exceeds the 10-year limit, earned grade is below C) and others who have not taken coursework but believe they have comparable knowledge.

IB courses will be accepted for transfer credit for selected coursework (limit of 18 credits). Students must achieve a score of 5 or better on an HL (high-level) IB exam. Transfer credits are limited to exams for English, language, and the arts.

AP and IB exceptions: Chemistry AP scores of 4 or better will be accepted as transfer credit for CHE 131 and CHE 132 for students who matriculate at MCPHS with existing college credit for organic chemistry. Transfer students accepted into the professional phase of an MCPHS degree program will receive transfer credit for IB courses accepted by a previous college. In both of these instances, official AP and/or IB exam documentation must be provided to MCPHS no later than the add/drop deadline of the term of entry.

Candidates who desire to receive credit based on AP and CLEP examinations must arrange for official test score results to be sent directly from Educational Testing Service (ETS) to the Admissions Office in Boston. A complete list of the AP and CLEP examinations and the corresponding MCPHS courses for which transfer of credit is allowed is available upon request through the Admissions Office.

Courses taken for college credit that count toward the high school diploma will receive transfer credit only if the course was administered in a college setting. Courses taken in a high school that are taught by teachers who have been certified to offer college-level courses will not receive transfer credit. Transfer credit for college courses that fulfill requirements for a high school diploma is at the discretion of the Dean of Arts and Sciences.

#### **Petition for Additional Transfer Credit**

The Admission Office will work with students during the admission process to evaluate transfer credit requests. After students matriculate, petitions for additional transfer credit must be submitted with required documentation to the Center for Academic Success and Enrichment (Boston, Worcester and Manchester) no later than the add/drop deadline of the

term of entry.

#### **Delayed Enrollment for Accepted Students**

Deferred enrollment is available only to active-duty military. To request approval of delayed enrollment (deferral), students must

- submit a written request to the Admission Office and
- promise, in writing, that they will not attend any other college or university during the deferral period.

#### **Fast Track and Graduate Admission (Boston)**

NOTE: All candidates must refer to General Admission Policies for additional information including interviews, mailing address, and deadlines.

#### **Fast Track**

At MCPHS University, Fast Track is used to identify options for transfer students to complete a bachelor's degree in the shortest possible time. Three Fast Track transfer options are available for students entering BS programs in Dental Hygiene, Medical Imaging and Therapeutics, and Nursing:

- Students who have already earned a bachelor's degree (BS) in any field of study may complete a second bachelor's degree at MCPHS by taking only the professional courses and related prerequisites. 60 semester hours of credit is awarded and the MCPHS Core Curriculum requirement is waived upon admission.
- Students who have already earned an associate's degree (AS) in any field of student may complete a bachelor's degree at MCPHS by taking professional courses and related prerequisites, plus any additional courses in the MCPHS Core Curriculum requirement that were not included in the applicant's associate degree program.
- Students who have taken college-level courses at another institution may transfer up to 60 semester hours toward an MCPHS bachelor's degree. Students must complete a minimum of 60 semester hours at MCPHS by taking professional courses, plus any prerequisites and MCPHS Core Curriculum requirements that were not taken at the prior institution.

Students entering MCPHS through a Fast Track option must meet the University's residency and course transfer requirements.

Applications are accepted for the following graduate and fast track programs:

#### **Graduate Programs**

- Master of Physician Assistant Studies
- Master of Public Health
- Master of Science in Clinical Research
- Master of Science or Doctor of Philosophy in Medicinal Chemistry
  
- Master of Science or Doctor of Philosophy in Pharmaceutical Economics and Policy
- Master of Science or Doctor of Philosophy in Pharmaceuticals
- Master of Science or Doctor of Philosophy in Pharmacology
- Master of Science in Regulatory Affairs and Health Policy
- Graduate Certificate in Clinical Research
- Graduate Certificate in Health Policy
- Graduate Certificate in Regulatory Affairs

#### **Fast Track Programs**

- Bachelor of Science in Dental Hygiene (Fast Track)
- Bachelor of Science in Diagnostic Medical Sonography (Fast Track)
- Bachelor of Science in Magnetic Resonance Imaging (Fast Track)
- Bachelor of Science in Nuclear Medicine Technology (Fast Track)
- Bachelor of Science in Radiation Therapy (Fast Track)
- Bachelor of Science in Radiography (Fast Track)

## **Advanced Imaging Certificates for Licensed Radiologic Technologists**

- Computed Tomography

### **Requirements**

*NOTE: Additional program-specific requirements may be found in the individual program descriptions in this catalog.*

Candidates for admission to all graduate, fast track, or postbaccalaureate programs must have the following:

- An earned bachelor's degree from an accredited college or university (some fast track programs do not require a prior bachelor's degree)
- An earned master's degree in a related field for those applying to a PhD program within the Division of Graduate Studies
- An overall grade point average (GPA) of 3.0 or higher (on a 4.0 scale) for graduate programs
- A TOEFL or IELTS for all candidates for whom English is not the primary spoken language. This test requirement may be waived on an individual basis for applicants who have attended all four years of high school in the United States (exclusive of ESL courses) or have an earned degree (bachelor's or higher) from a college or university within the U.S. or a native English speaking country whereas the program was fully taught in English.. (Please refer to the International Applicants section.)

Preference is given to those who

- have an overall GPA of 3.0 or better (on a 4.0 scale) with consistent performance of 3.0 or better in prerequisite courses and other subjects related to the major field of study; and
- have volunteer, research, or work experience related to the major field of study.

### **Application**

An application for graduate, fast track, or postbaccalaureate admission is reviewed when the file is complete. To be considered complete, the applicant's file must contain all of the following:

- Completed application, which may be found online for all programs (except Physician Assistant Studies) at [www.mcphs.edu](http://www.mcphs.edu). All Physician Assistant Studies application materials must be submitted through CASPA.
- Official transcripts from all colleges or universities attended, including those outside the United States
- Official reports of GRE and TOEFL, ITEP, ACT Compass, or IELTS scores, if applicable
- One letter of recommendation from faculty or work/research supervisors, which solidly support the candidate's ability to complete graduate-level work successfully in the chosen discipline
- For the Advanced Certificate in Medical Imaging programs, a copy of the applicant's current ARRT/NMTCB/ARDMS certificate and certification number, a copy of the Massachusetts Radiation Control Program radiologic technologist license, and a copy of the current CPR certification

Students applying to the Master of Physician Assistant Studies program must apply through CASPA ([www.caspaonline.org](http://www.caspaonline.org)). Candidates with international credentials must refer to the International Applicants section in this catalog. Candidates also must complete a supplemental application, which may be found at [www.mcphs.edu](http://www.mcphs.edu).

### **Transcripts**

Transcripts must clearly indicate all credits and grades received and indicate coursework currently in progress. Degree(s) or diploma(s) that have been received, dates awarded, and major courses of study must be clearly noted.

All transcripts must be official and presented in a sealed envelope with the institution's stamp or a college/university official's signature on the closure. Photocopies and hand-carried documents not in a sealed, stamped envelope are not accepted. Official transcripts must be received no later than the add/drop deadline of the term of entry.

### **Standardized Tests**

GRE scores are required (regardless of graduation date from a college or university) for the following programs: Pharmaceutics, Pharmacology, Medicinal Chemistry, and Pharmaceutical Economics and Policy.

Candidates for whom English is not the primary spoken language are required to take the TOEFL, ITEP, MCPHS on-campus English Proficiency Exam, or IELTS. This test requirement may be waived on an individual basis for applicants

who have attended all four years of high school in the United States (exclusive of ESL courses) and have scored 450 or higher on the Critical Reading section of the SAT, or who have an earned degree (bachelor's or higher) from a U.S. college or university. (Please refer to the International Applicants section.)

### **Recommendations**

Letters of recommendation must be sent from the recommender directly to the Admission Office in a sealed envelope with the recommender's signature over the closure (except Master of Physician Assistant Studies). Personal copies, photocopies, or hand-delivered recommendations that are not in individual sealed, stamped/signed envelopes are not acceptable.

### **Interview**

On-campus interviews are required for applicants applying to the Master of Physician Assistant Studies program. These interviews are by invitation only. Candidates who are invited are contacted directly by the Admission Office.

### **Graduate Transfer of Credit**

Transfer credit for graduate-level coursework taken at other accredited institutions may be accepted for transfer toward a student's degree requirements pending approval of the Graduate Council. Only courses that are clearly relevant to the student's program of study and have not been used to fulfill requirements for another degree may be considered for transfer credit. A maximum of 8 semester hours for MS and 12 semester hours for PhD programs may be transferred for coursework in which grades of B or higher have been attained. In some instances, transfer hours received in certain courses taken on a pass/fail basis may be approved by the Graduate Council. It is the responsibility of the student's Graduate Advisory Committee to determine the student's comprehension of the material before such hours are shown on the program of study for credit toward the degree. Research credit from another institution cannot be accepted for transfer credit. Coursework must have been completed not more than two years prior to the date of the request for transfer. Transfer credit for all MS coursework, including research credits, taken at MCPHS is acceptable for transfer toward a student's PhD degree requirements, provided that the coursework is clearly relevant to the student's program of study.

### **Graduate Student Status**

At the time of acceptance, each student is classified as regular, provisional, or nonmatriculating.

#### *Regular Status*

Candidates who have met all requirements for admission to a graduate degree program are admitted as regular students. The transcript must show sufficient and satisfactory undergraduate preparation in the major field, a minimum GRE score, and (if applicable) a TOEFL, ITEP, ACT Compass, or IELTS score. (Please refer to the International Applicants section.)

Candidates who are accepted to the MS track of graduate studies in the pharmaceutical sciences and desire consideration for acceptance to the PhD track may do so after successful completion of one full year in the master's degree track at MCPHS. A candidate must submit a letter of petition to the Associate Dean of Graduate Studies carefully outlining his or her career goals and reasons for consideration. Additional documentation may be requested at the discretion of the Associate Dean or the Graduate Advisory Committee. Candidates will be notified of the decision by the Associate Dean. Those who are not approved will continue in the master's degree track contingent upon satisfactory performance.

A graduate student is considered to have full-time status if he or she is

1. registered for 9 or more graduate credits, or
2. registered for 6 or more graduate credits while appointed as a graduate assistant for 15-20 hours per week, or
3. registered for DRA 810A Case Study Thesis, or
4. registered for PEP 880 MS Thesis Research in Pharmaceutical Economics and Policy, or
5. registered for PEP 890 PhD Dissertation Research in Pharmaceutical Economics and Policy, or
6. registered for PSB 872 Special Problems in Pharmaceutical Sciences (internships), or
7. registered for PEP 899 Special Topics in Pharmaceutical Economics and Policy, or
8. registered for PSB 880 Research, or
9. registered for PSB 895 Graduate Student Extension (thesis/dissertation completion, no credit), or
10. registered for DHY 895 Graduate Extension of Thesis

#### *Provisional Status*

The University may, at its discretion, admit candidates into a graduate degree program on a trial basis as provisional

students to ascertain their ability to do graduate work. Provisional students are those who have not met the minimum undergraduate grade point averages and/or GRE scores for admission. Provisional status also may be applied to students whose credentials do not meet specific program requirements. Provisional students must adhere to regulations established by the Graduate Council and be working toward a degree on a full-time basis. In order to achieve regular status, the student must complete the equivalent of two academic semesters (at least 9 semester hours) of full-time work with an overall grade point average of 3.0. If the student had not taken the GRE at the time of admission as a provisional student, the student must take the GRE during the first semester of provisional status.

At any time during the first year of matriculation following completion of the above criteria, a student may initiate an Approval for Change of Student Status in the Office of Graduate Studies. However, the student's graduate advisor also may initiate the change and should do so when the student has met the required criteria, or may request the change of status before the student has completed 9 semester credits. The change from provisional to regular status must be approved by the Assistant Dean of Graduate Studies. No student may remain on provisional status for more than two consecutive semesters. If a student admitted to provisional status fails to meet the conditions stated in the letter of admission, the student may be dismissed from the program.

### **Admission (Worcester and Manchester)**

Applications are accepted for the following programs:

- Accelerated Doctor of Pharmacy (PharmD)
- Master of Acupuncture (MAc)
- Master of Acupuncture and Oriental Medicine (MAOM)
- Master of Physician Assistant Studies (MPAS)
- Master of Science in Occupational Therapy (MSOT)
- Master of Science in Nursing—Family Nurse Practitioner Track (MSN)
- Fast Track Bachelor of Science in Dental Hygiene (BS)
- Fast Track Bachelor of Science in Diagnostic Medical Sonography (BS)
- Fast Track Bachelor of Science in Nursing (BSN)
- Doctor of Optometry (OD)
- Doctor of Physical Therapy (DPT)

### **Requirements**

- Candidates for admission for the accelerated Doctor of Pharmacy (PharmD) program who do not have a previously earned Bachelor of Science or Bachelor of Arts degree must have completed or plan to complete an equivalent of 66 semester hours of preprofessional coursework at the college or university level prior to entry in the program. Applicants who have a previously earned BS or BA degree from a U.S.-accredited institution must have completed or plan to complete the equivalent of 39 semester hours of math and science coursework at the college or university level prior to entry in the program. Candidates for transfer admission to the PharmD program also must have a cumulative academic grade point average of at least 2.7 or higher on a 4.0 scale attained at a regionally accredited college or university.
- Candidates for admission to the Master of Acupuncture (MAc) or Master of Acupuncture and Orientation Medicine (MAOM) programs must have a cumulative grade point average of at least 2.75 or higher on a 4.0 scale attained at a regionally accredited college or university. If candidates have completed co-requisite course work, a minimum of grade of C is required for transfer of credits.
- Candidates to the Master of Physician Assistant Studies, Master of Science in Occupational Therapy, Bachelor of Science in Nursing (BSN), and Doctor of Physical Therapy (DPT) programs must have completed a bachelor's degree and prerequisite courses.
- Candidates to the Fast Track Bachelor of Science in Dental Hygiene or Bachelor of Science in Diagnostic Medical Sonography program must have completed a bachelor's degree or specific prerequisite courses with an overall 2.5 GPA on a 4.0 scale. A minimum grade of C is required in all prerequisites.
- Candidates for admission to the Master of Physician Assistant Studies program must have a cumulative and science academic grade point average of at least 3.0 or higher on a 4.0 scale and a prerequisite course grade point average of at least 3.0 or higher on a 4.0 scale attained at a regionally accredited college or university. A minimum of grade of C is required in all prerequisites.
- Candidates to the Master of Science in Nursing program must have an earned BSN (Bachelor of Science in Nursing)

from an accredited college or university and RN license eligibility. A copy of the license must be provided. MSN candidates for admission also must have a cumulative academic grade point average of at least a 3.0 or better on a 4.0 scale.

- Candidates for admission to the Master of Science in Occupational Therapy program must have a cumulative grade point average of at least 3.0 or higher on a 4.0 scale attained at a regionally accredited college or university. A minimum grade of C is required in all prerequisites.
- Candidates for admission to the accelerated Bachelor of Science in Nursing program must have a cumulative academic grade point average of at least 2.5 or higher on a 4.0 scale attained at a regionally accredited college or university. A minimum grade of C is required in all prerequisites.
- Candidates for admission to the Doctor of Optometry program should have a minimum overall grade point average of 3.0, a minimum grade of C in all prerequisite courses, and evidence of familiarity with optometry (e.g., proof of shadowing a practitioner or volunteer work in optometric offices).
- Candidates for admission to the Doctor of Physical Therapy program must have minimum overall and prerequisite GPAs of 3.0, minimum grades of B– in all prerequisite courses, and a minimum of 10 hours of physical therapy exposure/experience in a clinical setting.

Preference is given to candidates who demonstrate

- scores in the 70th percentile or above in each section of the GRE (see Standardized Tests for a list of programs that require the GRE);
- minimum OAT (Optometry Admission Test) score of 300 (see Standardized Tests for a list of programs that require the OAT);
- consistent academic performance in a full-time program with above-average grades in mathematics and sciences without having to withdraw or repeat courses; and
- an ability to articulate clearly, in a written essay, the reasons for their choice of program study at MCPHS.

### **Application**

An application for admission to the PharmD, MPAS, MSOT, OD or DPT program is reviewed when the file is complete. To be considered complete, the applicant's file must contain a completed Pharmacy College Application Service (PharmCAS), Central Application Service for Physician Assistants (CASPA), Occupational Therapist Centralized Application Service (OTCAS), Physical Therapist Centralized Application Service (PTCAS), or Optometry Centralized Application Service (OptomCAS) application including the following documents, which must be submitted directly to PharmCAS ([www.pharmcas.org](http://www.pharmcas.org)), CASPA ([www.caspaonline.org](http://www.caspaonline.org)), OTCAS ([www.otcas.org](http://www.otcas.org)), PTCAS ([www.ptcas.org](http://www.ptcas.org)), or OptomCAS ([www.optomcas.org](http://www.optomcas.org)), respectively:

- Official transcripts from all colleges or universities attended
- One letter of recommendation, except for applicants to the Master of Physician Assistant Studies program which must submit two letters of recommendation (see below)
- A written essay

Additionally, the following documents must be submitted directly to the Admission Office on the campus to which the applicant is applying:

- Official high school transcript(s) or official GED test scores for applicants without a bachelor's degree
- Official reports of standardized test scores, if applicable (see below)

An application for admission to the Fast Track BSN, Fast Track Bachelor of Science in Dental Hygiene, Fast Track Diagnostic Medical Sonography, or Master of Science in Nursing program is reviewed when the file is complete. To be considered complete, the applicant's file must contain all of the following items:

- Completed application that may be found online at [www.mcphs.edu](http://www.mcphs.edu)
- Official transcripts from all colleges or universities attended
- Official reports of standardized test scores, if applicable (see below)

- One letter of recommendation (see below)

### **Transcripts**

Official transcripts reflecting all prerequisite courses must be received in the Admission Office no later than the add/drop deadline of the term of entry. Students failing to submit these documents by this deadline will be dropped from all classes. Transcripts must clearly indicate all credits and grades received. All transcripts must be official and presented in a sealed envelope with the institution's stamp or a college/university's official signature across the closure. Photocopies and hand-carried documents not in a sealed, stamped envelope are not accepted.

### **Standardized Tests**

Applicants for admission are required to submit official reports of standardized test scores as indicated below:

- Candidates for whom English is not the primary spoken language are required to take the TOEFL, ITEP, ACT Compass, or IELTS. This test requirement may be waived on an individual basis for applicants who have attended all four years of high school in the United States (exclusive of ESL courses) or who have an earned degree (bachelor's or higher) from a U.S. college or university (exclusive of ESL courses).
- Candidates who have completed Advanced Placement (AP) and/or College-Level Examination Program (CLEP) examinations are required to submit official score reports (refer to the Prerequisite Course Credit section for additional information).
- Candidates applying for the Physical Therapy program (Worcester) are required to submit official GRE scores.
- Candidates applying to the Optometry program (Worcester) are required to submit official Optometry Admission Test (OAT) scores.
- Official score reports must be sent directly to the Admission Office from the appropriate testing agency.

### **Recommendations**

Candidates for Worcester/Manchester admission should submit one letter of recommendation, except for applicants to the Master of Physician Assistant Studies program which must submit two letters of recommendation. Preferably one letter of recommendation should be from a mathematics or science professor and one letter of recommendation from a work supervisor or academic advisor. Letters of recommendation for the Doctor of Optometry, Doctor of Pharmacy, Doctor of Physical Therapy, or Master of Physician Assistant Studies, or Master of Science in Occupational Therapy should be submitted through OptomCAS, PharmCAS, PTCAS, CASPA, or OTCAS, respectively. Letters of recommendation for all other programs must be sent from the recommender directly to the Admission Office in a sealed envelope with the recommender's signature over the closure. Personal copies, photocopies, or hand-delivered recommendations that are not in individual sealed, stamped/signed envelopes are not acceptable.

### **Interview**

Interviews are required for applicants applying to the Master of Acupuncture programs, Doctor of Pharmacy, Master of Physician Assistant Studies, Doctor of Physical Therapy, and Doctor of Optometry programs. These interviews are by invitation only. Candidates who are invited are contacted directly by the Admission Office.

Although interviews may not be required of candidates applying to other programs, all candidates are encouraged to visit the University to meet with an admission counselor and tour the campus. To arrange an appointment or a tour, interested candidates should call the Manchester Admission Office at 603.314.1701 or the Worcester Admission Office at 508.373.5607.

### **Prerequisite Course Credit**

Candidates who are accepted to the Worcester/Manchester Fast Track BSN, Fast Track Diagnostic Medical Sonography, Fast Track Bachelor of Science in Dental Hygiene, Master of Science in Nursing, accelerated Doctor of Pharmacy (PharmD), Master of Physician Assistant Studies, Master of Science in Occupational Therapy, Doctor of Optometry (OD), or Doctor of Physical Therapy (DPT) program must complete all prerequisite courses required of the program prior to matriculation. Prerequisite course credit is not awarded for life experience or work experience.

### **Transfer of Credit**

Accepted students may receive a limited number of course credits in transfer. Please refer to Residency Requirement in the section *Academic Policies and Procedures*. Transfer credit is not awarded for life experience or work experience.

Transfer credit can be achieved through

- coursework taken prior to enrollment at other regionally accredited, degree-granting colleges and universities
- successful passing of the examinations listed below. Students receiving transfer credit for examinations must also pass the internal MCPHS placement exams during orientation in order to maintain their transfer credit. Transfer credits for examinations is limited to 18 credits overall.
- Advanced Placement (AP) examinations (see below)
- College-Level Examination Program (CLEP) examinations (see below)
- International Baccalaureate (IB) examinations (see below).

The Admission Office conducts a transfer credit evaluation on all transcripts in a candidate's file during the application review process. Accepted transfer students receive a written *transfer credit evaluation* in their acceptance package. Courses considered for transfer credit must meet the following requirements:

- Comparable in breadth and depth to those in the preprofessional phase of the specific program to which the candidate is applying. Comparability is determined by the Admission Office in collaboration with the Office of the Registrar, school deans, program directors, and faculty in related discipline(s).
- Successfully completed with a grade of C (2.0) or better at a regionally accredited college or university (B- or better for DPT).
- Completed within the last 10 years at the time of enrollment. This restriction is limited to courses in the area of mathematics and the natural, physical, and behavioral sciences.
- Submitted with an official transcript by the end of the student's first add/drop period, held the first week of classes. Courses not submitted by that time will not be awarded transfer credit.

#### **AP Transfer Credit**

AP examination results are accepted for transfer credit for selected coursework. Students must achieve a score of 4 or better on an AP examination for transfer credit to be awarded. No AP credit will be awarded for CHE 131 Chemical Principles I, CHE 132 Chemical Principles II, CHE 110 Basic Chemistry I, or CHE 210 Basic Chemistry II. No AP credit will be awarded to students in the Premedical and Health Studies program for BIO 151 Biology I or BIO 152 Biology II. Transfer credit by exam is limited to 18 credits total.

#### **CLEP Transfer Credit**

CLEP results are accepted as transfer credit for selected subject matter. Candidates must receive a score of 50 or better per subject to be awarded CLEP credit. examination(s) must be taken before the student's first semester of enrollment at MCPHS. Those who achieve a score below 50 may not repeat the examination and must take the course. CLEP is an opportunity for students whose coursework is comparable but not otherwise transferable (e.g., exceeds the 10-year limit, earned grade is below C) and others who have not taken coursework but believe they have comparable knowledge. Transfer credit by exam is limited to 18 credits total.

#### **IB Transfer Credit**

IB courses will be accepted for transfer credit for selected coursework. Students must achieve a score of 5 or better on an HL (high-level) IB exam. Transfer credits are limited to exams for English, language, and the arts. Transfer credit by exam is limited to 18 credits total.

#### **AP, CLEP and IB exceptions:**

- Chemistry (AP scores of 4 or better, CLEP scores of 50 or better and IB scores of 5 or better) will be accepted as transfer credit for CHE 131 and CHE 132 for students who matriculate at MCPHS with previous college credit for organic chemistry. Please note Organic Chemistry must be completed in residence at MCPHS.
- Candidates who desire to receive credit based on AP, CLEP and IB examinations must arrange for official test score results to be sent directly from Educational Testing Service (ETS) to the Admission Office in Boston. A complete list of the AP, CLEP and IB examinations and the corresponding MCPHS courses for which transfer of credit is allowed is available upon request through the Admission Office.



### **Dual Credit Programs**

Courses taken for college credit that count toward the high school diploma will receive transfer credit only if the course credit is awarded by a regionally accredited, degree-granting college or university. Students must provide an official college transcript to receive credit.

### **Transfer credit for professional coursework**

This transfer credit is very limited and is awarded on a case-by-case basis through special petition to the dean of the school in which the program is offered. All petitions must be processed through the Admission Office and initiated by August 1 prior to fall enrollment or by January 1 if entering in the spring semester.

Policies that determine the amount of transfer credit awarded and that identify courses accepted in transfer vary among programs. Candidates interested in transfer credit should contact the Admission Office about their particular program of interest.

### **Petition for Additional Transfer Credit**

The Admission Office will work with students during the admission process and up to the start of the first term of entry to evaluate transfer credit requests. After classes start, petitions for additional transfer credit must be submitted with required documentation to the Center for Academic Success and Enrichment no later than the add/drop deadline of the term of entry.

### **Admission (MCPHS Online, a division of the Center for Online Learning and Academic Innovation)**

Applications are accepted for the following programs:

#### **Graduate Programs**

Doctor of Health Sciences (DHS)  
Doctor of Science in Physician Assistant Studies (DScPAS)  
Master of Clinical Research (MCR)  
Master of Healthcare Administration (MHA)  
Master of Health Sciences (MHS)  
Master of Public Health (MPH)  
Master of Patient Safety (MPS)  
Master of Science in Dental Hygiene (MSDH)  
Master of Science in Nursing (MSN) (Family Nurse Practitioner)  
Master of Science in Nursing (MSN) (with a Concentration in Teaching and Learning for Nurses)  
Master of Science in Nursing (MSN) (Psychiatric/Mental Health Nurse Practitioner)  
Master of Science in Regulatory Affairs and Health Policy  
Graduate Certificate in Healthcare Management  
Graduate Certificate in Health Policy  
Graduate Certificate in Medication Safety  
Graduate Certificate in Oral Health Professions Education  
Graduate Certificate in Public Health  
Graduate Certificate in Regulatory Affairs  
Graduate Certificate in Teaching and Learning for Nurses  
Certificate of Advanced Graduate Studies in Nursing (Family Nurse Practitioner Track)  
Certificate of Advanced Graduate Studies in Nursing (Psychiatric/Mental Health Nurse Practitioner)

#### **Certificate Programs**

Advanced Certificate in Magnetic Resonance Imaging  
Legal Nurse Consultant

#### **Postbaccalaureate Programs**

Postbaccalaureate Doctor of Pharmacy Pathway (PharmD)

#### **Bridge Programs**

RN to Master of Science in Nursing (MSN) (Family Nurse Practitioner)  
RN to Master of Science in Nursing (MSN) (MSN with a Concentration in Teaching and Learning for Nurses)

AD to Master of Science in Dental Hygiene (MSDH)

### **Degree Completion Programs**

Bachelor of Science in Dental Hygiene

Bachelor of Science in Health Sciences

RN to Bachelor of Science in Nursing Completion

### **Requirements**

*NOTE: Additional program-specific requirements may be found in the individual program descriptions in this catalog or online at [www.mcphs.edu](http://www.mcphs.edu)*

Candidates for admission to all online graduate and postbaccalaureate programs must have:

- an earned bachelor's degree from an accredited college or university and
- a TOEFL, ITEP, ACT Compass, or IELTS if English is not the candidate's primary spoken language. This test requirement may be waived on an individual basis for applicants who have attended all four years of high school in the United States (exclusive of ESL courses) or who have an earned degree (bachelor's or higher) from a U.S. college or university. (Please refer to the International Applicants section.)

Candidates for admission to all online bridge and bachelor's degree completion programs must have

- an earned associate degree from an accredited college or university and
- a TOEFL, ITEP, ACT Compass, or IELTS if English is not the candidate's primary spoken language. This test requirement may be waived on an individual basis for applicants who have attended all four years of high school in the United States (exclusive of ESL courses) or have an earned degree (bachelor's or higher) from a U.S. college or university. (Please refer to the International Applicants section.)

Preference is given to those who

- have an overall grade point average (GPA) of 3.0 or better (on a 4.0 scale) with consistent performance of 3.0 or better in prerequisite courses and other subjects related to the major field of study; and
- have volunteer, research, or work experience related to the major field of study.

### **Application**

An application for online admission is reviewed when the file is complete. To be considered complete, the applicant's file will likely require all or some of the following:

- Completed application, which may be found online for all programs (<http://www.mcphs.edu/apply>)
- Official reports of TOEFL, ITEP, ACT Compass, or IELTS score, if applicable
- Letter of recommendation from faculty or work/research supervisors, which solidly support the candidate's ability to complete coursework successfully in the chosen discipline
- Official transcripts from all colleges or universities attended, including those outside the United States

The following are requirements for specific program applicants:

- Copy of a valid U.S. pharmacy license is required for Postbaccalaureate Doctor of Pharmacy Pathway program applicants.
- Applicants to all online dental hygiene programs must provide a copy of current license or proof of successful completion of the National Board Dental Hygiene Examination prior to participating in Orientation.
- Candidates to the ADN to Master of Science in Nursing Bridge program must have an earned AD from a state-approved program, 42 approved credits in Arts and Sciences prerequisite courses, a minimum cumulative GPA of 3.0 (on a 4.0 scale) in prelicensure nursing courses, and an RN license to practice nursing. A copy of the license must be provided.
- Candidates to the Master of Science in Nursing (MSN) programs must have an earned BSN (Bachelor of Science in Nursing) from an accredited college or university and RN license eligibility. A copy of the license must be provided. Master of Science in Nursing (MSN) candidates for admission also must have a cumulative academic grade point average of at least a 3.0 or better on a 4.0 scale.

- Candidates for transfer admission into the Bachelor of Science in Health Sciences Completion program must have a cumulative academic grade point average of at least 2.5 or higher on a 4.0 scale. Candidates also must hold an associate's degree in a health sciences field and be currently licensed in an area of healthcare.
- Candidates to the Postbaccalaureate Doctor of Pharmacy program or Master of Public Health programs must submit a written personal statement and resume of all professional work and healthcare related experiences

For the most up-to-date admission requirements, visit <http://www.mcphs.edu>.

### **Transcripts**

Transcripts must clearly indicate all credits and grades received and indicate coursework currently in progress. Degree(s) or diploma(s) that have been received, dates awarded, and major courses of study must be clearly noted.

All transcripts must be official and presented in a sealed envelope with the institution's stamp or a college/university official's signature on the closure. Photocopies and hand-carried documents not in a sealed, stamped envelope are not accepted. Official transcripts must be received no later than the add/drop deadline of the term of entry.

### **Standardized Tests**

Candidates for whom English is not the primary spoken language are required to take the TOEFL, ITEP, ACT Compass, or IELTS. This test requirement may be waived on an individual basis for applicants who have attended all four years of high school in the United States (exclusive of ESL courses) and have scored 480 or higher on the Evidence-Based Reading and Writing section of the SAT, or who have an earned degree (bachelor's or higher) from a U.S. college or university. (Please refer to the International Applicants section.)

### **Recommendations**

Letters of recommendation must be sent from the recommender directly to the Admission Office in a sealed envelope with the recommender's signature over the closure. Personal copies, photocopies, or hand-delivered recommendations that are not in individual sealed, stamped/signed envelopes are not acceptable.

### **Graduate Transfer of Credit**

Transfer credit for graduate-level coursework taken at other accredited institutions may be accepted for transfer toward a student's degree requirements pending approval of the Graduate Council. Only courses that are clearly relevant to the student's program of study and have not been used to fulfill requirements for another degree may be considered for transfer credit. A maximum of 9 semester hours for Master of Science programs may be transferred for coursework in which grades of B or higher have been attained. In some instances, transfer hours received in certain courses taken on a pass/fail basis may be approved by the Graduate Council. It is the responsibility of the student's Graduate Advisory Committee to determine the student's comprehension of the material before such hours are shown on the program of study for credit toward the degree. Research credit from another institution cannot be accepted for transfer credit. Coursework must have been completed not more than two years prior to the date of the request for transfer.

### **Graduate Student Status**

At the time of acceptance, each student is classified as regular, provisional, or nonmatriculating.

#### **Regular Status**

Candidates who have met all requirements for admission to a graduate degree program are admitted as regular students. The transcript must show sufficient and satisfactory undergraduate preparation in the major field, and (if applicable) a TOEFL, ITEP, ACT Compass, or IELTS score. (Please refer to the International Applicants section.)

A graduate student is considered to have full-time status if he or she is

- registered for 9 or more graduate credits, or
- registered for 6 or more graduate credits while appointed as a graduate assistant for 15 to 20 hours per week, or
- registered for PSB 880 Research (at least 1 graduate credit), or
- registered for PSB 895 Graduate Student Extension (Thesis/Dissertation completion, no credit), or
- registered for DHY 895 Graduate Extension of Thesis.

#### **Provisional Status**

The University may, at its discretion, admit candidates into a graduate degree program on a trial basis as provisional

students to ascertain their ability to do graduate work. Provisional students are those who have not met the minimum undergraduate grade point averages. Provisional status also may be applied to students whose credentials do not meet specific program requirements. Provisional students must adhere to regulations established by the Graduate Council and be working toward a degree on a full-time basis.

In order to achieve regular status, the student must complete the equivalent of two academic semesters (at least 9 semester hours) of full-time work with an overall grade point average of 3.0.

At any time during the first year of matriculation following completion of the above criteria, a student may initiate an Approval for Change of Student Status in the Office of Graduate Studies. However, the student's graduate advisor also may initiate the change and should do so when the student has met the required criteria, or may request the change of status before the student has completed 9 semester credits. The change from provisional to regular status must be approved by the Associate Dean of Graduate Studies. No student may remain on provisional status for more than two consecutive semesters. If a student admitted on provisional status fails to meet the conditions stated in the letter of admission, the student may be dismissed from the program.

### **Transfer or Graduate International Applicants**

All applicants, including U.S. citizens and permanent residents, who have academic credentials from countries outside the United States are required to supply additional documents in order to be considered for admission.

#### **Non-U.S. Transcripts**

Candidates must submit official transcripts of coursework taken outside the United States to World Education Services (WES)  
Tel.: 212.966.6311  
[www.wes.org](http://www.wes.org)

A course-by-course evaluation is required for foreign transcript evaluation. Photocopies of transcripts and test scores are not accepted. Official transcripts for courses taken outside the United States also must be submitted directly to the Admission Office in addition to the WES evaluation. A WES evaluation is not required for applicants into the first year of undergraduate programs.

Non-native English speakers are also required to submit a TOEFL, IELTS, ITEP, or the English proficiency test offered on campus at MCPHS.

All official transcripts from U.S. institutions also must be submitted per the application requirements of the program to which a candidate is applying. Please see Admission, Freshman Admission, Transfer Admission, Fast Track, Postbaccalaureate and Graduate Admission for more information.

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## Admission (International Applicants)

### International Freshman Application

An application for first-year admission is reviewed when the file is complete. To be considered complete, the international freshman applicant's file must contain all of the following:

- Completed International Freshman Application ([www.mcphs.edu/internationalapplication](http://www.mcphs.edu/internationalapplication)) or Common Application ([www.commonapp.org](http://www.commonapp.org))
- Official high school transcript(s) from all secondary schools attended; including most recent grades (seniors must include a list of senior courses)
- Official transcripts from colleges or universities attended, if applicable
- Official reports of standardized test scores: SAT I or ACT; TOEFL, ITEP, ACT Compass, or IELTS
- One letter of recommendation (from a mathematics or science teacher or a guidance counselor)

International applicants for first-year admission who have completed their entire secondary education in a U.S. high school are required to submit official test scores from either the SAT I or ACT. Only the highest SAT or ACT scores will be considered as part of the final admission decision. MCPHS requires students to submit all scores from all exams taken. Each time a new score is submitted, the applicant's record will be updated with the new high scores.

### Transcripts

Transcripts must clearly indicate all grades received and indicate coursework currently in progress. All transcripts must be official with the institution's stamp or a college/university official's signature.

All official transcripts from U.S. institutions also must be submitted per the application requirements of the program to which a candidate is applying. Please see Admission, Freshman Admission, Transfer Admission, Fast Track, Postbaccalaureate and Graduate Admission for more information. Final high school transcripts stating graduation from secondary education must be sent directly from the student's high school prior to the start of classes.

### Official Language Proficiency Test Scores

MCPHS requires all students whose first language is not English to submit official TOEFL (Test of English as a Foreign Language), IELTS (International English Language Testing System) or iTEP (International Test of English Proficiency), PTE Academic (Pearson Test of English) test scores. This requirement may be waived on an individual basis for applicants who have attended all four years of high school in the United States (exclusive of ESL courses) and achieved a minimum score of 480 on the Evidence-Based Reading and Writing section of the SAT.

- The minimum required TOEFL score for all MCPHS undergraduate programs is 79 for the Internet-based exam (83 required for Nursing program), 213 for the computer-based exam, or 550 for the paper-based exam.
- The minimum required IELTS score is 6.5 for all undergraduate programs. The CAPPs and all MS & PHD programs in Pharmaceutics, Pharmacology, and Medicinal Chemistry require a higher proficiency level (90 TOEFL or equivalent).
- The minimum required iTEP score is 4.0 for all undergraduate programs.
- The minimum required MCPHS on-campus English Proficiency Exam for all undergraduate programs is 79. The CAPPs and all MS & PHD programs in Pharmaceutics, Pharmacology, and Medicinal Chemistry require a higher proficiency level (90 TOEFL or equivalent).
- MCPHS does not accept scores that are more than two years old.

Official score reports must be sent directly to the Admission Office from the testing agency.

TOEFL exam information may be found on the Internet at [www.ets.org](http://www.ets.org). IELTS exam information may be found at [www.ielts.org](http://www.ielts.org). iTEP exam information may be found at [www.itep.org](http://www.itep.org). PTE Exam information may be found on <http://pearsonpte.com/>.

Students who are academically admissible but who have not reached Language Proficiency may be eligible for the Academic Bridge Program. For more information go to <https://www.mcphs.edu/admission-and-aid/international-applicants/bridge-program>.

### **Advanced Course Credit**

Freshmen may be awarded a limited amount of MCPHS course equivalency credit in transfer for Advanced Placement (AP) courses, International Baccalaureate (IB) courses, and/or college coursework taken during high school. Specific policies that govern MCPHS transfer credit equivalency are explained in detail in the Transfer Admission section of this catalog.

### **International Student Visa Information**

Most non-U.S. citizens require a Form I-20 and visa to study in the United States. (Canadian citizens do not need visas, but do require a Form I-20.) The Form I-20 is the first step in the visa process. A Form I-20 is a government document that informs the United States government that you are eligible for F-1 (Academic Student) status. It certifies that you are or expect to be a bona fide student; that you meet our admission requirements; that you will pursue a full course of study; and that you have the financial capability to study and live in the United States for the duration of your program. The Admission Office at MCPHS issues a Form I-20 to eligible new students after they have been accepted to the University, have submitted their enrollment deposit, and have correctly filled out and submitted the Form I-20 application and supporting materials (copy of valid passport, and financial documents).

Students currently studying at another U.S. institution must submit additional documents to have their SEVIS record transferred before MCPHS can issue a Form I-20. These documents include:

1. Copies of all Form I-20s
2. Copy of your visa
3. Copies of I-94 admission record
4. MCPHS Transfer of Schools Form (gives current institution authorization to transfer the student's Form I-20)

Those students who wish to bring their dependents with them during their course of study must send copies of dependent passports, and proof of funds to support each dependent (\$12,500 annually for a spouse, \$3,600 annually per child). Only a spouse or child can be considered a dependent.

A Form I-20 cannot be issued to any international student studying at MCPHS University's Online campus. Most Online campus programs are offered entirely in a virtual environment and therefore interested international candidates may complete programs (that do not require U.S. licensure or U.S. employment in the profession) from their current country of residence.

All financial documents must be in English, and less than six months old. Your financial support may come from any combination of the following sources in the United States and abroad:

1. Sponsors (parent[s], relative[s], spouse, organization[s], government, etc.). Each of your sponsors is required to complete and sign an Affidavit of Support form. Sponsors also may provide you with support in the form of room and board. When you live with someone and do not have to pay for your room and food, you are considered to have free room and board; however, proof of residency is required.
2. Personal funds that come from your own resources, not those of a sponsor
3. Funds from MCPHS University, such as a scholarship, housing grant, assistantship, or fellowship

As a reminder, F-1 status students are not permitted to work off-campus, but may work a limited amount of hours with authorization. Questions regarding the I-20 process should be directed to the Admission Office at 617.732.2188.

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## Tuition, Room and Board, Fees

### 2017-2018 Academic Program Tuition

Tuition charges for each academic term will be determined using the following criteria:

- Boston undergraduate students enrolled in 12 to 18 credits and graduate students enrolled in 9 to 18 credits for fall and spring semesters will be charged the flat tuition rate for qualifying programs.
- Boston undergraduate students enrolled in fewer than 12 credits for fall and spring semesters and graduate students enrolled in fewer than 9 credits, will be charged at the rate of \$1,160 per credit.
- Boston students enrolled in more than 18 credits for fall or spring semester will be charged \$1,160 per credit in addition to the flat tuition charge.
- Students whose registrations are in excess of the cumulative 69-credit threshold in the Boston PharmD program will be charged at the professional rate.
- Boston students enrolled in summer sessions will be charged at the per-credit rate except for majors in the School of Medical Imaging and Therapeutics, Dental Hygiene BS, and Nursing, which have a flat summer tuition rate for 9 or more credits.
- Worcester and Manchester students enrolled in 9 or more credits per semester will be charged the flat tuition rate except for postbaccalaureate/undergraduate students. Worcester/Manchester postbaccalaureate/undergraduate students enrolled in 12 to 18 credits will be charged the flat tuition rate for fall and spring semesters. For the summer semester, the flat tuition rate for postbaccalaureate/undergraduate programs is for 9 or more credits.
- Students enrolled in all graduate degree and graduate certificate programs at MCPHS Online during the 2017-2018 academic year will pay \$930 per credit hour. Rates per credit hour for online undergraduate and professional programs are noted below. There are no fees for MCPHS Online students in the 2017-2018 academic year.

### MCPHS Online (a division of the Center for Online Learning and Academic Innovation)

Graduate Programs (\$930/credit)

Doctor of Health Sciences (DHS)

Doctor of Science in Physician Assistant Studies (DScPAS)

Master of Clinical Research (MCR)

Master of Healthcare Administration (MHA)

Master of Health Sciences (MHS)

Master of Public Health (MPH)

Master of Patient Safety (MPS)

Master of Science in Dental Hygiene (MSDH)

Master of Science in Nursing (MSN) (Family Nurse Practitioner)

Master of Science in Nursing (MSN) (with a Concentration in Teaching and Learning for Nurses)

Master of Science in Regulatory Affairs and Health Policy (MS)

Graduate Certificate in Healthcare Management

Graduate Certificate in Health Policy

Graduate Certificate in Medication Safety

Graduate Certificate in Health Professions Education

Graduate Certificate in Public Health

Graduate Certificate in Regulatory Affairs

Graduate Certificate in Teaching and Learning for Nurses

Certificate of Advanced Graduate Studies in Nursing (Family Nurse Practitioner Track)

### Postbaccalaureate Programs

Postbaccalaureate Doctor of Pharmacy Pathway (\$930/credit)

### Bridge Programs (\$930/credit)

AD to Master of Science in Dental Hygiene

ADN to Master of Science in Nursing (Concentration in Teaching and Learning for Nurses and Family Nurse Practitioner)

**Degree Completion Programs**

Bachelor of Science in Health Sciences (\$415/credit)  
 Bachelor of Science in Dental Hygiene (\$710/credit)  
 Bachelor of Science in Diagnostic Medical Sonography (\$710/credit)  
 RN to Bachelor of Science in Nursing Completion (\$710/credit)

**Undergraduate Certificate Programs**

Advanced Certificate in Magnetic Resonance Imaging (MRI) (\$415/credit)

Other program-specific tuition policies are noted below.

PROGRAM/DEGREE	FLAT TUITION RATE	PER CREDIT HOUR
<b>Bachelor of Science</b>	\$31,600	\$1,160
Chemistry		
Dental Hygiene*		
Global Healthcare Management		
Health Psychology		
Health Sciences		
Medical and Molecular Biology		
Medical Imaging and Therapeutics*		
Nursing*		
Pharmaceutical and Healthcare Business		
Pharmaceutical Sciences		
Pharmacology/Toxicology		
Premedical and Health Studies		
Public Health		
<i>* These programs include a mandatory summer term with an additional \$14,150 tuition charge.</i>		
<b>Doctor of Pharmacy (PharmD)</b>		
<b>Boston (entry-level program)</b>		
0–69 credits	\$31,600	\$1,160
70+ credits (professional rate)	\$37,200	\$1,160
Clinical rotations (all charged per credit)		\$1,160
<b>Postbaccalaureate Doctor of Pharmacy Pathway</b>		
<b>Worcester/Manchester three-year program</b>	\$50,250 (annual)	\$1,160
<b>Doctor of Optometry (OD)</b>	\$41,550 (annual)	\$1,160
<b>Doctor of Physical Therapy (DPT)</b>	\$46,650 (annual)	\$1,160
<b>Master of Acupuncture (3 year program)</b>	\$27,000 (annual)	\$ 670
<b>Master of Acupuncture (4 year program)</b>		
9-12 credits	\$18,000 (annual)	\$ 670
12+ credits	\$27,000 (annual)	\$ 670
<b>Master of Acupuncture and Oriental Medicine</b>	\$30,000 (annual)	\$ 670
<b>Master of Physician Assistant Studies (MPAS)</b>		
<b>Boston</b>		
Didactic years	\$37,200	\$1,160
Clinical rotations (all charged per credit)		\$1,160
<b>Manchester/Worcester (Postbaccalaureate)</b>	\$45,520 (annual)	\$1,160
<b>Master of Science in Occupational Therapy (MSOT)</b>	\$41,745 (annual)	\$1,160
<b>Master of Science and PhD graduate programs</b>		\$1,160
<b>Certificate programs</b>		
Advanced Medical Imaging (Computed Tomography and Magnetic Resonance Imaging)		\$ 370
Health Policy		\$1,160



Regulatory Affairs	\$1,160
Advanced Pharmacy Practice	\$1,160
Chinese Herbal Medicine	\$ 510
<b>Nonmatriculating students</b>	\$1,160
Course audit fee	\$ 775
<b>Fees</b>	
<b>Acceptance deposit fee</b> (nonrefundable—deposit will be applied toward tuition) Boston, Worcester, Manchester, and Online campuses	\$500
<b>Orientation fee</b> (required of all new students)	\$115
<b>Comprehensive service fee (per term)</b> Incorporates registration, technology, and student activity fees	
<b>Boston campus</b>	
Students enrolled at least half time (greater than 6 credits)	\$495/semester
Students enrolled less than half time (6 or fewer credits)	\$261/semester
<b>Worcester campus</b>	
Students enrolled at least half time (greater than 6 credits)	\$330/semester
Students enrolled less than half time (6 or fewer credits)	\$174/semester
<b>Manchester campus</b>	
Students enrolled at least half time (greater than 6 credits)	\$330/semester
Students enrolled less than half time (6 or fewer credits)	\$174/semester
<b>Dental Hygiene clinical equipment fees</b>	
First-year fast track BS and second-year BS	\$3,110
Second-year fast track BS and third-year BS	\$355
<b>Boston Physician Assistant and PharmD clinical year fee</b>	\$1,620/year
<b>Nursing fee</b>	
Boston (final four semesters)	\$360/semester
Worcester/Manchester (all four semesters)	\$360/semester
<b>Optometry equipment fee</b> (first year)	\$1,153/semester
<b>Optometry equipment fee</b> (second year)	\$1,000/semester
<b>Physical Therapy equipment fee</b> (first year)	\$215
<b>Physical Therapy equipment fee</b> (second year)	\$215
<b>Physician Assistance equipment fee</b> (first year)	
Boston	\$950
Worcester/Manchester	\$835
<b>Introduction to Patient Care III lab fee</b> (Worcester/Manchester first year PharmD)	\$100
<b>Patient Care Seminar lab fee</b> (Worcester/Manchester second-year PharmD)	\$195
<b>Study abroad fee</b>	\$1,000
<b>Graduation fee</b>	\$290
Residence Hall Fees	
<b>Room reservation deposit fee</b> (nonrefundable but will be applied toward residence hall fees)	\$300
<b>Room fee (Boston campus)</b>	
Fennell Building	
Academic-year contract	\$6,425/semester
Summer only	\$2,080/session
Tree House	
Double (academic-year contract)	\$6,575/semester

Single (academic-year contract)	\$7,050/semester
<b>Matricaria Building</b>	
Double (academic-year contract)	\$6,575/semester
Single (academic-year contract)	\$7,050/semester
Double (summer only)	\$2,250/session
Single (summer only)	\$2,370/session
<b>Rodgers Apartments</b>	
Double (academic-year contract)	\$6,575/semester
Single (academic-year contract)	\$7,050/semester
<b>Room fee (Worcester campus)</b>	
<b>Borysek Living and Learning Center, 12-month contract</b>	
1 Bedroom	\$15,750
Type A—2-person	\$14,850
Type A—3-person	\$13,455
Type A—4-person	\$13,455
Type A—6-person	\$9,105
Type B—2-person	\$11,445
Type B—6-person	\$8,355
<b>Lincoln Square</b>	
Renovated—1-person	\$10,500
Renovated—2-person	\$8,175
Standard—1-person	\$8,850
Standard—2-person	\$7,005
<b>50 &amp; 60 Salisbury Street</b>	
Type A—1-bedroom single	\$15,915
Type A—1-bedroom double	\$8,505
Type B—2-bedroom—A single	\$11,055
Type B—2-bedroom—A double	\$8,505
Type B—1-bedroom—B single	\$10,455
<b>72 Salisbury Street</b>	
Type A	\$12,495
Type B	\$12,105
<b>Lancaster Street</b>	
Single apartment	\$13,455
<b>Boston board fee</b>	
Fennell/Treehouse (academic-year contract)	\$1,637/semester
Matricaria/Edwards/Rogers (academic-year contract)	\$850/semester
<b>Room damage deposit</b>	\$200
This deposit is applied toward the student's account and is refundable contingent upon inspection after the room has been vacated.	
<b>Residence hall dues (Boston and Worcester campuses)</b>	\$126
<b>Health Insurance</b>	
Per year	\$2,414

According to the Commonwealth of Massachusetts and MCPHS policy, all Boston, Worcester, Manchester and newton matriculated students (regardless of enrollment) must be covered by a health insurance program. The University makes available a general health insurance program that meets the required standards. This policy is provided by Blue Cross Blue Shield, beginning September 1 and continuing 12 months. Insurance brochures will be available online. Students will be automatically enrolled in this plan unless a waiver is completed and received by Student Financial Services prior to the following waiver deadlines: Fall starts – September 25<sup>th</sup>; Spring starts – January 31<sup>st</sup>; Summer starts – May 31<sup>st</sup>. Students registering late must submit the waiver at that time. The waiver stipulates that personal coverage will be maintained during the enrollment period. If Student Financial Services does not receive the waiver prior to the applicable deadline, the student will be billed for the insurance premium and will remain responsible for payment of said premium. The waiver must be renewed annually.

All international students will be enrolled in the Blue Cross Blue Shield student health insurance plan automatically, with the exception of those international students whose sponsoring institutions have a signed agreement with MCPHS that complies with the University's health insurance waiver requirements, or those international students with a plan for which the health insurance company's primary home office is based in the United States *and* the policy provides coverage comparable to that of the University student health insurance plan. Travel insurance plans and short-term limited duration plans are not comparable. International students who do not fall under one of the two conditions above *must* purchase the University's student health insurance plan.

### **Criminal Background Information Fees**

Any out-of-pocket expenses for criminal or sex offender background checks that may be required by clinical rotation sites, including, without limitation, Criminal Offender Record Information (CORI), Sex Offender Registry Information (SORI) checks, or level 1 background checks, must be paid by the student.

### **Credit Cards**

The University accepts MasterCard, Visa, Discover, and American Express through its online payment provider.

### **Payment Schedule**

Tuition and applicable fees are due and payable on a semester basis, prior to the following deadlines:

Fall semester:	August 1
Spring semester:	December 1
Summer semester:	May 1

Students not adhering to these deadlines may be administratively withdrawn from the University.

For students with outstanding balances, the University reserves the right to refuse

- to release official transcripts,
- to release the diploma certifying graduation,
- to complete board examination certification, or
- to register the student for any additional coursework.

A late payment fee will be assessed for all outstanding balances immediately following the due date.

### **Late Fees**

Late payment fee	\$500
Returned check fee	\$30

If a student has more than two checks returned by the bank, he/she will be required to make all future payments by money order, certified bank check, Discover, MasterCard, Visa, or American Express.

### **Other Estimated Expenses**

In addition to the direct costs of tuition, fees, and room and board, students also should budget for indirect expenses, such as books and supplies, transportation expenses, and other miscellaneous expenses that will vary depending on personal spending habits and choices.

### **Address Changes**

Address change forms are located at the Office of the Registrar. Current students may change their address online using WebAdvisor.

### **Add/Drop Period**

Add/drop period deadline for all programs is specified for each academic term, usually within the first week of classes. During add/drop period, tuition is fully refundable for a course withdrawal. Student accounts are adjusted automatically, and any additional charges must be paid at the time of the transaction. After the add/drop deadline, there will be no tuition refund for individual course withdrawal.

### **University Withdrawal, Leave of Absence and Refund**

The following graduated scale of charges for tuition and residence hall fees is used for purposes of determining refunds for students completely withdrawing from the University during the semester, as well as students taking a Leave of Absence:

PERIOD OF ATTENDANCE	REFUND
Add/drop period	100%
First week after the add/drop period	50%
Second week after the add/drop period	25%
Third week and beyond after the add/drop period	0%

Students who withdraw from the University must contact the Center for Academic Success and Enrichment (CASE) at the time of withdrawal and complete an official form. Students taking a Leave of Absence from the University must contact their Academic Dean to complete the official process. Approved refunds are computed on the basis of the date appearing on the form. *Absence from class without completing the form does not constitute withdrawal or approved Leave of Absence from the University. Students should contact Student Financial Services to determine how this withdrawal affects their financial aid.*

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## Student Financial Services

### Applying for Financial Aid

The Office of Student Financial Services at MCPHS is dedicated to providing comprehensive education financing counseling to students and their families. The staff is available to assist students by answering questions regarding the aid application process, their financial aid award, and their student account.

The University offers a variety of scholarships, loans, and employment opportunities to assist students in meeting the costs of education that cannot be met through the family's own resources. To apply for financial aid for the 2017–18 academic year, the only application required is the 2017-2018 Free Application for Federal Student Aid (FAFSA). The FAFSA may be completed online at [www.fafsa.gov](http://www.fafsa.gov). Students who submitted a 2016-2017 FAFSA should use their FSA ID from the Department of Education to complete the online renewal application.

The Office of Student Financial Services will notify students if additional information or documentation is required to complete their financial aid applications. *Students should not send additional documentation unless requested to do so by Student Financial Services.*

**Notification of awards:** Notification of award letters will be emailed to students once the financial aid file is complete. It is recommended that students complete the FAFSA as soon as they are available on October 1<sup>st</sup> of each year. The student's demonstrated need is recalculated each year, and award amounts are contingent upon the University's level of allocated funds.

### Eligibility for Financial Aid

To be eligible for federal student aid, the student must be

- a citizen, permanent resident, or other eligible noncitizen of the United States;
- registered with the Selective Service System or exempt from registration;
- not in default on any federal student loan or owing a refund on any federal grant;
- not convicted of any federal or state drug offense while receiving federal student aid; and
- in good academic standing.

By completing the application instructions previously outlined, students are automatically considered for all possible funding opportunities, including those offered by the federal government, the state (if eligible), and the University. Please keep in mind that students who meet the March 15 financial aid application deadline are given priority consideration for all available funds, which are limited by allocations and budgets.

### Degree Standing

A student's standing as an undergraduate or graduate student is an important factor in the financial aid application and award process. The FAFSA asks students to identify whether they are in an undergraduate or graduate/professional program. These questions should be answered based on the following criteria:

#### *Undergraduate Students*

Students in the following programs are considered undergraduate students for financial aid purposes:

- Chemistry
- Dental Hygiene
- Diagnostic Medical Sonography
- Health Psychology
- Health Sciences
- Magnetic Resonance Imaging
- Medical and Molecular Biology
- Nuclear Medicine Technology
- Nursing
- Pharmaceutical and Healthcare Business
- Pharmaceutical Sciences

- Pharmacology/Toxicology
- PharmD–Boston campus: Years I–IV
- Premedical and Health Studies
- Public Health
- Radiation Therapy
- Radiography
- Bachelor of Pre-Dental-Dental Hygiene

#### *Graduate Students*

Students in the following programs are considered graduate/professional students for financial aid purposes:

- Master of Physician Assistant Studies (Boston and Manchester/Worcester)
- Master of Public Health
- Master of Regulatory Affairs and Health Policy
- Doctor of Pharmacy (PharmD)–Boston campus: Years V and VI
- Doctor of Pharmacy (PharmD)–Worcester/Manchester campuses: all years (unless advised by Student Financial Services)
- Doctor of Optometry
- Doctor of Physical Therapy
- Master of Science in Dental Hygiene
- Master of Science in Nursing
- Master of Science / PhD in Medicinal Chemistry
- Master of Science / PhD in Pharmaceutical Economics and Policy
- Master of Science / PhD in Pharmaceutics
- Master of Science / PhD in Pharmacology
- Master of Science in Clinical Research
- Master of Science in Occupational Therapy
- Master of Acupuncture
- Master of Acupuncture and Oriental Medicine

Students whose program is not listed here should contact the Office of the Registrar for assistance in identifying their degree standing.

#### **Student Status**

*Doctor of Pharmacy (PharmD)–Boston:* Years I through IV are classified undergraduate, and full-time status is a minimum of 12 semester hours; at the point a PharmD student attains fifth-year status, full-time status is a minimum of 9 semester hours.

*Doctor of Pharmacy (PharmD)–Worcester/Manchester:* Year I is classified undergraduate, and full-time status is a minimum of 12 semester hours; for Years II and III, full-time status is 9 semester hours.

*For all baccalaureate degree programs,* students are classified as undergraduates, and full-time status is a minimum of 12 semester hours.

*For all masters, MS, other doctoral, and PhD programs,* full-time status is a minimum of 9 semester hours.

#### **Dependency Status**

For the 2017-2018 school year (July 1, 2017 through June 30, 2018), the U.S. Department of Education considers the following students to be independent of their parent(s) for purposes of awarding federal financial aid:

- Students who were born before January 1, 1994
- Students who are orphans or wards of the court, or were wards of the court at any point during or after age 13
- Students who are veterans of the U.S. Armed Forces
- Students who have children, if they provide more than half of the support for the child
- Students who have dependents (other than a child or spouse) living with them, if they provide more than half of the support for the dependent

- Students who are married
- Students who will be graduate/professional students in 2017-2018 (see Degree Standing to determine who is considered a graduate/professional student for financial aid purposes)
- Students who are serving in the U.S. Armed Forces or are National Guard or Reserves enlistees for purposes other than state or training
- Students who are or were emancipated minors as determined by a court
- Students who are or were in a legal guardianship on the date the student became an adult, as determined by a court
- Students who are or were considered an unaccompanied youth who was homeless on or after July 1, 2016

As the criteria above indicate, financial independence is not one of the criteria used in determining whether a student is considered dependent or independent. Parental data must be provided on the FAFSA for students who are unable to answer “yes” to any of the listed criteria. The University uses the U.S. Department of Education definition of dependency status for all federal, state, institutional, and private financial aid programs. Students should refer to the FAFSA for specific details on each of the above criteria or contact the Office of Student Financial Services for assistance in determining status.

### **Prior Bachelor’s Degree**

Students who are in possession of a baccalaureate degree prior to their enrollment at the University are not eligible for certain grant programs, including the Federal Pell Grant, Federal Supplemental Educational Opportunity Grant, and state scholarship/grant programs.

### **Massachusetts Residency**

Massachusetts residency is defined as having resided in Massachusetts *for purposes other than attending college for at least one year prior to the beginning of the academic year.* (The beginning of the academic year is defined as July 1 by the Commonwealth.) Parents of dependent students also must have resided in Massachusetts for at least one year prior to the beginning of the academic year. Programs funded by the Commonwealth are limited to undergraduate students without a prior bachelor’s degree.

### **Yellow Ribbon Program**

MCPHS University participates in the Yellow Ribbon Program. Only Veterans entitled to the maximum benefit rate, as determined by service requirements, or their designated transferees may receive this funding. Details on eligibility can be found, here: [https://www.benefits.va.gov/gibill/yellow\\_ribbon.asp](https://www.benefits.va.gov/gibill/yellow_ribbon.asp). In order to receive a full acceptance of a Yellow Ribbon Scholarship, students must submit their Certificate of Eligibility for the Post-9/11 GI Bill from the VA to the University. This benefit is only available for certain MCPHS eligible programs and may not cover all tuition and fees. For additional details or questions regarding eligibility, please email: [sfs@mcphs.edu](mailto:sfs@mcphs.edu).

### **Enrollment Status**

Financial aid awards are based on full-time attendance at the University. Full-time attendance, during the fall semester and the spring semester, is defined as a minimum of 12 credits for undergraduate students and 9 credits for graduate students (see Degree Standing to determine graduate/professional student status for financial aid purposes). Enrollment is reviewed for all students receiving financial aid at the end of the official add/drop period each semester, at which time adjustments to financial aid awards are made.

The following aid programs require full-time enrollment. Less than full-time enrollment will result in complete loss of the award:

- Massachusetts State Funds
- Health Professions Loan
- Most other state grants

The following programs are prorated based on enrollment status. For these programs, undergraduate students will receive a portion of the awarded amount if the student enrolls less than full-time for a given semester:

- Federal Pell Grant
- MCPHS Need-Based Awards
- MCPHS Merit-Based Awards

The following programs require at least half-time enrollment. Less than half-time enrollment will result in complete loss of the award. Half-time enrollment is defined as 6 credits for undergraduate students and 4.5 credits for graduate students:

- Federal PLUS loan
- Federal Stafford Loans (subsidized and unsubsidized)
- Many alternative/private loans

### **Graduate Students**

Graduate students who want to apply for assistantships, scholarships, and fellowships should contact the Associate Dean for Graduate Studies.

### **International Applicants**

Financial aid in the form of grants and loans are generally not available to international students. Students may qualify for a Private Educational Loan with a credit worthy U.S. Citizen Co-signer.

### **Satisfactory Academic Progress**

The University is required to establish minimum standards of satisfactory academic progress (SAP) for students receiving financial aid. The University applies these standards to all federal, state, and institutional funds.

The Office of Student Financial Services will disburse financial aid only to those students who are in good academic standing and are making satisfactory progress toward completion of their degree.

#### **Requirements**

A student is not making satisfactory academic progress if any of the following conditions exist:

- The student's cumulative grade point average (GPA) is below 2.0 at the end of the second year of his/her academic program. Grade point averages are reviewed by the Academic Standing Committee at the end of each semester.
- The student's earned credits (completed with a passing grade) are less than 67% of all attempted credits (coursework), as calculated at the end of each semester.
- The student has exceeded the maximum time frame of attempted credits (150%) of the published length of his/her degree program.

Satisfactory academic progress is reviewed at the end of each semester (payment period).

The following describes how types of coursework are used in the SAP calculation:

- Dropped coursework is not included.
- Failing grades (F) are included in the GPA and in earned and attempted credits.
- Withdrawals are included in earned and attempted credits.
- Repeated coursework is included in the GPA and in earned and attempted credits.
- Pass/fail coursework is included in earned and attempted credits.
- Audit coursework is not included.
- Colleges of the Fenway (COF) coursework is included in the GPA and in earned and attempted credits.
- Transfer coursework (applicable to current program) is included in earned and attempted credits.
- Satisfactory/unsatisfactory coursework (graduate programs only) is included in earned and attempted credits.
- Remedial coursework is not included.

If a student is not making satisfactory academic progress, he or she will be placed on financial aid warning. A student then has one semester to make satisfactory progress. If, after one semester on financial aid warning, a student is not making satisfactory academic progress, the student becomes ineligible for aid.

Students who are ineligible for financial aid because they are not making satisfactory academic progress may appeal to regain eligibility for the subsequent semester to achieve the SAP standards. Students may also continue to take



coursework without the use of financial assistance until eligibility is reinstated by achieving the required SAP standards, subject to the approval of the university and the student's academic department.

Appeals are considered when a student can demonstrate that an extraordinary circumstance existed (for example, student illness, the illness or death of a family member) that prevented him/her from achieving satisfactory academic progress. Students considering an SAP appeal should contact the Office of Student Financial Services to make an appointment to discuss the situation. Appeals are due within two weeks of receipt of notification of academic status; however, an appeal does not exclude the student's payment responsibility associated with the semester's bill due date. Incomplete appeals will not be reviewed. Students with an approved appeal will be placed on financial aid probation and have one semester to achieve satisfactory academic progress. If the student fails to achieve the SAP standards after probation, then he/she will not be eligible for aid until the standards are achieved. If MCPHS determines, based on the appeal, the student will require more than one academic semester to meet progress standards, the University may grant a subsequent appeal; if an academic plan is developed for the student, the student must successfully complete the program in the specified time. Students will be reviewed at the end of one academic semester to determine if they are meeting the requirements of the plan. If the student is meeting the requirement of the academic plan, the student is eligible to receive Title IV funds as long as the student continues to meet those requirements, and is reviewed according to the requirements detailed in the plan. Nonmatriculating students are not eligible for financial aid.

### **Process for Awarding Financial Aid**

In selecting financial aid recipients, primary emphasis is placed upon financial need, availability of funds, the student's academic achievement, and/or satisfactory academic progress.

#### **Determining Need**

To determine a student's need, the University uses the Free Application for Federal Student Aid (FAFSA). The information provided on the FAFSA is used to determine what amount a family can be expected to contribute toward the cost of attending the University (the expected family contribution, or EFC).

The University uses the standard federal formula (known as the federal methodology, or FM) in computing the expected parental and student contributions. Some of the factors used in the analysis include income, assets, family size, and number of family members in college. The student's expected contribution is added to the parental expected contribution to produce the total expected family contribution. The student's financial need is determined by subtracting the expected family contribution from the total cost of attending the University. The cost of attendance includes tuition and fees as well as an allowance for room and board, books and supplies, travel, federal loan fees, and other education-related expenses.

#### **The Financial Aid Package**

After the student's financial need is determined, Student Financial Services will develop a financial aid package for the student. MCPHS utilizes scholarships, loans, and employment opportunities to assist students in meeting as much of their demonstrated financial need as possible. The University makes every effort to distribute the available funds in an equitable fashion in order to assist the greatest number of eligible students. The total amount of aid a student receives may not exceed his or her total cost of attendance.

The University offers a variety of scholarships, which are funded through endowments, gifts, and other monies raised by the University. Scholarships are awarded primarily based on financial need and academic achievement. Students applying for financial aid are automatically considered for each scholarship for which they may qualify. Major programs providing financial aid to students are described in the 2017-2018 MCPHS Student Financial Services handbook.

#### **Private Funding Sources**

In addition to the federal, state, and University programs offered through the University's financial aid application process, students also are encouraged to apply for outside aid to help meet the costs of education. Several free scholarship search services are available through the Internet (please visit the University's website at [www.mcphs.edu](http://www.mcphs.edu) for further information). In addition, most high school and public libraries have resources detailing private scholarship opportunities.

#### **Verification Process**

Each year the federal government and/or MCPHS selects students who have completed the FAFSA for verification. The verification process simply requires the University to review supporting documents to verify the information reported on

the FAFSA for the parent(s), student, and spouse.

Information that may be verified includes adjusted gross income, federal taxes paid, education credits, the number of individuals in the household, the number of individuals in the household who are enrolled at least half time in college, high school completion status, identity / statement of educational purpose, and other information deemed necessary for review.

If you are selected for verification, you will be notified via email of additional documents that you must submit to complete your financial aid file.

The IRS Data Retrieval Tool allows students and parents to access the IRS tax return information needed to complete the FAFSA. Students and parents may transfer the data directly into their FAFSA if certain criteria are met. MCPHS encourages all students and families to utilize the IRS data retrieval process, which is the preferred method for FAFSA filers to report federal tax information. If the IRS data retrieval process is not used on a FAFSA transaction, then the student and/or parent may need to obtain federal tax return transcripts from the IRS. Students and/or parents may complete online requests for a federal tax return transcript at [www.irs.gov](http://www.irs.gov). Online requests are considered the quickest approach to obtain a federal tax return transcript. The request may take up to 10 days to fulfill.

MCPHS will not disburse federal, state, and institutional financial aid to a student's account until the student completes the verification process. Failure to complete the verification process will result in cancellation of federal financial aid. The University reserves the right to verify any file that appears to contain discrepant information. In addition to verifying a student's application data, MCPHS is required by federal law to resolve any conflicts of information that become evident as part of the application review process. All discrepancies must be resolved prior to disbursement of Title IV aid to a student's account.

## **Additional Student Financial Services**

### **Appeal Process**

Students and parents may appeal their financial aid award if there is a significant and unforeseen change in circumstances or if there is information that was not provided on the original application materials. For additional details regarding the financial aid appeal process, refer to the 2017-2018 MCPHS Student Financial Services handbook. All appeals must be in writing and must include documentation of the reasons for requesting the reevaluation of the financial aid package as well as complete tax transcripts and W-2s (if necessary) for the student and parent (if the student is a dependent).

### **Applying Financial Aid to Your Student Account**

If all necessary paperwork has been submitted by the student, financial aid will be applied to a student's account after add/drop and after attendance has been verified by the Registrar's office each semester. Failure to submit the necessary paperwork will result in the delay and possible cancellation of the student's financial aid.

### **Refunds**

Students will automatically receive a refund for any excess funds (credit balance) on their student account each semester. Refunds are available as soon as administratively possible following verification of student enrollment and disbursement of financial aid funds. *Students should be sure to make arrangements each semester for the purchase of books and payment of rent (if housed off campus), since refunds are not available during the first few weeks of each academic term. It is highly recommended for ease in refund processing that students sign up for direct deposit through webadvisor.*

### **Late Payment Fees**

Students with outstanding student account balances will be charged a late payment fee. To avoid late payment fees, students must ensure that all financial obligations (including tuition, fees, health insurance fees, and housing charges) will be met by the dates specified in the Tuition section of this catalog.

Students receiving financial aid and/or private alternative loans must ensure that proper documentation is completed and aid and/or loan funds are received by the University *on or before the payment due date* in order to avoid a late fee.

Students participating in a payment plan must ensure that the payment plan budget for each term will cover all outstanding charges. Payment plan budgets that will not result in a paid-in-full status by the end of the payment term will

be assessed a late payment fee.

For students with outstanding balances, the University reserves the right to *refuse*

- to release official transcripts,
- to release the diploma certifying graduation,
- to complete board examination certification, or
- to register the student for any other coursework
- to access campus wide systems such as blackboard, webadvisor and University E-mail
- to view final grades

Students wishing to appeal late payment fees are required to do the following:

- Pay the student account balance due in full (less the late payment fee).
- Submit the following in writing to the Office of Student Financial Services:
  - Student name
  - Student ID number
  - The reason(s) or documentation that contributed to the circumstances of the late payment fee

The student will be notified of the decision concerning the appeal of a late payment fee.

### **Student Account Statements**

Student account statements are sent electronically on a monthly basis. Statements include all recent account activity, including charges, payments, disbursements of financial aid and loan funds, and account adjustments. Balances due must be paid by the payment due date to avoid late payment fees. Students have the ability to view real-time charges and updates through the Student Account Center as well as grant shared access to their account.

The University accepts electronic funds transfer, MasterCard, Discover, Visa, and American Express.

### **Work-Study**

Students working in a Federal Work-Study Program position are paid through a weekly paycheck based on hours actually worked. These funds are not credited to the student's account.

### **Withdrawal and Approved Leave of Absence from the University**

Students withdrawing or taking a leave of absence from the University who have been determined to be eligible for federal financial aid are subject to certain provisions surrounding the calculation of their federal aid eligibility. A federally determined formula is used to calculate the amount of federal aid a student is eligible to receive based on the portion of the semester completed before the withdrawal. If a student received more assistance than was earned, the unearned funds must be returned to the Department of Education.

The amount of aid a student is eligible to receive is based on the percentage of the semester that was completed prior to the initiation of the withdrawal process. For example, if 40% of the semester has passed when the withdrawal process is initiated, then 40% of the federal aid originally scheduled for disbursement has been earned. Once more than 60% of the semester has been completed, a student is considered to have earned 100% of the federal aid he or she was eligible to receive.

If it is determined that a student received more federal aid than was earned, MCPHS will return the unearned funds based on a formula comparing institutional charges with the unearned percentage of funds. If MCPHS must return a portion of the funds, the removal of those funds from the student's account will create a balance due, which the student will be required to pay.

To find out how a withdrawal during the first 60% of the semester may affect a financial aid award, students should make an appointment to discuss the situation with their Student Financial Services representative.

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## Academic Policies and Procedures

### Introduction

General University policies and procedures are stated below. Students should note that within individual programs and schools there might be additional requirements or variations of these policies. The ultimate responsibility for complying with academic policies and fulfilling graduation requirements rests with the individual student.

### Academic Honesty

The University presumes that students will assume personal responsibility and maintain personal integrity in all aspects of their education. Dishonest actions in the execution of an examination, report, academic assignment, and/or academic coursework requirement, including clinical rotations, constitute violations of the MCPHS Academic Honesty Policy. Such violations are subject to specific academic sanctions, as well as to disciplinary sanctions (i.e., disciplinary warning, probation, deferred suspension, suspension, and/or expulsion).

### Academic Honesty and Student Discipline Procedures

#### Academic violations or offenses include the following:

- 1.01 Receiving assistance, or attempting to receive assistance, not authorized by an instructor in the preparation of any assignment, laboratory exercise, report, or examination submitted as a requirement for an academic course or rotation.
- 1.02 Knowingly giving unauthorized assistance, or attempting to give unauthorized assistance, to another student in the preparation of any assignment, laboratory exercise, report, or examination submitted as a requirement for an academic course or rotation.
- 1.03 Plagiarism: Submitting another person's work (including words, images, and ideas) as one's own without the proper acknowledgment of source, or use of the words or ideas of another without crediting the source of those words or ideas.  
  
Also, submitting the same work for assignments in more than one class (copying from oneself) without permission from the instructor and/or appropriate citation, in the same semester or subsequent semesters.
- 1.04 Obtaining or attempting to engage another person to take one's own examination.
- 1.05 Selling, giving, lending, or otherwise furnishing any material that can be shown to contain the questions or answers to any examination scheduled to be given at any subsequent date in any course of study offered by the University.
- 1.06 Taking, or attempting to take, steal, or otherwise procure in any unauthorized manner any material pertaining to the conduct of a class, including examinations.
- 1.07 Falsifying or presenting fictional patient information as real to fulfill requirements for work assigned by individual faculty members or clinical preceptors.
- 1.08 Signing in another student or requesting to be signed in by another student on a course attendance sheet; or falsely recording another student's attendance (as with the use of "clicker").
- 1.09 Altering, or attempting to alter grades or information on any assignment, laboratory exercise, report, exam, or previously completed examination as a requirement for an academic course or rotation.

#### Implementation of the Academic Honesty Policy

1. The Dean of Students or designee will review the Academic Honesty Policy, issues of dishonesty, and consequences of violating the Academic Honesty Policy during new student orientation.
2. The Academic Honesty Policy will be provided by the Office of Student Affairs to all members of the MCPHS community online through the MCPHS student handbook. All entering MCPHS students are expected to acknowledge they have read the Academic Honesty Policy via an online process coordinated by the Office of Student Affairs. Refusal to do so may result in more severe sanctions should a student be found responsible for an academic honesty violation.
3. In specific testing and/or evaluation situations, students may be required to present their MCPHS ID cards to verify identity.

4. Each instructor is responsible for informing students of the standards of behavior expected of students in the classroom, laboratory, and clinical site and for consistently enforcing such standards.
5. Faculty may require that students sign an academic honesty statement for exam and written graded assignments. The statement will read as follows:

### **Academic Honesty Statement**

I pledge that I have neither given nor received unauthorized aid, and will not give or receive unauthorized aid on any examination, paper and/or assignment.

Student Name (printed) \_\_\_\_\_

Student Signature: \_\_\_\_\_ ID Number: \_\_\_\_\_

### **Plagiarism Prevention Service**

Students are expected to abide by the University's Academic Honesty Policy as outlined. Plagiarism (see Offense 1.03 above) is considered a violation of this policy. In order to deter plagiarism and ensure appropriate use of resources in student research and learning, the University subscribes to a plagiarism prevention service. Faculty may require students to submit their written work electronically through this plagiarism prevention service in order to verify that when ideas of others are used they are cited appropriately. The course syllabus identifies student work that must be submitted electronically for such review.

### **Academic Honesty and Exams**

The school deans are responsible for the proper conduct of examinations in their schools and will assign faculty and graduate assistants to serve as proctors for examinations. Support staff, under the supervision of the school deans, are responsible for maintaining confidentiality in the production and reproduction of examinations.

Instructors are expected to assist in the promotion of academic honesty through the following practices:

- Access to and use of "recycled" exams should be limited.
- Students will be required to leave all unnecessary materials (i.e., all backpacks, notebooks, texts, calculators, PDAs, cellular phones, etc.) away from their seat assignment—only required materials will be allowed at the seat assignment.
- All exams are to be proctored.
- In specific evaluation situations, students may be asked to show instructors/proctors materials being used during the exam (PDAs, cellular phones, etc.) to ensure proper use of the allowed material and adherence to the honesty policy.

Instructors are encouraged to utilize the following exam seating practices whenever possible:

- Students entering an exam room will be randomly seated.
- Seating assignments will be spaced throughout the exam room, allowing for adequate spaces between students.

The instructor should follow the University Policy on Academic Honesty when giving examinations and ensure that proctors are present at all examinations in compliance with this policy. At least one (1) course coordinator for each course should be present during an examination to answer questions or to clarify issues that may arise. Exceptions to this rule must be approved by the school dean.

Students are expected to report violations of the Academic Honesty Policy to the instructor and/or the department/division chair or program director of the academic department for further investigation.

### **Student Discipline Procedures for Academic Honesty Policy Violations**

Preliminary procedure: The University maintains a policy of open communication among all members of the University community so that any misunderstanding can be minimized and any conflicts can be expeditiously resolved between the parties involved. Hence, the first step in attempting to resolve an alleged student violation shall ordinarily be a meeting between the faculty member and the accused student(s).

The faculty member will schedule a meeting with the student to attempt to come to a resolution. The meeting should be scheduled within seven business days of the faculty member's knowledge of the alleged academic dishonesty incident(s).

The faculty member will give the student a copy of the MCPHS Academic Honesty Policy and Student Discipline Procedures and offer the Office of Student Affairs as a resource to discuss student rights and responsibilities.

The faculty member will provide the accused student with the information the faculty member has regarding the alleged incident and will provide the accused student(s) the opportunity to respond to the presented information. After listening to the student response, the faculty member can do one of the following:

Determine academic dishonesty did not occur and not pursue the incident further

OR

Determine academic dishonesty did occur and discuss the academic sanction the faculty member will assign (i.e., repeat of the assignment, grade reduction, failure for the assignment or exam, failure for the course). If consequences regarding academic dishonesty are listed in the course syllabus, faculty sanctions must follow information as indicated in the syllabus.

The faculty member will provide the student with the option to meet with a staff member in the Office of Student Affairs to review the student's rights and responsibilities prior to the faculty member's finalizing his/her decision.

If the student accepts the faculty-assigned consequence, the case is closed provided the student has no prior offenses of the academic honesty policy or the violation is so severe that a hearing is deemed necessary by the Office of Student Affairs. *NOTE: There is no option for appeal in a closed case.*

Parties (faculty and student) unable to agree shall appeal the case to the academic school dean (or designee). The academic school dean (or designee) can decide to meet individually with the student and faculty member or to conduct a three-way meeting with the student and faculty member, to be scheduled within seven class days of the initial faculty/student meeting. The academic dean (or designee) will meet with the involved parties and review the case. Subsequent to case review, the academic dean (or designee) can do one of the following:

Determine academic dishonesty did not occur and not pursue the incident further

OR

Determine academic dishonesty did occur and discuss the academic sanction he/she will assign (i.e., repeat of the assignment, grade reduction, failure for the assignment or exam, failure for the course). If consequences regarding academic dishonesty are listed in the course syllabus, academic sanctions must follow information as indicated in the syllabus.

Appellate decisions are final.

Students should be advised that, regardless of the academic resolution, all academic dishonesty violations will be reported to and recorded with the Office of Student Affairs. Subsequent to a student's accepting responsibility in discussion with the course faculty member or academic dean (or designee), the Dean of Students or designee will send a letter to the student, faculty member, and academic dean outlining the decisions reached among the involved parties (e.g., loss of points, change of grade, failure of exam, etc.), along with notification of a student conduct sanction, the minimum being disciplinary warning. Should the Dean of Students, or designee, determine that further action is required, based upon the disciplinary history of the student or severity of the violation, then the matter will be processed as outlined in the student discipline system in a hearing, as appropriate.

All cases involving academic dishonesty will be recorded with the Office of Student Affairs, regardless of the resolution process utilized. Faculty and academic deans report, consult, and work collaboratively with the Office of Student Affairs regarding each alleged academic dishonesty incident. Complex alleged academic dishonesty incidents that require extensive fact finding or involve a conflict of interest (i.e., the academic dean is the instructor for the course in which academic dishonesty is alleged) may be referred by the faculty member or academic dean immediately to the Office of Student Affairs for review and disciplinary procedures as outlined in the student discipline system.

All cases involving academic dishonesty will be recorded with the Dean of Students' office, regardless of the resolution process utilized. Faculty and academic deans report, consult, and work collaboratively with the Dean of Students' office regarding each alleged academic dishonesty incident. Complex alleged academic dishonesty incidents that require extensive fact finding or involve a conflict of interest (i.e., the academic dean is the instructor for the course in which academic dishonesty is alleged) may be referred by the faculty member or academic dean immediately to the Dean of Students' office for review and disciplinary procedures as outlined in the student discipline system.

*NOTE: A student may continue attending class during the resolution process for an academic dishonesty incident. When a final decision is made that a student has failed a course due to academic dishonesty and no appeal option exists, the student must discontinue attending the class in which the academic dishonesty incident occurred.*

### **Sanctions for Academic Dishonesty**

In determining a sanction, the responsible student's present demeanor and past disciplinary history, the nature of the offense, the severity of any resulting damage, injury or harm, and other factors may be considered. Students whose behavior is contrary to the Code of Conduct are subject to the maximum sanction of dismissal from the University or any lesser sanction for any act of misconduct. Academic dishonesty sanctions include, but are not limited, to information below.

Faculty and the academic dean (or designee) may assign the sanctions of repeating an assignment, receiving a score of zero on an exam/assignment, receiving a lowered assignment/exam/course grade, or failing the course. The Dean of Students (or designee) assigns the sanctions of warning, disciplinary probation, deferred suspension, suspension, or expulsion in accordance with the University Academic Honesty Policy and the University student discipline system. The Dean of Students (or designee) communicates academic honesty offenses, academic sanctions, and disciplinary sanctions to the student in writing subsequent to a case's being closed.

Students are subject to academic sanctions from College of the Fenway faculty should they commit academic violations while taking a COF course, and such cases are referred to the Office of Student Affairs. MCPHS would address such offenses under the MCPHS Academic Honesty Policy and Student Discipline Procedures.

### **MCPHS Documented Student Absence Request Policy and Procedure**

Absences from classes and coursework can be detrimental to students' academic progress. In an effort to help students in certain circumstances, a documented absence may be granted as a reasonable allowance; however, a documented absence does not always excuse a student from making up academic work. Each course syllabus and academic program's policy and procedure manual outline students' responsibilities related to class absences. Students are expected to abide by these instructions; students who fail to do so may be ineligible to receive an excused documented absence, regardless of reason for the absence.

The procedure for seeking an approved documented absence and consideration for making up exams, coursework, clinical/rotation hours, or any other academic work for credit is outlined below:

#### **Procedure for Obtaining a Documented Absence**

##### **1. Notification**

In the case of an absence (anticipated or urgent), every effort must be made to notify course faculty or preceptor *and* the Student Affairs office. Email notification is preferred. Regardless of the situation, a student must notify his/her course faculty or preceptor of the absence, and present supporting documentation within 5 business days from the first date of absence to the office that handles such requests on each campus. Notification of clinical preceptors must comply with expectations outlined in clinical rotation syllabi and handbooks. For online courses, refer to course syllabus and the attendance requirements outlined by the faculty member.

Anticipated absences include religious observance and immutable appointments (i.e., jury duty, court date, medical appointment, University-related conference, professional development). It is recommended that all requests for anticipated absences be made 10 days in advance of the absence date(s).

Exceptions to the 5-business-day notification period are rare and can be approved only by the Dean of Students on a student's respective campus.

## **2. Submitting Documented Absence Request Form**

Students must submit a completed Documented Absence Request Form with valid documentation via this link: <http://tinyurl.com/mcphs-absence>. See Required Documentation and/or Meeting section below.

Students with three or more documented absences in one semester in a single course will be required to meet with the Dean of Students or designee on their respective campus.

## **3. Notification**

The Student Affairs office will render a decision within two to three business days (or longer), and accordingly, the student and the course faculty will be notified of the decision via email.

## **4. Missed Work and Make-Up Process**

Once a documented absence has been approved, it is the responsibility of the student to contact the instructor within 24 hours to arrange make-up coursework. Course instructors will be asked to make reasonable arrangements (consistent with the syllabus) to assist the student in completing requirements of the missed coursework or exam. The following information is imperative to making up missed work and/or exam(s):

- It is expected that any missed work or assignments be submitted appropriately; however, the maximum make-up period shall be within seven business days of return or at the discretion of the faculty member.
- Students who anticipate an absence from clinical or lab experiences must make every effort to identify a classmate to switch hours with, in consultation with the student's clinical coordinator (not applicable for all academic programs).
- Students may be required to repeat a rotation due to the absence.
- Students may be required to take an exam before the absence or at the discretion of the faculty member.
- Students are responsible for obtaining class/lab notes for missed material.
- While a student may be granted an excused absence, some absences may not justify make-up work because faculty may not be able to replicate the experience. In such cases, this policy should be in the syllabus and the determination made by the school dean in collaboration with the instructor.
- If an acceptable agreement between the student and professor(s) cannot be reached regarding completion of missed work, the school dean or designee will serve as arbitrator.

## **Required Documentation and/or Meeting**

- Bereavement: Documentation is needed for a student absence lasting three days or fewer for the death of an immediate family member. A copy of the obituary, funeral service card, or death certificate is required.
  - A meeting with the Student Affairs office on your campus is required for an excused absence request for bereavement lasting more than three days or where travel to another country or U.S. region is required.
  - Immediate family is defined as grandparent, parent/guardian, sibling, child, or spouse/partner.
- Religious observance:\* Documentation is not needed if the holy day is listed in the interfaith calendar.
  - A meeting with the Dean of Students or designee on a student's respective campus is required for an excused absence request for religious observance for a holy day that is not listed as a holy day in the interfaith calendar.
- Family emergency: Documentation is needed for a student absence lasting three days or fewer for an immediate family member's hospitalization or other emergency.
  - A meeting with the Student Affairs office on your campus is required for an absence lasting more than three days that is related to a family emergency.
  - Immediate family is defined as parent/guardian, sibling, child, or spouse/partner.



- Illness / medical reason: Student absence related to illness or medical care requires documentation from a healthcare provider.
- Documentation includes a letter or information on letterhead from the office of a physician or medical clinic. If the student requires recovery time these dates should be included in the documentation. If a student has a contagious illness (e.g., H1N1), or has surgery, the University may require the student to present a second medical notice clearing him/her to return to campus and/or a clinical site.
- Immutable appointment: Student absence lasting three days or fewer for jury duty, court date related to personal safety/well-being, or University-related conference (i.e., career days, ACPE professional development).
- Documented absences for a period of more than three days require a meeting with the Student Affairs office on your campus.
- For a student who has three or more documented absences in one semester for a single course or clinical experience, a meeting with the Student Affairs office on your campus is required.
- Documented absences for circumstances not covered above should be directed to the Student Affairs office on your campus.

\*Religious observance:

With respect to students, Massachusetts General Laws Chapter 151C, section 2B, reads in relevant part as follows: *Any student in an educational or vocational training institution ... who is unable, because of his religious beliefs, to attend classes or to participate in any examination, study or work requirement on a particular day shall be excused from any such examination or study or work requirement, and shall be provided with an opportunity to make up such examination, study or work requirement which he may have missed because of such absence on any particular day; provided, however, that such make-up examination or work shall not create an unreasonable burden upon such school. No fees of any kind shall be charged by the institution for making available to the said student such opportunity. No adverse or prejudicial effects shall result to any student because of his availing himself of the provisions of this section.*

**Documented absences are not granted for the following (please note this is not an inclusive list):**

- Plane reservations after the start of the term or during midterm or final exam periods
- Weather conditions (with special exceptions)
- Transportation/commuter issues
- Poor time management
- Travel for a holiday or appointment

### **Instructor Absence**

If a faculty member is unable to conduct classes as scheduled, every effort will be made to offer substitute instruction for the students. Planned absences due to professional commitments should be approved by the school dean well in advance so that suitable coverage or alternative assignments may be arranged. The school dean should be informed as soon as possible of any unplanned absences due to illness or personal emergency so that students can be notified in a timely manner. Classes can be canceled only with the approval of the school dean or, in his or her absence, the Vice President for Academic Affairs.

### **Academic Progress**

The academic standing of each student will be reviewed at the end of each academic semester at each campus, including summer sessions. All students will be reviewed by the school in which they are enrolled. Summer sessions are reviewed to evaluate student academic progress.

Each school has specific academic progress standards (e.g., minimum grade point average requirements, minimum grades for required courses) that must be met in order to progress within the degree program (see Good Academic Standing). Students who fail to meet the minimum standards required for academic progress will be notified of the decision by the school's Academic Standing Committee (ASC).

### **Academic Warning**

Faculty members submit academic warnings at the mid-point of each semester via WebAdvisor which are then processed by designated assistant deans/directors of the Center for Academic Success and Enrichment (CASE) on each campus.

Undergraduate students receiving academic warnings will be notified by email message to his or her official MCPHS email account. Undergraduate students receiving two or more academic warnings will also receive a notification letter from their school dean with additional instructions.

Students in graduate programs who receive academic warnings will be notified by their academic departments/programs by email to their official MCPHS emails and provided additional instructions.

Boston: Each student placed on academic warning will be encouraged to attend academic skill-building workshops and to meet with their student success coach in the Center for Academic Success and Enrichment. These actions may be required of students who receive more than one academic warning (as stipulated in a letter from their school dean).

Worcester/Manchester: Each student placed on academic warning will be required (as stipulated in his or her notification letter) to meet with a graduate enrichment coach in the Center for Academic Success and Enrichment (Worcester/Manchester) and meet with a faculty advisor.

There is no appeal process associated with academic warning.

### **Academic Probation**

Each student's academic status will be reviewed at the end of each academic semester, and each student's professional (if applicable) and cumulative grade point averages (GPAs) will be determined. A student with a professional and/or cumulative GPA below the requirement for his or her major shall be placed on academic probation and receive a letter from their Academic Dean or Program Director. This written notice of probationary status also will include a notice that failure to reach the required GPA by the end of the designated academic semester may result in dismissal from the University.

Each student on probation is required to meet with a designated member of the Center for Academic Success and Enrichment (CASE) on their home campus by the end of the second week of the probationary semester to develop and agree to—in writing—an academic improvement plan (AIP). The AIP may include mandatory study/advising sessions, mandatory class attendance, or other stipulations aimed at encouraging and supporting student success.

Probationary status may remain in effect for up to two consecutive academic terms, defined as two semesters or two clinical clerkships, depending upon the student's year and/or campus of enrollment. It is expected that students on probation make progress toward good academic standing at the conclusion of each academic term. Failure to demonstrate improvement at the end of the first probationary period may result in dismissal. At the conclusion of the second consecutive academic term, the student must have achieved good academic standing; failure to do so may result in dismissal. Upon completion of each academic term, a student on academic probation will receive a notice of his or her current standing in writing from the school dean.

Individual programs may have specific grade point requirements that students must meet in order to enter the professional years and associated clerkships of their programs. These program-specific requirements preempt the probation process for the preprofessional years. For information about program-specific requirements for the professional years, students should contact the appropriate school dean and refer to the Good Academic Standing chart. There is no appeals process associated with academic probation.

### **Academic Dismissal**

Each student's academic status will be reviewed at the end of each academic semester by the appropriate ASC. Each student's professional (if applicable) and cumulative GPAs will be determined. If a student's GPA falls below the level of good academic standing, as defined by the program requirements, for two consecutive academic semesters, the ASC will submit a recommendation for dismissal from the program to the appropriate school dean.

Courses may be attempted no more than two times. Grades of F and W are considered attempts for courses in which D

or better is the passing grade. For those courses in which the passing grade is higher (e.g., C–, C), grades below the passing grade and W are all considered attempts. Failure to complete any course within these limits will result in an ASC recommendation for dismissal from the degree program to the school dean.

Individual programs may have specific grade point requirements that students must meet in order to enter the professional years and associated clerkships of their programs. These program-specific requirements preempt the dismissal process for the preprofessional years, and students failing to meet them may be subject to dismissal. For information about program-specific requirements for the professional years, students should contact the appropriate school dean and refer to the Good Academic Standing chart.

A student recommended for dismissal may be continued by the school dean with or without conditions. If the school dean accepts the dismissal recommendation, the student will receive written notice of dismissal from the school dean. The notice will include procedures for appeal and will direct students to meet with an advisor to discuss a potential change of program. All change of programs must be finalized by the end of the add/drop period for the next enrolled semester. If students do not successfully appeal or meet the change of program deadline they will be administratively withdrawn from the university. Administrative withdrawal letters will include notice of loss of housing, financial aid, and registration. The following offices/individuals will be notified: Center for Academic Success and Enrichment, Dean of Students, Office of the Registrar, Residence Life Office, Information Services, Public Safety, Student Financial Services and Immigration Services/International Academic Services (if applicable). Students will be required to turn in their University ID and vacate University residence halls.

A student whose conduct is unsatisfactory may be dismissed from the University at any time. In such a case, tuition and fees paid for the current academic semester will not be refunded.

#### **Reinstatement of Dismissed Students**

To be considered for readmission following dismissal by a school dean, the student must petition the Provost's Office, in writing, by the date designated in the appeals procedure guidelines that accompany the dismissal letter. The Provost's Office may uphold the dismissal, readmit the student, or readmit the student with conditions. If readmitted, the student's academic performance will be reviewed at the end of one academic semester. If the student has failed to meet the stipulated conditions or, in the absence of stipulated conditions, failed to meet the minimum GPA required for good academic standing in that student's program, the student will be dismissed from the University.

A student who has been dismissed twice is eligible for readmission to the same degree program only if (1) the student has been away from the University for a period of 12 months, and (2) the student has demonstrated academic success through coursework taken at another institution. If these conditions are met, the student may apply for readmission to the school dean. Readmission also will depend upon the availability of space in the program.

A student may apply for readmission to another degree program after the first or second dismissal. The student must meet with an academic advisor in the Center for Academic Success and Enrichment to initiate the internal transfer process described in the Change of Program section below. All materials required for this process must be finalized by the end of the add/drop period for the next enrolled semester. All of the program's internal transfer requirements (available from the school dean's office) must be met.

#### **Auditing Courses—No Credit**

A student may audit a course with the consent of the instructor. The student must register for the course through the Office of the Registrar prior to the add/drop deadline and pay two-thirds of the tuition. The student does not earn academic credit for audited courses. Students cannot audit courses that are part of their required curriculum.

#### **Change of Program (Boston)**

A student requesting an internal change of program must schedule an appointment with the Center for Academic Success and Enrichment (CASE) to discuss with an advisor the decision to apply for a change of program. Prior to this meeting, the student must have a printed copy (from WebAdvisor) of the most recent program evaluation and a program evaluation for the new major. These audits should be brought to the meeting with the advisor. Students must initiate their request for additional transfer credit for coursework completed prior to matriculation during the meeting with the advisor.

When a new major has been chosen, the student may be required to schedule an appointment with the director of the

program to which he or she wishes to transfer. The CASE (Boston) will submit to the program director a request for change of student status form, the program evaluation, and a “what-if” program evaluation, as well as a letter stating the reasons for transfer. All program internal transfer requirements (available from the school dean’s office) must be met. If the student is accepted into the new program in good standing, written notification of acceptance (in the form of a signed Request for Change of Student Status form approved by the school dean) is sufficient notification. If the student is accepted into the new program on probation, a letter notifying the student of his or her probationary status will be attached to the Request for Change of Student Status form and sent to the school dean for approval and signature. Once accepted, the program director will determine, if applicable, the new year of graduation (YOG). The student, the advisor, the program director, and the appropriate school dean must sign the Request for Change of Student Status form. All written correspondence regarding the decision must be sent to the student, program director, Office of the Registrar, Student Financial Services, CASE, and school dean(s). If students have outstanding coursework taken external to MCPHS, the official transcripts must be received in the Office of the Registrar no later than the add/drop deadline for the term of entry. Final acceptance into the new program will remain pending until transfer coursework has been approved.

In order to register for classes in the new program, the completed and approved request for change of student status form must be on file in the Office of the Registrar and the CASE. Once admitted to a new program, a student must adhere to the program and GPA requirements commensurate with his or her new YOG.

Depending on the intended new program, first-year students may change majors only after grades have been reviewed following the fall or spring semester or, in the case of the PharmD, the spring semester of the second year. Students may begin the change-of-major process early, but they must meet with an advisor in the CASE to review the change-of-major procedures, petition, and timeline, and then meet again at the final stage of the process.

If a student moves from the Worcester/Manchester PharmD program to any program in Boston, he or she will receive transfer credit for any courses that would be applied to the degree program, and the secondary degree would begin with a new degree audit. In this case, the residency requirement would be waived. Students cannot transfer from the Worcester or Manchester PharmD program into the Boston PharmD program.

#### **Recalculation of the Grade Point Average**

Students who have been accepted into a new program and wish to remove courses from their grade point average that are not required for the new major should note their request on the Request for Change of Student Status form. All grades will remain on the transcript (and program evaluation), with the notation that they are not included in the grade point average.

Students who leave a program not in good academic standing and wish to move to another degree program or be readmitted to their former program must meet the grade point requirements of that YOG and program (see Good Academic Standing). Students who leave the PharmD program not in good standing must complete the new program and meet the grade point average requirement required by the School of Pharmacy–Boston before seeking readmission to a student’s original program.

Any courses removed from the grade point calculation that are required for the original degree program will be added back to the GPA calculation prior to consideration for readmission.

#### **Conduct of Classes**

##### **Admission to Classes**

No student will be admitted to a scheduled class unless

- the student’s name is on the instructor’s class roster and
- the student’s account is in order.

##### **Attendance**

The University expects students to meet attendance requirements in all courses in order to qualify for credit. Attendance requirements may vary depending on the instructor, and these should be clearly stated in the syllabus available to each student during the first week of the course. Generally, students are expected to attend all classes unless they have a valid excuse. (See Documented Student Absence Request Policy and Procedure).

**Student Conduct**

An instructor shall have the right to require a student who is disruptive during a class, laboratory, or experiential rotation to leave for the remainder of the session and shall report the incident to the Student Affairs office on their campus for further appropriate action in accordance with the Student Code of Conduct.

**Instructional Periods**

Faculty members are expected not to continue any class beyond the scheduled ending time. Unless students have been informed that the faculty member will be late, class is canceled if a faculty member has not arrived within 10 minutes of the scheduled starting time of a class.

**Online and Distance Education Classes**

The majority of courses at MCPHS are conducted in physical classrooms and labs. However, in addition to programs offered entirely online, some required and elective courses may be delivered online and/or through distance education. In participating in online or distance education courses, students learn in different ways and must manage a technologically mediated environment. This learning will be of value both in the completion of degree requirements and in the workplace. Increasingly, workplaces utilize technology for training and work. Please see the MCPHS Online section for suggestions for taking online courses.

**Minimum Class Size**

By noon on the Friday of the first week of classes, the school dean will make the following decision regarding offering a class, based on enrollment:

- Required courses will be offered unless offered more than once in a calendar year. If five or fewer students register for a required course that is offered more than once in a calendar year, the course may be canceled (programmatic requirements considered).
- Elective courses will be offered provided there is a minimum of eight students enrolled.

**Registration**

It is the responsibility of the instructor to ensure that only properly registered students are allowed to attend class. If a student's name does not appear on the class roster in WebAdvisor after the add/drop period, that student shall not be allowed to attend, participate in, or take or receive exams until the instructor is notified by the Office of the Registrar that the student is officially registered.

**Course Policies**

**Academic Honesty** (*See Academic Honesty Policy under University Policies & Procedures section of the University Catalog*).

**Credit Hour Policy**

The credit hour policy applies to all courses at all levels (graduate, professional and undergraduate) that award academic credit regardless of the mode of delivery including, but not limited to, self-paced, online, hybrid, lecture, research, clinical and laboratory. Academic units are responsible for ensuring that credit hours are awarded only for work that meets the requirements outlined in this policy.

A lecture period of 50 minutes per week or laboratory work of 110 to 220 minutes per week, extending over one semester, constitutes one academic credit hour. For each hour of lecture, students are expected to spend a minimum of two hours outside of class preparing for the course. For research, clinical/experiential rotations and service learning activities, actual hours may vary by program, but such activities must include an amount of work that is at least equivalent to lecture and laboratory courses.

**Assessment**

All materials, in whatever format, submitted by students for evaluation in MCPHS courses may be used by MCPHS for program or institutional assessment. To the extent possible, individual identification will be removed from these materials before they are used for assessment purposes.

### **Colleges of the Fenway**

A Colleges of the Fenway (COF) student enrolled in an MCPHS course through COF cross-registration must notify the course instructor and provide her or him with an email address to ensure that course information is received in a timely manner. The student also should consult with the instructor regarding access to online applications that might be used in the course.

### **Disabilities**

Students with documented disabilities who wish to request accommodations under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act (ADA) should contact the Office of Disability Support Services at 617.879.5925 to discuss the accommodations process.

### **Writing-Intensive Courses** (for all HUM courses and others designated as writing intensive)

The MCPHS faculty believes that learning in all disciplines is an integrative process, a synthesis of critical reading, thinking, and writing. Students not only must learn to write but also must write to learn. Consequently, writing-intensive courses require students to write 15 to 20 pages in two or more assignments that may take various forms as determined by the course instructor. In addition, instructors dedicate class time to the teaching of writing in their specific disciplines, provide feedback on assignments, and allow revision of at least one assignment.

### **Writing Proficiency Requirement** (Boston only)

MCPHS—Boston students in all baccalaureate and first professional degree programs are expected to meet the University's standards for writing proficiency, which include the general standards for writing competency as delineated in the University's writing proficiency rubric, and specific applications of those standards by faculty in disciplines across the University curricula.

Students who do not perform at a satisfactory level of writing proficiency may be referred to the Writing Center and may be required to demonstrate writing improvement to receive full course credit. (For details, see the Writing Proficiency Requirement—Boston section of this catalog.) The writing proficiency rubric is available on the Writing Center Web page at <https://my.mcphs.edu>.

### **Courses Taken at Other Colleges after Matriculation**

Once a student has matriculated at the University, no courses taken off campus will be accepted for transfer credit. (NOTE: COF courses are allowed for Boston students.) Exceptions to this policy may be granted by the Provost's Office in instances involving delay of graduation or extreme hardship. In these instances, course approval must be obtained from the Center for Academic Success and Enrichment. Students are advised not to enroll in or make payments for non-MCPHS courses without official University approval.

### **Credit by Examination**

Credit by examination is available to students whose previous coursework in a subject area does not meet transfer credit criteria or who feel they have achieved competency in a subject through work or life experience. Credit by examination is available to new students only during the student's first semester of matriculation at the University, no later than the add/drop deadline of the term of entry.

Competency may be demonstrated through one of the following means: (1) College Level Examination Program (CLEP), (2) Advanced Placement (AP) examination, or (3) International Baccalaureate (IB) examination.

The College Board administers CLEP and AP examinations. A passing score on the CLEP examination in English Composition with Essay will be accepted as credit for Expository Writing I. A passing score on the CLEP examination in Freshman College Composition with Essay will be accepted as credit for Expository Writing II. CLEP credit will be awarded only after the Admission Office has received official scores directly from the College Board. In the case of AP examinations, credit will be awarded for a score of 4.0 or higher.

No AP credit will be awarded for CHE 131 Chemical Principles I, CHE 132 Chemical Principles II, CHE 110 Basic Chemistry I, or CHE 210 Basic Chemistry II. No AP credit will be awarded to students in the Premedical and Health Studies program for BIO 151 Biology I or BIO 152 Biology II.

AP and IB exceptions: Chemistry AP scores of 4 or better will be accepted as transfer credit for CHE 131 and CHE 132

for students who matriculate at MCPHS with existing college credit for organic chemistry. Transfer students accepted into the professional phase of an MCPHS degree program will receive transfer credit for IB courses accepted by a previous college. In both of these instances, official AP and/or IB exam documentation must be provided to MCPHS no later than the add/drop deadline of the term of entry.

Students who complete IB courses must provide high school transcripts and/or IB reports that document the course, examination level, and exam score. Students must achieve a score of 5 or better on an HL (high-level) IB exam. Transfer credits are limited to exams for English, language, or the arts.

Students are responsible for scheduling CLEP/AP examinations through the College Board. Results/scores of the examination(s) should be sent (by the school dean if applicable) to the Admission Office. If the student achieves an acceptable score on the examination(s), then notification will be sent to (1) the student, (2) the program director, (3) the school dean, (4) the Office of the Registrar, (5) the Academic Advising Center / advisor, and (6) others as appropriate. Credit earned by examination will not be counted toward the residency requirement.

### **Clinical Rotations and Background Screenings**

For some MCPHS programs, placements in clinical rotations at healthcare providers are a required part of the MCPHS curriculum. Some of those healthcare providers require background screenings, and a conviction for a criminal offense might present an issue. It is possible that certain types of criminal convictions, whether prior to being a student at MCPHS or while attending MCPHS, could preclude a student from being able to complete a required clinical rotation. For more information, please contact the MCPHS Chief Compliance Officer.

### **Cross-Registration (Boston)**

Cross-registration provides full-time undergraduates of the Colleges of the Fenway with the opportunity to take up to two courses per semester (fall and spring semesters) at any of the six Colleges of the Fenway institutions at no additional charge, so long as the credit load does not exceed 18 semester hours. This opportunity provides students with the advantages of a small college but exposes them to resources similar to those of a large university. Cross-registration enables students to broaden their intellectual and social capacities, and it introduces them to faculty, research, colleagues, and curricula they would not otherwise have experienced.

Students in good academic and financial standing may cross-register after students at the home institution have completed the preregistration process. Courses are open to cross-registration on a seat-available basis. Each school's home students have the first option to register for courses that have been developed through joint efforts of faculty across the schools, and the goal of these courses is to attract a mix of students. A searchable database of all courses open for cross-registration may be found at [www.colleges-fenway.org](http://www.colleges-fenway.org). Detailed information about cross-registration and associated processes and policies is highlighted on the Colleges of the Fenway website ([www.colleges-fenway.org](http://www.colleges-fenway.org)).

When a course offered through the Colleges of the Fenway requires MCPHS students to be absent from their own institution's (MCPHS's) classes for no more than one week, the absence is considered an excused absence. Students enrolled in such courses are expected to meet all other academic requirements, working individually with faculty to make up work.

### **Dean's List**

The dean's list recognizes full-time students seeking a bachelor's degree or doctor of pharmacy who have completed the required full-time semester hours of credit and earn a minimum 3.50 semester GPA. Courses that are taken pass/fail do not count toward the full-time status. Doctor of Pharmacy students in Boston, Worcester, and Manchester who are completing clinical rotations are not eligible for the dean's list. Doctor of Pharmacy students in the Worcester and Manchester programs during the six-week fall semester of Year II are eligible for the dean's list. Incomplete grades that remain beyond the first three weeks of the subsequent semester render a student ineligible for the dean's list in that term. Dean's list is not awarded to students in graduate programs (i.e., MPAS, MANP, MSN, MSDH, MS, DPT, OD, and PhD). The dean's list is published approximately one month into the following semester.

### **Add/Drop Procedures**

A registered student who wishes to adjust his or her class schedule during the designated add/drop period can make adjustments online via WebAdvisor. Students cross-registered for Colleges of the Fenway courses must adhere to the add/drop procedures at their home institution. The add/drop period deadline for all programs is specified for each academic term, usually within the first week of classes. Adjustments to tuition and fees, where applicable, are made

automatically through the Office of Student Financial Services. Students who wish to withdraw from a course after the designated add/drop period should refer to the Withdrawal from a Course section in Academic Policies and Procedures. No refunds are made if such changes are made after the designated add/drop period. **NOTE: Simply failing to attend classes will not result in the course being dropped from the student's official registration, and students will be held financially accountable and receive a course grade of F.**

### **Email Policy**

All MCPHS students are required to open, utilize, and maintain (i.e., keep storage within the maximum set by the Department of Information Services) an MCPHS email account. Official University communications and notices are sent via MCPHS email accounts. All students are responsible for regularly checking their MCPHS email and for the information contained therein. Only MCPHS accounts will be used in all matters related to academics, student life, and University notifications. The University does not forward MCPHS email to personal email accounts.

*NOTE: All MCPHS community members may voluntarily register in the MCPHS Emergency Notification System to receive text messages via cell phones and email regarding major campus emergencies and campus closings. Contact [helpdesk@mcphs.edu](mailto:helpdesk@mcphs.edu) for more information.*

### **Examinations**

All tests and examinations, other than final examinations, are scheduled by the instructor. Students who miss a scheduled examination (i.e., classroom examination, lab, or other graded performance) and are granted an excused absence for the missed examination (see Documented Student Absence Request Policy and Procedure) must arrange a make-up exam with the course instructor. The format of the make-up exam may vary from that of the original scheduled exam and is at the discretion of the course instructor. With respect to completion of such examinations, if an acceptable agreement between the student and professor(s) cannot be reached, the school dean will serve as arbitrator.

During the fall and spring semesters for undergraduate and first professional degree students, no course examinations (worth 15% or more of the final course grade) may be scheduled during the week before final examinations. Major written assignments may be due the week before finals if the assignments were semester-long and not assigned within the last four weeks of the semester. Exceptions are granted for laboratory examinations, including practical examinations. Exceptions also may be granted for block-scheduled courses, subject to approval by the Vice President for Academic Affairs (see School of Nursing, Boston, Worcester/Manchester).

*NOTE: Final examinations are scheduled by the Office of the Registrar several weeks before the end of the semester. Final examinations must be given only during final exam week. The final exam schedule includes make-up times for examinations canceled due to inclement weather or other unforeseen circumstances (e.g., power outages, fire alarms). Students and faculty are expected to take these dates into account when planning any travel (i.e., they should not purchase nonrefundable tickets to leave before the make-up date).*

### **Posting Examination Grades**

Faculty do not use student identification numbers to post exam grades. Quiz, exam, and assignment grades are posted on Blackboard™ via the use of student-specific log-ons and confidential passwords. Please remember that passwords should be kept confidential.

### **Final Grades**

Students may view their final grades online via WebAdvisor. Final grades are not available to students until all grades have been submitted by all faculty. The Registrar's Office will notify students via email when all grades are posted each term.

### **Good Academic Standing**

To be in good academic standing, a student's cumulative and professional grade point averages must meet the minimums required by the degree program in which he or she is enrolled. Any student whose cumulative or professional average falls below the minimum after an academic term is considered to be on probation. Professional grade point averages are calculated only after 12 credits have been taken in professional courses (exceptions exist for the Nursing program). Cumulative or professional grade point average minimums are listed in the Good Academic Standing table in this section.



Students who fail to meet the minimum standards required for academic progression will be notified of the decisions by the school's Academic Standing Committee.

In order to maintain good academic standing, students should be aware that the professional curricula of the University are rigorous and demanding. Students who must be engaged in gainful employment should balance school and work responsibilities so as not to compromise their academic success.

### **Good Academic Standing and Satisfactory Progress for Financial Aid**

Student Financial Services disburses financial aid only to students in good academic standing who are making satisfactory progress toward completion of their degrees. Refer to Student Financial Services in this catalog for further details.

## **Grading Policies**

### **Grade Appeals**

A student who wishes to appeal a course grade must do so within two weeks of the grade being posted by the Registrar's Office. Students are encouraged to meet with their advisor or student success coach in the Center for Academic Success and Enrichment (CASE) to discuss the grade appeal process. The first appeal should be in writing to the instructor, who must make a decision to uphold or change the grade within 3 business days of the appeal. The written appeal should contain the rationale for the appeal. If a mutually acceptable agreement cannot be reached (or the instructor does not respond within 3 business days), the student has 3 business days to appeal in writing to the administrator in charge of the academic unit offering the course (Department Chair, Program Director or designee). The appeal should contain the rationale for the appeal and the result of the appeal to the instructor. The academic unit administrator must decide to uphold or change the grade within 3 business days of the appeal. If this procedure does not successfully resolve the matter (or if the administrator does not rule on the matter in 3 business days), the student has 3 business days to appeal in writing to the chief administrator (School Dean or designee) overseeing the academic unit offering the course. The appeal should contain the rationale for the appeal and the results of the appeals to the instructor and the academic unit administrator. The chief administrator will uphold or change the grade and inform the student within three business days. The decision of the chief administrator is final. Decisions on grade appeals are based solely on objective grade information.

If the grade appeal affects a student's progression status, the grade appeal process must be completed on or before the first day of class/clinical rotation, prior to the start of the next semester. It is the student's responsibility to initiate the grade appeal.

### **Grade Point Average**

The total number of quality points (see Grading System section of this catalog), divided by the total number of credit hours taken, yields the grade point average. The grade point average for each semester and cumulatively is calculated to two decimal points. In some degree programs, a professional grade point average also is calculated for each student by dividing the number of professional quality points by the total number of professional credit hours taken.

### **Grade Reports**

At the end of each academic term, students can view their grades online via WebAdvisor. The Office of the Registrar notifies students when grades are posted.

## Good Academic Standing Chart

Good Academic Standing						
School	Program	Degree	Overall GPA	Prof. GPA	Min. Grade in Prof. Courses	Other
All schools	All first-year students		2.0			
Acupuncture	Acupuncture	MAc	2.0		C	
	Acupuncture and Oriental Medicine	MAOM	2.0		C	
	Doctor of Acupuncture and Integrative Health	DAIH	3.0		B	
Arts and Sciences	Chemistry / Pharmaceutical Chemistry	BS/MS	2.0 for BS; 3.0 for MS			3.0 overall and 3.0 in BIO, CHE, MAT, PHY courses at end of Year III to enter MS program in Year IV
	Medical and Molecular Biology	BS	2.0			
	Health Psychology	BS	2.0			
	Health Sciences	BS	2.0			
	Health Sciences (Degree Completion)	BS	2.0			
	Premedical and Health Studies	BS	2.0			3.0 GPA required to apply for Premed pathways at end of Year I
	Public Health	BS	2.0			
	Public Health	BS/MPH	2.0 for BS; 3.0 for MPH			B- in MPH courses
Dental Hygiene	Dental Hygiene	BS	2.5	2.5	C	Minimum grade C in BIO 110, 210, 255 and CHE 110, 210. An overall GPA of 2.5 to progress into the fall of Year II. Three grades below C in any combination of DHY courses results in dismissal from the program.
	PreDental Dental Hygiene	BS	2.5	2.5	C	Minimum grade C in BIO 110, 210, 255 and CHE 131, 132. An overall GPA of 2.5 to progress into the fall of Year III. Three grades below C in any combination of DHY courses results in dismissal from the program.
	Dental Hygiene	MSDH		3.0		B- in all courses
	Dental Hygiene/Public Health	MSDH/MPH			3.0	

Good Academic Standing						
School	Program	Degree	Overall GPA	Prof. GPA	Min. Grade in Prof. Courses	Other
<b>Medical Imaging and Therapeutics</b>	Diagnostic Medical Sonography Magnetic Resonance Imaging Nuclear Medicine Technology Radiation Therapy Radiography	BS	2.0	2.5	C+	All majors: Minimum grade C in BIO 110, 210; CHE 110, 210, or CHE 131, 132; MAT 141 or 150; and PHY 181 or 270. MRI: additionally minimum grade C in HSC 310 and MAT 151, 152, 197, 261. For all Medical Imaging and Therapeutics BS programs, failure in two internship rotations results in dismissal.
<b>Physical Therapy</b>	Physical Therapy	DPT		3.0	B-	3.0 each semester and 3.0 overall Three grades below B- in any combination of PTH courses results in dismissal.
<b>Occupational Therapy</b>	Occupational Therapy	MSOT		3.0	B-	3.0 each semester and 3.0 overall Three grades below B- in any combination of OTH courses results in dismissal.
<b>Nursing</b>	Nursing (Boston)	BSN	2.5 - Class of 2018, 2019; 2.7 - Class of 2020.	2.5 in first three sequential nursing courses [NUR] 2.7 for all subsequent professional (NUR) nursing courses.	C+	Minimum grade of C+ in BEH 352; BIO 110, 210, 255; CHE 110, 210; MAT 142,261. Three grades below C+ in any combination of NUR courses results in dismissal.
	Nursing (Worcester and Manchester)	BSN, MSN	2.7	2.7	C+	Three grades below C+ in any combination of NUR courses results in dismissal.
	Nursing (Worcester and Online)	MSN/RN to MSN/RN to BSN CAGS		3.0		B in all courses
<b>Center for Online Learning and Academic Innovation</b>	Biomedical Informatics	BS	2.0			
	Global Healthcare Management	BS	2.0			
	Healthcare Administration	MHA	3.0			B- in all courses
	Health Sciences	MHS	3.0			B- in all courses
	Health Sciences	DHS	3.0			B in all courses

Good Academic Standing						
School	Program	Degree	Overall GPA	Prof. GPA	Min. Grade in Prof. Courses	Other
<b>Center for Online Learning and Academic Innovation</b> <i>(continued)</i>	Health Sciences / Postbaccalaureate Nursing Dual Degree	BSHS/ BSN	2.0	3.0		Minimum grade of C+ in BEH 352O; BIO 110O, 210O, 255O; CHE 110O, 210O; MAT 261O. Three grades below C+ in any combination of NUR courses results in dismissal.
	Patient Safety	MPS	3.0			B- in all courses
	Public Health	MPH	3.0			B- in all courses
<b>Optometry</b>	Optometry	OD		2.0	C	C in all courses
	Optometry/Public Health	OD/MPH		3.0		B- in all MPH courses
<b>Physician Assistant Studies- Boston</b>	PA–Boston	MPAS		2.85	C	Minimum 2.85 professional GPA end of second professional year to enter clerkships
		DScPAS		3.0	B	
<b>Physician Assistant Studies- Manchester and Worcester</b>	PA–Manchester and Worcester	MPAS	3.0	3.0	C	A GPA less than 3.0 or one or more course grades below a C may result in dismissal.
<b>Pharmacy- Boston</b>	Clinical Research	MS	3.0			B in all courses
	Medicinal Chemistry	MS/PhD	3.0			B in all required courses
	Pharmaceutical and Healthcare Business	BS	2.0			
	Pharmaceutical Economics and Policy	MS/PhD	3.0			B in all courses
	Pharmaceutical Sciences	BS	2.2 at end of Year II and beyond			
	Pharmaceutical Sciences	MPS	2.75 at end of BSPS Year III to enter MS program; 3.0 graduate courses to continue in MS program			
	Pharmaceutics	MS/PhD	3.0			B in all required courses
	Pharmacology	MS/PhD	3.0			B in all required courses

Good Academic Standing						
School	Program	Degree	Overall GPA	Prof. GPA	Min. Grade in Prof. Courses	Other
<b>Pharmacy-Boston</b> <i>(continued)</i>	Pharmacology/Toxicology	BS	2.5 at end of Year II and beyond			
	Pharmacy	PharmD	2.7 at end of Year II and beyond		C-	2.7 to enter Year III (first professional year)
	Pharmacy (Postbaccalaureate Pathway)	PharmD	2.7		C-	All didactic coursework must be completed within three years of matriculation; all program requirements must be completed within four years of matriculation
	Pharmacy/Public Health	PharmD/ MPH		3.0		B- in all MPH courses
	Regulatory Affairs and Health Policy	MS	3.0			B in all courses
<b>Pharmacy-Worcester/Manchester</b>	Pharmacy	PharmD	2.20	2.20		Grades for PSW 350, PPW 401 and 402 are pass/fail and are not included in GPA calculation. A GPA of 1.5 or less and one or more F grades results in dismissal.
	Pharmacy/Public Health	PharmD/ MPH		3.0		B- in all MPH courses

## Grading System

GRADE	QUALITY POINTS	EXPLANATION
A	4.0	
A-	3.7	
B+	3.3	
B	3.0	
B-	2.7	
C+	2.3	
C	2.0	
C-	1.7	
D	1.0	
F	0.0	
I	N/A	Incomplete
W	N/A	Withdrawal from course
S	N/A	Satisfactory (Nuclear Medicine Technology, and graduate programs only)
U	N/A	Unsatisfactory (graduate programs only)
P	N/A	Pass
HP	N/A	High Pass (excellent performance in clinical courses only)
AUD	N/A	Audit; students cannot audit courses that are part of their curriculum
TR	N/A	Student received transfer credit
*	N/A	An asterisk denotes removal of grade from GPA

NOTATION	EXPLANATION
C	Clinical/internship/clerkship
H	Honors course
L	Lab
O	Online course
ST	Selected topics course
T	Travel course

### Incomplete Grades

Courses with a grade of Incomplete must be completed within three weeks of the new semester following the academic term (including summer sessions) in which the Incomplete grade was assigned, or the grade automatically becomes an F. The instructor is responsible for notifying the Office of the Registrar regarding any student who has been granted additional time for coursework completion. The instructor also must specify the extended time period, up to one semester. No student may progress to courses for which the course with an Incomplete is a prerequisite until the work is completed and the I grade is changed. Incomplete grades render a student ineligible for the dean's list. No student can graduate with an Incomplete grade in any course necessary for graduation.

### **Pass/Fail Courses**

A maximum of one elective course may be taken on a pass/fail basis at another institution, including the Colleges of the Fenway. A grade of P or F will appear on the MCPHS transcript for any course taken pass/fail. A pass/fail course will not affect a student's grade point average. However, a failure in such a course may have an impact on progression through the curriculum.

### **Repeated Courses**

Following completion of a course repeated at MCPHS, the earlier grade will be removed from the grade point average, and the more recent grade will be used in the calculation. Both grades remain on the transcript for future reference. If the student repeats a course outside the University (see Courses Taken at Other Colleges after Matriculation), the lower grade is dropped from the grade point average, but a substitute grade is not used in the calculation. Such courses are listed as transfer credit.

Courses may be attempted no more than two times. Grades of F and W are considered attempts for courses in which D or better is the passing grade. For those courses in which the passing grade is higher (e.g., C-, C), grades below the passing grade and W are all considered attempts. Failure to complete any course within these limits will result in dismissal from the degree program or major.

When a curriculum change results in a course moving from one category to another (e.g., from preprofessional to professional), and a student repeats the course in the new category, the GPA will automatically be calculated in the new category. If the student wants the GPA to be calculated in the previous category, he or she must state the justification for that request via a petition for special academic request. The request is *not* automatically approved, and the repeated course will *not* be counted in both professional and preprofessional categories.

### **Replacement of F Grades**

The registrar will automatically replace the previous grade when a student repeats a course. Students are encouraged to review their current program evaluation with the Center for Academic Success and Enrichment to determine if there are existing grades that should be replaced. The timely replacement of grades is essential in determining the academic standing of students.

### **Graduation Policies**

#### **Eligibility**

The University recognizes three graduation dates during the academic year: September 1st and dates specified on the academic calendar for December and May. A formal Commencement ceremony is held once per year for all campuses, in May.

In order to be eligible to receive a degree on one of the above official graduation dates, students must complete all degree requirements (including coursework, experiential education, instructional requirements, and financial clearance) by the following deadlines:

<i>May</i>	Last day of spring semester final exam period*
<i>September</i>	Last day of summer session II
<i>December</i>	Last day of fall semester final exam period*

*\* All requested exceptions for students to process at Commencement with minimal requirements pending must be approved by the Office of Student Affairs one month prior to the Commencement date.*

Students who have completed degree requirements by the last day of the spring semester final exam period, or who earned their degree the previous September or December, are eligible to participate in the formal May Commencement ceremony. Students who will complete all degree requirements by the last day of summer session II are eligible to participate.

Students are eligible to participate in the Commencement ceremony only as noted above. In the event of incomplete requirements (including outstanding financial balances), the school dean will make a change in the student's date of

graduation (via the Change of Year of Graduation form). It is the responsibility of the individual student to ensure that he or she meets all degree requirements on schedule or risk delay in graduation.

### **Graduation with Honors**

Summa cum laude	3.86–4.00
Magna cum laude	3.70–3.85
Cum laude	3.50–3.69

The determination of honors is based on the graduate's final cumulative grade point average. Only students seeking a first bachelor's degree or doctor of pharmacy who have completed at least 60 credits at MCPHS are eligible for honors. Honors designations appear on the student's final grade transcript but not on the diploma.

First honor graduates are recognized during the May Commencement ceremony. In order to be considered a first honor graduate, one must be a student in a full-time undergraduate or entry-level program with at least three years of residency (except Nursing, PA–Worcester/Manchester and Fast Track Dental Hygiene) and must not have earned any graduate or other advanced degree.

### **Petition to Graduate**

Students must file a Petition to Graduate form online. Deadlines for submitting the forms also are posted online. Upon determination of completed requirements, students will be approved for graduation. In the event of incomplete requirements, the school dean will make a change in the student's year of graduation (YOG) via the Change of YOG form. The student will be notified of this change and encouraged to meet with his or her program director and/or the Center for Academic Success and Enrichment (Boston, Worcester/Manchester) to ensure satisfactory program completion within the new YOG. All tuition and fees must be paid to the University prior to graduation.

### **Year of Graduation**

Whenever a student falls out of sequence in the curriculum of an academic program, takes a leave of absence, or changes program, a change of year of graduation (YOG) may be necessary. If requesting to change programs, a student must complete a Change of YOG form as part of the request to the school dean. The form must be signed by an academic advisor. The program director and school dean will review the request for change of YOG as part of the acceptance process. The completed and signed Change of YOG form will be distributed to (1) the school dean, (2) the student, (3) the Office of the Registrar, (4) Student Financial Services, (5) the program director, and (6) the Center for Academic Success and Enrichment (Boston, Worcester/Manchester).

### **Leave of Absence**

The University recognizes that there are situations when a student may require a leave of absence (LOA) Such leaves are granted for a maximum of one academic year with the exception of leaves granted for military service. The student must meet to consult with their Academic Dean or designee regarding the reason(s) for considering, and the ramifications of, taking a leave of absence. After the initial meeting with the Academic Dean or designee, the student must return the completed Leave of Absence form within 1 week (or 5 business days) with the required signatures: a) the student, b) Academic Dean or designee, c) Student Financial Services, and d) Immigration Services representative (for international students). The Academic Dean or designee will notify the student within 1 week (or 5 business days) upon receipt of the completed form with the finalized LOA requirements via the student's MCPHS email account. **Students who take a leave after the designated add/drop period will receive course grade(s) of W.** *\*For information on a Health/Medical Leave of Absence, please see the Health/Medical Leave of Absence section.*

### **Return from Leave of Absence**

Students returning from a leave of absence must confirm they are returning to MCPHS University with their Academic Dean or designee prior to the following dates:

- **March 1-for a summer or fall semester return**
- **October 1-for a spring semester return**
- **Online students-30 days prior to the beginning of the semester**

Students on a Leave of Absence are *not* eligible for University Services, with the exception of academic advising. Students who intend to return from a LOA must also review and adhere to applicable school/program specific policies



in addition to the general policy outlined herein. Students who fail to return within the designated time must reapply for admission.

### **Double Majors (Boston)**

Students enrolled in selected BS degree programs (Boston) may declare a double major. Accelerated, degree completion, online, MPAS, Nursing, PharmD, Premedical and Health Studies, and Health Sciences programs cannot be used in double majors. In addition, a double major in Public Health and Health Psychology is not available. Students who declare a double major cannot complete a minor.

In order to be eligible for a double major, the student must have a grade point average (GPA) of 3.2 or higher and have completed at least 30 credits. Once students have been approved for a double major, they are required to maintain a minimum GPA of 3.0 for the remainder of their studies.

Students should note that only one degree will be conferred. Due to scheduling conflicts and/or additional course requirements, students may need to take more than 18 credits per semester and/or enroll in summer semester(s) in order to graduate with their class. In cases where courses overlap between majors, general elective credit may need to apply to one of the courses. It is recommended that students check with Student Financial Services to discuss how the additional course requirements might affect their financial aid status. In order to be considered for a double major, candidates should contact the Center for Academic Success and Enrichment (Boston) and complete the Application for Double Major form, which requires approval of relevant program directors and deans.

### **Minors (Boston)**

Students who wish to pursue a minor must complete a Declaration of Minor form, which is available from the Center for Academic Success and Enrichment. The Declaration of Minor form must be forwarded to (1) the student, (2) the Center for Academic Success and Enrichment, and (3) the Office of the Registrar.

Requirements for completion of some minors vary for students in the Premedical and Health Studies program. These variations are outlined in the Bachelor of Science in Premedical and Health Studies section of this catalog.

### **Registration for Classes**

Prior to the start of preregistration for each term, the Registrar's Office will notify students (via MCPHS email) of the registration schedule. The schedule will indicate if students will be block registered for required courses or if students need to meet with Academic Advising before registering for classes. Students who register on time receive an electronic bill from Student Financial Services. Students who miss the registration period are charged a late registration fee. Students who have outstanding balances are not allowed to register or attend classes until all bills are paid in full.

### **Nonmatriculating Students**

In rare instances, students may register for courses at MCPHS prior to matriculation in a specific program. All prerequisites for a class must be satisfied and there must be room in the class. Credit will be accepted only for classes in which students earn a C or better in undergraduate courses or a B or better in graduate courses. The maximum number of credits allowed is 12 semester hours for undergraduate students and 6 semester hours for graduate students. Students must request to have these credits applied to their degree; it is not automatic.

### **Visiting Students**

Visiting students (those enrolled in degree programs at institutions other than members of the Colleges of the Fenway) also may register for classes at the University. Such students must provide documentation of good academic standing from their home institution before completing their registration. Visiting students may register on a seat-available basis and only after the designated period when matriculated students have completed the registration process. Such students may obtain registration materials at the Office of the Registrar. This same policy also applies to students from other MCPHS campuses.

In the case of nonmatriculated and visiting students, it is expected that such students will adhere to the academic requirements as set forth by the instructor(s) and stated in the course syllabus.

### **Residency Requirement**

Students must complete (1) at least half of the required credits for a degree and (2) all professional course requirements

in the respective degree program in residence at MCPHS. In special cases, the school dean may allow transfer credit for professional courses provided the student is able to demonstrate competency in the subject. If a program does not have specified professional courses, then half of all credits must be taken in residence. At least one-half of the courses required for a minor must be completed while in residence at MCPHS. "In residence" is defined as being registered for and enrolled in MCPHS courses, whether the courses are delivered using traditional or distance delivery methods. Colleges of the Fenway courses are credited as MCPHS courses (including the number of credits). An exception to the residency requirement is granted to those who hold licensure in a discipline and are enrolled in an MCPHS baccalaureate degree completion option. The residency requirement for such students is a minimum of 30 semester credits of MCPHS-approved courses.

### **Bachelor of Science Completion Policy**

In order to graduate with a Bachelor of Science degree at MCPHS University, a student must complete the final 30 credits of their degree program enrolled in MCPHS University courses or through an MCPHS approved articulation agreement.

### **Transcripts**

Copies of official transcripts must be requested in writing and bear the signature of the requesting student. Current students may request transcripts online via WebAdvisor. Transcripts are furnished to designated institutions or authorized agencies only when the student submits a completed transcript authorization form. Transcripts are issued to those students whose financial status with Student Financial Services is clear.

### **Transfer Credit—Prior to Acceptance**

Courses taken at other regionally accredited colleges or universities in the United States before the student was accepted to the University may receive MCPHS transfer credit provided that a minimum grade of C has been earned. No transfer credit may be awarded for behavioral, basic science, or professional coursework that is more than 10 years old.

### **Transfer Policy**

MCPHS does not award transfer credit for remedial or skills courses or other courses that are taught at levels below the first-year level at MCPHS. This includes English courses on sentence and paragraph structure or similar content courses below the level of LIB 111 (Expository Writing I), mathematics courses in arithmetic or algebra if below the level of MAT 141 (Algebra and Trigonometry), and biology and chemistry courses below the level of the MCPHS first-year courses required for the program to which the student seeks entrance.

Transfer courses will not be accepted as fulfillment of the core curriculum requirements in the liberal arts distribution areas if they are taught in the first year of a University curriculum. Liberal arts courses acceptable for transfer credit must have prerequisite requirements and must be taken during the student's second or subsequent year in a University curriculum.

### **Approval of Transfer Credit—Postmatriculation**

Once a student has matriculated at the University, no courses taken off campus will be accepted for transfer credit without prior written approval. (NOTE: Colleges of the Fenway courses are allowed for Boston students.) Exceptions to this policy may be granted by the Center for Academic Success and Enrichment in instances involving delay of graduation or extreme hardship.

Prior to taking a course for transfer credit at another institution, students must submit a Petition to Transfer Credit form to the Center for Academic Success and Enrichment, who approves or denies the petition. Notification of the decision will be distributed to (1) the Academic Advising Center, (2) the program director, (3) the school dean, (4) the Office of the Registrar, and (5) others as appropriate. The student is responsible for requesting that official transcripts be sent to the Office of the Registrar, which will verify the credit and post a grade of TR in the student's transcript. Official transcripts must be received no later than the add/drop deadline of the subsequent semester.

### **Minimum Transfer Grade**

The minimum grade for receiving transfer credit is C (2.0).

### **PHY 270 Foundations of Physics I**

Students who, prior to matriculation at MCPHS, have completed either one semester of calculus-based physics or two

semesters of algebra-based physics will receive transfer credit for PHY 270. To be eligible for transfer credit, the courses must have been completed at a college or university and grades of C or better must have been earned in each class. This policy applies only to transfer credit requested for courses taken prior to matriculation at MCPHS.

### **Studio Art and Performance Courses**

A maximum of one studio art or performance course may be taken for credit at another institution, including the Colleges of the Fenway. Studio art courses may be accepted for general elective credit only, not for liberal arts distribution credit.

### **Visiting Classes**

A person may visit a class in which he or she is not officially enrolled only with prior consent of the instructor.

## **Withdrawal**

### **Administrative Withdrawal**

#### *Section 1: Administrative Withdrawal*

An administrative withdrawal will mean that a student's preregistration or registration, housing, meal plan, and financial aid for the current semester will be canceled. The student will be unable to register or preregister for any subsequent semester until the administrative withdrawal is resolved.

A student may be administratively withdrawn by the University if any of the following conditions apply:

- a. If, after due notice, the student fails to satisfy an overdue financial obligation to the University, consisting of tuition, loans, board, room fees, library charges, or other student charges, including student activities, health insurance, graduation fees, and other such fees as may be established by the University
- b. If the student fails to comply with certain administrative requirements, including, without limitation, the submission of immunization forms, satisfaction of technical standards, or completion of SEVIS registration
- c. If the student fails to attend classes during the first two weeks of the semester
- d. If the student fails to register for the coming semester

#### *Section 2: Effects of Administrative Withdrawal*

If a student is administratively withdrawn, his or her record will indicate the withdrawal date and the reason code for administrative withdrawal. All courses for which a student is registered at the time of withdrawal will receive a grade of W until or unless the student is reinstated.

The student shall not be allowed to preregister or register for a future semester. If a student has already preregistered at the time of withdrawal, all preregistration course requests will be canceled.

The student shall receive no further material or notification from the registrar concerning University affairs once administratively withdrawn.

#### *Section 3: Procedures for Implementing Administrative Withdrawal*

The registrar will send a letter to a student administratively withdrawn from the University. The administrative withdrawal must be based on one of the grounds set forth in Section 1. Administrative withdrawal notifications are sent to the students via MCPHS email and a hard copy is also mailed to the home address on file.

#### *Section 4: Appeals and Reinstatement*

Administrative withdrawal reinstatements must be resolved within two weeks of receipt of the administrative withdrawal notification letter. Appeals must be submitted by the student in writing to the Office of Student Affairs within one week of receiving the notification. The appeal should include a description of the actions the student has taken to resolve the matter and the reasons why the student is entitled to reinstatement

Appeals will be reviewed for reinstatement into the current term only. The Office of Student Affairs in conjunction with the Dean or Program Director, Student Financial Services and Immigration Services (if applicable) will approve or deny the reinstatement within 1 week after receiving the student appeal letter.

In semesters beyond those from which the student was administratively withdrawn, the student must file a readmission application by the stated deadline for enrollment in the next available semester.

#### *Health/Medical Leave of Absence*

A Health/Medical Leave of Absence may be appropriate when a student's current physical or behavioral health condition precludes successful complete of their educational program. In addition to following the steps outlined for a general Leave of Absence, a student seeking a Health/Medical Leave of Absence must submit medical documentation from the student's medical provider to the Office of Student Affairs. This documentation must indicate the medical reasons the student is unable to attend classes for the requested time period. In conjunction with submitting this documentation, the student must meet with representatives from Student Affairs on their respective campus and complete appropriate paperwork. At least one full academic semester must have passed before returning to the University under a Health/Medical Leave of Absence.

#### *Return from Health/Medical Leave of Absence*

In addition to the general Leave of Absence steps for returning to the University, a student will provide to the Office of Student Affairs, on their respective campus, documentation from the student's medical provider that indicates the student's readiness to return that includes:

- a diagnosis of the condition that led to the student's leave;
- the student's length and course of treatment;
- the student's current medical health status;
- recommendations necessary for ongoing care; and
- any noted restrictions including those related to technical requirements of the student's academic program.

#### *Involuntary Health Leave of Absence*

The Dean of Students or designee may issue an involuntary health withdrawal, whether or not the student's behavior violates the Student Code of Conduct.

An involuntary health leave of absence must involve a strong likelihood of

- a. serious risk of physical harm to the student himself or herself, manifested by evidence of threats of suicide or attempts at suicide or other serious bodily harm;
- b. serious risk of physical harm to other persons in the community, including an infectious condition or evidence of homicidal or other violent behavior; and/or
- c. reasonable risk of physical impairment or injury to the student himself or herself because of impaired judgment that would not allow the student to live independently or protect himself or herself in the community or not allow the student to perform the essential functions of an educational program without requiring substantial modification of the program.

### **Process for Involuntary Leave of Absence**

#### *Report and Initial Meeting*

Upon receiving a report documenting the behavior(s) that indicate why a student should be put on involuntary health leave, the Dean of Students or designee will meet with the student regarding the report.

#### *Suspension Pending Determination*

The student may be suspended immediately from the University or University residence hall pending the determination of the involuntary health leave of absence when, on the basis of the information available, the University reasonably believes that the student's continued presence on campus endangers the physical safety or well-being of himself or herself or others or seriously disrupts the educational process of the University. Either before suspension or as promptly as is feasible, the student will be given the opportunity to be heard and present evidence as to why he or she should not be immediately suspended.

#### *Evaluation*

The Dean of Students or designee may inform the student orally or in writing that he or she must participate in a medical or mental health evaluation conducted by one of the following:

- a. MCPHS Director of Counseling Services or designee (in the case of psychological disorder)
- b. An independent evaluator (licensed social worker, licensed mental health counselor, licensed psychologist [including psychiatrist], or licensed medical doctor) selected by the student at the student's expense

The student must sign a release of information form authorizing the evaluator to consult with MCPHS staff regarding the evaluation.

The evaluation must be completed within 24 hours of the date of written or verbal notice or as soon as reasonable, as determined by the Dean of Students or designee. The Dean of Students or designee may grant an extension for completion.

If the student fails to complete or refuses to participate in an evaluation when referred, he or she may be issued an involuntary health leave of absence.

#### *Determination*

Upon completion of the evaluation, the MCPHS staff member who conducts or consults in the evaluation will make a recommendation to the Dean of Students or designee. An opportunity must be provided for the student to discuss the recommendations with the MCPHS staff member who conducted or consulted in the evaluation and with the Dean of Students or designee.

The student will be given the opportunity to be heard and present evidence as to why he or she should not be issued an involuntary health leave of absence. The Dean of Students or designee will make a determination and inform the student in writing.

#### *Effective Date*

Once the involuntary health leave of absence is issued, the terms of the leave become effective immediately. A student's record will indicate the leave date and the reason code for involuntary health leave. All courses for which a student is registered at the time of leave will receive a grade of W, and the refund policy as outlined in the University catalog will be followed. Requests for special consideration regarding the refund policy (e.g., leave date beyond the refund date) may be made to the Dean of Students.

The safety of the student while on campus must be assured. Advance notice of an involuntary health leave is recommended only when the safety of the student while on campus is assured. In the case of emergencies, no advance notice may be possible.

#### *Appeal*

A student who has been issued an involuntary health leave of absence may appeal the decision to the Vice President for Academic Affairs in writing within five business days of receiving the decision. The student's reasons for the appeal and the desired resolution must be indicated in the letter. The Vice President for Academic Affairs will consider the case within five business days of the request for an appeal. The decision of the Vice President for Academic Affairs is final and will be communicated to the student in writing.

#### *Return after Leave of Absence*

In order to remove the conditions of the leave of absence, the student must present medical documentation that the behavior no longer precludes successful completion of an educational program. The student also must participate in an evaluation conducted by University staff, by an established deadline, and write a letter to the Dean of Students or designee detailing the student's readiness to return to the University. In most cases, at least one academic semester must have passed before readmission under an involuntary health leave may be considered.

#### *Deviations from Established Policies*

Reasonable deviations from this policy will not invalidate a decision or proceeding unless significant prejudice to a student may result.

#### **Withdrawal from a Course**

Students may withdraw from a course through the end of the 10th week of the fall or spring semester; in the summer session, withdrawal must be by the end of the 3rd week. No refunds are given after the end of the official add/drop period. After the official add/drop period, students who choose to withdraw receive a grade of W for the course. The withdrawal slip must be signed by the student's advisor. Every registered student who remains in a course is given a grade. Simply failing to attend classes does not constitute withdrawal.

**Withdrawal from the University**

A student must complete an exit interview with the Associate Dean for the Center for Academic Success and Enrichment or designee (Boston), Assistant Dean (Worcester), or Associate Dean of Students (Manchester) prior to withdrawing from the University. The student also must complete a withdrawal form, which calls for the signature of the Associate Dean for the Center for Academic Success and Enrichment (Boston) or designee, Assistant Dean for the Center for Academic Success and Enrichment (Worcester), or Associate Dean of Students (Manchester) and Student Financial Services. Failure to complete the withdrawal process results in automatic failure in all courses in which the student is currently enrolled and forfeiture of any prorated tuition refund. Withdrawn students are not eligible for University services.

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## General Education Requirements

*Preprofessional, general education and liberal arts distribution requirements for all baccalaureate and first professional degree programs are summarized below. Course sequences for the preprofessional and professional curriculum in a particular degree program may be found in the specific sections pertaining to each of the University's schools and divisions.*

### **Placement in Mathematics Courses**

Students are placed in mathematics courses based on their math placement exam scores, SATs or ACTs, and degree programs. Any changes in assigned mathematics courses must be discussed with and approved by the coordinator of mathematics in the School of Arts and Sciences during the add/drop period at the beginning of the fall semester.

### **Oral Proficiency Requirement—Boston**

All students who enter the University in any bachelor of science or first professional degree program must, as a requirement for graduation, demonstrate oral proficiency by passing an examination designed and evaluated by faculty. The oral proficiency exam (OPE) is administered prior to the student's first semester at the University. Students whose oral exam results do not meet University standards must take LIB 253 (Oral Communication in Healthcare) within the first year of matriculation. This course carries liberal arts or general elective credit (but not humanities credit). Students who fail the OPE or who fail to take the OPE during their first semester at the University are automatically registered in LIB 253.

### **OPE Exemption**

Students are exempt from the OPE requirement only if they are matriculated in a program that requires a baccalaureate degree as a condition of admission, or if they are in a certificate program.

### **Writing Proficiency Requirement—Boston**

Students who enter the University without credit for LIB 111 (primarily first-year students) will be placed in a skills-building course, LIB 110 (Introduction to Academic Reading and Writing) or in LIB 111 (Expository Writing I). To meet the writing proficiency (WP) requirement, these students must complete either the LIB 110, LIB 111, LIB 112 sequence or the LIB 111, LIB 112 sequence, and they must continue to meet WP standards as these are monitored across the curriculum. Students placed in LIB 110 will earn general elective credit.

All students who have entered the University in any bachelor of science or first professional degree program *and* have credit for LIB 111 and LIB 112 (primarily transfer students) must meet WP standards as these are monitored across the curriculum.

To ensure all students achieve and maintain WP, the School of Arts and Sciences has developed guidelines for writing-intensive (WI) courses and a system for WP referrals. In addition, faculty are encouraged to incorporate writing emphases in their classes wherever possible.

In the School of Arts and Sciences, LIB 110, LIB 111, LIB 112, and all HUM courses are designated as WI. Faculty in other disciplines may offer WI courses if they meet the following criteria:

- The amount of required writing should be significant, approximately 3,750–5,000 words (15–20 pages) of graded writing. The total words/pages should be divided among two or more assignments, and at least one assignment should include a draft that students revise with instructor feedback. A single term paper / project is an option, but the project should include several smaller assignments (e.g., a project proposal, followed by a literature review or annotated bibliography, a completed draft, and a revised final project).
- Faculty should devote class time to instruction on writing practices in their disciplines (e.g., abstracts, writing style, citation conventions, and formats) and on strategies for successful completion of assignments; they should provide detailed writing assignment instructions and evaluation criteria.
- Faculty teaching WI courses should set aside a portion of the course grade (minimum of 40%) to be based on writing assignments (this is not grading for writing skills per se but for writing assignments that include demonstration of content learning).
- WI courses should have enrollments capped at 30 or fewer students.
- WI course faculty across the curriculum should employ shared proficiency and grading rubrics when assessing

students' WP or evaluating writing assignments.

To continually reinforce WP standards, faculty across the curriculum use a shared WP rubric to identify students who appear to need additional skills development to meet WP standards. These students are referred to the University Writing Center, where the staff makes proficiency determinations. Based on individual situations, students may be assigned to writing tutors or workshops to address specific writing problems. Failure to complete an assigned workshop or activity could result in a grading penalty or an incomplete grade in the referring course (based on syllabus requirements).

The intent of the WP referral system is to integrate writing expectations, instruction, and development in disciplinary/professional contexts that build on foundations established in the general education curriculum.

### **Information Literacy Requirements (Library Modules)**

As a requirement for graduation, students must demonstrate proficiency in the use of information resources by passing a series of instructional modules. The three library modules (INF 110, 220, and 330) are designed and evaluated by library faculty. INF 110 must be completed in the student's first year at MCPHS; most students will complete the module as part of the Introduction to the Major course. Students who do not take Introduction to the Major will complete the module independently. INF 220 is taken during the second or third year and INF 330 is taken during the required research/capstone course appropriate for each program. Librarians or the Library link on <https://my.mcphs.edu> can help students determine specific program requirements.

### **Exemptions from General Education Requirements—Boston**

Students enrolled in a certificate program or in a degree program for which a baccalaureate degree is an admission requirement are exempted from the core curriculum, oral and writing proficiency, and library module requirements. Students in the 30-month Physician Assistant Studies program (Boston) are an exception in that they are required to complete the library module requirement though they are exempt from the core curriculum and oral and writing proficiency requirements.

### **Exemptions from General Education Requirements—Worcester/Manchester**

Students enrolled in degree programs on the Worcester and Manchester campuses are exempt from general education requirements, provided they have completed a baccalaureate degree at an accredited institution of higher education in the United States. (Applicants must still fulfill all prerequisite courses required for admission to their degree program.)

### **Medical Terminology Requirement**

Competency in medical terminology is required of students in certain degree programs. Students usually meet this competency within their programs. A medical terminology course taken off campus is not awarded general elective credit in any program. All School of Medical Imaging and Therapeutics students in accelerated baccalaureate programs are required to pass (with a grade of C or higher) RSC 250 Patient Care & Medical Terminology for the Radiologic Sciences prior to progressing into their first clinical internship course (NMT 330C or MRI 402 or RAD 201C or RTT 201C). Students who are unsuccessful in their first attempt to pass RSC 110 may be delayed in progression in their curriculum while repeating the course. Note that students are allowed only two attempts to successfully complete a course. Failure to successfully achieve a grade of C or higher in the second attempt of RSC 110, therefore, will result in dismissal from the School of Medical Imaging and Therapeutics program.

Medical terminology is a prerequisite for admission to all fast track School of Medical Imaging and Therapeutics programs, effective summer and fall 2010.

### **Introduction to the Major**

All students entering the University as first-year students (including first year transfer students) must take a 1-semester-hour Introduction to the Major during the fall semester. The seminar is designed to ease the transition from high school to college by orienting students to MCPHS resources, career opportunities, and the academic skills needed for classroom success.



## Arts and Sciences Core Curriculum

All Bachelor of Science and first professional degree programs at MCPHS must incorporate the Arts and Sciences core curriculum through curriculum components that are equivalent to the following minimum standards.

DISCIPLINE(S)	MINIMUM STANDARD
<b>Science and mathematics (13 semester hours)</b>	
Life sciences	One course
Chemistry*	One course, with laboratory
Mathematics, physics, and computer science	One course
Statistics	One course
<b>Liberal arts (27 semester hours)</b>	
Healthcare ethics	One course
Communication studies	One course
Composition (includes introduction to literature)	Two courses
Introduction to behavioral sciences	One course
Introduction to social sciences	One course
Liberal arts distribution	Three courses; at least one course (elective or required) must be in each of the three distribution areas (humanities, social sciences, and behavioral sciences)

\* For those academic programs that do not require a chemistry laboratory as part of the degree requirement, the laboratory requirement will be replaced with any life or physical science laboratory course. See specific program curricula.

## Core Curriculum Rationale

### *Preamble: The Arts and Sciences Core Curriculum and General Education*

In addition to education in the various Arts and Sciences disciplines and preparatory work in areas prerequisite to the curricula of the professional programs, the Arts and Sciences core curriculum promotes an integrated education. Integration facilitates liberal learning in the professional curricula through emphasis on six general ability-based outcomes: critical thinking and decision making, social interaction and citizenship, self-awareness and social responsibility, lifelong learning, communication, and value-based action. Allocation of space for distribution electives, along with the presence of required courses in interpersonal communication and healthcare ethics during the advanced and professional years, affirms the faculty's commitment to education of the whole person.

### *Life Sciences*

The life sciences introduce students to fundamental biological principles that are necessary to their future studies as healthcare professionals. Courses such as Cell and Molecular Biology and Biology of Organisms establish the foundations for understanding the cellular, biochemical, immunological, and microbial mechanisms that form the basis of more advanced studies, such as microbiology, physiology, pathophysiology, and pharmaceutical biotechnology. The life sciences component of the core curriculum is designed to provide students with a breadth of basic knowledge and practice in applying that knowledge to solve complex problems. Emphasis on active learning strategies in both didactic and laboratory assignments prepares students for the independent and advanced learning required by all degree programs at the University.

### *Chemistry*

Chemistry introduces students to the composition, structure, and properties of substances and is fundamental to an understanding of the physical world. By gaining knowledge of the particulate nature of matter, students learn an explanatory paradigm that supports the biological and pharmaceutical sciences and illuminates the history of science and technology. Since the atomic world is not directly observable, the discipline of chemistry cultivates formal reasoning skills, such as drawing inferences from observations. By approaching knowledge through a constructivist perspective, chemistry complements the liberal arts and develops an appreciation for open-minded and dynamic learning.

### *Mathematics, Physics, and Computer Science*

Mathematics is the basic language of the sciences. The process of learning mathematics helps develop logical and rational habits of reasoning and acclimates students to the operation of formal systems. Physics helps students implement active learning strategies in the analysis and solution of complex problems requiring the integration of symbolic, mathematical reasoning with verbal and visual thinking skills. Laboratories cast the student in the role of researcher and emphasize the importance of careful procedure and observation in the collection and analysis of experimental data. A sound understanding of calculus and the calculus-based concepts and principles of mechanics

provides a necessary foundation for advanced study in chemistry and the biomedical and pharmaceutical sciences. Computers and communication technologies have become integral aspects of scientific learning and professional practice. Computer science courses provide knowledge of critical software applications, hardware components, and Internet resources. They foster the creative organization and presentation of information, enhance problem-solving and data management skills, and develop abilities to track and use new information pertinent to professional learning and practice.

#### *Statistics*

Statistics is a core course because it provides the tools needed to accurately assess statistical analyses that are reported in both the mass media and scholarly publications. The ability to effectively interpret numerical and graphical statistics is necessary for advanced study in the health professions, and it is essential that healthcare professionals demonstrate knowledge of the statistical terminology and methodologies found in the biomedical and professional literature. The formal study of statistics complements the sciences because it also requires that students learn to formulate and test hypotheses and draw appropriate conclusions.

#### *Healthcare Ethics*

Ethics is a necessary component of any professional education. Healthcare ethics prepares students to identify the salient ethical issues that arise in contemporary healthcare practice (including biomedical and behavioral research). Formal instruction puts these contemporary issues in broader context by introducing students to the historical quest for a coherent and comprehensive normative ethical theory to guide personal and professional conduct. It also reviews and evaluates the strengths and limitations of competing normative ethical theories and engages students in theoretical discussion and analysis of problematic case studies. This core component forms one of the crucial general ability-based outcomes in professional education: the responsible use of values and ethical principles.

#### *Communication*

Interpersonal communication is also a necessary core component in the education of health professionals. Communication studies provide a theoretical model for understanding the two-way nature of communication and the various factors that influence the transmission and exchange of information and the development of interpersonal relationships, including patient-provider relationships. Communication studies help students assess their communication competencies, improve their ability to work with colleagues, and adapt to new social environments. Students learn listening and public speaking skills, assertiveness strategies, and ways of demonstrating empathy. Enhanced self-awareness and self-esteem contribute to professional development and lifelong learning.

#### *Composition*

Expository writing develops the ability to write clearly, concisely, and precisely. The use of writing as a tool for learning increases academic performance across the curriculum and promotes student-centered learning. Writing from sources teaches summary, synthesis, and criticism skills that are basic to all disciplines. Expository writing also develops research skills, including the use of library and online resources, location and evaluation of source materials, thesis formulation and development, and referencing and citation techniques. Attention to works of prose fiction, drama, and poetry, and student-centered exploration of moods and meanings in expressive media provide the foundation for humanistic, literary, and aesthetic analysis.

#### *Introduction to the Behavioral Sciences*

A foundational course in the behavioral sciences teaches students how internal factors (e.g., personality and motives) and external factors (e.g., social pressures) combine to affect behavior. Students learn to appreciate the manner in which human behavior can be studied systematically and scientifically. They also come to understand the differences between “normal” and “abnormal” behavior and how difficult it can be to distinguish these. Students learn that some of their assumptions about humans are misconceptions and stereotypes, and they learn to apply the concepts, theories, and principles of psychology and/or sociology to develop a better understanding of themselves and those around them.

#### *Introduction to the Social Sciences*

A foundational, interdisciplinary course in the social sciences teaches students the value of historical perspective as well as terms and concepts basic to disciplinary study in the social sciences (e.g., culture, class, ethnicity, race, gender, and social construction). Students survey historical patterns of immigration and social transformation, study themes related to the emergence of American culture and identity, and explore various forces and factors that contribute to the formation of both individual and collective identities. Students are introduced to the analysis and use of historical documents, secondary sources, and visual media. Students learn how to locate contemporary issues in historical, social, economic, and political frameworks; to identify individual, social, and cultural differences; and to express sensitivity and tolerance within a culturally diverse society.

### *Humanities*

Humanities distribution electives include courses in advanced foreign languages, aesthetics, literature, philosophy, and religious studies. All humanities courses are writing intensive and build on prerequisite composition courses. They develop critical reading and reasoning skills and foster esthetic, moral, and humanistic inquiry. Essay assignments emphasize analytical, synthetic, interpretive, thematic, and/or argumentative writing.

### **Minor Requirements**

For those students in Arts and Sciences, Health Sciences, or School of Pharmacy–Boston who desire further study in specialty areas, minor concentrations are available in American Studies, Biology, Business, Chemistry, Healthcare Humanities, Health Psychology, Nutrition, Performing Arts, Premedical Studies, Public Health, Women’s Studies and Sustainability.

Students complete at least three (3) courses that are only applied to one minor; these courses may not be used to fulfill requirements for the major or another minor.

Requirements for completion of some minors vary for students in the Premedical and Health Studies degree program. These students declare minors by completing a Declaration of Minor form, and they must fulfill the minor requirements defined for their program.

### **American Studies**

*Coordinator: Dr. Jennifer Tebbe*

The American Studies minor is designed to offer students an opportunity to coordinate liberal arts electives in several disciplines—behavioral sciences, literature, history, social and political sciences, and public health in the United States—to form a coherent body of knowledge in the study of American culture.

#### *Required Courses*

COURSE	TITLE	SEMESTER HOURS
LIB 530	Undergraduate Research Project (following completion of at least 12 semester hours in the minor)	3
SSC 430	The Fifties: Introduction to American Studies or	
SSC 431	The Sixties: Introduction to American Studies	3
TOTAL		6

#### *Elective Courses*

Three courses selected from the following list for a total of 9 semester hours:

COURSE	TITLE	SEMESTER HOURS
HUM 252	The Short Story	3
HUM 458	Modern American Writers	3
SSC 230	Cultural Anthropology	3
SSC 340	Survey of Modern American History	3
SSC 430*	The Fifties: Introduction to American Studies	3
SSC 431*	The Sixties: Introduction to American Studies	3
SSC 440	Women in History	3
SSC 495	Evolution of the Health Professions	3
HUM 291	Introduction to Film	3
HUM 353	Literary Boston in the 19 <sup>th</sup> Century	3
HUM 357.O	Immigrant Literature	3
PBH 435	Public Policy and Public Health	3
SSC 345	Immigrant Experience	3
SSC 420	20 <sup>th</sup> Century Pop Music and Culture	3
SSC 444	Cigarettes in American Culture	3
SSC 445.O	The Irish in America	3

SSC 452	Urban History	3
SSC 474NO.O	The Politics of Food	3
SSC 475PO.O	Mental Health and American Culture	3
SSC 475	The History of Social Movements	3
<b>TOTAL semester hours for minor</b>		<b>15</b>

\*If not taken for the required course

## Biology

*Coordinator: Dr. Joseph DeMasi*

The Biology minor is designed to offer students an opportunity for additional and advanced-level study in the biological sciences. The minor will prepare students for postgraduate study in biological and medical sciences.

### Required Courses

Four advanced-level courses from the following list that are not required for the student's degree (or, for Premedical and Health Studies majors, fulfill an advanced biology elective):

COURSE	TITLE	SEMESTER HOURS
BEH 341	Biological Psychology	3
BIO 321	Nutrition Science	3
BIO 332	Genetics	3
BIO 345	Exercise Physiology	3
BIO 346	Applied Concepts in Public Health	3
BIO 405	Plagues of the Past, Present, and Future	3
BIO 430	Molecular Biology of Cancer	3
BIO 434	Immunology	3
BIO 440	Cell Biology	3
BIO 445	Advanced Human Physiology	3
BIO 465	Medical Parasitology	3
BIO 455	Advanced Microbiology (w/lab)	4
PSB 328	Physiology/Pathophysiology I or BIO 351 Advanced Anatomy & Physiology I	4
PSB 329	Physiology/Pathophysiology II or BIO 352 Advanced Anatomy & Physiology II	4
PSB 440	Molecular Biotechnology	3
<b>TOTAL</b>		<b>12-15</b>

## Chemistry

*Coordinator: Dr. Songwen Xie*

The Chemistry minor is designed to offer students an opportunity for additional and advanced-level study in the chemical sciences.

### Required Courses

COURSE	TITLE	SEMESTER HOURS
CHE 234L	Organic Chemistry II Laboratory	1
CHE 314	Analytical Chemistry (w/lab)	4
CHE 717	Instrumental Analysis (w/lab) or	
CHE 340	Inorganic Chemistry (w/lab)	4
PHY 272L	Foundations of Physics I Laboratory	1
PHY 274	Foundations of Physics II (w/lab)	4
<b>TOTAL</b>		<b>14</b>

## Healthcare Humanities

*Coordinator: Dr. Martha Gardner*

The Healthcare Humanities minor provides a coordinated curriculum of study that emphasizes the relevance of humanistic perspectives to illness experiences and the healthcare professions. Students must earn a minimum of 15 semester hours.

*Required Courses*

COURSE	TITLE	SEMESTER HOURS
HUM 345	Healthcare Humanities	3
HUM 456	Narrative and Medicine	3
Total		6

*Elective Courses*

Three courses from the following lists, including at least one HUM and one SSC course:

*Humanities*

COURSE	TITLE	SEMESTER HOURS
HUM 355	Science, Technology, and Values	3
HUM 452	Women Writers	3

*Social Sciences*

COURSE	TITLE	SEMESTER HOURS
SSC 432	Medical Anthropology (requires Cultural Anthropology prerequisite)	3
SSC 444	Cigarettes in American Culture	3
SSC 495	Evolution of the Health Professions	3

*Behavioral Sciences*

COURSE	TITLE	SEMESTER HOURS
BEH 254	Death and Dying	3
BEH 260	Behavioral Health	3
BEH 405	Mind/Body Medicine	3
BEH 454	Stress and Illness	3

**Health Psychology**

*Coordinator: Dr. Stacie Spencer*

The Health Psychology minor is designed to offer students a solid foundation in the theories, approaches, and methods of psychology as they relate to healthcare and to provide preparation for careers in such areas as health promotion, mental health pharmacy, psychiatric nursing, and social services delivery. Students must earn a minimum of 15 semester hours.

*Required Courses*

COURSE	TITLE	SEMESTER HOURS
BEH 250	Health Psychology	3
BEH 451	Research Methods in Health and Behavior	3
TOTAL		6

*Elective Courses*

Three additional BEH courses with at least one basic (traditional areas not directly associated with health issues) and one applied (courses that have a specific health-related focus) course. Lists of basic and applied courses may be found on the MCPHS website and at the Center for Academic Success and Enrichment, and will be provided to students when they are accepted into the minor.

**Nutrition**

*Coordinator: Dr. Marie Dacey*

As good nutrition is a foundation of health, MCPHS students may minor in Nutrition. This minor course of study will support all undergraduate programs at MCPHS as an enriching educational experience to study nutrition from a biopsychosocial perspective. It is interdisciplinary by design. It will provide a foundation in nutrition, especially for students who desire more knowledge in the field before deciding whether to further pursue nutrition through graduate study and/or professional development.

The minor will comprise 15 semester hours; 9 semester hours are from required courses, and 6 are from electives.

*Required Courses*

COURSE	TITLE	SEMESTER HOURS
BEH 353	Nutrition and Health	3
BIO 321O	Nutrition Science	3
SSC 356O	The Politics of Food)	3
TOTAL		9

*Elective Courses*

Two courses selected from the following list for a total of 6 semester hours:

COURSE	TITLE	SEMESTER HOURS
BEH 260	Behavioral Health	3
HSC 301O	Health Promotion	3
HSC 315O	Planning Health Education and Promotion Programs	3
HSC 330O	Leadership in Health Education and Promotion	3
HSC 450O	Health Communication, Literacy, and Disparities	3
PBH 350	Global Health	3
PBH 370	Epidemiology of Chronic and Infectious Diseases	3
PBH 450J	Women in Public Health	3
PBH 435	Public Policy and Health	3
LIB 530	Undergraduate Research	3
LIB 532	Directed Study	3

\*Pre-med majors may substitute BIO 346 for PBH 250

*Students may also petition to apply credit from nutrition courses completed through the Colleges of the Fenway toward elective credits in this minor course of study.*

**Performing Arts (Colleges of the Fenway)**

*Coordinator: Dr. Virginia Briggs*

The Colleges of the Fenway minor in Performing Arts integrates performing experiences with classroom study of the performing arts: dance, music, theater, and performance art. The minor includes study, observation, and practice of the performing arts. It consists of Introduction to Performing Arts; three discipline-specific courses (dance, music, and theater); and one upper-level course, as well as three semesters of an approved performance ensemble.

*Requirements*

**A. Four academic courses as follows:**

Introduction to the Performing Arts  
Three courses, one each in music, dance, and theater

**B. One upper-level elective course**

**C. Three semesters of participation in an approved cocurricular (noncredit) performing arts activity from the following list:**

COF Orchestra  
COF Chorus  
COF Dance Project  
COF Theater Project  
Emmanuel Theater Guild  
Simmons Chorale  
Wheelock Family Theater

Information on available performing arts courses, the performance ensembles, and completion of the minor is available from Dr. Virginia Briggs, MCPHS advisor for the Minor in Performing Arts, in the School of Arts and Sciences; and Raymond Fahmer, Director, Office of Performing Arts, Colleges of the Fenway (tel.: 617.521.2075).

## Premedical

MCPHS offers a solid preparation for entrance into medical, dental, optometry, podiatry, or veterinary schools. Majors in Chemistry and Pharmacology/Toxicology follow a curriculum that meets or exceeds the minimum requirements of most medical schools. Majors in Medical and Molecular Biology, Health Psychology, Pharmaceutical Sciences, Pharmacy, and Public Health may choose electives that also fulfill premedical requirements.

Medical schools vary in their recommendations beyond the minimum requirements. Students who choose the Premedical minor may tailor their preparation for specific medical schools by selecting appropriate electives. Opportunities also are available for excellent students to do research in a laboratory or clinical setting, thereby improving their skills and increasing the chance of admission to a medical school.

The Premedical minor is *not* appropriate for students who wish to pursue professional study in the physician assistant, physical therapy, or occupational therapy fields.

### Required Courses

COURSE	TITLE	SEMESTER HOURS
BIO 151	Biology I: Cellular and Molecular Biology	3
BIO 152	Biology II: Biology of Organisms (w/lab)	4
BIO 255	Medical Microbiology (w/lab)	4
CHE 131	Chemical Principles I (w/lab)	4
CHE 132	Chemical Principles II (w/lab)	4
CHE 231	Organic Chemistry I (w/lab)	4
CHE 232	Organic Chemistry II	3
CHE 234L	Organic Chemistry II Laboratory	1
MAT 151*	Calculus I	3
MAT 152*	Calculus II	3
PHY 270*	Foundations of Physics I	3
PHY 272L*	Foundations of Physics I Laboratory	1
PHY 274*	Foundations of Physics II (w/lab)	4
BIO 360**	Cellular Biochemistry or PSB331/332 Biochemistry I and II	4 or 6

\* MAT 171 and 172 and PHY 280 and 284 may be substituted for these courses.

\*\* Students may complete BIO 360 Cellular Biochemistry (4) in place of PSB 331/332.

### Elective Courses

In addition to required courses, students seeking to earn a Premedical minor must complete three electives from the following list. The three electives must have three different prefixes.

COURSE	TITLE	SEMESTER HOURS
BEH 250	Health Psychology	3
BEH 260	Behavioral Health	3
BEH 341	Biological Psychology	3
BEH 352	Human Development through the Life Cycle	3
BEH 405	Mind/Body Medicine	3
BEH 454	Stress and Illness	3
BEH 457	Drugs and Behavior	3
BIO 332	Genetics	3
BIO 430	Molecular Biology of Cancer	3
BIO 450	Cell Biology	3
BIO 434	Immunology	3
HUM 345	Healthcare Humanities	3
HUM 355	Science, Technology, and Values	3
HUM 452	Women Writers	3
HUM 456	Narrative and Medicine	3

PBH 330	Epidemiology	3
PBH 435	Public Policy and Public Health	3
PPB 538	Global Infectious Diseases	3
PSB 412	Patients' Rights and Professionals' Liabilities	3
SSC 432	Medical Anthropology	3
SSC 444	Cigarettes in American Culture	3
SSC 495	Evolution of the Health Professions	3

## Public Health

*Coordinator: Dr. Keri J. Griffin*

The Public Health minor provides a coherent curriculum in the foundational areas of public health: the population health perspective, biostatistics, and epidemiology. Students choose additional studies in public health areas of their interest (e.g., health promotion, community health, medical anthropology, health policy, or environmental health). The minor provides a complementary area of study for majors in Health Psychology, Medical and Molecular Biology, and Premedical and Health Studies. It is available to other programs with general elective options.

### Required Courses

COURSE	TITLE	SEMESTER HOURS
MAT 461	Biostatistics	3
PBH 250	Introduction to Public Health	3
PBH 330	Epidemiology	3
TOTAL		9

### Elective Courses

Two electives from the following list:

COURSE	TITLE	SEMESTER HOURS
BIO 405	Plagues of the Past, Present, and Future	3
HSC 301O	Health Promotion	3
PBH 340	Environment and Health	3
PBH 335	Human Sexuality	3
PBH 420	Community Health	3
PBH 435	Public Policy and Public Health	3
SSC 432	Medical Anthropology	3
SSC 444	Cigarettes in American Culture	3

## Sustainability (Colleges of the Fenway)

*Coordinator: Dr. Lana Dvorkin Camiel*

The Colleges of the Fenway minor in Sustainability encourages students outside of environmental science itself to explore the connections of their career-directed studies to the linked issues of the natural world, finite resources and social justice. The minor is purposely designed for breadth of coverage with the intent for the student to explore various dimensions of sustainability that will inform his/her view of his/her major. The selection of specific courses within the minor is meant to be undertaken in consultation with the student's major advisor or another faculty member with an interest in issues of sustainability.

### Requirements

#### A. One academic courses (taken twice) as follows:

ENVI 201 Environmental Forum (taken twice), 3 semester hours

**B.** A total of 16 to 20 credits (depending on the college and credits), are required for the minor, with students taking four courses from at least two of the following groups:

#### **Environmental Technology and Science**

Wheelock: Introduction to Marine Biology  
Environmental Impacts



		Science Inquiry and the Earth Discovering Planet Earth Principles of Chemistry Natural Disasters Investigating Green Energy Meteorology
MCPHS:	HSC3010 PPB 540E PPB 535 CHE 435 BEH 454	Health Promotion Complementary and Alternative Medicine Herbal Supplements Green Chemistry Stress and Illness
WIT:	ARC550 ARCH482 ARCH 528 ENVM 580 ENVM 280 CHEM 400 CHEM 550 CIVT 350 CCEV 417 CIVT 600 CCEV 215 CCEV 350 CCEV 420 MECH 540	Urban Studies Site Planning and Landscape Environmental Systems Energy Resources and Conservation Environmental Ecology Environmental Chemistry Environmental Chemistry Environmental Topics Design/Construction Design for the Environment Environmental Design and Construction Water Resources Design/Management Env Topics in Design Construction Ind Sustainability in Built Environment Energy Analysis/CoGen Build Facilities
Simmons:	BIOL 104 BIOL 245 CHEM 109 CHEM 227 HON 308 PHYS105	Introduction to Environmental Science Ecology Chemistry and Consumption Energy and Global Warming Sustainability and Global Warming Science and Technology in the Everyday World
Emmanuel:	BIOL1112 BIOL 1211 BIOL 2105 BIOL 2107 BIOL 2151 CHEM 1104 CHEM 1111 CHEM 1112 CHEM 2113 PHYS 1121 PHYS 1222	Biology and Society Emerging Infectious Diseases Plant Biology Ecology Marine Biology Chemistry of Everyday Life Chemistry: World of Choices Chemistry: World of Choices Chemistry of Boston Waterways Energy and the Environment Energy and the Environment
MassArt:	EDAD202 EDAD 312 EDAD 302 LAMS 320	Sustainable Lighting: First Light Advanced Lighting and Sustainability: City Lights Methods and Materials Net Zero House Sustainable Architecture Environmental Science
<b>Political Policy/Economics</b>		
Wheelock:		Introduction to American Government
MCPHS:	PBH 435 SSC 495	Public Policy and Public Health Evolution of the Health Professions

Simmons:	ECON 247 ECON 239 POLS 239 POLS 245M	Environmental Economics Government Regulation of Industry American Public Policy Politics of Newly Industrialized States
Emmanuel:	ECON 2112 ECON 3103 ECON 3109 ECON 3113 ECON 3115 POLS 2203 POLS 3303 POLS 3305	Politics of International Economic Relations International Economy Emerging Economies Economics of Health Care Economics and the Environment Political Socialization Street Democracy Women in Global Politics
MassArt:	LASS 299 LASS 357	Global Black Studies Civil Liberties
<b>Social Equity</b>		
Wheelock:		Contemporary Moral Issues Globalization and Human Rights Philosophy of Social Justice Issues in Globalization Food and Globalization Perspectives on Global Health Sociology of Minority Groups
MCPHS:	NUR 702 PPB 538 SSC 230 SSC 240 SSC 345 SSC 432	Human Diversity Global Infectious Diseases Cultural Anthropology Social Science Problems Immigrant Experiences Medical Anthropology
Simmons:	HIST 205 MGMT 224 SJ 220 SOC 241 SOCI	Global Environmental History Socially Minded Leadership Working for Social Issues Health Illness and Society International Health
Emmanuel:	ART 2202 ART 2204 PHIL 1115 PHIL 1201 PHIL 3201 SOC 1111 SOC 2105 SOC 2107 SOC 2127 SOC 2129 THRS 2108 THRS 2301 THRS 3133	Art History From Globalization to Transnationalism Recent Moral Issues Global Ethics Race, Ethnicity and Ethics Introduction to Sociology Race, Ethnicity and Group Relations The Urban World Social Class, and Inequity Cultural Geography Religion and the Environment Healthcare: Social Justice and Economics Social Justice and Religious Traditions
MassArt:	HART 375 HART 404	Landscape: Space and Place Protecting Cultural Heritage

## Women's Studies

*Coordinator: Dr. Kristen Petersen*

The interdisciplinary Women's Studies minor presents students with an understanding of gender across disciplines, maximizing the School's strengths in the social sciences, health and behavioral sciences, public health, biology, and the humanities. Women and men experience the world differently because socially constructed gender roles determine their spheres of influence, expectations for behavior, and health issues. Since MCPHS students are trained for occupations in healthcare fields, an understanding of the influence of gender in women's and men's lives is particularly relevant to their education.

### *Required Courses*

COURSE	TITLE	SEMESTER HOURS
SSC 349	Introduction to Women's and Gender Studies	3

### *Two of the Following Courses*

BEH 356	Gender Roles	3
PBH 335	Human Sexuality	3
SSC 230	Cultural Anthropology	3
SSC 440	Women in History	3

### *Two of the Following Elective Courses*

BEH 351	Social Psychology	3
BEH 352	Human Development through the Life Cycle	3
BIO 532	Directed Study	3
HUM 252	Women Writers	3
HUM 457	Modern British Writers	3
HUM 458	Modern American Writers	3
LIB 532	Directed Study	3
PBH 435	Public Policy and Public Health	3
SSC 230	Cultural Anthropology	3
SSC 354	Family in Society	3
SSC 432	Medical Anthropology	3
SSC 495	Evolution of the Health Professions	3

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TOTAL		15
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## MCPHS University–Boston

### School of Arts and Sciences

Delia Castro Anderson, PhD, Professor, Associate Provost for Undergraduate Education and Dean

Roger M. Denome, PhD, Associate Professor and Associate Dean

Kate Bresonis, MS, Assistant Professor and Assistant Dean

Joe DeMasi, PhD, Associate Professor of Biology and Chair of the Department of Mathematics and Natural Sciences

Susan Gorman, PhD, Associate Professor of English and Chair of the Department of Humanities, Behavioral, and Social Sciences

Professors Anderson, Bodwell, Dacey, Garafalo, Ginsburg, Harvan, Richman, Spencer, Tebbe-Grossman; Associate Professors Barden, Chang, L. Chen, DeMasi, Denome, Farkas, L. Foye (Emerita), Gardner, Gorman, Griffin, Hart, Ho, Kelley, Kentner, Luca, Nelson, Petersen, Tanner (Emeritus), Tataronis; Assistant Professors Bresonis, Chase, Ellis, Guerrero, Heising, Ruben, Shifley, Wade, Xie; Instructors Broadbelt, Habershaw, Holloway, Jana, Johnson, Poulos, Schneider, Young; Faculty Associates Abdelal, Bouchard, F. Chen, DePierro, Gosselin, Grandy, Peden, Van Dellen

### Degree Programs

- Bachelor of Science in Chemistry / Master of Science in Pharmaceutical Chemistry
- Bachelor of Science in Health Psychology
- Bachelor of Science in Health Sciences
- Bachelor of Science in Health Sciences Completion\*
- Bachelor of Science in Medical and Molecular Biology
- Bachelor of Science in Premedical and Health Studies
- Bachelor of Science in Public Health
- Bachelor of Science in Public Health/ Master of Public Health\*
- Master of Public Health\*
- Graduate Certificate in Public Health

\*Online programs are affiliated with the Center for Online Learning and Academic Innovation.

### Technical Standards for the School of Arts and Sciences\*

The School of Arts and Sciences has specified the following nonacademic criteria (“technical standards”), which all students are expected to meet, with or without reasonable accommodation, in order to participate in the educational programs of the school.

#### Observation

Students must be able to carry out procedures involved in the learning process that are fundamental to the courses offered at the University. Students are expected to actively participate in all demonstrations / laboratory exercises in the basic sciences, and to learn and function in a wide variety of didactic settings in science, humanities, and social and behavioral sciences courses. Such observation and information acquisition requires the functional use of visual, auditory, and somatic sensation. Students must have sufficient vision to be able to observe demonstrations, experiments, and laboratory exercises in the sciences, including computer-assisted instruction. They must be able to view images via a microscope.

#### Communication

Students must be able to communicate effectively in English with faculty, students, administrators, and peers in settings where communication is typically oral or written. They should be able to speak, hear, and observe in order to be effectively involved in the didactic learning process. They are expected to acquire, assimilate, interpret, integrate, and apply information from direct observation, oral communication, written messages, films, slides, microscopes, and other media.

#### Motor and Sensory

Students must possess sufficient motor function, fine motor skills, and sensory skills to perform the requirements identified in their respective professional career track. They should possess sufficient motor function to execute the

necessary movements to participate in the laboratory portion of the science courses. Such actions require coordination of both gross and fine muscular movements, equilibrium, and functional use of the senses of touch and vision.

\* These technical standards were adapted from *Report of the Special Advisory Panel on Technical Standards for Medical School Admission*, American Association of Medical Colleges, 2008.

### **Bachelor of Science in Chemistry and Master of Science in Pharmaceutical Chemistry**

The Bachelor of Science in Chemistry / Master of Science in Pharmaceutical Chemistry program is designed for students who are interested in a career in chemistry. It allows students to obtain a master's degree in five years instead of the six to seven years that it would take to complete two degrees separately. Additionally, this program is designed to take advantage of the University's strengths in the pharmaceutical sciences. Students will obtain experience in biotechnology techniques and will learn the principles of drug design and mechanism of action. The BS/MS includes both a research project and an internship, ensuring that graduates will be prepared to work in industry or pursue a PhD. There are two options to complete the research requirement, the lab-based research and the literature-based research. MS students have the opportunity to be teaching assistants. Students should understand that being a TA takes time from conducting research. If a student chooses to teach, it is not guaranteed that he/she can graduate on time. Students in the sixth year should register for CHE 895 Graduate Study Extension (0 Cr) for fall and spring semesters.

A student who decides to pursue the Bachelor of Science degree alone must take additional elective credits in the spring of the fourth year to complete the 124 total semester hours required for the BS. Students continuing in the BS/MS program complete the entire curriculum as outlined. They must be enrolled for one summer in order to complete the research project.

To remain in good academic standing in the Bachelor of Science in Chemistry program, students must maintain a cumulative 2.0 grade point average (GPA). To progress into the Master of Science phase, students must apply at the end of their third year, successfully complete an interview, and have an overall GPA of at least 3.0, as well as a 3.0 or better GPA in all BIO, CHE, MAT, and PHY courses. Students must maintain a 3.0 GPA to remain in good academic standing in the MS program. To meet the residency requirement for the BS, students must complete at least 64 semester hours at the University. All fourth- and fifth-year requirements for the MS degree must be completed at the University.

### **Curriculum: Bachelor of Science in Chemistry / Master of Science in Pharmaceutical Chemistry**

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 150L	Biology I Laboratory	1
BIO 151	Biology I: Cell and Molecular Biology	3
CHE 131	Chemical Principles I (w/lab)	4
LIB 111	Expository Writing I	3
MAT 151	Calculus I	3
ITM 101	Introduction to the Major	1
TOTAL		15

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 152	Biology II: Biology of Organisms (w/lab)	4
CHE 132	Chemical Principles II (w/lab)	4
LIB 112	Expository Writing II	3
LIB 133*	American Culture, Identity, and Public Life	3
MAT 152	Calculus II	3
TOTAL		17

\* May be taken either semester

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
CHE 231	Organic Chemistry I (w/lab)	4
LIB 120*	Introduction to Psychology	3
MAT 261	Statistics	3
PHY 270	Foundations of Physics I	3
PHY 272L	Foundations of Physics I Laboratory	1
	Distribution elective	3
TOTAL		17

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
CHE 232	Organic Chemistry II	3
CHE 234L	Organic Chemistry II Laboratory	1
CHE 314	Analytical Chemistry (w/lab)	4
INF 210	Survey of Literature of Chemistry	1
LIB 252	Introduction to Speech	3
PHY 274	Foundations of Physics II (w/lab)	4
TOTAL		16

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
CHE 717	Instrumental Analysis (w/lab)	4
CHE 365	Thermodynamics and Kinetics (w/lab)	4
LIB 512	Healthcare Ethics	3
PSB 331	Biochemistry I	3
	Distribution elective	3
TOTAL		17

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
CHE 340	Inorganic Chemistry (w/lab)	4
CHE 367	Quantum Mechanics and Molecular Structure (w/lab)	4
PSB 332	Biochemistry II	3
CHE 333L	Introductory Biochemistry Laboratory	1
CHE 714	Spectroscopic Analysis (w/lab)	3
TOTAL		15

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
CHE 731	Advanced Organic Chemistry	4
CHE 755	Stereochemistry	3
PSB 346	Physico-chemical Properties of Drug Molecules	3
	Distribution elective	3
	Advanced chemistry elective	3
TOTAL		16

Year IV—spring\* (BS degree)

COURSE	TITLE	SEMESTER HOURS
CHE 450	Pharmaceutical Chemistry I (w/lab)	4
CHE 445L	Experimental Techniques in Chemistry	2
	Advanced chemistry electives*	5–6
TOTAL		11–12

\* Students completing the BS degree alone take two advanced electives in the spring semester but do not register for research or seminar credits. CHE 810 Heterocyclic Chemistry (2 semester hours), PSB 820 Advanced Medicinal Chemistry I (3 semester hours), or PSB 851 Bio-organic Chemistry (2 semester hours) may be taken by BS students only with permission of the instructor.

**Total credits to complete Bachelor of Science degree requirements: 124 semester hours**

Year IV—spring\* (MS degree)

COURSE	TITLE	SEMESTER HOURS
CHE 450	Pharmaceutical Chemistry I (w/lab)	4
CHE 710	Seminar*	1
CHE 445L	Experimental Techniques in Chemistry	2
CHE 880	Research* or	
CHE 885	Literature Based Research*	3
	Advanced chemistry elective*	2–3
TOTAL		12–13

\* Students continuing with the Master of Science curriculum register for research or literature-based research, seminar, and one advanced elective. Recommended MS electives are PSB 820 Advanced Medicinal Chemistry I (3 semester hours) or PSB 851 Bio-organic Chemistry (2 semester hours).

Year IV—summer

COURSE	TITLE	SEMESTER HOURS
CHE 880	Research or	
CHE 885	Literature Based Research	3

Year V—fall

COURSE	TITLE	SEMESTER HOURS
CHE 711	Seminar	1
CHE 751	Pharmaceutical Chemistry II (w/lab)	4
CHE 810	Heterocyclic Chemistry	2
CHE 880	Research or	
CHE 885	Literature Based Research	3
TOTAL		10

Year V—spring

COURSE	TITLE	SEMESTER HOURS
CHE825	Internship	12

**Total credits to complete BS/MS degree requirements: 150 semester hours**

Electives

COURSE	TITLE	SEMESTER HOURS
CHEM 347	Advanced Topics in Biochemistry (w/lab) (Simmons)	4
CHE 435	Green Chemistry (w/lab)	3
CHE 470	Characterization of Solids	3
CHE 530	Undergraduate Research Project	2
CHE 810	Heterocyclic Chemistry	2

PSB 802	Chemistry of Macromolecules	3
PSB 815	Drug Metabolism	3
PSB 820	Advanced Medicinal Chemistry I	3
PSB 822	Enzyme Kinetics	2
PSB 851	Bio-organic Chemistry	2

### Bachelor of Science in Health Psychology

The role of behavioral factors in health promotion, disease prevention, treatment of illness, and health policy has become one of the most interesting and fast-developing topics in the arena of healthcare. In response to this phenomenon, the four-year Bachelor of Science in Health Psychology program was developed.

The Health Psychology major allows students the flexibility to prepare for bachelor-level careers in patient care, healthcare research, management, or administration, or for further study in psychology, medicine, public health, or social work. In fact, with the growing emphasis medical school admission committees have placed on broad humanities undergraduate preparation in psychology and sociology, this program could serve as an ideal premedical track.

One of only a few in the country, the MCPHS Health Psychology major produces graduates with a range of knowledge in psychology, a strong preparation in the basic sciences and liberal arts, and an informed sense of healthcare issues from other fields such as sociology, law, ethics, literature, history, and healthcare administration. Students receive training in research methods and statistics. In their senior year, Health Psychology majors apply their knowledge through individually tailored internships in a setting such as a stress reduction, pain management, or elder care center in order to apply their knowledge and receive practical experience.

To remain in good academic standing, students must maintain a cumulative 2.0 grade point average (GPA). To meet the residency requirement for the Bachelor of Science in Health Psychology degree, students must complete at least 62 semester hours at the University.

### Curriculum: Bachelor of Science in Health Psychology

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 151*	Biology I: Cell and Molecular Biology	3
CHE 110**	Basic Chemistry I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
LIB 120	Introduction to Psychology	3
TOTAL		14

\* After consultation with the program director, students may substitute BIO 110 and 210 (Anatomy and Physiology I and II) for BIO 151 and 152.

\*\* Students in the Health Psychology major who choose to pursue a Premedical minor may substitute CHE 131 Chemical Principles I for CHE 110 and replace LIB 120 with MAT 151 Calculus I in the first semester. Additional curriculum changes should be reviewed with the program director and Center for Academic Success and Enrichment advisor.

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 152	Biology II: Biology of Organisms (w/lab)	4
LIB 112	Expository Writing II	3
LIB 133	American Culture, Identity, and Public Life	3
MAT	Math course determined by placement	3
MAT 197	Computer Applications	3
TOTAL		16



*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
BEH 250	Health Psychology	3
BEH 352	Human Development	3
MAT 261	Statistics	3
	Humanities elective	3
	Social sciences elective	3
TOTAL		15

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
BEH 101	Health Psychology Seminar I	1
BEH 350	Abnormal Psychology	3
BEH 451	Research Methods in Health and Behavior	3
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
	Social sciences elective	3
	General elective	3
TOTAL		16

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
BEH 260	Behavioral Health	3
BEH 456	Applications of Research Methods	3
BEH	Category A	3
LIB 512	Healthcare Ethics	3
	Humanities elective	3
TOTAL		15

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
BEH 102	Health Psychology Seminar II	1
BEH	Category B	3
BEH	Category C	3
MAT 461	Biostatistics	3
PSB 412	Medical Patients' Rights and Professionals' Liabilities	3
	General elective	3
TOTAL		16

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
BEH 103	Health Psychology Seminar III	1
BEH	Behavioral Science elective**	3
LIB 590	Health Psychology Field Placement I	3
	General electives	6
TOTAL		13

Year IV—spring

COURSE	TITLE	SEMESTER HOURS
BEH	Behavioral Science elective**	3
LIB 592	Health Psychology Capstone Seminar	3
	General electives	9
TOTAL		15

**Total credits to complete degree requirements: 120 semester hours**

**Category A:**

BEH 341 Biological Psychology  
BEH 405 Mind/Body Medicine  
BEH 454 Stress and Illness  
BEH 457 Drugs and Behavior

**Category B:**

BEH 254 Death and Dying  
BEH 357 Positive Psychology  
BEH 345 Myths and Misconceptions  
in Psychology

**Category C:**

BEH 351 Social Psychology  
BEH 355 Organizational Psychology  
BEH 356 Gender Roles  
BEH 340 Psychology of Aggression

**\*\* Behavioral sciences elective requirements may be fulfilled by any BEH course, including BEH 450 Selected Topics courses.**

**Bachelor of Science in Health Psychology Pathways offered: to view the Pathway options and the curriculum for each Pathway, visit: <https://www.mcphs.edu/academics/school-of-arts-and-sciences/psychology>**

### Bachelor of Science in Health Sciences

**Please note:** The Health Sciences program is not intended for those interested in dentistry, medicine, occupational therapy, optometry, osteopathy, physical therapy, physician assistant studies, or veterinary careers. Students interested in these disciplines are advised to enroll in the MCPHS Bachelor of Science in Premedical and Health Studies program, which is designed to prepare individuals for entry into these disciplines. However, students who choose to complete the degree requirements for the Bachelor of Science in Health Sciences may, with mentoring, advising, and required academic performance, qualify for admission into these postbaccalaureate programs.

The Health Sciences program is designed for first-year and transfer campus-based students who are interested in healthcare business, health promotion, or health information systems careers. The program is also designed for students who are undecided about their preferred health sciences career pathway. Students benefit from opportunities to build strong academic skills while gaining more detailed understanding of available programs and program-related career prospects.

### Program Details

**Nonclinical career pathway:** Nonclinical positions in the healthcare industry do not provide direct patient care. These positions take on behind-the-scenes or administrative tasks that help with the successful functioning of the healthcare facility. Because people in these positions do not provide patient care, they are considered nonclinical. Even though these positions have very different responsibilities than clinical positions, they are still a vital part of the operation of a healthcare facility. Examples of nonclinical positions in the healthcare industry include the following:

- Electronic medical records and health information systems specialists
- Health educators and health promotion coordinators
- Hospital, ambulatory care, long-term care, or public health business staff and managers
- Hospital unit coordinators and managers
- Human resource / recruiting professionals
- Medical billers and patient accounts representatives
- Medical receptionists and customer care representatives
- Public relations, health communications, and healthcare marketing associates

Students with a Bachelor of Science in Health Sciences may seek employment in nonclinical health sciences careers. By the third year, students choose a major concentration in Healthcare Management or Health Education.

**Clinical career transfer pathway:** Students may be admitted to the Health Sciences program for one year to work with mentors and advisors and explore health career options. Students benefit from opportunities to build strong academic skills while gaining more detailed understanding of available programs and program-related career prospects. In the spring semester of the first year, students may apply for transfer into one of several MCPHS University health professions

programs, such as Dental Hygiene, Nursing, or Medical Imaging and Therapeutics.

**Postgraduate career pathway:** By the third year, Health Sciences students may choose the postgraduate career pathway concentration with the intent of fulfilling prerequisite and admission requirements for a graduate program in the health sciences. With mentoring, advising, and required academic performance, these students may customize their third- and fourth-year course selections in their chosen postgraduate career pathway.

**Curriculum: Bachelor of Science in Health Sciences**

*NOTE: Entry-level students must complete the following courses at MCPHS, or receive transfer credit for equivalent courses (higher-level science and mathematics courses may be substituted with approval of the program director)*

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO110/L	Anatomy & Physiology I (w/lab)	4
CHE 110/L	Basic Chemistry I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 141	Algebra & Trigonometry	3
TOTAL		15

*\*\* Students interested in MRI degree must complete MAT 151 and 152.*

*\*\*\* Students interested in SMIT programs will take PHY 270/272L. Students interested in DHY or NUR or a nonclinical career do not need a physics course.*

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 210/L	Anatomy & Physiology II (w/lab)	4
CHE 210/L	Basic Chemistry II (w/lab)	4
HSC 110	Introduction to Health Sciences Seminar	1
LIB 112	Expository Writing II	3
LIB 120	Introduction to Psychology	3
TOTAL		15

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
BEH 352	Human Development through the Life Cycle	3
HSC 210	Introduction to Health Sciences	1
HSC 301O	Health Promotion	3
LIB 133	American Culture, Identity & Public Life	3
LIB 220	Interpersonal Communication	3
MAT 261	Statistics	3
TOTAL		16

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 255/L	Microbiology (w/lab)	4
BEH 250	Health Psychology	3
HSC 401O	Public Health and Policy	3
	Social sciences elective (SSC)	3
	Distribution elective (HUM)	3
TOTAL		16

**NOTE: Students select a concentration program prior to Year III, with approval from program director.**

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
HSC 310O	Healthcare Informatics	3
HSC 320O	Writing for Health Sciences Professionals	3
LIB 512	Healthcare Ethics	3
	Concentration requirement	3
	General elective	3
TOTAL		15

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
HSC 410O	Research Analysis & Methods	3
PSB 320	Introduction to Healthcare Delivery	3
SSC 495	Evolution of the Health Professions	3
	Concentration requirement	3
	General Elective	3
TOTAL		15

*Year IV— fall*

COURSE	TITLE	SEMESTER HOURS
HSC 470	Health Sciences Practicum	3
	Concentration requirement	3
	Concentration requirement	3
	General elective	3
	General elective	3
TOTAL		15

*Year IV—spring*

COURSE	TITLE	SEMESTER HOURS
HSC XXX	Health Sciences Capstone	3
	Concentration requirement	3
	Concentration requirement	3
	General elective	3
	General elective	3
TOTAL		15

**Elective Courses = 18 semester hours**

Students may choose or transfer electives in consideration of their preferred health sciences career pathway and with approval of the program director.

**Concentrations**

Entry-level students must choose from the following concentration options. The concentration will include a minimum of 18 semester hours.

**Healthcare Management Concentration**

COURSE	TITLE	SEMESTER HOURS
HSC 325O	Healthcare Management	3
PSB 416	Managerial Accounting	3

HSC 4300	Law for Healthcare Managers	3
PSB 435	Introduction to Business	3
HSC 4350	Healthcare Marketing	3
HSC 4310	Managing Human Resources in Healthcare	3
<b>TOTAL</b>		<b>15</b>

### Health Education Concentration

COURSE	TITLE	SEMESTER HOURS
BEH 260	Behavioral Health	3
BEH 353	Nutrition and Health	3
BEH 405	Mind-Body Medicine	3
HSC 3150	Planning Health Education and Promotion Programs	3
HSC 4600	Health Communications, Literacy and Disparities	3
HSC 3300	Health Education and Promotion Leadership	3
<b>TOTAL</b>		<b>18</b>

**Bachelor of Science in Health Sciences Pathways: to view the Pathway options and the curriculum for each Pathway, visit: <https://www.mcphs.edu/academics/school-of-arts-and-sciences/health-sciences>**

### Postgraduate Pathway Concentration

Students interested in pursuing postgraduate advanced study may design an individualized concentration with approval by the program director. To be qualified for admission to a postgraduate advanced study program, students will need to meet the minimum GPA requirements and the prerequisite requirements for the graduate program they are interested in.

### Bachelor of Science in Health Sciences Academic Policies

The Health Sciences core and the concentration courses may not be transferred from another institution because they serve as the distinguishing elements of the 122-credit program curriculum. Courses may be MCPHS courses delivered using traditional or distance delivery methods, or approved Colleges of the Fenway courses. The Health Sciences core and concentration courses make up the 30-credit residency requirement for the three online degree completion options. To meet the MCPHS residency requirement for the on-campus entry-level option, at least one-half (61) of the required credits for the degree must be completed through MCPHS.

To remain in good standing in the BSHS program, regardless of program option, students must maintain a cumulative grade point average of at least 2.0.

### Bachelor of Science in Health Sciences Completion

The Health Sciences degree completion option is designed for transfer students with an earned associate degree in an allied health discipline such as dental hygiene, radiography or biological sciences and possess current registration, certification or licensure. The bachelor of science degree in health sciences benefits those looking for career progression into teaching or management positions within their disciplines, or positions in public health and health education.

### Prerequisites

- An associate degree in an allied health discipline from a programmatically and/or regionally accredited institution
- Current registration, certification or licensure in an allied health discipline
- A recommended cumulative GPA of 2.5 or higher

Please note that math and science coursework that is more than ten years old is not eligible for transfer credit and will need to be repeated.

Prior to matriculation, MCPHS Online also recommends that you have successfully completed the following coursework in your associate degree studies:

COURSE	SEMESTER HOURS
College level life sciences: one course*	3

College level chemistry: one course (with lab)*	4
Composition (Expository Writing): two courses	6
Introduction to Psychology	3
Introduction to Social Science (Sociology, History or Political Science)	3
Interpersonal Communication	3
Healthcare Ethics	
Algebra and Trigonometry	
Statistics	
Humanities Course	3
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TOTAL	34-43

## Curriculum

### 1. Arts and Sciences courses

Associate degree applicants will have met all or most of the Arts and Sciences general education course requirements. A minimum 34 semester hours is required (as listed below). Applicants with credit for Anatomy and Physiology I and II (with labs) and Basic Chemistry I and II (with labs) will be granted additional transfer credit, bringing the Arts and Sciences total to 43 s.h. MCPHS University staff will work with applicants to arrange for completion of any missing courses.

COURSE	TITLE	SEMESTER HOURS
	College level life sciences: one course*	3
	College level chemistry: one course (with lab)*	4
	Composition (Expository Writing): two courses	6
	Introduction to Psychology	3
	Introduction to Social Science (Sociology, History or Political Science)	3
	Interpersonal Communication	3
	Healthcare Ethics	
	Algebra and Trigonometry	
	Statistics	
	Humanities Course	3
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TOTAL		34-43

\*Applicants who are not practicing health professionals and who intend to pursue postbaccalaureate or fast track education in an allied health science discipline must complete Anatomy and Physiology I and II with labs (8 s.h.) and Basic Chemistry I and II with labs (8 s.h.).

### 2. Health Sciences Core

Students must successfully complete eighteen (18) semester hours in the Health Sciences Core. The Health Sciences Core must be taken with MCPHS University.

COURSE	TITLE	SEMESTER HOURS
HSC 3010	Health Promotion	3
HSC 3100	Healthcare Informatics	3
HSC 3200	Writing for Health Science Professionals	3
HSC 4010	Public Health and Policy	3
HSC 4100	Research Analysis and Methods	3
HSC 4200	Grant Proposal Writing for the Health Sciences	3
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TOTAL		18

### 3. Health Sciences Major

All students transferring into the MCPHS Online Bachelor of Science in Health Sciences program will receive 40 credits from professional coursework completed toward their associate degree in an allied health science program. These transfer credits are applied toward the required health sciences major portion of this program.

#### 4. Health Sciences Concentration

Entry-level students choose from one of the following concentration options. The concentration will comprise a minimum of 18 credits.

##### Healthcare Management

COURSE	TITLE	SEMESTER HOURS
HSC 325O	Healthcare Management	3
PSB 416O	Healthcare Managerial Accounting	3
HSC 430O	Law for Healthcare Managers	3
HSC 435O	Healthcare Marketing	3
HSC 4xxO	Managing Human Resources in Healthcare	3
HSC 532O	Directed Study	3
TOTAL		18

##### Health Professions Education

COURSE	TITLE	SEMESTER HOURS
HSC 425O	Educational Theories and Methods	3
HSC 416O	Curriculum and Course Development for the Health Sciences	3
HSC 4xxO	Assessment in Health Professions Education	3
HSC 427O	Teaching in the Clinical Setting	3
HSC 430O	Directing Health Sciences Education Programs	3
HSC 532O	Directed Study	3
TOTAL		18

#### 5. General electives

Students complete between 9 and 18 semester hours of general electives to reach the minimum 122 sh required for the degree. Transfer credit is also available for general electives. Transfer credit awarded for courses in the Arts and Sciences, Health Sciences Major and general elective areas may not exceed 92 sh.

#### Bachelor of Science in Medical and Molecular Biology

The Bachelor of Science in Medical and Molecular Biology is an undergraduate degree that prepares students for a number of employment and postgraduate study opportunities. These include entry-level laboratory positions; postgraduate certificate studies leading to careers in biotechnology, forensic science, and the clinical laboratory sciences; graduate studies in biology leading to careers in research, industry, and education; and application to medical and professional schools.

The curriculum design provides a broad foundation in the sciences and a wide variety of liberal arts courses that are integrated throughout the program. Major requirements in biology include medical microbiology and molecular biology in the second year; and cellular biochemistry, genetics, and six biology electives—two medical biology electives, two molecular and cellular biology electives, and two electives from either list. In the fourth year a science communication course provides a synthetic, capstone experience. In addition, students are encouraged to participate in undergraduate research opportunities at the University or in research/clinical laboratories in the local area.

To remain in good academic standing in the Bachelor of Science in Medical and Molecular Biology program, students must maintain a cumulative 2.0 grade point average (GPA). To meet the residency requirement for the BS in Medical and Molecular Biology, students must complete at least 63 semester hours at the University.

#### Curriculum: Bachelor of Science in Medical and Molecular Biology

Year I—fall

COURSE	TITLE	SEMESTER HOURS
BIO 150L	Biology I: Laboratory	1
BIO 151	Biology I: Cell and Molecular Biology	3

CHE 131	Chemical Principles I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 151	Calculus I	3
TOTAL		15

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 152	Biology II: Biology of Organisms (w/lab)	4
CHE 132	Chemical Principles II (w/lab)	4
LIB 112	Expository Writing II	3
LIB 133	American Culture, Identity, and Public Life	3
MAT 152	Calculus II	3
TOTAL		17

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 260	Molecular Biology	3
CHE 231	Organic Chemistry I (w/lab)	4
MAT 261	Statistics	3
LIB 120	Introduction to Psychology	3
	Social Science Elective	3
TOTAL		16

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 255	Medical Microbiology (w/lab)	4
CHE 232	Organic Chemistry II	3
CHE 234L	Organic Chemistry II Laboratory	1
	Biology elective	3
	Humanities elective	3
TOTAL		14

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 360	Cellular Biochemistry I	4
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
PHY 270	Foundations of Physics I	3
PHY 272L	Foundations of Physics I Laboratory	1
	Humanities elective	3
	Biology elective	3
TOTAL		17

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 332	Genetics	3
LIB 512	Healthcare Ethics	3



	Behavioral sciences elective	3
	Humanities elective	3
	General elective	3
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TOTAL		15

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
	Biology electives	9
	General electives	6
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TOTAL		15

*Year IV—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 420	Communication in the Biological Sciences	3
	Biology electives	3
	General electives	9
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TOTAL		15

**Total credits to complete degree requirements: 124 semester hours**

**Biology Electives.** Students must complete six biology electives: two from the Molecular and Cellular Biology Elective list, two from the Medical Biology Elective list, and two more from either list.

**Molecular and Cellular Biology Electives**

COURSE	TITLE
BIO 335L	Experimental Techniques in Molecular Biology
BIO 405	Plagues of the Past, Present, and Future
BIO 430	Molecular Biology of Cancer
BIO 440	Cell Biology
BIO 434	Immunology
BIO 455	Advanced Microbiology (w/lab)
BIO 530	Undergraduate Research Project
PSB 440	Molecular Biotechnology
	Approved Colleges of the Fenway courses

**Medical Biology Electives**

COURSE	TITLE
BEH 341	Biological Psychology
BIO 110	Anatomy and Physiology I with Lab
BIO 210	Anatomy and Physiology II with Lab
BIO 321	Nutrition Science
BIO 345	Exercise Physiology
BIO 346	Applied Concepts in Public Health
BIO 445	Advanced Human Physiology
BIO 465	Medical Parasitology
BIO 530	Undergraduate Research Project
MAT461	Biostatistics
PBH 340	Environment and Public Health
PSB 328	Physiology/Pathophysiology I
PSB 329	Physiology/Pathophysiology II
	Approved Colleges of the Fenway courses

*NOTE: Admission and curriculum requirements for Medical and Molecular Biology students interested in professional degree programs from institutions with which MCPHS has affiliations (see Institutional Agreements) are on the website at [www.mcphs.edu](http://www.mcphs.edu).*

**Bachelor of Science in Medical and Molecular Biology Pathways: to view the Pathway options and the curriculum for each Pathway, visit: <https://www.mcphs.edu/academics/school-of-arts-and-sciences/chemical-and-biological-sciences>**

**Bachelor of Science in Premedical and Health Studies**

The Premedical and Health Studies degree is specifically designed for students seeking undergraduate preparation for chiropractic, dental, medical, occupational therapy, optometry, osteopathic, physician assistant, podiatry, or veterinary school, or who are considering graduate education in nutrition, speech-language pathology, public health, health administration, or other health-oriented programs. The curriculum provides an interdisciplinary health studies major that balances the basic and laboratory sciences with courses in the liberal arts. It prepares exceptionally well-rounded candidates for medical school or for a diversity of postbaccalaureate degree programs. This program also is designed to allow premedical students to transition into the MCPHS Master of Physician Assistant Studies, Optometry, and Physical Therapy degree programs.

Premedical majors have the option of choosing one of several minors: American Studies, Biology, Business, Chemistry, Healthcare Humanities, Health Psychology, Nutrition, Performing Arts, Public Health, Sustainability, or Women’s Studies. These minors develop depth of knowledge in a focal area that complements the interdisciplinary design of the degree program. In addition to preparing students for medical school and the health professions, each minor provides an alternative postgraduate direction. The Biology and Chemistry minors add upper-division didactic and laboratory experiences that could lead to graduate education in the sciences. The Health Psychology minor provides a basis for graduate study in clinical, counseling, or health psychology. The Healthcare Humanities minor prepares students for graduate study in this field. In each of its manifestations, the BS in Premedical and Health Studies is a rigorous educational experience for life in the contemporary world. Graduates who do not pursue advanced studies will find themselves well prepared for a variety of employment options in industry, healthcare, research, and education.

To remain in good academic standing, students must maintain a cumulative 2.0 grade point average (GPA). To meet the residency requirement for the BS in Premedical and Health Studies degree, students must complete at least 63 semester hours at the University.

Students who are enrolled in other degree programs within the University and who have attained a minimum GPA of 3.0 without failed or repeated courses are eligible to apply for transfer into the PMHS pathway programs. Students should apply following the spring semester of their freshman year.

**Curriculum: Bachelor of Science in Premedical and Health Studies**

*NOTE: Students choosing a minor substitute courses in Years II–IV. The minor courses are listed after the Year IV curriculum. Students pursuing a designated professional pathway also may need to make course substitutions. Students in the pathways or selecting minors should meet with program mentors and/or a CASE advisor when planning course registration during Years II–IV.*

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 150L	Biology I Laboratory	1
BIO 151	Biology I: Cell and Molecular Biology	3
CHE 131	Chemical Principles I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 151	Calculus I	3
TOTAL		15

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 152	Biology II: Biology of Organisms (w/lab)	4

CHE 132	Chemical Principles II (w/lab)	4
LIB 112	Expository Writing II	3
LIB 120	Introduction to Psychology or	
LIB 133	American Culture, Identity, and Public Life	3
MAT 152	Calculus II	3

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TOTAL		17
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*If LIB 120 is completed in Year I spring, then the following course sequence is followed:*

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
CHE 231	Organic Chemistry I (w/lab)	4
LIB 133	American Culture, Identity, and Public Life	3
LIB 205	Health Professions Orientation Seminar	1
MAT 261	Statistics	3
	Behavioral sciences elective #1*	3
	Humanities elective	3

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TOTAL		17
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*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 255	Medical Microbiology (w/lab)	4
CHE 232	Organic Chemistry II	3
CHE 234L	Organic Chemistry II Laboratory	1
SSC 230	Cultural Anthropology	3
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3

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TOTAL		14
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*If LIB 133 is completed in Year I spring, then the following course sequence is followed:*

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
CHE 231	Organic Chemistry I (w/lab)	4
LIB 120	Introduction to Psychology	3
LIB 205	Health Professions Orientation Seminar	1
MAT 261	Statistics	3
SSC 230	Cultural Anthropology	3

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TOTAL		14
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*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 255	Medical Microbiology (w/lab)	4
CHE 232	Organic Chemistry II	3
CHE 234L	Organic Chemistry II Laboratory	1
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
	Behavioral sciences elective #1	3
	Humanities elective	3

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TOTAL		17
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*\* BEH elective choices for PMHS majors include BEH 250 Health Psychology, BEH 405 Mind/Body Medicine, BEH 260 Behavioral Health, BEH 341 Biological Psychology, BEH 454 Stress & Illness, BEH 351 Social Psychology, and BEH 352 Human Development through the Life Cycle.*

Year III—fall

COURSE	TITLE	SEMESTER HOURS
BIO 360	Cellular Biochemistry	4
	General Elective	3
PHY 270	Foundations of Physics I and	
PHY 272L	Foundations of Physics I Laboratory or	
PHY 280	Physics I (w/lab)**	4
	Behavioral sciences elective #2	3
	Advanced biology elective #1***	3
TOTAL		17

Year III—spring

COURSE	TITLE	SEMESTER HOURS
LIB 512	Healthcare Ethics	3
PHY 274	Foundations of Physics II (w/lab) or	
PHY 284	Physics II (w/lab)	4
SSC 495	Evolution of the Health Professions	3
	Advanced biology elective #2	3
	Liberal arts elective****	3
TOTAL		16

\*\* PHY 280/284 is meant for students who will be taking professional school entrance exams such as the MCAT, GRE, or OAT.

\*\*\* Advanced biology electives include (BIO434) Immunology; (BIO332) Genetics; (BIO405) Plagues of the Past, Present, and Future; (BIO430) Molecular Biology of Cancer; (BIO346) Applied Concepts in Public Health; Advanced Microbiology w/lab; (BIO351/352) Advanced A&P I and II OR (PSB328/329) Physiology/Pathophysiology I and II OR (BIO445) Advanced Human Physiology; (BIO440) Cell Biology; BIO465 Medical Parasitology, or approved Colleges of the Fenway upper-level BIO course.

\*\*\*\* Liberal arts elective can be any 3-semester-hour course in the following areas: BEH, HUM, SSC, language, or communication.

Year IV—fall

COURSE	TITLE	SEMESTER HOURS
	Humanities elective	3
	General electives*****	12
TOTAL		15

Year IV—spring

COURSE	TITLE	SEMESTER HOURS
LIB 480	Premedical and Health Studies Capstone Seminar	3
	General electives	9
TOTAL		12

\*\*\*\*\* A general elective may be LIB 305 Medical College Preparation Course for 2 semester hours.

**Total credits to complete degree requirements: 123 semester hours**

**Premed major with Biology minor:**

Students must choose four courses from the following list that are not otherwise required for their degree (i.e., the same courses cannot be used to fulfill both the minor and the advanced biology elective requirement):

- BEH 341 Biological Psychology (3)
- BIO 332 Genetics (3)
- BIO 346 Applied Concepts in Public Health (3)

BIO 405 Plagues of the Past, Present, and Future (3)  
BIO 430 Molecular Biology of Cancer (3)  
BIO 455 Advanced Microbiology w/lab (4)  
BIO 434 Immunology (3)  
BIO 440 Cell Biology (3)  
BIO 465 Medical Parasitology  
PSB 328 Physiology/Pathophysiology I (4) or BIO 351 Advanced Anatomy & Physiology I w/lab (4)  
PSB 329 Physiology/Pathophysiology II (4) or BIO 352 Advanced Anatomy & Physiology II w/lab (4)  
If PSB 328/329 and BIO 351/352 are not chosen, BIO445 Advanced Human Physiology can be taken  
PSB 440 Molecular Biotechnology (3)

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**Premed major with Chemistry minor:**

Add CHE 314 Analytical Chemistry (4)  
Add INF 210 Survey of the Literature of Chemistry (1)  
Replace general elective with CHE 340 Inorganic Chemistry (4) or  
Replace general elective with CHE 717 Instrumental Analysis (4)  
BIO or CHE advanced elective (300-level course or higher) (3)

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**Premed major with Healthcare Humanities minor:**

HUM 345 Healthcare Humanities (3) to fulfill the humanities elective  
HUM 456 Narrative and Medicine  
Three courses from the following list (only one may be from the BEH list):  
HUM 355 Science, Technology, and Values (3)  
HUM 452 Women Writers (3)  
SSC 432 Medical Anthropology (3)  
SSC 444 Cigarettes in American Culture (3)  
BEH 254 Death and Dying (3)  
BEH 260 Behavioral Health\* (3)  
BEH 405 Mind/Body Medicine\* (3)  
BEH 454 Stress and Illness\* (3)

\* One of these courses may also fulfill a BS requirement.

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**Premed major with Health Psychology minor:**

Students must complete the following:  
BEH 250 Health Psychology  
BEH 451 Research Methods in Health and Behavior  
BEH Basic\*  
BEH Applied\* (Any BEH course that has a specific health focus)  
BEH Elective (Any BEH course—Basic or Applied)

\* Lists of Basic and Applied courses may be found on the MCPHS University website and at the ARC, and will be provided to students when they are accepted into the minor.

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**Premed major with Public Health minor:**

Students must complete the following:  
MAT 461 Biostatistics (3)  
PBH 250 Introduction to Public Health (3)  
PBH 330 Epidemiology (3)

Any two of the following courses:

BEH 260 Behavioral Health (3)  
BIO 405 Plagues of the Past, Present, and Future (3)  
HSC 301 Health Promotion (3)  
PBH 340 The Environment and Public Health (3)  
PBH 420 Community Health (3)  
PBH 435 Public Policy and Public Health (3)

SSC 432 Medical Anthropology (3)

SSC 444 Cigarettes in American Culture (3)

*NOTE: Admission and curriculum requirements for Premedical and Health Studies students interested in professional degree programs from institutions with which MCPHS has affiliations (see Institutional Agreements) are on the website at [www.mcphs.edu](http://www.mcphs.edu).*

**Bachelor of Science in Premedical and Health Studies Pathways: to view the Pathway options and the curriculum for each Pathway, visit: <https://www.mcphs.edu/academics/school-of-arts-and-sciences/premedical-and-health-studies>**

### **Bachelor of Science in Public Health**

The Bachelor of Science in Public Health degree program is an applied liberal arts curriculum that prepares students for postgraduate master's (MPH) and doctoral (PhD) programs in public health. Students who continue their education in public health at the graduate level typically pursue careers in epidemiology, biostatistics, health promotion, community health, environmental health, biomedical science, or health policy and management. The curriculum prepares students equally well for advanced studies leading to careers in environmental science, public policy, health promotion, healthcare administration, law, and medicine.

The Public Health curriculum builds on general education courses in biology, chemistry, mathematics, and liberal arts as well as required foundational courses in social and behavioral sciences, biostatistics, epidemiology, environmental health, and public policy. In the third and fourth years, students continue with advanced-level courses; select four public health electives from the biology, behavioral sciences, and social sciences disciplines; engage in experiential and service learning through a field placement; and design an interdisciplinary project in a senior capstone seminar.

Public Health majors have elective openings that permit completion of a minor in Premedical and Health Studies, Biology, Chemistry, Healthcare Humanities, or Health Psychology, and they have opportunities for language and international studies through the Colleges of the Fenway, as well as travel courses and study abroad through MCPHS University.

An additional option also exists whereby students may adopt a Pre-Health Law concentration. This concentration combines public health with the study of law and will prepare students to sit for the LSAT examination in preparation for law school to obtain the Master of Laws (L.L.M.) or Juris Doctor (J.D.) degrees.

To remain in good academic standing, students must maintain a cumulative 2.0 grade point average (GPA). To meet the residency requirement for the BS in Public Health, students must complete at least 62 semester hours at the University.

### **Curriculum: Bachelor of Science in Public Health**

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 150L	Biology I Laboratory	1
BIO 151	Biology I: Cell and Molecular Biology	3
CHE 131	Chemical Principles I (w/lab)	4
LIB 111	Expository Writing I	3
MAT 151	Calculus I	3
ITM 101	Introduction to the Major	1
TOTAL		15

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 152	Biology II: Biology of Organisms (w/lab)	4
CHE 132	Chemical Principles II (w/lab)	4
LIB 112	Expository Writing II	3
MAT 152	Calculus II	3
LIB 133	American Culture, Identity, and Public Life	3
TOTAL		17

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
HSC 3100	Healthcare Informatics	3
LIB 120	Introduction to Psychology	3
MAT 261	Statistics	3
PBH 250	Introduction to Public Health	3
PBH206	Public Health Seminar	1
	General elective	3
TOTAL		16

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
HSC 3010	Health Promotion	3
BIO 255	Medical Microbiology (w/lab)	4
SSC 230	Cultural Anthropology	3
SSC 495	Evolution of the Health Professions	3
	General elective	3
TOTAL		16

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
MAT 461	Biostatistics	3
LIB 512	Healthcare Ethics	3
	General electives	6
TOTAL		15

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 405	Plagues of the Past, Present, and Future	3
PBH 330	Epidemiology	3
PBH 340	Environment and Health	3
	General elective	6
TOTAL		15

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
	Public health electives	9
	Behavioral sciences elective	3
	Humanities elective	3
TOTAL		15

*Year IV—spring*

COURSE	TITLE	SEMESTER HOURS
PBH 480	Public Health Capstone Seminar	3
PBH 460	Field Placement	3
PBH 435	Public Policy and Public Health	3

Public health electives	6
<b>TOTAL</b>	<b>15</b>

**Total credits to complete degree requirements: 124 semester hours**

**Bachelor of Science in Public Health/Pre-Health Law Concentration**

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 150L	Biology I Laboratory	1
BIO 151	Biology I: Cell and Molecular Biology	3
CHE 131	Chemical Principles I (w/lab)	4
LIB 111	Expository Writing I	3
MAT 151	Calculus I	3
ITM 101	Introduction to the Major	1
<b>TOTAL</b>		<b>15</b>

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 152	Biology II: Biology of Organisms (w/lab)	4
CHE 132	Chemical Principles II (w/lab)	4
LIB 112	Expository Writing II	3
MAT 152	Calculus II	3
LIB 133	American Culture, Identity, and Public Life	3
<b>TOTAL</b>		<b>17</b>

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
HSC 310O	Healthcare Informatics	3
LIB 120	Introduction to Psychology	3
MAT 261	Statistics	3
PBH 250	Introduction to Public Health	3
PSB 210	Macroeconomics	3
PBH206	Public Health Seminar	1
<b>TOTAL</b>		<b>16</b>

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
HSC 301O	Health Promotion	3
BIO 255	Medical Microbiology (w/lab)	4
SSC 230	Cultural Anthropology	3
SSC 495	Evolution of the Health Professions	3
PBH260	Introduction to Health Law	3
<b>TOTAL</b>		<b>16</b>

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
MAT 461	Biostatistics	3



PSB 435	Introduction to Business	3
HUM 340	Introduction to Philosophy	3
	Behavioral elective	3
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TOTAL		15

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 405	Plagues of the Past, Present, and Future	3
PBH 330	Epidemiology	3
PBH 340	Environment and Health	3
PBH 435	Public Policy and Public Health	3
PSB 447	Fundamentals of Business Law	3
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TOTAL		15

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
PBH 440	Social Justice	3
PBH 445	Advanced Political Science and Healthcare Policy	3
PBH 449	Public Rhetoric	3
LIB 512	Healthcare Ethics	3
	Public Health elective	3
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TOTAL		15

*Year IV—spring*

COURSE	TITLE	SEMESTER HOURS
PBH 480	Public Health Capstone Seminar	3
PBH 460	Field Placement	3
	Public Health elective	3
	General elective	3
	General elective	3
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TOTAL		15

**Total credits to complete degree requirements: 124 semester hours**

**Public Health Electives (5 must be chosen from this category, 15 semester hours):**

COURSE	TITLE
BEH 250	Health Psychology
BEH 260	Behavioral Health
BEH 454	Stress and Illness
BIO 260	Molecular Biology
BIO 455	Advanced Microbiology (w/lab)
BIO 243	Parasitology
PBH 335	Human Sexuality
PBH420	Community Health
PSB 320	Introduction to Healthcare Delivery
PSB 425	Healthcare Management
SSC 432	Medical Anthropology
SSC 444	Cigarettes in American Culture

Students enrolled in the Public Health major should adopt a Premed minor if they wish to consider medical, dental, or physician assistant school after completing the baccalaureate program.

*Substitutions:* Year II: Students should substitute Organic Chemistry (CHE 231/231L and CHE 232/234L) for general electives (this adds 2 semester hours to the program). Year III: Students should substitute the Foundations of Physics series (PHY 270/272L and PHY 274/274L) or the Physics I and Physics II series (PHY 280/280L and PHY 284/284L) and Cellular Biochemistry (BIO 360) for general electives (this adds 3 semester hours to the program).

### **Bachelor of Science in Public Health / Master of Public Health**

The five-year Bachelor of Science in Public Health and Master of Public Health (BS/MPH) program at MCPHS is a joint program encompassing the requirements of both degrees. Students will have the opportunity to apply for the program in the fall of their third year at MCPHS. Upon acceptance to the program, students will begin their graduate study in the fall of their fourth year with three graduate-level courses. The total number of credits for both degrees is 150 semester hours, 123 being completed to award the BS after the fourth year and 27 in the fifth year to award the MPH. Of the 123 credits in the BS, 15 semester hours in the fourth year are 700-level MPH courses that count toward the 42 semester hours required for the MPH degree.

### **Curriculum: Bachelor of Science in Public Health / Master of Public Health**

The curriculum for Years I and II and the fall semester of Year III is identical to the BS curriculum above. Students accepted into the MPH program will complete the combined curriculum as follows:

#### *Year III—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 405	Plagues of the Past, Present, and Future	3
PBH 330	Epidemiology	3
PBH 435	Public Policy and Public Health	3
	Humanities elective	3
	Public health elective	3
TOTAL		15

#### *Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
PBH 705	Introduction to Environmental Health Sciences	3
PBH 710	Introduction to Health Policy and Management	3
PBH 750	Community Health Science and Practice	3
	Public health electives	6
TOTAL		15

#### *Year IV—spring*

COURSE	TITLE	SEMESTER HOURS
PBH 460	Field Placement	3
PBH 480	Public Health Capstone Seminar	3
PBH 755	Health Promotion and Education	3
PBH 765	Community Health Assessments	3
	Public health elective	3
TOTAL		15

#### *Year IV—summer*

COURSE	TITLE	SEMESTER HOURS
PBH 895	Preparatory Seminar, Culminating Experience	1
TOTAL		1

Year V—fall

COURSE	TITLE	SEMESTER HOURS
DRA 807	Statistics in Clinical Research	3
PBH 715	Introduction to Social and Behavioral Sciences	3
PBH 760	Program Design, Research, and Evaluation	3
	Public health electives	6
TOTAL		15

Year V—spring

COURSE	TITLE	SEMESTER HOURS
DRA 809	Health Epidemiology	3
PBH 890	Public Health Practice Experience	2
PBH 898	Culminating Experience	3
	Public health elective	3
TOTAL		11

**Total credits to complete combined degree requirements: 150 semester hours**

### **Bachelor of Science in Public Health / Master of Science in Occupational Therapy**

The five-year Bachelor of Science in Public Health and Master of Science in Occupational Therapy (MSOT) program at MCPHS University is a joint program encompassing the requirements of both degrees. The knowledge and skills gained through the BS in Public Health program provide an excellent foundation for the MSOT program and for a career in Occupational Therapy. More specifically, the BS in Public Health program provides students with an interdisciplinary education with practical applications. Students will develop skills that can be used to assess need for services and to implement and evaluate services. Students who complete the BS Public Health - MSOT pathway will be prepared to work in a variety of settings, with additional expertise relevant to community agencies and government institutions.

To view the curriculum for this pathway, visit <https://www.mcphs.edu/academics/school-of-arts-and-sciences/public-health/public-health-pathway-occupational-therapy-bs-msot>.

### **School of Arts and Sciences Honors Program**

The MCPHS School of Arts and Sciences Honors program is available to qualified students majoring in any of the school's baccalaureate degree programs. The honors program offers

- the pursuit of discipline-specific interests and a deeper level of inquiry in any Arts & Sciences discipline: Life Sciences, Chemistry, Math, Physics, Humanities, Communication, Ethics, Behavioral Sciences, Public Health or Social Sciences,
- continued development of academic research skills,
- close faculty mentoring on Honors projects,
- extra preparation for further study toward postgraduate education and careers,
- interactions with fellow honors students and faculty advisers, and
- the possibility of fieldtrips to fascinating locales such as Mass General Hospital's Paul S. Russell Museum of Medical History and Innovation, Brandeis' Graybiel Spatial Orientation Laboratory, and many more.

### **Honors Program Eligibility**

A student should formally apply by February 15 at 5:00 pm of the second curriculum year. A student must have a minimum 3.50 grade point average (GPA) and should be based on the Boston campus for years 3 and 4 of his or her degree program. Students who spend their 4th year in a graduate program (e.g., PA, PT, OT) are not eligible. The application must include

- a brief essay (approximately 250 words) explaining academic interests and goals, how participation in the honors program will further these goals, and how involvement in the honors program will tie into long-term career goals; and
- a recommendation by a faculty member with whom the student has had significant course- or laboratory-related interaction.

The School of Arts and Sciences Honors Program Committee will determine acceptance into the program based on

- a student's academic performance in college courses,
- the strength of a student's application materials, and
- availability of faculty mentors in a student's area of interest.

The Honors Program Committee will provide interested students a list of faculty willing to supervise honors students and a description of their research interests, as well as a list of courses that may be used to fulfill the honors program requirements.

### **Honors Program Requirements**

Students who successfully complete the honors program will earn an honors designation on their transcripts. Conferral of that designation will occur upon successful completion of at least four honors opportunities, which include

- 300-, 400-, and 500-level courses taught by participating faculty who allow honors students to do extra supervised work to earn an honors designation for the course; and
- 300-, 400-, and 500-level honors-only courses.

The following criteria also apply:

- No more than two of these four opportunities will be an independent study course taken during the student's final undergraduate year at MCPHS (e.g., a directed study or undergraduate research project course). These courses may be in any discipline and are not meant to duplicate, replace, or extend work done in capstone courses.
- The student must have a minimum 3.50 GPA at the time of graduation.

Additional program information is available from the Office of the Dean of Arts and Sciences.

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## MCPHS University–Boston School of Arts and Sciences Graduate Programs

Professors: Anderson, Garafalo, Ginsburg, Richman, Tebbe-Grossman; Associate Professors: Barden, Dacey, Denome, Farkas, Hart; Assistant Professors: Briggs, Chen, Griffin, Heising, Shifley, Xie; Instructors: Levy, Roberti, Young; Faculty Associates: Abdelal, Poulos, Spooner

### Degree Programs

- Master of Science (MS) in Pharmaceutical Chemistry
- Master of Public Health (MPH)\*

\*Online programs are affiliated with the Center for Online Learning and Academic Innovation.

The Arts and Sciences graduate programs are committed to providing leadership, advocacy, and administrative support to enhance the academic and scholarly achievements of our graduate students. These programs promote, enhance, monitor, and support graduate studies by providing effective communication with students from their initial inquiries to the finalization of dissertations and theses. The Arts and Sciences Graduate Council comprises graduate faculty members who are committed educators; they assist in the development and implementation of policies that ensure high standards of excellence in graduate education at MCPHS University. Through our graduate programs, the University provides students with opportunities and preparation for leadership in a growing interdependent healthcare learning community.

### Research

The School of Arts and Sciences faculty members provide the academic expertise to support the research initiatives of master and doctoral candidates by promoting high-quality research training and supervision through clear communication and procedures. The advanced degree is awarded after completion of the approved program, which includes a written thesis or dissertation based on the student's research. This research must be an original work of a quality that merits publication following critical peer review.

### Programs of Study

#### Master of Science in Pharmaceutical Chemistry (Boston)

*Director: Dr. Songwen Xie*

The University offers the Bachelor of Science in Chemistry / Master of Science in Pharmaceutical Chemistry for students who are interested in a career in chemistry. It allows students to obtain a master's degree in five years instead of the six to seven years that it would take to complete two degrees separately. Additionally, this program is designed to take advantage of the University's strengths in the pharmaceutical sciences. Students obtain experience in biotechnology techniques and learn the principles of drug design and mechanisms of action. The Bachelor of Science/Master of Science program includes both a research project and an internship, ensuring that graduates will be prepared to work in industry or pursue a PhD. There are two options to complete the research requirement, the lab-based research and the literature-based research. MS students have the opportunity to be teaching assistants. Students should understand that being a TA takes time from conducting research. If a student chooses to teach, it is not guaranteed that he/she can graduate on time. Students in the sixth year should register for CHE 895 Graduate Study Extension (0 Cr) for fall and spring semesters.

#### Curriculum: Master of Science in Pharmaceutical Chemistry

*Year IV—spring\* (MS degree)*

COURSE	TITLE	SEMESTER HOURS
CHE 450	Pharmaceutical Chemistry I (w/lab)	4
CHE 710	Seminar*	1
CHE 445L	Experimental Techniques in Chemistry	2
CHE 880	Research* or	

CHE 885	Literature Based Research	3
	Advanced chemistry elective*	2–3

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TOTAL 12–13

\* Students continuing with the MS curriculum register for research or literature-based research, seminar, and one advanced elective. Recommended MS electives are PSB 820 Advanced Medicinal Chemistry I (3 semester hours) or PSB 851 Bio-organic Chemistry (2 semester hours).

*Year IV—summer*

COURSE	TITLE	SEMESTER HOURS
CHE 880	Research or	
CHE 885	Literature Based Research	3
TOTAL		3

*Year V—fall*

COURSE	TITLE	SEMESTER HOURS
CHE 711	Seminar	1
CHE 751	Pharmaceutical Chemistry II (w/lab)	4
CHE 810	Heterocyclic Chemistry	2
CHE 880	Research or	
CHE 885	Literature Based Research	3
TOTAL		10

*Year V—spring*

COURSE	TITLE	SEMESTER HOURS
CHE825	Internship	12
TOTAL		12

**Total credits to complete BS/MS degree requirements: 150 semester hours**

*Electives*

COURSE	TITLE	SEMESTER HOURS
CHEM 347	Advanced Topics in Biochemistry (w/lab) (Simmons)	4
CHE 435	Green Chemistry (w/lab)	3
CHE 470	Characterization of Solids	3
CHE 530	Undergraduate Research Project	2
CHE 810	Heterocyclic Chemistry	2
PSB 802	Chemistry of Macromolecules	3
PSB 815	Drug Metabolism	3
PSB 820	Advanced Medicinal Chemistry I	2
PSB 822	Enzyme Kinetics	2
PSB 851	Bio-organic Chemistry	2

**Master of Public Health (MPH), (Boston and Online)**

*Director: Carly Levy*

The Master of Public Health (MPH) degree at MCPHS is a 42-semester-hour program, offered online or face-to-face on the Boston campus. The degree encompasses the five core disciplines of public health: Biostatistics, Environmental Health Science, Epidemiology, Health Policy and Management, and Social and Behavioral Sciences. Community Health is the concentration that is offered. Community Health is defined as a multi-sector and multi-disciplinary collaborative enterprise that uses public health science, evidence-based strategies, and other approaches to engage and work with communities, in a culturally appropriate manner, to optimize health and quality of life. MPH candidates are required to complete a 120-hour practice requirement in a public health setting of their choice. In addition, students

must attend an in-person seminar as the culminating experience of their degree program at MCPHS University. Opportunities for community service and outreach are made available to students. The program presents opportunities for workforce development and career progression that include networking events, career counseling, and social networking.

### Curriculum: Master of Public Health (MPH)

COURSE	TITLE	SEMESTER HOURS
PBH 701	Survey of Public Health	3
PBH 705	Introduction to Environmental Health Sciences	3
PBH 710	Introduction to Health, Policy and Management	3
PBH 715	Introduction to Social and Behavioral Sciences	3
DRA 807	Statistics in Clinical Research	3
DRA 809	Health Epidemiology	3
Public Health Required Courses		18

#### *Public Health Required Concentration Electives*

COURSE	TITLE	SEMESTER HOURS
PBH 750	Community Health Science and Practice	3
PBH 755	Health Promotion and Education	3
PBH 760	Program Design, Research, and Evaluation	3
PBH 765	Community Health Assessments	3
PBH 890	Public Health Practice Experience	2
PBH 895	Preparatory Seminar, Culminating Experience	1
PBH 898	Culminating Experience	3
Public Health Required Concentration Electives		18

#### *Public Health Electives (500 level or above, 6 semester hours)*

COURSE	TITLE	SEMESTER HOURS
PBH 801	Community Organizing	3
PBH 805	Maternal and Child Health	3
PBH 810	Principles of Public Health Emergency Preparedness	3
PBH 815	Mass Communication and Health	3
PBH 820	Public Health Genetics	3
PBH 825	Public Health Law	3
DRA 811	Health Policy and Development Analysis	3
DRA 818	The Law of Healthcare Compliance	3

**Total credits to complete degree requirements: 42 semester hours**

### Admission Requirement

Applicants are encouraged to apply before the program priority filing date to receive maximum consideration for admission. The Admission Office will continue to review applications until all available seats in the program have been filled.

Once the application is received, the Admission Office will notify the applicant of any missing items that are required for the application to be considered complete. Files are reviewed on a rolling basis, and a decision will be made once all application materials are received.

**Graduate Certificate, Public Health (Online)**

*Director: Carly Levy*

The graduate certificate program is open to applicants who desire advanced study in public health and can be applied toward a Master of Public Health upon graduation. Current graduate students earning a master's degree other than public health and wishing to add this graduate certificate should contact the program director.

Admission requirements are more flexible than those of the degree program. A minimum grade of B- in each course is required for award of the certificate.

**Graduate Certificate in Public Health (Online)**

**Please select any four of the following six courses (12 semester hours total):**

COURSES	TITLE	SEMESTER HOURS
PBH701	Survey of Public Health	3
PBH705	Introduction to Environmental Health Sciences	3
PBH710	Introduction to Health Policy and Management	3
PBH715	Introduction to Social and Behavioral Sciences	3
DRA807	Statistics of Clinical Research	3
DRA809	Health Epidemiology	3
TOTAL		12



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## MCPHS University–Boston Division of Health Sciences

### Forsyth School of Dental Hygiene

Linda D. Boyd, RDH, RD, LD, EdD, Professor and Dean

Christine Dominick, CDA, RDH, MOcEd, Professor and Associate Dean

Associate Professors Giblin, Jenkins, Rainchuso, Smallidge; Assistant Professors August, LaSpina, Perry, Smyliyanski;  
Instructors Byrne, Smethers

### School of Medical Imaging and Therapeutics

#### **Diagnostic Medical Sonography Program**

Jeffrey C. Hill, BS, ACS, FASE, Department Chair, Assistant Professor - Echocardiography Track

Erin O'Hora, BS, RDMS, RVT, Department Vice Chair, Assistant Professor/Clinical Coordinator - General Track

Bryan Doldt, BS, RDCS, FASE, Program Director, Assistant Professor - Echocardiography Track

Jennifer Miller, BS, RDMS, RVT, Program Director, Assistant Professor - General Track

Debra Crandell, MS, RDMS, Director of DMS Online Ed., Assistant Professor/Clinical Coordinator - General Track

Marie Ficociello, MS, RDCS, Assistant Professor/Clinical Coordinator - Echocardiography Track

Susan Rohrbach, MS, RDMS, Assistant Professor – General Track

#### **Magnetic Resonance Imaging Program**

Lori Nugent, BS, MEd, Program Director and Assistant Professor

Anne C. Davies, BSEE, MEd, Assistant Professor/Clinical Coordinator

#### **Nuclear Medicine Technology Program**

Frances Keech, DHSc, RT(N), MBA, FSNMMI, TS; Program Director and Associate Professor

#### **Radiation Therapy Program**

Kelly Ebert BS, MPA, Program Director and Assistant Professor

Barry Mendelsohn, BS, RT(T), Clinical Coordinator and Instructor

#### **Radiography Program**

Ryan Piccinin, BS, RT(R), Clinical Coordinator and Instructor

### Degree and Certificate Programs

- Bachelor of Science in Dental Hygiene (Accelerated)
- Bachelor of Science in PreDental/Dental Hygiene
- Bachelor of Science in Dental Hygiene (Fast Track)
- Bachelor of Science in Dental Hygiene Completion\*
- Dual Bachelor of Science in Health Science/Bachelor of Science in Dental Hygiene
- AS to MS in Dental Hygiene Bridge Program \*
- Master of Science in Dental Hygiene\*
- Graduate Certificate in Health Professions Education\*
- Bachelor of Science in Diagnostic Medical Sonography-General (Accelerated)
- Bachelor of Science in Diagnostic Medical Sonography-General (Fast Track)
- Bachelor of Science in Diagnostic Medical Sonography-Echo (Accelerated)

- Bachelor of Science in Diagnostic Medical Sonography-Echo (Fast Track)
  - Bachelor of Science in Magnetic Resonance Imaging (Accelerated)
  - Bachelor of Science in Nuclear Medicine Technology (Accelerated)
  - Bachelor of Science in Radiation Therapy (Accelerated)
  - Bachelor of Science in Radiography (Accelerated)
  - Bachelor of Science in Magnetic Resonance Imaging (Fast Track)
  - Bachelor of Science in Nuclear Medicine Technology (Fast Track)
  - Bachelor of Science in Radiation Therapy (Fast Track)
  - Bachelor of Science in Radiography (Fast Track)
  - Advanced Certificate in Computed Tomography
  - Advanced Certificate in Magnetic Resonance Imaging (MRI)\*
- \*Online programs are affiliated with the Center for Online Learning and Academic Innovation.

## **Technical Standards for the Division of Health Sciences**

### **Observation**

Candidates and students must have sufficient capacity to observe in the lecture hall, laboratory, and diagnostic and treatment areas of outpatient and inpatient settings. Sensory skills to perform the procedures of the healthcare profession in which students are enrolled are required. In any case where a candidate's or a student's ability to observe or acquire information through sensory modalities is compromised, the candidate or student must demonstrate alternative means and/or abilities to acquire and demonstrate the essential information conveyed in this fashion.

### **Communication**

Candidates and students must be able to communicate effectively in both academic and healthcare settings. Candidates and students must show evidence of effective written and oral communication skills and must be able to communicate with patients in order to elicit and impart information.

### **Motor**

The ability to participate in basic diagnostic and therapeutic maneuvers and procedures is required. Candidates and students must have sufficient motor function to execute movements reasonably required to properly care for all patients and must be able to perform motor functions with or without assistive devices.

### **Intellectual**

Candidates and students must be able to measure, calculate, reason, analyze, and synthesize. Problem solving, one of the critical skills demanded of healthcare professionals, requires all of these intellectual abilities. Candidates and students must be able to read and understand medical literature. In order to complete the specific Health Sciences program, students must be able to demonstrate mastery of these skills and the ability to use them together in a timely fashion in healthcare problem solving and patient care.

### **Behavioral and Social Attributes**

Candidates and students must possess the emotional health and stability required for full utilization of their intellectual abilities, the exercise of good judgment, and the prompt completion of all academic and patient care responsibilities. The development of mature, sensitive, and effective relationships with patients and other members of the healthcare team is essential. The ability to function in the face of uncertainties inherent in clinical practice, flexibility, compassion, integrity, motivation, interpersonal skills, and concern for others are all required.

Students interested in dental hygiene or medical imaging and therapeutics (diagnostic medical sonography, magnetic resonance imaging, nuclear medicine technology, radiation therapy, or radiography) are required to read the statements about profession-specific tasks. Please visit the website for more information ([www.mcphs.edu](http://www.mcphs.edu)).

## **Forsyth School of Dental Hygiene**

In July 2002, the Forsyth School of Dental Hygiene (FSDH) became part of MCPHS University. The school was first established in 1916 by the Forsyth brothers and the Forsyth Institute as the second dental hygiene program opened in the United States, and today it is the oldest continuously operating dental hygiene program in the country. Students who attend the school, located on the MCPHS Boston or Worcester campus, receive clinical instruction in the state-of-the-art dental hygiene clinics to enhance delivery of high-quality oral healthcare services to the public.

The FSDH is committed to providing excellence through engagement of students in a diverse learning environment,

fostering community partnerships, and advancing knowledge through scholarship and lifelong learning. Forsyth's degree programs prepare students to be leaders in their professions with career options in dental hygiene education, business, research, public health, administration, and clinical practice. The school embraces a strong sense of responsibility to patients, the community, and the dental hygiene profession as well as to high standards of healthcare ethics.

MCPHS offers dental hygiene students the opportunity to learn in the Dr. Esther M. Wilkins Forsyth Dental Hygiene Clinic in Boston and the Esther M. Wilkins Forsyth Dental Hygiene Clinic in Worcester. The Boston facility is equipped with 24 operatories and the Worcester facility has 12 operatories with digital radiologic imaging technology, intraoral cameras, ergonomic patient and operator chairs, digital panoramic technology, electronic records, and a dental materials laboratory with magnification and flat-screen monitors.

The FSDH offers an accelerated Bachelor of Science in Dental Hygiene, a Bachelor of Science in PreDental Dental Hygiene, Fast Track Bachelor of Science in Dental Hygiene, a Dual Bachelor of Science in Health Science/Bachelor of Science in Dental Hygiene (Fast Track), a Bachelor of Science Completion in Dental Hygiene, a Master of Science in Dental Hygiene, a bridge program to a Master of Science degree for associate degree–holding dental hygienists, and a Graduate Certificate in Oral Health Professions Education for individuals with an earned baccalaureate degree and work experience in a dental or dental hygiene setting. Each program has unique outcome objectives designed to fulfill the professional objectives or degree requirements associated with the individual academic needs of dental hygiene students.

*See MCPHS Online for a description of the Bachelor of Science in Health Sciences Degree Completion program with a concentration in Oral Health.*

#### **Clinical Component**

The clinical component of the program is supported by evidence-based information delivered in active learning and seminars. The student learns to assess risk for oral diseases and provide preventive services. In addition, considerable time is spent developing proficiency in dental hygiene procedures for patients of all ages, with a focus on building skills that support specialized care for unique populations. Dental radiology is delivered throughout the clinical portion of the program. The student develops skills necessary for exposing, processing, and interpreting both traditional and digital radiographs. Each student also has the option of participating in community-based clinical rotations that enhance on-campus learning experiences. Transportation is not provided to these locations; however, public transportation is available to most extramural sites. As a requirement for graduation and licensure examinations, the student must demonstrate competence by achieving a specified level of performance for each clinical skill and by completing specific patient and service assignments. The student is ultimately responsible for obtaining the patients needed to fulfill these requirements. The student must fulfill all course requirements and competencies each semester to advance within the program.

### **Forsyth School of Dental Hygiene Policies and Professional Requirements**

#### **Basic Cardiac Life Support**

Each student must be certified in Basic Cardiac Life Support for Healthcare Providers by the American Heart Association prior to beginning the fall semester of the first clinical year. Certification must remain current throughout the program.

#### **Licensure**

The student who successfully completes the academic and clinical components of the accelerated Bachelor of Science in Dental Hygiene or Fast Track Bachelor of Science in Dental Hygiene program will be eligible to take licensure examinations. Successful completion of the National Board Dental Hygiene Examination and a state or regional clinical examination are necessary for licensure. MCPHS provides education to students in accordance with the regulations set forth by the Massachusetts Board of Registration in Dentistry. MCPHS may not be able to provide the education and/or certification necessary for eligibility for licensure in every state jurisdiction. The student is responsible for determining eligibility requirements for dental hygiene licensure in the jurisdiction in which he or she plans to practice and to obtain any additional education necessary for licensure in that jurisdiction.

#### **Policy for Reentry and Content Validation after Nonprogression or Leave of Absence**

Students attempting to return from nonprogression in the professional curriculum or leave of absence must be cleared to return to classes by designated staff in the Center for Academic Success and Enrichment (CASE) and the Office of Student Affairs (if a medical leave of absence). The Center for Academic Success and Enrichment (CASE) will notify the Dean of FSDH of the student's eligibility to return.

Students who are not continuously enrolled in the sequence of undergraduate FSDH professional clinical courses for a period of two semesters or more must validate clinical knowledge and skills before they may reenroll in FSDH

professional clinical courses. Validation testing will consist of competency testing to assess clinical and radiography skills related to direct patient care. Program faculty will provide guidance as to what competencies, content, and skills the student needs to review prior to testing, but it is the student's responsibility to prepare for the testing. Students must pass validation testing at a minimum competency level of 75% in order to be eligible to reenter the FSDH professional clinical curriculum. Students may also opt to retake DHY 209L Pre-clinic and DHY230 Radiology instead of undergoing validation testing.

A student who is unable to pass the validation testing at the 75% level will be given the option of retaking DHY 209L Pre-clinic and DHY 230 Radiology. If a passing grade is obtained through validation testing or successful completion of DHY 209L and DHY 230, the student may reenter the FSDH program on a space-available basis.

If the student does not pass the validation test and does not reenroll or pass DHY 209L and DHY 230, he or she will be dismissed from the program.

Reentry into the FSDH program is subject to clinical placement availability. (NOTE: There is no guarantee placement will be available at the student's desired time of return.) This policy applies to all undergraduate dental hygiene programs.

### **Progression into Professional Phase of the Bachelor of Science in Dental Hygiene**

The minimum passing grade of C in Anatomy and Physiology (BIO 110 / BIO 210), Chemistry (CHE 110 / CHE 210), and Microbiology (BIO255) and an overall cumulative grade point average (GPA) of 2.5 are required to progress into the fall of Year II (professional phase) of the program.

Students who achieve the minimum passing grade of C in Anatomy and Physiology (BIO 110 and BIO 210) and Chemistry (CHE 110 / CHE 210), and Microbiology (BIO255), but do not meet the minimum cumulative GPA of 2.5 at the end of the Year I summer term may enroll in DHY 202 Dental Anatomy and DHY 204 Head and Neck Anatomy in the Year II fall semester but may not enroll in other professional courses.

If DHY 202 and 204 are completed with C or better grades and a minimum cumulative and professional GPA of 2.5 are attained, the student may progress into the remaining Year II fall semester professional courses the following fall semester. This will result in a change in the year of graduation.

Students who do not meet the minimum grade and GPA expectations at the end of the first year or after attempting DHY 202 and DHY 204 will be dismissed from the program.

### **Dismissal from Program**

Three grades below C in any combination of DHY courses results in dismissal from the program.

### **Progression within the Professional Phase of the Bachelor of Science in Dental Hygiene**

To progress within the didactic and clinical phase of the Bachelor of Science in Dental Hygiene program, students must achieve a final grade of C or better ( $\geq 75\%$ ). Obtaining a final grade below C in any professional course results in the student's having to repeat the course. Progression through the program will be delayed (i.e., the student will be on nonprogression status) because most professional courses are offered only once per academic year. A dental hygiene student may be placed on nonprogression status only once during his or her tenure in the Forsyth Dental Hygiene program. A student who receives a second nonprogression status in a subsequent semester will be dismissed from the dental hygiene program.

### **Bachelor of Science in Dental Hygiene Program (Accelerated)**

The student who begins the accelerated Bachelor of Science in Dental Hygiene program is expected to complete the program in three years. To meet the residency requirement for the BS in Dental Hygiene degree, students must complete at least 60 semester hours at the University.

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 110	Anatomy and Physiology I (w/lab)	4
CHE 110	Basic Chemistry I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
LIB 120	Introduction to Psychology	3
TOTAL		15

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 210	Anatomy and Physiology II (w/lab)	4
CHE 210	Basic Chemistry II (w/lab)	4
LIB 112	Expository Writing II	3
LIB 133	American Culture, Identity, and Public Life	3
MAT 143	Mathematics for Dental Hygienists	3
TOTAL		17

*Year I—summer session*

COURSE	TITLE	SEMESTER HOURS
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
DHY 232	Nutrition	2
TOTAL		5

*Year I—summer session I*

COURSE	TITLE	SEMESTER HOURS
BIO 255	Microbiology (w/lab)	4
TOTAL		4

*Year I—summer session II*

COURSE	TITLE	SEMESTER HOURS
MAT 261	Statistics	3
TOTAL		3

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
DHY 202	Dental Anatomy, Embryology, and Histology	2
DHY 204	Head and Neck Anatomy	2
DHY 209	Dental Hygiene Process of Care I	4
DHY 209L	Dental Hygiene Pre-clinical Laboratory	2
DHY 230	Dental Radiology (w/lab)	3
DHY 231	Dental Materials (w/lab)	3
TOTAL		16

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
DHY 211	Dental Hygiene Process of Care II	3
DHY 223	Clinical Dental Hygiene I	3
DHY 233	Periodontology	3
DHY 330	Pathology	3
	Distribution Elective	3
TOTAL		15

*Year II—summer session*

COURSE	TITLE	SEMESTER HOURS
	Distribution Elective	3

DHY 4200	Oral Health Research	3
DHY 343	Pain Management (w/lab)	3
TOTAL		9

*Year II—summer session II*

COURSE	TITLE	SEMESTER HOURS
PSB 3200	Introduction to Healthcare Delivery	3
TOTAL		3

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
DHY 310	Dental Hygiene Process of Care III	3
DHY 323	Clinical Dental Hygiene II	4
DHY 342	Pharmacology	3
DHY 350	Community Oral Health	3
	Program Elective	3
TOTAL		16

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
DHY 311	Dental Hygiene Process of Care IV	2
DHY 324	Clinical Dental Hygiene III	4
DHY 460	Capstone Leadership in Dental Hygiene	3
LIB 512	Healthcare Ethics	3
DHY345	Practice and Career Management	2
	Distribution Elective	3
TOTAL		17

**Total credits to complete degree requirements: 120 semester hours**

### Dental Hygiene Program Electives

An overall grade point average and a professional grade point average will be calculated for each student in the Dental Hygiene program. Elective courses and those required for admission into the Dental Hygiene program are excluded when calculating the professional grade point average. All course electives, including program electives, count toward the student's cumulative grade point average.

The program elective must be a distinct course from the distribution electives; for example, Abnormal Psychology cannot fulfill the behavioral requirement as well as the program elective requirement.

*Program Electives for Dental Hygiene*

COURSE	TITLE
BEH 250	Health Psychology
BEH 260	Behavioral Health
BEH 350	Abnormal Psychology
BEH 355	Organizational Psychology
HSC 425O	Educational Theories and Methods
HSC 301O	Health Promotion
HSC 320O	Writing for Health Science Professionals
HSC 325O	Healthcare Management
HSC 401O	Public Health and Policy
HSC 420O	Grant Writing for the Health Sciences

PSB 412	Patients' Rights and Professionals' Liabilities
PSB 235	Introduction to Business
PSB 415	Accounting
PSB 423	Pharmaceutical/Healthcare Marketing
PSB 444	Organizational Development

### Bachelor of Science in Dental Hygiene (Fast Track) Worcester Campus

A student who holds a baccalaureate degree or higher from an accredited college or university and/or completed prerequisite course work may pursue the accelerated 16-month Fast Track Bachelor of Science in Dental Hygiene. The candidate for this program must have completed the prerequisite college courses listed below. Transfer students without a bachelor's degree may be admitted as fast track students but must meet all requirements for the accelerated BS in Dental Hygiene described above to achieve the 120 semester hours necessary to earn a first bachelor's degree. An official college/university transcript will be reviewed to determine eligibility for transfer credits. The student in the Fast Track BS program takes courses in dental hygiene theory and practice, and receives clinical instruction in the Esther M. Wilkins Forsyth Dental Hygiene Clinic (Worcester). Upon successful completion of the program, the student becomes eligible for dental hygiene licensure examinations.

*Prerequisites for the Fast Track Bachelor of Science program for Students with a Bachelor's Degree include the following:*

COURSE	SEMESTER HOURS
Anatomy and physiology I and II (w/labs)	8
Basic chemistry I and II (w/labs)	8
Microbiology (w/lab)	4
Statistics	3
Introduction to psychology	3
Introduction to sociology	3
Expository Writing I & II	6
Interpersonal Communication	3
<b>TOTAL</b>	<b>38</b>

*Additional Courses for the Fast Track Bachelor of Science program for Students without a Bachelor's Degree include the following:\**

COURSE	SEMESTER HOURS
College Algebra	3
American Culture, Identity, and Public Life (3 credits) (Acceptable substitutions include American History, U.S. History, U.S. Government, Western Civilization)	3
Humanities elective (3 credits) (Acceptable courses include Literature, Creative Writing, Philosophy, Ethics, Religious Studies, Select Fine Arts, Advanced Level Languages)	3
Behavioral Science elective (3 credits) (Acceptable courses: any upper level psychology course)	3
Social Science Elective (3 credits) (Acceptable courses include: Cultural Studies, Anthropology, Government, American Studies, Women's Studies, Ethnic Studies, or an additional History/Political Science course)	3
<b>TOTAL</b>	<b>15</b>

\*Students entering without a prior bachelors degree must also take PSB 320 Intro to Health Care Delivery during the program's summer term for a total of 16 credits. Additionally, these students will also take the Dental Hygiene Program Elective during the last semester of the program, increasing the credits to 17 that term. The dental hygiene program elective is chosen from a list of specific approved courses.

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
DHY 202	Dental Anatomy, Embryology, and Histology	2
DHY 204	Head and Neck Anatomy	2
DHY 209	Dental Hygiene Process of Care I	4
DHY 209L	Dental Hygiene Pre-clinical Laboratory	2
DHY 230	Dental Radiology (w/lab)	3

DHY 231	Dental Materials (w/lab)	3
DHY 232	Nutrition	2
TOTAL		18

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
DHY 211	Dental Hygiene Process of Care II	3
DHY 223	Clinical Dental Hygiene I	3
DHY 233	Periodontology	3
DHY 330	Pathology	3
DHY 343	Pain Management (w/lab)	3
LIB 512	Healthcare Ethics	3
TOTAL		18

*Year I—summer session*

COURSE	TITLE	SEMESTER HOURS
DHY 310	Dental Hygiene Process of Care III	3
DHY 350	Community Oral Health	3
DHY 420	Oral Health Research	3
DHY 323	Clinical Dental Hygiene II	4
PSB 320	Introduction to Health Care Delivery (online)	3
TOTAL		16

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
DHY 311	Dental Hygiene Process of Care IV	2
DHY 324	Clinical Dental Hygiene III	4
DHY 342	Pharmacology	3
DHY 460	Capstone Leadership in Dental Hygiene	3
DHY 345	Practice & Career Management	2
DHY elective	Dental Hygiene program elective (online)	
TOTAL		17

**Total institutional credits to complete degree requirements: 69 semester hours**

*Students will graduate with a Bachelor of Science in Dental Hygiene following successful credit transfer of any college prerequisites and completion of the required dental hygiene courses listed above.*

**Bachelor of Science in PreDental/Dental Hygiene – Boston Campus**

For students interested in applying to dental school upon graduating with a Bachelor of Science in Dental Hygiene. This 10 semester/37 month program includes the higher level science and math courses required for application to dental school. The first 21 months of the program students will take the higher level science courses. The last 16 months is the dental hygiene curriculum. Upon successful completion of the program, the student becomes eligible for dental hygiene licensure examinations.

To progress within the didactic and clinical phase of the PreDental/Dental Hygiene Bachelor of Science program, students must achieve a final grade of C or better ( $\geq 75\%$ ). Obtaining a final grade below C in any professional course results in the student having to repeat the course. Progression through the program will be delayed (i.e., the student will be on nonprogression status) because most professional courses are offered only once per academic year. A dental hygiene student may be placed on nonprogression status only once during his or her tenure in the Forsyth Dental Hygiene program. A student who receives a second nonprogression status in a subsequent semester will be dismissed from the dental hygiene program.



The student who begins the accelerated PreDental Dental Hygiene Bachelor of Science program is expected to complete the program in three years (37 months).

<i>Year I – fall</i>		
COURSE	TITLE	SEMESTER HOURS
BIO 151	Biology I: Cell and Molecular Biology	3
BIO 150L	Biology I Lab	1
CHE 131	Chemistry Principles (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 151	Calculus I	3
TOTAL		15

<i>Year I – spring</i>		
COURSE	TITLE	SEMESTER HOURS
BIO 152	Biology II Biology of Organisms (w/lab)	4
CHE 132	Chemistry Principles (with Lab)	4
LIB 112	Expository Writing II	3
MAT 152	Calculus II	3
LIB 120	Introduction to Psychology	3
TOTAL		17

<i>Year I – summer</i>		
COURSE	TITLE	SEMESTER HOURS
BIO 110	Anatomy & Physiology I with lab	4
BIO 210	Anatomy & Physiology II with lab	4
HUM	Humanities Distribution Elective	3
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
TOTAL		14

<i>Year II – fall</i>		
COURSE	TITLE	SEMESTER HOURS
CHE 231	Organic Chemistry (w/lab)	4
LIB 133	American Culture, Identity, and Public Life	3
BEH 250	Health Psychology (DHY Program Elective & BEH elective)	3
PHY 280	Foundations of Physics I	3
PHY 280L	Foundations of Physics Lab I	1
TOTAL		14

<i>Year II – spring</i>		
COURSE	TITLE	SEMESTER HOURS
CHE 232	Organic Chemistry II	4
CHE 234L	Organic Chemistry II Lab	1
SSC 230	Cultural Anthropology	3
LIB 510	Health Care Ethics	3
PHY 284 & 284L	Foundations of Physics II (w/lab)	4
TOTAL		14

*Year II – summer*

COURSE	TITLE	SEMESTER HOURS
BIO 255	Medical Microbiology (w/lab)	4
MAT 261	Statistics	3
PSB 311	Biochemistry	3
DHY 223	Nutrition	2
TOTAL		12

*Year III – fall*

COURSE	TITLE	SEMESTER HOURS
DHY 202	Dental Anatomy and Histology	2
DHY 204	Head and Neck Anatomy	2
DHY 209	Dental Hygiene Process of Care I	4
DHY 209L	Dental Hygiene Preclinic Laboratory	2
DHY 230	Dental Radiology with Lab	3
DHY 321	Dental Materials with Lab	3
TOTAL		16

*Year III – spring*

COURSE	TITLE	SEMESTER HOURS
DHY 211	Dental Hygiene Process of Care II	3
DHY 223	Clinic I	3
DHY 233	Periodontology	3
DHY 330	Pathology	3
DHY 343	Pain Management	2
DHY 341	Pain Management Lab	1
TOTAL		15

*Year III – summer*

COURSE	TITLE	SEMESTER HOURS
DHY 310	Process of Care III	3
DHY 350	Community Oral Health	3
DHY 530	Oral Health Research	3
DHY 323	Clinical Dental Hygiene II	4
TOTAL		13

*Year IV – fall*

COURSE	TITLE	SEMESTER HOURS
DHY 311	Dental Hygiene Process of Care IV	2
DHY 324	Clinical Dental Hygiene III	4
DHY 342	Pharmacology	3
DHY 460	Capstone Leadership in Dental Hygiene	3
DHY 345	Practice & Career Management	2
TOTAL		14

**Total credits to complete degree requirements: 144 semester hours. If a student needs to take precalculus, total credits to complete degree program: 147 semester hours**

### Dual Degree Bachelor of Science in Health Sciences/Bachelor of Science in Dental Hygiene

The BSHS/Fast Track BSDH Dual Degree program provides a pathway to dental hygiene for students enrolled in the BSHS Program in Boston who are interested in pursuing the fast track BSDH at the Forsyth School of Dental Hygiene in Boston. The program will allow students to earn a BSHS while at the same time completing some BSDH courses that can then be applied to the fast track BSDH.

#### *Year I – School of Arts & Sciences – fall*

COURSE	TITLE	SEMESTER HOURS
BIO 110L	Anatomy and Physiology (w/lab)	4
CHE 110/L	Basic Chemistry I (w/lab)	4
MAT 141	Algebra & Trig	3
LIB 111	Expository Writing	3
ITM 101	Introduction to the Major	1
TOTAL		15

#### *Year I – School of Arts & Sciences – spring*

COURSE	TITLE	SEMESTER HOURS
BIO 110/L	Anatomy & Physiology II (w/lab)	4
CHE 110/L	Basic Chemistry II (w/lab)	4
LIB 120	Intro to Psychology	3
LIB 112	Expository Writing	3
HSC 110	Health Sciences Seminar	1
TOTAL		15

#### *Year II – School of Arts & Sciences – fall*

COURSE	TITLE	SEMESTER HOURS
HSC 301/301O	Health Promotion	3
LIB 133	American Culture	3
LIB 220	Interpersonal Communication	3
MAT 261	Statistics	3
BEH 352	Human Development through the Life Cycle	3
HSC 210	Introduction to Health Sciences	1
TOTAL		16

#### *Year II – School of Arts & Sciences – spring*

COURSE	TITLE	SEMESTER HOURS
HSC 401/401O	Public Health and Policy	3
BIO 255	Medical Microbiology (w/lab)	4
BEH 250	Health Psychology	3
SSC	Social Sciences Distribution Elective	3
HUM	Humanities Distribution Elective	3
TOTAL		16

#### *Year III – School of Arts & Sciences – fall*

COURSE	TITLE	SEMESTER HOURS
HSC 310O	Health Care Informatics	3
LIB 512	Health Care Ethics	3
HSC 320O	Writing for Health Science Professionals	3
HSC	Health Sciences Distribution Elective	3

HSC	Health Sciences Distribution Elective	3
TOTAL		15

*Year III – School of Arts & Sciences – spring*

COURSE	TITLE	SEMESTER HOURS
HSC 410/410O	Research Analysis and Methods	3
PSB 320	Intro to Health Care Delivery	3
SSC 495	Evolution of the Health Profession	3
HSC	Health Sciences Distribution Elective	3
HSC	Health Sciences Distribution Elective	3
TOTAL		15

*Year IV – Forsyth School of Dental Hygiene – fall*

COURSE	TITLE	SEMESTER HOURS
DHY 202	Dental Anatomy, Histology & Embryology	2
DHY 204	Head and Neck Anatomy	2
DHY 209	Dental Hygiene Process of Care I	4
DHY209L	DH Preclinic Lab	2
DHY 230	Radiology (w/lab)	3
DHY 231	Dental Materials (w/lab)	3
DHY 232	Nutrition	2
TOTAL		18

*Year IV – Forsyth School of Dental Hygiene – spring*

COURSE	TITLE	SEMESTER HOURS
DHY 211	Dental Hygiene Process of Care II	3
DHY 223	Clinical Dental Hygiene I	3
DHY 233	Periodontology	3
DHY 330	Pathology	3
DHY 343	Pain Management (w/lab)	3
TOTAL		15

*Year IV – Forsyth School of Dental Hygiene – summer*

COURSE	TITLE	SEMESTER HOURS
DHY 310	Dental Hygiene Process of Care III	3
DHY 350	Community Oral Health	3
DHY 420.O	Oral Health Research	3
DHY 323	Clinical Dental Hygiene II	4
TOTAL		13

*Year V – Forsyth School of Dental Hygiene – fall*

COURSE	TITLE	SEMESTER HOURS
DHY 311	Dental Hygiene Process of Care IV	2
DHY 324	Clinical Dental Hygiene III	4
DHY 342	Pharmacology	3
DHY 460	Capstone Leadership in Dental Hygiene	3
DHY 345	Practice and Career Management	2
TOTAL		14

**Total credits to complete degree requirements: 152 semester hours**

## **Bachelor of Science in Dental Hygiene Completion (Online)**

*Program Director Dr. Linda Boyd*

This option is open to dental hygienists who hold an Associate Degree or certificate from an accredited dental hygiene program and licensure appropriate for practice in the state or country where the student resides. Upon admission, the student will be awarded credit for prior dental hygiene professional coursework completed in his or her associate degree up to a maximum of 44 semester credits. Students also must complete the MCPHS Arts and Sciences core curriculum requirements (minimum 40 semester credits), dental hygiene professional coursework at MCPHS (minimum 36 semester credits). A total of 120 semester credits are required for the Bachelor of Science in Dental Hygiene.

### **Prior Degree or Certificate**

A maximum of forty-four (44) semester credits will be awarded to a student who is a registered dental hygienist who has completed an associate degree or certificate program in dental hygiene through a regionally accredited educational institution.

### **Preprofessional Core Curriculum Courses**

Prior completion of the required preprofessional courses listed below as well as the general electives is preferred. Courses already completed that meet MCPHS transfer credit policies will be accepted for transfer credit. The remaining requirements beyond those transferred during the admission process must be completed at MCPHS unless approved in advance by the Admission Office or, postmatriculation, by the Center for Academic Success and Enrichment (CASE).

COURSE	SEMESTER HOURS
Anatomy and physiology I (w/lab)	3
Basic chemistry I (w/lab)	4
Computer applications or physics	3
College Level Life Sciences	3
Algebra and Trigonometry	3
Communication studies	3
Composition I and II	6
Introduction to psychology	3
Introduction to sociology	3
Behavioral sciences course	3
Social sciences course	3
Humanities course	3
TOTAL	40

### **Professional Courses**

COURSE	TITLE	SEMESTER HOURS
HSC 320	Writing for Health Science Professionals	3
DHY 446	Oral Health in Special Care Populations	3
DHY 442	Evidence-Based Dental Hygiene Practice	3
MAT 261	Statistics	3
DHY 420	Oral Health Research Methods	3
LIB 512	Healthcare Ethics	3
HSC 301	Health Promotion	3
HSC 325	Healthcare Management	3
DHY 490	Dental Hygiene Practicum	3
HSC 401	Public Health & Policy	3
HSC 315O	Planning Health Education & Promotion	3
HSC 427	Teaching in the Clinical Setting	3
TOTAL		36

**Minimum number of credits to complete Baccalaureate in Dental Hygiene: 120 semester hours**

***Prior dental hygiene program (44), Arts and Sciences core curriculum (40), required professional component (36),***

## Admission

For admission to the program, an applicant must have

- graduated from a dental hygiene program accredited by the ADA Commission on Dental Accreditation,
- earned a minimum cumulative grade point average (GPA) of 2.5 (on a 4.0 scale) in dental hygiene program courses,
- completed one year of work experience in healthcare (e.g., as a dental assistant, nurse's aide, social worker),
- successfully completed the National Board Dental Hygiene Examination,
- obtained a license to practice dental hygiene or eligibility for licensure in at least one jurisdiction in the United States or Canada,
- achieved a minimum score of 79 on the Test of English as a Foreign Language (TOEFL),
- completed the application for admission, and
- current employment in dental hygiene (recommended but not required).

## Master of Science in Dental Hygiene (Online)

*Program Director Dr. Linda Boyd*

The Master of Science degree offered by the Forsyth School of Dental Hygiene is a part-time, 36-credit-hour, postbaccalaureate, online master's degree program culminating in a thesis. The program, specifically designed for practicing dental hygienists, uses computer-assisted distance learning and minimal on-campus class meetings.

The purpose of this program is to prepare qualified dental hygiene professionals for careers and leadership roles in state and community-based public health administration, dental professional education, dental industry marketing and product development, research, and public and private health agencies and organizations.

## Program Admission and Degree Requirements

For admission to the Master of Science in Dental Hygiene program, an applicant must have

- graduated from an accredited dental hygiene program,
  - earned a bachelor's degree from an accredited college or university or completed the MCPHS Master of Science Degree Bridge program for associate degree dental hygienists,
  - completed one year of work experience in healthcare,\*
  - achieved a minimum score on the Test of English as a Foreign Language (TOEFL) as detailed in the current MCPHS University catalog,
  - completed the application for admission to an online program as described in the current MCPHS University catalog, and
  - attended the on-campus Orientation session.
- This requirement may be waived for MCPHS graduates.

The Master of Science in Dental Hygiene degree will be conferred upon the dental hygiene graduate student who has mastered the advanced professional knowledge and who

- successfully completes the 36 semester hours of required courses listed in the program curriculum, including 6 semester hours of thesis study;
- maintains a cumulative grade point average (GPA) of 3.0 for all courses completed at MCPHS;
- presents and successfully defends an approved thesis to the student's Thesis Advisory Committee; and
- completes all requirements for the MSDH degree within a period of six years.

The master's thesis is the final academic experience of the program. Each student will demonstrate attainment of program competencies; apply knowledge, skills, and values acquired in the program to a specific problem or issue; and independently demonstrate mastery and integration of curriculum concepts and methods. The topic, developed with guidance from the student's Thesis Advisory Committee, will be related to oral health. The student will present the study and results to professional colleagues.

COURSE	TITLE	SEMESTER HOURS
DHY 701	Essentials of Public Health	3
DHY 703	Program Planning and Evaluation	3
DHY 706	Health Education and Health Behavior	3
DHY 714	Research Methodology and Statistics	3
DHY 722	Health Policy and Finance	3
DHY 818	Research Fundamentals	3
DHY 827	Administration and Management	3

DHY 831	Thesis I	3
DHY 832	Thesis II	3
DHY 895*	Graduate Extension of Thesis	0
TOTAL		27

\* All graduate students involved in the thesis must continue to register for Graduate Extension (DHY 895O) and pay the registration fee until it is completed and the thesis is defended.

CONCENTRATION COURSES		SEMESTER HOURS
Dental Hygiene Education		
DHY 751	Adult Learning Theory & Clin Teaching for Health Professions Ed	3
DHY 753	Curriculum and Course Design in Health Prof Education	3
DHY 755	Health Professions Education Practicum	3
TOTAL		9

or

CONCENTRATION COURSES		SEMESTER HOURS
Public Health		
DHY 715/DRA809	Epidemiology	3
DHY 840	Advanced Dental Hygiene Practice	3
DHY 835	Public Health Practicum	3
TOTAL		9

### **AS to MS in Dental Hygiene Bridge Program (Online)**

*Program Director Dr. Linda Boyd*

The AS to MS in Dental Hygiene Bridge Program is designed to facilitate progression of the dental hygienist with an associate degree to graduate study by providing curriculum content not provided in associate degree programs and awarding credit for general education courses completed.

A dental hygienist accepted into the AS to MS in Dental Hygiene Bridge Program may transfer up to 100 semester credit hours previously earned in a dental hygiene program and prerequisite general education courses. Transfer credit will be given only for those courses in which the student earned at least a C grade (2.0). Six courses (18 credit hours) compose the bridge curriculum, covering baccalaureate dental hygiene competencies and preparing the dental hygienist for graduate-level education. A bachelor's degree will not be awarded upon completion of the bridge curriculum. The student matriculates in the dental hygiene master's degree program following successful completion of the bridge courses and earning an overall grade point average (GPA) of 2.5.

The program will be offered online to allow participation of practicing dental hygienists and current dental hygiene educators.

### **Admission Requirements**

For admission to the program, an applicant must have

- graduated from an associate degree or certificate in dental hygiene program accredited by the American Dental Association Commission on Dental Accreditation,
- earned a minimum cumulative GPA of 2.5 (on a 4.0 scale) in dental hygiene program courses,
- completed one year of work experience in healthcare,
- successfully completed the National Board Dental Hygiene Examination,
- obtained a license to practice dental hygiene in at least one jurisdiction in the United States or Canada,
- achieved a minimum score on the TOEFL or IELTS as detailed in the current MCPHS University catalog,
- completed the application for admission to the online program as described in the current MCPHS University catalog;
- current employment in dental hygiene; and
- attended all sessions of the on-campus Orientation prior to the beginning of the first program semester.

### Program Curriculum

Up to 100 semester credit hours in general education and dental hygiene education courses may be transferred; a minimum grade of C is required for transfer credit.

BRIDGE COURSES		SEMESTER HOURS
HSC 320	Writing for Health Science Professionals	3
DHY 446	Oral Health in Special Care Populations	3
MAT 261	Statistics	3
DHY 442	Evidence-Based Dental Hygiene Practice	3
DHY 420	Oral Health Research Methods	3
LIB 512	Healthcare Ethics	3
TOTAL		18

COURSES		SEMESTER HOURS
DHY 701	Essentials of Public Health	3
DHY 703	Program Planning and Evaluation	3
DHY 706	Health Education and Health Behavior	3
DHY 714	Research Methodology and Statistics	3
DHY 722	Health Policy and Finance	3
DHY 818	Research Fundamentals	3
DHY 827	Administration and Management	3
DHY 831	Thesis I	3
DHY 832	Thesis II	3
DHY 895*	Graduate Extension of Thesis	
TOTAL		27

CONCENTRATION COURSES		SEMESTER HOURS
Dental Hygiene Education		
DHY 751	Adult Learning Theory & Clin Teaching for Health Professions Ed	3
DHY 753	Curriculum and Course Design in Health Prof Education	3
DHY 755	Health Professions Education Practicum	3
TOTAL		9

or

Public Health		
DHY 715/DRA 809	Epidemiology	3
DHY 840	Advanced Dental Hygiene Practice	3
DHY 835	Public Health Practicum	3
TOTAL		9

\* All graduate students involved in the thesis must continue to register for Graduate Extension (DHY 8950) and a pay registration fee until it is completed and the thesis is defended.

### Master of Science in Dental Hygiene / Master of Public Health (Online)

Program Director Linda Boyd/Carly Levy

The Master of Science in Dental Hygiene and Master of Public Health (MSDH/MPH) program at MCPHS University is a joint program encompassing the requirements of both degrees. Students in the Public Health concentration will have the opportunity to apply to the program in their second year of study in the Master of Science in Dental Hygiene program at MCPHS Online and the Forsyth School of Dental Hygiene. Upon acceptance to the joint program, students may begin their graduate study in the MPH program in the summer after their second year, attending the five-day face-to-face preparatory seminar for the culminating experience course. Students must defend their thesis in the Master of Science



in Dental Hygiene prior to taking additional courses in the MPH curriculum. Students will finish their MPH in three semesters following the conferral of the Master of Science degree.

### Professional Courses

#### *Year I—fall*

COURSE	TITLE	SEMESTER HOURS
DHY 701	Essentials of Public Health	3
DHY 827	Administration and Management	3
TOTAL		6

#### *Year I—spring*

COURSE	TITLE	SEMESTER HOURS
DHY 703	Program Planning and Evaluation	3
DHY 722	Health Policy and Finance	3
TOTAL		6

#### *Year I—summer*

COURSE	TITLE	SEMESTER HOURS
DHY 706	Health Education & Health Behavior	3
DHY 714	Research Methodology & Statistics	3
TOTAL		6

#### *Year II—fall*

COURSE	TITLE	SEMESTER HOURS
DHY 818	Research Fundamentals	3
DRA 809	Health Epidemiology	3
TOTAL		6

#### *Year II—spring*

COURSE	TITLE	SEMESTER HOURS
DHY 831	Thesis I	3
DHY 840	Advanced Dental Hygiene Practice	3
TOTAL		6

#### *Year II—summer*

COURSE	TITLE	SEMESTER HOURS
DHY 832	Thesis II	3
DHY 835	Public Health Practicum	3
PBH 895	Preparatory Seminar, Culminating Experience	1
TOTAL		7

#### *Year III – fall*

COURSE	TITLE	SEMESTER HOURS
PBH 750	Community Health Science and Practice	3
PBH 705	Intro to Environmental Health or Public Health Elective	3
TOTAL		6

*Year III – spring*

COURSE	TITLE	SEMESTER HOURS
PBH 715	Intro to Social and Behavioral Sciences	3
PBH 898	Culminating Experience	3
TOTAL		6

*Year III – summer*

COURSE	TITLE	SEMESTER HOURS
PBH 705 or Public Health Elective		3
PBH 765	Community Health Assessments	3
TOTAL		6

**Total credits required to complete degree requirements for Master of Science in Dental Hygiene: 36 semester hours, Total credits required for both degrees: 55**

- DHY701 (3sh) satisfies the PBH701 (3sh) requirement
  - DHY714 (3sh) satisfies the DRA807 (3sh) requirement
  - DHY722 (3sh) satisfies the PBH710 (3sh) requirement
  - DHY703 (3sh) satisfies the PBH760 (3sh) requirement
  - DHY706 (3sh) satisfies the PBH755 (3sh) requirement
  - DHY715 (3sh) satisfies the DRA809 (3sh) requirement
  - DHY835 (3sh) satisfies the PBH890 (2sh) requirement
  - DHY827 (3 sh) satisfies one of the PBH Elective (3sh) requirement
- Total: 23 semester hours of MPH coursework

**Graduate Certificate in Oral Health Professions Education (Online)**

This certificate program is designed to provide practicing dental professionals holding a Bachelor of Science degree or higher with the opportunity to earn a credential in oral health professions education. The certificate will provide them education courses supplementing their knowledge of dental hygiene, dental assisting, and dental education, and prepare them to teach courses in a variety of educational settings.

A minimum grade of B and a minimum grade point average (GPA) of 3.0 are required.

COURSE	TITLE	SEMESTER HOURS
DHY 751	Adult Learning Theory and Clinical Teaching for Health Professions Ed	3
DHY 753	Curriculum and Course Design in Health Professions Education	3
DHY 755	Health Professions Education Practicum	3
TOTAL		9

## School of Medical Imaging and Therapeutics

### **Accelerated 32- to 36-Month Bachelor of Science**

The accelerated 32- to 36-month Bachelor of Science programs offer degrees in Diagnostic Medical Sonography (DMS), Magnetic Resonance Imaging (MRI), Nuclear Medicine Technology (NMT), Radiation Therapy (RTT), and Radiography (RAD). The DMS programs are completed in 36 months, and the MRI, NMT, RTT, and RAD programs in 32 months. The Bachelor of Science program integrates didactic instruction in the liberal arts, basic and applied science, and the social sciences with clinical instruction provided by the clinical affiliates. The location of the University in the Longwood Medical and Academic Area, as well as its affiliations with medical institutions located in the Greater Boston area, enable students to train in hospitals with state-of-the-art facilities that are among the best in the world. Students planning to major in one of the Medical Imaging and Therapeutics programs will be expected to specify the program of choice during the formal application process to MCPHS. Students who are uncertain about their program of choice are encouraged to complete a shadowing activity for each specialty area in order to decide which discipline they wish to study. If the student has firmly decided on the concentration he or she wishes to pursue, the student should contact his or her local hospital to arrange a shadowing opportunity. If such arrangements cannot be made, the MCPHS director for that program will try to accommodate the request to establish a shadowing opportunity. All such requests will be processed on an individual basis based on available space and the specific shadowing requirements at affiliate institutions. Any request to change the major after matriculation to MCPHS will be based on availability of space in the new area of interest.

For internal transfers, admission into the desired program is subject to space availability; in addition, the following must be completed:

- Transcript review by the appropriate program director and the dean of the school
- A Change of Major form signed by the Center for Academic Success and Enrichment
- A personal interview with the program director or designated program faculty
- Clinical observation in which the student will shadow a clinical supervisor in the chosen major; this requirement may be waived at the discretion of the program director

### **Clinical Rotations**

A number of clinical rotations in the required curriculum may be scheduled at some distance from the campus. This is necessary to provide a range of diverse learning experiences and to ensure availability and quality of clinical rotation sites. The University makes every effort to accommodate requests regarding assignments to experiential education sites, but students generally can expect to be assigned to clinical sites at some distance from the campus for at least a portion of their required clinical rotations. In such instances, students are responsible for transportation and other related travel expenses.

### **Bachelor of Science in Diagnostic Medical Sonography: General and Echocardiography Tracks (Accelerated, 36 months)**

The Diagnostic Medical Sonography (DMS) profession uses sound waves (ultrasound) to produce multi-dimensional dynamic images of tissue, organs, and blood flow inside the human body for the diagnosis of various medical conditions. The sonographer, a highly skilled imaging technologist, uses sophisticated ultrasound equipment to identify disease. In addition, the sonographer works closely with physicians in the processing of the ultrasound images to make a diagnosis.

The DMS program offers a full-time, Accelerated, 36 month course of study that begins in the fall semester. The comprehensive curriculum includes primary specialties of ultrasound, plus secondary specialties, offered across two tracks; the General ultrasound track, includes training in abdominal, obstetrics/gynecology, breast, pediatric, musculoskeletal and vascular sonography; the Echocardiography track focuses on adult echocardiography with secondary specialty tracks in pediatric echocardiography, and vascular sonography.

Graduates of the DMS programs are eligible to sit for several registry exams offered by the American Registry of Diagnostic Medical Sonography (ARDMS) under exam prerequisite 3B and Cardiovascular Credentialing International (CCI) exam prerequisite RCS5.

The student must pass the ARDMS Sonography Principles & Instrumentation (SPI) registry exam in order to pass the DMS 304, Problem Solving in Physics and Instrumentation course. In addition, passing the SPI registry exam is required to continue into Year III of the program.

All DMS courses during the professional phase of studies must be completed with a weighted grade  $\geq 77\%$  (C+) in order to progress in the program.

Students must complete all professional coursework at MCPHS to receive their degrees in the Diagnostic Medical Sonography programs.

The MCPHS graduate is well suited to work in several DMS specialties and, with the BS degree, has the comprehensive education required to become a leader in the profession.

### Pre professional Phase

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 110	Anatomy and Physiology I (w/lab)*	4
CHE 110	Basic Chemistry I (w/lab)*	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 141	Algebra and Trigonometry*	3
TOTAL		15

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 210	Anatomy and Physiology II (w/lab)*	4
CHE 210	Basic Chemistry II (w/lab)*	4
LIB 112	Expository Writing II	3
PHY 181	General Physics*	4
TOTAL		15

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
LIB 120	Introduction to Psychology	3
LIB 133	American Culture, Identity, and Public Life	3
MAT 261	Statistics	3
LIB 220	Interpersonal Communication	3
TOTAL		12

*\*NOTE: The student must earn a minimum grade of C in BIO 110/210, CHE 110/210, MAT 141, and PHY 181. Medical terminology is integrated into the professional phase and thus is not a course requirement.*

### *Progression into the Professional Phase for DMS—General and Echocardiography Tracks:*

An overall cumulative grade point average (GPA) of 2.0 and successful completion of the above courses is required as prerequisite for entry into the professional phase of the DMS programs. These requirements apply to students entering MCPHS as freshmen, students who are transferring into the DMS program from other programs within MCPHS, and those who are transferring from another accredited college or university.

### DMS Technical Standards

Minimum expectations of the DMS programs are to prepare competent, entry-level sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains. To meet these expectations, students enrolled in health sciences professional programs must have abilities and technical skills to be successful healthcare providers. The following technical standards describe the non-academic qualifications the DMS programs considers essential for the successful progression in, and completion of the educational objectives of its curriculum.

Although the DMS program will engage in an interactive process with applicants with disabilities, it reserves the right not to admit any applicant who, upon completion of the interactive process, cannot meet the technical standards set forth below, with or without reasonable accommodations. Reasonable accommodation for persons with prior

documented disabilities will be considered on an individual basis. Students wishing to request accommodations for disabilities should contact the Director for Disability Support Services or The Center for Academic Success and Enrichment as applicable.

A DMS professional provides direct care for patients in hospitals or outpatient facilities and must be able to apply acquired knowledge and physical tasks to skillfully perform sonography procedures. These technical standards are based upon the minimum tasks performed by graduates of the program as recommended by the Society of Diagnostic Medical Sonography, Scope of Practice and Clinical Standards for the Diagnostic Medical Sonographer, April 13, 2015 (<http://www.sdms.org/docs/default-source/Resources/scope-of-practice-and-clinical-standards.pdf?sfvrsn=8>) Listed below are the technical standards that all applicants must meet in order to participate in, and successfully complete the DMS programs:

**A. Physical Requirements**

The Diagnostic Medical Sonographer must be able to:

1. Work standing on his/her feet 80% of the time.
2. Use both hands, wrists, and shoulders to maintain prolonged arm positions necessary for Scanning and perform fine motor skills.
3. Lift more than 50 pounds routinely.
4. Transport, move, and or lift patients from a wheelchair or stretcher to the examination table or patient bed, and physically assist patients into proper positions for examination.
5. Push, pull, bend and stoop routinely to move and adjust sonographic equipment and perform studies.
6. Use senses (vision, hearing, and touch) to adequately view sonograms, including color distinctions; distinguish audible sounds; perform eye/hand coordination skills required in sonographic examinations; and recognize changes in patient's condition and needs.
7. Work in a semi-darkened room for prolonged periods of time.
8. Be physically capable of carrying out all assigned duties.

**B. Mental and Intellectual Requirements**

The Diagnostic Medical Sonographer must be able to:

1. Communicate effectively, verbally and nonverbally, with patients and other healthcare professionals to explain procedures, give instructions, and give and obtain information.
2. Organize and accurately perform the individual steps in a sonographic procedure in the proper sequence according to established standards.
3. Understand and reach quickly to verbal instructions and patient needs.
4. Follow directions effectively and work closely with members of the healthcare community.
5. View and evaluate recorded images for the purpose of identifying proper protocol, procedural sequencing, technical qualities and identification of pathophysiology.
6. Apply problem solving skills to help optimize patient care and produce the best diagnostic information possible.

**C. Emotional Requirements**

The Diagnostic Medical Sonographer must be able to:

1. Provide physical and emotional support to the patient during sonographic procedures.
2. Interact compassionately and effectively with the sick and or the injured.
3. Handle stressful situations related to technical and procedural standards and patient care situations.
4. Adapt to changing environments and be able to prioritize tasks.
5. Project an image of professionalism.
6. Demonstrate a high level of compassion for others, a motivation to serve, integrity, and a consciousness of social values.
7. Interact positively with people from all levels of society and all ethnic and religious backgrounds.

**Professional Phase: Bachelor of Science in Diagnostic Medical Sonography-General Track (Accelerated, 36 months)**

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
DMS 200	Introduction to Diagnostic Medical Sonography	2
DMS 202	Obstetrics/Gynecology Sonography I	3

DMS 204L	Sonography Laboratory Procedures I	4
DMS 206	Abdominal Sonography I	3
DMS 208	Sonographic Physics and Instruments I	3
TOTAL		15

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
DMS 212	Obstetrics/Gynecology Sonography II	3
DMS 214L	Sonography Laboratory Procedures II	4
DMS 216	Abdominal Sonography II	3
DMS 218	Sonographic Physics and Instruments II	3
	Distribution Elective*	3
TOTAL		16

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
DMS 304	Problem Solving in Physics and Instruments	3
DMS 205	Breast Sonography	3
DMS 320	Introduction to Vascular Sonography (w/lab)	5
DMS 224L	Sonography Laboratory Procedures III	1
TOTAL		12

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
DMS 302C	General Clinical Sonography I	8
DMS 310	Critical Thinking in Sonography I	2
DMS 315	Pediatric Sonography	3
LIB 5120	Healthcare Ethics	3
TOTAL		15

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
DMS 312C	General Clinical Sonography II	8
DMS 410	Critical Thinking in Sonography II	2
DMS 420	Musculoskeletal Sonography	3
	Distribution Elective*	3
TOTAL		16

*Year III—summer*

COURSE	TITLE	SEMESTER HOURS
DMS 412C	General Clinical Sonography III	8
DMS 440	Advanced Problem Solving in Sonography	2
DMS 443	Advanced Problem Solving in Vascular Sonography**	(1)
	Distribution Elective*	3
TOTAL		13 (14)

\* During Years II and III, students complete three liberal arts distribution electives: an HUM course, an SSC course, and a BEH course.

\*\*If the elective DMS 443 Advanced Problem Solving in Vascular Sonography is taken, total semester credits come to 14, and degree credits to 131.

**Total credits to complete degree requirements: 130 semester hours**

**Professional Phase: Bachelor of Science in Diagnostic Medical Sonography-Echocardiography Track  
(Accelerated, 36 months)**

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
DMS 200	Introduction to Diagnostic Medical Sonography	2
DMS 207	Fetal and Pediatric Echocardiography (w/lab)	4
DMS 208	Sonographic Physics and Instruments I	3
DMS 209	Cardiovascular Principles	3
DMS 210L	Cardiovascular Laboratory Procedures I	3
TOTAL		15

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
DMS 217	Cardiac Doppler	2
DMS 218	Sonographic Physics and Instruments II	3
DMS 219	Adult Echocardiography I	3
DMS 220L	Cardiovascular Laboratory Procedures II	5
TOTAL		13

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
DMS 304	Problem Solving in Physics and Instruments	3
DMS 319	Adult Echocardiography II	3
DMS 320	Introduction to Vascular Sonography (w/lab)	5
DMS 230L	Cardiovascular Laboratory Procedures III	1
TOTAL		12

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
DMS 310	Critical Thinking in Sonography I	2
DMS 306C	Cardiovascular Clinical Sonography I	8
DMS 408	Advanced Doppler	1
LIB 5120	Healthcare Ethics	3
	Distribution Elective*	3
TOTAL		17

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
DMS 316C	Cardiovascular Clinical Sonography II	8
DMS 410	Critical Thinking in Sonography II	2
DMS 450	TE Echo Invasive Procedures	2
	Distribution Elective*	3
TOTAL		15

Year III—summer

COURSE	TITLE	SEMESTER HOURS
DMS 426C	Cardiovascular Clinical Sonography III	8
DMS 440	Advanced Problem Solving in Sonography	2
DMS 443	Advanced Problem Solving in Vascular Sonography**	(1)
	Distribution Elective*	3
TOTAL		13 (14)

\* During Year III, students complete three liberal arts distribution electives: a HUM course, a SSC course, and a BEH course.

\*\*If the elective DMS 443 Advanced Problem Solving in Vascular Sonography is taken, total semester credits come to 14, and degree credits to 128.

**Total credits to complete degree requirements: 127 semester hours**

### **Bachelor of Science Degree in Magnetic Resonance Imaging (Accelerated)**

Magnetic Resonance Imaging, also referred to as MRI, is a procedure in which radio waves and a powerful magnet linked to a computer are used to create detailed images of body structures for the purpose of diagnosis. MRI technologists use their knowledge of anatomy, physiology, patient care, and MRI physical principles to safely operate advanced MRI scanners and assist the radiologist in the diagnosis of disease and injury. Unlike most MRI programs, this is a primary pathway program that recognizes MRI as a distinct and separate imaging discipline. Hence, no prior background in a medical imaging science is required.

### **Admission Technical Standards**

Technical Standards for Admission, Promotion, and Graduation

Candidates for and students enrolled in health sciences professional programs must have abilities and skills in the areas of observation; communication; and motor, intellectual, and behavioral/social attributes. The following technical standards describe the nonacademic qualifications (required in addition to academic standards) that the MRI program considers essential for the successful progression in and completion of the educational objectives of its curriculum.

Although the MRI program will engage in an interactive process with applicants with disabilities, it reserves the right not to admit any applicant who, upon completion of the interactive process, cannot meet the technical standards set forth below, with or without reasonable accommodations. Reasonable accommodation for persons with prior documented disabilities will be considered on an individual basis. Students wishing to request accommodations for disabilities should contact the Director for Disability Support Services or The Center for Academic Success and Enrichment as applicable.

### **MRI Technical Standards**

A magnetic resonance technologist provides direct care for patients in hospitals or outpatient facilities and must be able to apply acquired knowledge to skillfully perform MRI procedures. These technical standards are based upon the minimum tasks performed by graduates of the program as recommended by the American Society of Radiologic Technologists ([www.asrt.org](http://www.asrt.org)) and the American Registry of Radiologic Technologists ([www.arrt.org](http://www.arrt.org)). Listed below are the technical standards that all applicants must meet in order to participate in and successfully complete the MRI program:

1. Sufficient visual acuity to accurately administer contrast agents and to monitor imaging equipment as well as provide the necessary patient assessment and care
2. Sufficient ability to receive and provide verbal communication with patients and members of the healthcare team and to assess the health needs of patients through the use of monitoring devices such as intercom systems, cardiac monitors, respiratory monitors, and fire alarms
3. Sufficient gross and fine motor coordination to manipulate equipment such as a scan console, power injectors, and various RF receiver coils; in addition, MRI technologists must perform venipuncture on a daily basis
4. Sufficient communication skills (verbal, reading, writing) to interact with individuals and to communicate their needs promptly and effectively, as may be necessary in the patient's/client's interest
5. Sufficient intellectual and emotional function to plan and implement patient care

Examples of specific technical standards the MRI student must be able to meet are as follows:

- Ability to lift, transfer, and/or move patients from wheelchair/stretchers to scan table; dock/release and wheel scan table to/from scan room to patient waiting area
- Ability to lift, move, reach, or push MRI equipment (lift MRI coils of up to 35 pounds, push/wheel docking table with patient to/from scan room)



- Manual dexterity and ability to bend/stretch
- Ability to distinguish colors and shades of gray
- Effective interpersonal communication skills in the process of interviewing patients and explaining the procedure verbally and/or in writing
- Ability to read and extract information from the medical chart, patient requisitions, and doctors' orders

To perform/assist with MRI procedures on patients, students must initially undergo the same screening procedures as patients, staff, and visitors in order to enter the scan room. The MRI scan room contains a region of intense magnetic field. Objects that display any form of ferromagnetism are therefore of particular concern for MRI. Contraindications for entering the MRI scan room include, and are not limited to

- certain biomedical implants, materials, and devices (e.g., aneurysm clips, brain clips);
- certain electrically, magnetically, and mechanically activated implants and devices (e.g., cardiac pacemakers, cochlear implants); and
- certain metallic foreign objects (e.g., shrapnel, bullets, metal in eyes).

The 32-month Bachelor of Science is an accelerated program combining online courses, courses on the Boston campus, and clinical internships throughout Massachusetts and southern New Hampshire. The typical course of study begins with 16 months of core curriculum preprofessional courses and general education courses followed by 16 months of professional courses and clinical internships.

Students enrolled in the MRI program receive their internship training at hospital affiliates in the Greater Boston area and southern New Hampshire. These include, but are not limited to, Beth Israel Deaconess Medical Center, Brigham and Women's Hospital, Catholic Medical Center, Dana-Farber Cancer Institute, Elliot Hospital, Mt. Auburn Hospital, and Shields MRI Centers Massachusetts and Rhode Island.

Upon graduation from the Bachelor of Science program in Magnetic Resonance Imaging, students are eligible to apply for certification through examination by the American Registry of Radiologic Technologists.

To meet the residency requirement for the BS in Magnetic Resonance Imaging degree, students must complete at least 64 semester hours at the University.

### Curriculum: Bachelor of Science in Magnetic Resonance Imaging (Accelerated)

<i>Year I—fall</i>		
COURSE	TITLE	SEMESTER HOURS
BIO 110	Anatomy and Physiology I	3
BIO 110L	Anatomy and Physiology I Lab	1
CHE 110	Basic Chemistry I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 150*	Precalculus or	
MAT 151	Calculus I	3
TOTAL		15

*\* If placed in Precalculus, the student receives 3 semester hours of general elective credit.*

<i>Year I—spring</i>		
COURSE	TITLE	SEMESTER HOURS
BIO 210	Anatomy and Physiology	3
BIO 210L	Anatomy and Physiology II Lab	1
CHE 210	Basic Chemistry II (w/lab)	4
LIB 112	Expository Writing II	3
MAT 151	Calculus I or General elective	3
LIB 120	Intro to Psychology	3
TOTAL		17

Year I—summer

COURSE	TITLE	SEMESTER HOURS
LIB 133	American Culture, Identity, and Public Life	3
MAT 261	Statistics	3
	Distribution elective*	3
HSC 310	Healthcare Informatics	3
TOTAL		12

\* The two distribution electives must be a humanities (HUM) elective and a social science (SSC) elective.

Year II—fall

COURSE	TITLE	SEMESTER HOURS
	Distribution elective	3
PHY 275	Physics for Medical Imaging	4
BEH 250	Health Psychology	3
BEH 254	Death and Dying	3
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
TOTAL		16

The student must earn a minimum grade of C in BIO 110 and 210; CHE 110 and 210; MAT 150, 151, 152, 197, and 261; RSC 110; HSC 3100; and PHY 270.

### Professional Phase

The student must earn a minimum grade of C in all courses and achieve and maintain a professional 2.5 grade point average (GPA) from this semester on to progress in the program and graduate.

Year II—spring

COURSE	TITLE	SEMESTER HOURS
BEH 450V	IPE with Health Psychology	1
MRI 305	Patient Care in MRI	2
MRI 401	Physical Principles of MRI	3
MRI 402	Intro to Clinical	2
MRI 405	MRI Safety and Applications	3
PSB 320	Intro to Healthcare Delivery	3
RSC 310	Cross Sectional Anatomy	3
TOTAL		17

\* The two distribution electives must be a humanities (HUM) elective and a social science (SSC) elective.

Year II—summer

COURSE	TITLE	SEMESTER HOURS
MRI 310	MRI Procedures	3
RSC 325	Clinical Pathophysiology	4
MRI 420C	Clinical Internship 1	5
TOTAL		12

Year III—fall

COURSE	TITLE	SEMESTER HOURS
LIB 512O	Health Care Ethics	3
MRI 415	MRI Image Production and Evaluation	3
MRI 421C	MRI Clinical Internship II	10
TOTAL		16

Year III—spring

COURSE	TITLE	SEMESTER HOURS
MRI 435	MRI Registry Review	1
MRI 422C	MRI Clinical Internship III	10
MRI 430	MRI Pathology	4
TOTAL		15

**Total credits to complete degree requirements: 123 semester hours (1,008 clinical + internship hours)**

### **Bachelor of Science Degree in Nuclear Medicine Technology (Accelerated)**

Nuclear medicine is a medical specialty that uses radioactive pharmaceuticals and tracers in the diagnosis and treatment of disease. The specialty relies on the expertise of professionals in the allied health sciences for its sophisticated, high-technology medical procedures. Among these professionals are nuclear medicine technologists, with skills ranging from patient care to the operation of nuclear instrumentation.

The technologist performs functions that complement those of nuclear medicine physicians, such as the care and preparation of patients for nuclear medicine procedures, application of quality control techniques to the nuclear medicine products and procedures, operation of instruments for in vivo and in vitro examinations, involvement in research activities, and participation in the management of the nuclear medicine laboratory.

Students enrolled in the Nuclear Medicine Technology program receive their internship training at hospital affiliates in the Greater Boston area. These include, but are not limited to, Boston Medical Center, Brigham and Women's Hospital, Children's Hospital Boston, Dana-Farber Cancer Institute, Massachusetts General Hospital, and Tufts Medical Center. Upon graduation from the Bachelor of Science in Nuclear Medicine Technology program, the student is eligible to apply for certification through examination by the American Registry of Radiologic Technologists and the Nuclear Medicine Technology Certification Board.

To meet the residency requirement for the Bachelor of Science in Nuclear Medicine Technology, students must complete at least 61 semester hours at the University.

#### *Progression into the Professional Phase for Nuclear Medicine Technology and MCPHS Internal Transfers*

All students must meet the following requirements in order to progress into the professional phase of the Nuclear Medicine Technology program. These requirements apply to students entering MCPHS as freshmen, students who are transferring into majors in the Nuclear Medicine Technology program from other programs within MCPHS, and those who are transferring from another accredited college or university into the professional phase of Nuclear Medicine Technology Bachelor or Fast Track Baccalaureate program.

### **Requirements**

An overall cumulative grade point average (GPA) of 2.0 and successful completion of the following courses with a grade of C or better is required in order to progress into the professional phase of the student's chosen program:

COURSE	TITLE	SEMESTER HOURS
BIO 110/210	Anatomy and Physiology I and II (w/lab)	8
PHY 181	General Physics for DMS, NMT, RAD, and RT, or	
PHY 275	Physics for Medical Imaging	4
MAT 141	Algebra and Trigonometry for DMS, NMT, RAD, RT, or	
MAT 150/151	Pre-calculus and Calculus I	3/6
CHE 110/210	Basic Chemistry I and II (w/labs) or	
CHE 131/132	Chemical Principles I (w/lab)/ Chemical Principles II (w/lab) for MRI, NMT, RAD	4/4

For internal transfers, admission into the desired program is subject to space availability; in addition to the above requirements, the following must be completed:

- Transcript review by the appropriate program director and the dean of the school
- A written essay (maximum of 500 words) describing the reason for requesting the particular specialty area and what the student knows about the profession
- A Change of Major form signed by the Center for Academic Success and Enrichment

- A personal interview with the program director or designated program faculty

NOTE: All Nuclear Medicine Technology students must fulfill requirements for CPR certification and medical terminology prior to NMT Internship (NMT 330C).

### Curriculum: Bachelor of Science in Nuclear Medicine Technology (Accelerated)

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 110	Anatomy and Physiology I	3
BIO 110L	Anatomy and Physiology I Lab	1
CHE 110	Basic Chemistry I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 141	Algebra and Trigonometry	3
TOTAL		15

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 210	Anatomy and Physiology II	3
BIO 210L	Anatomy and Physiology Lab	1
CHE 210	Basic Chemistry II (w/lab)	4
LIB 112	Expository Writing II	3
LIB 120	Introduction to Psychology	3
PHY 181	General Physics	4
TOTAL		18

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
LIB 133	American Culture, Identity, and Public Life	3
MAT 261	Statistics	3
RSC 325	Clinical Pathophysiology	4
RSC 250	Patient Care and Medical Terminology for the Radiologic Sciences	3
	Distribution Elective*	(3)
TOTAL		13 (16)

\* Students complete three liberal arts distribution electives: an HUM course, an SSC course, and a BEH course. One of these electives may be taken in the summer of Year I or in the fall of Year II.

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
NMT 215	Nuclear Medicine Procedures I (w/lab)	3
NMT 260	Informatics in Nuclear Medicine	3
NMT 271	Radiation Physics and Instrumentation I (w/lab)	3
RSC 310	Cross-sectional Anatomy	3
	Distribution Elective*	3
RSC 315	Computed Tomography (CT) Imaging	3
TOTAL		18

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
NMT 216	Nuclear Medicine Procedures II	3
NMT 250	Foundations of NMT Clinical Practice	1
NMT 265	Nuclear Cardiology	3
NMT 270	Radiopharmaceuticals	3
NMT 272	Radiation Physics and Instrumentation II (w/lab)	3
RSC 287	Radiation: Protection and Biology	3
TOTAL		16

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
NMT 275	Positron Emission Tomography (PET)	2
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
LIB 512	Healthcare Ethics	3
	Distribution Elective	3
	Distribution Elective	3
TOTAL		14

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
NMT 330C	Nuclear Medicine Internship I	12
TOTAL		12

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
NMT 332C	Nuclear Medicine Internship II	12
NMT 390	Problem Solving in Nuclear Medicine	2
TOTAL		14

**Total credits to complete degree requirements: 120 semester hours**

**Bachelor of Science Degree in Radiation Therapy (Accelerated)**

Radiation therapy is an allied health specialty that utilizes ionizing radiation in the treatment of disease, primarily cancer. The primary responsibilities of a radiation therapist include implementing treatment plans prescribed by a radiation oncologist and assisting in the planning of treatment with the medical dosimetrist and radiation physicist. These responsibilities require highly specialized technical skills as well as highly developed interpersonal skills for interacting effectively with other members of the oncology treatment team, patients, and their families. Students in the Radiation Therapy program develop these skills through an intensive didactic curriculum and through clinical internship under the supervision of certified and licensed radiation therapists. Internship training is provided at the clinical affiliates. These include, but are not limited to, Baystate Medical Center, Beth Israel Deaconess Medical Center, Beth Israel Deaconess Cancer Center and Surgical Pavilion – Needham, Brigham and Women's Hospital, Dana-Farber / Brigham and Women's (DF/BW) Cancer Center (Milford), Dana-Farber Cancer Institute, DF/BW at South Shore Hospital, Lahey Clinic, Lahey Clinic North, MetroWest Medical Center, MGH North Shore Center for Outpatient Care, Mt. Auburn Hospital, North Main Radiation, Rhode Island Hospital, Shields Radiation Oncology Center (Mansfield), St. Vincent Hospital Radiation Oncology Center, Southcoast Centers for Cancer Care, and Winchester Hospital Radiation Oncology Center. Due to the widespread geographical locations of the clinical settings in the radiation therapy program, it is suggested that students have a drivers license and reliable transportation. The majority of the clinical settings are not accessible by public transportation.

Upon graduation from the Bachelor of Science in Radiation Therapy program, the student is eligible to sit for the certification examination administered by the American Registry of Radiologic Technologists.

To meet the residency requirement for the Bachelor of Science in Radiation Therapy, students must complete at least 61 semester hours at the University.

*NOTE: All radiation therapy students must be certified in CPR before the Clinical Internship (RTT 201C).*

### **Radiation Therapy Technical Standards**

MCPHS University has established the following list of technical standards for the majors of Radiography, Nuclear Medicine and Radiation Therapy. These technical standards conform to the professional technical standards required for the safe and ethical practice of the tasks/skills associated with medical radiography, clinical nuclear medicine technology and clinical radiation therapy. Each student, with or without a reasonable accommodation, must be able to demonstrate that he/she is able to:

- Reach and manipulate equipment to its highest position (6 feet);
  - Move a standard wheelchair and/or stretcher from a waiting area to the imaging/treatment room;
  - Transfer patients from wheelchairs and stretchers and help them on/off imaging/treatment table;
  - Lift a minimum of 60 pounds and ensure patient safety.
  - Perform CPR
  - Move from room to room and maneuver in small enclosed spaces
  - Demonstrate manual dexterity to perform necessary manipulations such as drawing doses with a syringe, manipulating locks, putting on surgical gloves;
  - Use sufficient corrected eyesight to observe patients and evaluate radiographic quality.
  - Visually monitor patients/charts/machine indicator lights in dimly lit conditions
  - Read and apply appropriate information and instructions contained in requisitions, notes and patient charts;
  - Detect audible alarms and background sounds during procedures to ensure patient and staff safety;
  - Possess sufficient verbal and written skills to communicate needs promptly and effectively in English.
  - Communicate in a clear and concise manner with patients of all ages, including obtaining health history and pertinent information
  - Understand and apply clinical instructions given by department personnel;
  - Be able to adapt to changing environments and schedules.
  - Establish rapport with fellow students, coworkers, patients and families.
  - Function under stressful conditions.
  - Endure an eight-hour clinical day with a minimum of four to six hours of standing or walking;
  - Endure a minimum of two hours of didactic instruction in a normal classroom environment;
- Working conditions for Radiographers and Radiography students typically involve:
- Possible exposure to ionizing radiation.
  - Possible exposure to film developing chemical solutions.

To perform/assist with MRI procedures on patients, students must initially undergo the same screening procedures as patients, staff, and visitors in order to enter the scan room. The MRI scan room contains a region of intense magnetic field. Objects that display any form of ferromagnetism are therefore of particular concern for MRI. Contraindications for entering the MRI scan room include, and are not limited to

- certain biomedical implants, materials, and devices (e.g., aneurysm clips, brain clips);
- certain electrically, magnetically, and mechanically activated implants and devices (e.g., cardiac pacemakers, cochlear implants); and
- certain metallic foreign objects (e.g., shrapnel, bullets, metal in eyes).

### *Progression into the Professional Phase for Radiation Therapy Majors and MCPHS Internal Transfers*

All students must meet the following requirements in order to progress into the professional phase of the Radiation Therapy Program. These requirements apply to students entering MCPHS as freshmen, students who are transferring into Radiation Therapy from other programs within MCPHS, and those who are transferring from another accredited college or university into the professional phase of the Radiation Therapy Program Bachelor or Fast Track Baccalaureate program.

### **Requirements**

An overall cumulative grade point average (GPA) of 2.0 and successful completion of the following courses with a grade of C or better is required in order to progress into the professional phase of the student's chosen program:

COURSE	TITLE	SEMESTER HOURS
BIO 110/210	Anatomy and Physiology I and II (w/lab)	8
PHY 181	General Physics for DMS, NMT, RAD, and RT, or	
PHY 275	Physics for Medical Imaging	4
MAT 141	Algebra and Trigonometry for DMS, NMT, RAD, RT, or	
MAT 150/151	Pre- calculus and Calculus I	3/6
CHE 110/210	Basic Chemistry I and II (w/labs) or	
CHE 131/132	Chemical Principles I (w/lab)/ Chemical Principles II (w/lab) for MRI,NMT, RAD	4/4

For internal transfers, admission into the desired program is subject to space availability; in addition to the above requirements, the following must be completed:

- Transcript review by the appropriate program director and the dean of the school
- A written essay (maximum of 500 words) describing the reason for requesting the particular specialty area and what the student knows about the profession
- A Change of Major form signed by the Center for Academic Success and Enrichment
- A personal interview with the program director or designated program faculty

### Curriculum: Bachelor of Science in Radiation Therapy (Accelerated)

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 110	Anatomy and Physiology I	3
BIO 110L	Anatomy and Physiology I Lab	1
CHE 110	Basic Chemistry I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 141	Algebra and Trigonometry	3
TOTAL		15

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 210	Anatomy and Physiology II	3
BIO 210L	Anatomy and Physiology II Lab	1
MAT 197	Computer Applications	3
LIB 112	Expository Writing II	3
LIB 120	Introduction to Psychology	3
PHY 181	General Physics	4
TOTAL		17

### Professional Phase

The student must earn a minimum grade of C in all courses and achieve and maintain a professional 2.5 grade point average (GPA) from this semester on to progress in the program and graduate.

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
LIB 133	American Culture, Identity, and Public Life	3
RTT 110	Introduction to Radiation Therapy	2
RSC 250	Patient Care and Medical Terminology	3
RSC 325	Clinical Pathophysiology	4
RTT 530	Directed Study (Optional)	1
TOTAL		12/13

\* Students complete three liberal arts distribution electives: an HUM course, an SSC course, and a BEH course. BEH elective is incorporated into the

radiation therapy curriculum (BEH 254 Death and Dying)

Year II—fall

COURSE	TITLE	SEMESTER HOURS
MAT 261	Statistics	3
RSC 310	Cross-sectional Anatomy	3
RTT 201C	Radiation Therapy Internship I	3
RTT 260	Foundations of Radiation Therapy I	3
RTT 280	Medical Radiation Physics I	3
BEH 254	Death and Dying	3
TOTAL		18

Year II—spring

COURSE	TITLE	SEMESTER HOURS
RSC 287	Radiation: Protection and Biology	3
RTT 202C	Radiation Therapy Internship II	4
RTT 262	Foundations of Radiation Therapy II	3
RTT 281	Medical Radiation Physics II	3
RTT 283	Physics for Treatment Planning	2
RTT 235	Clinical Oncology	2
TOTAL		17

Year II—summer

COURSE	TITLE	SEMESTER HOURS
PSB 320	Introduction to Healthcare Delivery	3
RTT 203C	Radiation Therapy Internship III	6
	Distribution Elective (Optional)	(3)
TOTAL		9 (12)

Year III—fall

COURSE	TITLE	SEMESTER HOURS
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
RTT 304C	Radiation Therapy Internship IV	6
RTT 361	Radiation Therapy Treatment Methods	3
HUM	Humanities Distribution Elective	3
TOTAL		15

Year III—spring

COURSE	TITLE	SEMESTER HOURS
LIB 512	Healthcare Ethics	3
RTT 305C	Radiation Therapy Internship V	6
RTT 340	Radiation Therapy Quality Assurance and Laboratory	1
RTT 345	Brachytherapy	2
RTT 370	Radiation Therapy Registry Review	2
SSC	Social Science Distribution Elective	3
TOTAL		17

**Total credits to complete degree requirements: 120 (123) semester hours**



### **Bachelor of Science Degree in Radiography (Accelerated)**

Radiography is an imaging science that utilizes ionizing radiation to assist physicians in the diagnosis of disease. Responsibilities of the radiographer include patient care and assessment, patient education, preparation and positioning for radiographic procedures, and evaluation of image quality.

The first year of this program consists of a core curriculum of preprofessional and general education courses. The didactic and clinical components of the radiography curriculum are integrated into the second and third years. Clinical training in radiography is provided at Beth Israel Deaconess Medical Center, Boston Medical Center, Brigham and Women's Hospital, Cambridge Health Alliance, Charlton Memorial Hospital, Children's Hospital Boston, Falmouth Hospital, Mount Auburn Hospital, New England Baptist Hospital, St. Elizabeth's Hospital, Signature Health Care (Brockton Hospital), Tufts Medical Center, Whidden Hospital, and a special rotation to Angell Memorial. Upon graduation from the Bachelor of Science in Radiography program, the student is eligible to apply for certification through examination by the American Registry of Radiologic Technologists.

To meet the residency requirement for the BS in Radiography, students must complete at least 61 semester hours at the University.

### **Radiography Technical Standards**

MCPHS University has established the following list of technical standards for the majors of Radiography, Nuclear Medicine and Radiation Therapy. These technical standards conform to the professional technical standards required for the safe and ethical practice of the tasks/skills associated with medical radiography, clinical nuclear medicine technology and clinical radiation therapy. Each student, with or without a reasonable accommodation, must be able to demonstrate that he/she is able to:

- Reach and manipulate equipment to its highest position (6 feet);
- Move a standard wheelchair and/or stretcher from a waiting area to the imaging/treatment room;
- Transfer patients from wheelchairs and stretchers and help them on/off imaging/treatment table;
- Lift a minimum of 60 pounds and ensure patient safety.
- Perform CPR
- Move from room to room and maneuver in small enclosed spaces
- Demonstrate manual dexterity to perform necessary manipulations such as drawing doses with a syringe, manipulating locks, putting on surgical gloves;
- Use sufficient corrected eyesight to observe patients and evaluate radiographic quality.
- Visually monitor patients/charts/machine indicator lights in dimly lit conditions
- Read and apply appropriate information and instructions contained in requisitions, notes and patient charts;
- Detect audible alarms and background sounds during procedures to ensure patient and staff safety;
- Possess sufficient verbal and written skills to communicate needs promptly and effectively in English.
- Communicate in a clear and concise manner with patients of all ages, including obtaining health history and pertinent information
- Understand and apply clinical instructions given by department personnel;
- Be able to adapt to changing environments and schedules.
- Establish rapport with fellow students, coworkers, patients and families.
- Function under stressful conditions.
- Endure an eight-hour clinical day with a minimum of four to six hours of standing or walking;
- Endure a minimum of two hours of didactic instruction in a normal classroom environment; Working conditions for Radiographers and Radiography students typically involve:
  - Possible exposure to ionizing radiation.
  - Possible exposure to film developing chemical solutions.

To perform/assist with MRI procedures on patients, students must initially undergo the same screening procedures as patients, staff, and visitors in order to enter the scan room. The MRI scan room contains a region of intense magnetic field. Objects that display any form of ferromagnetism are therefore of particular concern for MRI. Contraindications for entering the MRI scan room include, and are not limited to

- certain biomedical implants, materials, and devices (e.g., aneurysm clips, brain clips);
- certain electrically, magnetically, and mechanically activated implants and devices (e.g., cardiac pacemakers, cochlear implants); and
- certain metallic foreign objects (e.g., shrapnel, bullets, metal in eyes).

*NOTE: All Radiography students must fulfill the requirement for CPR certification and for medical terminology before the first Radiography Internship (RAD 201C).*

*Progression into the Professional Phase for BS in Radiography Majors and MCPHS Internal Transfers*

All students must meet the following requirements in order to progress into the professional phase of the Radiography Program. These requirements apply to students entering MCPHS as freshmen, students who are transferring into Radiography from other programs within MCPHS, and those who are transferring from another accredited college or university into the professional phase of the Radiography Program Bachelor or Fast Track Baccalaureate program.

**Requirements**

An overall cumulative grade point average (GPA) of 2.0 and successful completion of the following courses with a grade of C or better is required in order to progress into the professional phase of the student's chosen program:

COURSE	TITLE	SEMESTER HOURS
BIO 110/210	Anatomy and Physiology I and II (w/lab)	8
PHY 181	General Physics for DMS, NMT, RAD, and RT, or	
PHY 275	Physics for Medical Imaging	4
MAT 141	Algebra and Trigonometry for DMS, NMT, RAD, RT, or	
MAT 150/151	Pre- calculus and Calculus I	3/6
CHE 110/210	Basic Chemistry I and II (w/labs) or	
CHE 131/132	Chemical Principles I (w/lab)/ Chemical Principles II (w/lab) for MRI,NMT, RAD	4/4

For internal transfers, admission into the desired program is subject to space availability; in addition to the above requirements, the following must be completed:

- Transcript review by the appropriate program director and the dean of the school
- A written essay (maximum of 500 words) describing the reason for requesting the particular specialty area and what the student knows about the profession
- A Change of Major form signed by the Center for Academic Success and Enrichment
- A personal interview with the program director or designated program faculty

**Curriculum: Bachelor of Science in Radiography (Accelerated)**

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 110	Anatomy and Physiology I	3
BIO 110L	Anatomy and Physiology Lab I	1
CHE 110	Basic Chemistry I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 141	Algebra and Trigonometry	3
TOTAL		15

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 210	Anatomy and Physiology II	3
BIO 210L	Anatomy and Physiology Lab II	1
CHE 210	Basic Chemistry II (w/lab)	4
LIB 112	Expository Writing II	3
LIB 120	Introduction to Psychology	3
PHY 181	General Physics	4
TOTAL		18

**Professional Phase**

The student must earn a minimum grade of C in all courses and achieve and maintain a professional 2.5 grade point average (GPA) from this semester on to progress in the program and graduate.

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
RAD 205	Foundations of Radiography	3
RAD 240	X-ray Radiation Physics	2
RSC 250	Patient Care/Medical Terminology	3
RSC 325	Clinical Pathophysiology	4
TOTAL		12

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
LIB 133	American Culture, Identity, and Public Life	3
RAD 210	Radiographic Procedures I	3
RAD 220	Radiographic Exposure Principles I (w/lab)	4
RAD 210L	Radiographic Procedures I Lab	1
MAT 261	Statistics	3
TOTAL		17

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
HUM/SSC	Distributive Elective	3
LIB 512	Healthcare Ethics	3
RAD 201C	Radiography Internship I	4
RAD 211	Radiographic Procedures II	3
RAD 211L	Radiographic Procedures II Lab	1
RAD 221	Radiographic Exposure Principles II	3
TOTAL		17

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
RAD 202C	Radiography Internship II	5
RAD 250	Image Critique in Radiography	2
RAD 212O	Radiographic Procedures III	2
PSB 320O	Introduction to Healthcare Delivery	3
TOTAL		12

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
RAD 303C	Radiography Internship III	6
RSC 310	Cross-sectional Anatomy	3
RSC 315	Computed Tomography (CT) Imaging	3
RAD 270	Introduction to Problem Solving	2
TOTAL		14

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
RAD 304C	Radiography Internship IV	6

RAD 370	Problem Solving in Radiography	3
RSC 287	Radiation: Protection and Biology	3
BEH 254	Death and Dying	3
TOTAL		15

**Total credits to complete degree requirements: 120 semester hours**

**Bachelor of Science Degrees in Diagnostic Medical Sonography, Magnetic Resonance Imaging, Nuclear Medicine Technology, Radiation Therapy, and Radiography (Fast Track)**

Designed specifically for students with either an associate or bachelor's degree in another field, these programs of study provide a fast track option for individuals ready for transition to a career in a discipline within medical imaging and therapeutics. Building on previous learning and experience gained from the student's first degree, these programs will mirror the curricula of the three-year Bachelor of Science programs previously outlined in the prior section of this catalog.

In order to be eligible for these programs, students must possess a prior bachelor's or associate's degree, or the appropriate amount of college credits and prerequisites. In addition to the prerequisite coursework, students admitted without a prior bachelor's degree must also have completed coursework equivalent to the the general education core curriculum; transfer and residency credits for these students must total a minimum of 120 semester hours.

**Bachelor of Science in Diagnostic Medical Sonography, General and Echocardiography (Fast Track, 24 months)**

The Diagnostic Medical Sonography (DMS) profession uses sound waves (ultrasound) to produce multi-dimensional dynamic images of tissue, organs, and blood flow inside the human body for the diagnosis of various medical conditions. The sonographer, a highly skilled imaging technologist, uses sophisticated ultrasound equipment to identify disease. In addition, the sonographer work closely with physicians in the processing of the ultrasound images to make a diagnosis.

The DMS program offers a full-time, Fast Track, 24-month course of study that begins in the fall semester. The comprehensive curriculum includes primary specialties of ultrasound, plus secondary specialties, offered across two tracks; the General ultrasound track, includes training in abdominal, obstetrics/gynecology, breast, pediatric, musculoskeletal and vascular sonography; the Echocardiography track focuses on adult echocardiography with specialty tracks in pediatric echocardiography, and vascular sonography.

Graduates from the DMS programs are eligible to sit for several registry exams offered by the American Registry of Diagnostic Medical Sonography (ARDMS) under exam prerequisite 3B and Cardiovascular Credentialing International (CCI) exam prerequisite RCS5.

The student must pass the ARDMS Sonography Principles & Instrumentation (SPI) registry exam in order to pass the DMS 304, Problem Solving in Physics and Instrumentation course. In addition, passing the SPI registry exam is required to continue into Year III of the program.

All DMS courses during the professional phase of studies must be completed with a weighted grade  $\geq 77\%$  (C+) in order to progress in the program.

Students with a bachelor's or associate's degree, or the appropriate amount of college credits and prerequisites, may apply to the fast track program. Courses must have been completed at a regionally accredited college or university with a grade of C or better for transfer. Math and science courses taken more than ten years prior to the anticipated date of matriculation to MCPHS will not be accepted.

**Required prerequisite courses for all students**

- Anatomy and Physiology I & II with lab (8 credits)
- Basic Chemistry I with lab (4 credits)
- Physics I (Algebra-based) with lab (4 credits)
- Algebra and Trigonometry (3 credits) (Acceptable substitutions include Precalculus and Calculus)
- Expository Writing I (3 credits)
- Statistics (3 credits)
- TOTAL: 25 credits

**Additional courses required for students without a Bachelor's Degree:**

Basic Chemistry II with lab (4 credits)

Expository Writing II (3 credits)

Introduction to Psychology (3 credits)

American Culture, Identity, and Public Life (3 credits) (Acceptable substitutions include American History, U.S. History, U.S. Government, Western Civilization)

Humanities elective (3 credits) (Acceptable courses include Literature, Creative Writing, Philosophy, Ethics, Religious Studies, Select Fine Arts, Advanced Level Languages)

Behavioral Science elective (3 credits) (Acceptable courses include any upper level psychology course)

Social Science elective (3 credits) (Acceptable courses include History, Political Science/Government, Anthropology, Upper-level Sociology, American Studies, Women Studies, Ethnic Studies, Geography, Economics)

TOTAL: 22 credits

*NOTE: Medical terminology is integrated into the professional phase and thus is not a course requirement.*

**DMS Technical Standards**

Minimum expectations of the DMS programs are to prepare competent, entry-level sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains. To meet these expectations, students enrolled in health sciences professional programs must have abilities and technical skills to be successful healthcare providers. The following technical standards describe the non-academic qualifications the DMS programs considers essential for the successful progression in, and completion of the educational objectives of its curriculum.

Although the DMS program will engage in an interactive process with applicants with disabilities, it reserves the right not to admit any applicant who, upon completion of the interactive process, cannot meet the technical standards set forth below, with or without reasonable accommodations. Reasonable accommodation for persons with prior documented disabilities will be considered on an individual basis. Students wishing to request accommodations for disabilities should contact the Director for Disability Support Services or The Center for Academic Success and Enrichment as applicable.

A DMS professional provides direct care for patients in hospitals or outpatient facilities and must be able to apply acquired knowledge and physical tasks to skillfully perform sonography procedures. These technical standards are based upon the minimum tasks performed by graduates of the program as recommended by the Society of Diagnostic Medical Sonography, Scope of Practice and Clinical Standards for the Diagnostic Medical Sonographer, April 13, 2015 (<http://www.sdms.org/docs/default-source/Resources/scope-of-practice-and-clinical-standards.pdf?sfvrsn=8>)

Listed below are the technical standards that all applicants must meet in order to participate in, and successfully complete the DMS programs:

**A. Physical Requirements**

The Diagnostic Medical Sonographer must be able to:

1. Work standing on his/her feet 80% of the time.
2. Use both hands, wrists, and shoulders to maintain prolonged arm positions necessary for Scanning and perform fine motor skills.
3. Lift more than 50 pounds routinely.
4. Transport, move, and or lift patients from a wheelchair or stretcher to the examination table or patient bed, and physically assist patients into proper positions for examination.
5. Push, pull, bend and stoop routinely to move and adjust sonographic equipment and perform studies.
6. Use senses (vision, hearing, and touch) to adequately view sonograms, including color distinctions; distinguish audible sounds; perform eye/hand coordination skills required in sonographic examinations; and recognize changes in patient's condition and needs.
7. Work in a semi-darkened room for prolonged periods of time.
8. Be physically capable of carrying out all assigned duties.

**B. Mental and Intellectual Requirements**

The Diagnostic Medical Sonographer must be able to:

1. Communicate effectively, verbally and nonverbally, with patients and other healthcare professionals to explain procedures, give instructions, and give and obtain information.
2. Organize and accurately perform the individual steps in a sonographic procedure in the proper sequence according to established standards.
3. Understand and reach quickly to verbal instructions and patient needs.

4. Follow directions effectively and work closely with members of the healthcare community.
5. View and evaluate recorded images for the purpose of identifying proper protocol, procedural sequencing, technical qualities and identification of pathophysiology.
6. Apply problem solving skills to help optimize patient care and produce the best diagnostic information possible.

### C. Emotional Requirements

The Diagnostic Medical Sonographer must be able to:

1. Provide physical and emotional support to the patient during sonographic procedures.
2. Interact compassionately and effectively with the sick and or the injured.
3. Handle stressful situations related to technical and procedural standards and patient care situations.
4. Adapt to changing environments and be able to prioritize tasks.
5. Project an image of professionalism.
6. Demonstrate a high level of compassion for others, a motivation to serve, integrity, and a consciousness of social values.
7. Interact positively with people from all levels of society and all ethnic and religious backgrounds.

### Curriculum: Bachelor of Science in Diagnostic Medical Sonography-General Track (Fast Track, 24 months)

<i>Year I—fall</i>		
COURSE	TITLE	SEMESTER HOURS
DMS 200	Introduction to Diagnostic Medical Sonography	2
DMS 202	Obstetrics/Gynecology Sonography I	3
DMS 204L	Sonography Laboratory Procedures I	4
DMS 206	Abdominal Sonography I	3
DMS 208	Sonographic Physics and Instruments I	3
TOTAL		15

<i>Year I—spring</i>		
COURSE	TITLE	SEMESTER HOURS
DMS 212	Obstetrics/Gynecology Sonography II	3
DMS 214L	Sonography Laboratory Procedures II	4
DMS 216	Abdominal Sonography II	3
DMS 218	Sonographic Physics and Instruments II	3
TOTAL		13

<i>Year I—summer</i>		
COURSE	TITLE	SEMESTER HOURS
DMS 304	Problem Solving in Physics and Instruments	3
DMS 205	Breast Sonography	3
DMS 320	Introduction to Vascular Sonography (w/lab)	5
DMS 224L	Sonographic Laboratory Procedures III	1
TOTAL		12

<i>Year II—fall</i>		
COURSE	TITLE	SEMESTER HOURS
DMS 302C	General Clinical Sonography I	8
DMS 310	Critical Thinking in Sonography I	2
DMS 315	Pediatric Sonography	3
LIB 220O	Introduction to Interpersonal Communication for Health Professionals	3
TOTAL		16

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
DMS 312C	General Clinical Sonography II	8
DMS 410	Critical Thinking in Sonography II	2
DMS 420	Musculoskeletal Sonography	3
TOTAL		13

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
DMS 412C	General Clinical Sonography III	8
DMS 440	Advanced Problem Solving in Sonography	2
LIB 512O	Healthcare Ethics	3
DMS 443	Advanced Problem Solving in Vascular Sonography*	(1)
TOTAL		13 (14)

\*If the elective DMS 443 Advanced Problem Solving in Vascular Sonography is taken, total semester credits come to 14, and degree credits to 83.

**Total credits to complete degree requirements: 82 semester hours**

**Curriculum: Bachelor of Science Program in Diagnostic Medical Sonography, Echocardiography (Fast Track, 24 Months)**

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
DMS 200	Introduction to Diagnostic Medical Sonography	2
DMS 207	Fetal and Pediatric Echocardiography (w/lab)	4
DMS 208	Sonographic Physics and Instruments I	3
DMS 209	Cardiovascular Principles	3
DMS 210L	Cardiovascular Laboratory Procedures I	3
TOTAL		15

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
DMS 217	Cardiac Doppler	2
DMS 218	Sonographic Physics and Instruments II	3
DMS 219	Adult Echocardiography I	3
DMS 220L	Cardiovascular Laboratory Procedures II	5
TOTAL		13

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
DMS 304	Problem Solving in Physics and Instruments	3
DMS 319	Adult Echocardiography II	3
DMS 320	Introduction to Vascular Sonography (w/lab)	5
DMS 230L	Cardiovascular Lab Procedures III	1
TOTAL		12

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
DMS 310	Critical Thinking in Sonography I	2

DMS 306C	Cardiovascular Clinical Sonography I	8
DMS 408	Advanced Doppler	1
LIB 2200	Introduction to Interpersonal Communications for Health Professionals	3
TOTAL		14

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
DMS 316C	Cardiovascular Clinical Sonography II	8
DMS 410	Critical Thinking in Sonography II	2
DMS 450	TE Echo Invasive Procedures	2
TOTAL		12

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
DMS 426C	Cardiovascular Clinical Sonography III	8
DMS 440	Advanced Problem Solving in Sonography	2
LIB 5120	Healthcare Ethics	3
DMS 443	Advanced Problem Solving in Vascular Sonography	(1)
TOTAL		13 (14)

*\*If the elective DMS 443 Advanced Problem Solving in Vascular Sonography is taken, total semester credits come to 14, and degree credits to 80.*

**Total credits to complete degree requirements: 79 semester hours**

### **Bachelor of Science Program in Magnetic Resonance Imaging (Fast Track, 16 Months)**

#### **Technical Standards for Admission, Promotion, and Graduation**

Candidates for and students enrolled in Health Sciences professional programs must have abilities and skills in the areas of observation; communication; and motor, intellectual, and behavioral/social attributes. The following technical standards describe the nonacademic qualifications (required in addition to academic standards) that the MRI program considers essential for the successful progression in and completion of the educational objectives of its curriculum.

Although the Magnetic Resonance Imaging (MRI) program will engage in an interactive process with applicants with disabilities, it reserves the right not to admit any applicant who, upon completion of the interactive process, cannot meet the technical standards set forth below, with or without reasonable accommodations. Reasonable accommodation for persons with prior documented disabilities will be considered on an individual basis. Students wishing to request accommodations for disabilities should contact the Director for Disability Support Services or The Center for Academic Success and Enrichment (CASE) as applicable.

#### **Magnetic Resonance Imaging Technical Standards**

A magnetic resonance technologist provides direct care for patients in hospitals or outpatient facilities and must be able to apply acquired knowledge to skillfully perform MRI procedures. These technical standards are based upon the minimum tasks performed by graduates of the program as recommended by the American Society of Radiologic Technologists ([www.asrt.org](http://www.asrt.org)) and the American Registry of Radiologic Technologists ([www.arrt.org](http://www.arrt.org)). Listed below are the technical standards that all applicants must meet in order to participate in and successfully complete the MRI program:

1. Sufficient visual acuity to accurately administer contrast agents and to monitor imaging equipment as well as provide the necessary patient assessment and care
2. Sufficient ability to receive and provide verbal communication with patients and members of the healthcare team and to assess the health needs of patients through the use of monitoring devices such as intercom systems, cardiac monitors, respiratory monitors, and fire alarms
3. Sufficient gross and fine motor coordination to manipulate equipment such as a scan console, power injectors, and various RF receiver coils; in addition, MRI technologists must perform venipuncture on a daily basis



4. Sufficient communication skills (verbal, reading, writing) to interact with individuals and to communicate their needs promptly and effectively, as may be necessary in the patient's/client's interest
5. Sufficient intellectual and emotional function to plan and implement patient care

Examples of specific technical standards the MRI student must be able to meet are as follows:

- Ability to lift, transfer, and/or move patients from wheelchair/stretchers to scan table; dock/release and wheel scan table to/from scan room to patient waiting area
- Ability to lift, move, reach, or push MRI equipment (lift MRI coils of up to 35 pounds, push/wheel docking table with patient to/from scan room)
- Manual dexterity and ability to bend/stretch
- Ability to distinguish colors and shades of gray
- Effective interpersonal communication skills in the process of interviewing patients and explaining the procedure verbally and/or in writing
- Ability to read and extract information from the medical chart, patient requisitions, and doctors' orders

To perform/assist with MRI procedures on patients, students must initially undergo the same screening procedures as patients, staff, and visitors in order to enter the scan room. The MRI scan room contains a region of intense magnetic field. Objects that display any form of ferromagnetism are therefore of particular concern for MRI. Contraindications for entering the MRI scan room include, and are not limited to the following:

- Certain biomedical implants, materials, and devices (e.g., aneurysm clips, brain clips);
- Certain electrically, magnetically, and mechanically activated implants and devices (e.g., cardiac pacemakers, cochlear implants); and
- Certain metallic foreign objects (e.g., shrapnel, bullets, metal in eyes).

The student must earn a minimum grade of C in all courses and achieve and maintain a minimum cumulative grade point average (GPA) of 2.5 in this program in order to progress and graduate.

### Curriculum: Bachelor of Science Program in Magnetic Resonance Imaging (Fast Track, 16 months)

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
MRI 305	Patient Care in MRI	2
BEH 450V	IPE with Health Psychology	1
MRI 401	Physical Principles of MRI	3
MRI 402C	Introduction to Clinical MRI	2
MRI 405	MRI Safety and Applications	3
RSC 310	Cross Sectional Anatomy	3
PSB 320	Introduction to Healthcare Delivery	3
TOTAL		17

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
MRI 410	MRI Procedures	3
LIB 220	Intro to IPC	3
RSC 325	Clinical Pathophysiology	4
MRI 420C	MRI Clinical Internship I	5
TOTAL		15

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 512	Health Care Ethics	3
MRI 415	MRI Image Production and Evaluation	3
MRI 421C	MRI Clinical Internship II	10
TOTAL		16

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
MRI 422C	MRI Clinical Internship III	10
MRI 430	MRI Pathology	4
MRI 435	MRI Registry Review	1
TOTAL		17

**Total credits to complete degree requirements: 65 semester hours**

**Curriculum: Bachelor of Science Program in Nuclear Medicine Technology (Fast Track) (16 Months)**

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
NMT 215	Nuclear Medicine Procedures I	3
NMT 260	Informatics in Nuclear Medicine	3
NMT 271	Radiation Physics and Instrumentation I (w/lab)	3
RSC 310O	Cross-sectional Anatomy	3
RSC.315	CT Imaging	3
TOTAL		18

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
NMT 216	Nuclear Medicine Procedures II	3
NMT 250	Foundations of NMT Clinical Practice	1
NMT 265	Nuclear Cardiology	3
NMT 270	Radiopharmaceuticals	3
NMT 272	Radiation Physics and Instrumentation II	3
RSC 287	Radiation: Protection and Biology	3
MRI 310	Patient Care in MRI	2
TOTAL		18

NOTE: All Nuclear Medicine Technology students must fulfill requirements for CPR certification and to pass medical terminology proficiency prior to NMT Internship (NMT 330C).

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
LIB 512O	Healthcare Ethics	3
NMT 275	Positron Emission Tomography (PET)	2
NMT330C	Nuclear Medicine Internship I	12
TOTAL		17

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
NMT 332C	Nuclear Medicine Internship II	12
RAD 390O	Problem Solving in Nuclear Medicine	2
TOTAL		14

**Total credits to complete degree requirements: 68 semester hours**

### Curriculum: Bachelor of Science Program in Radiation Therapy (Fast Track) (24 Months)

NOTE: All enrollees must fulfill requirements for CPR certification have one credit of medical terminology prior to beginning the program.

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
RTT 110	Introduction to Radiation Therapy	2
RSC 250	Patient Care and Medical Terminology	3
RSC 325	Clinical Pathophysiology	4
SSC	Social Science Distribution Elective	3
TOTAL		12

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BEH 254	Death and Dying	3
MAT 261	Statistics	3
RSC 310	Cross-sectional Anatomy	3
RTT 201C	Radiation Therapy Internship I	3
RTT 260	Foundations of Radiation Therapy I	3
RTT 280	Medical Radiation Physics I	3
TOTAL		18

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
RSC 287	Radiation: Protection and Biology	3
RTT 202C	Radiation Therapy Internship II	4
RTT 235	Clinical Oncology	2
RTT 262	Foundations of Radiation Therapy II	3
RTT 281	Medical Radiation Physics II	3
RTT 283	Physics for Treatment Planning	2
TOTAL		17

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
PSB 320O	Introduction to Healthcare Delivery	3
RTT 203C	Radiation Therapy Clinical Internship III	6
HUM	Humanities Distribution Elective	3
TOTAL		12

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
RTT 304C	Radiation Therapy Clinical Internship IV	6
RTT 361	Radiation Therapy Treatment Methods	3
TOTAL		12

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
LIB 512	Healthcare Ethics	3

RTT 305C	Radiation Therapy Clinical Internship V	6
RTT 340	Radiation Therapy Quality Assurance (w/lab)	1
RTT 345	Brachytherapy	2
RTT 370	Radiation Therapy Registry Review	2

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TOTAL		14
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**Total credits to complete degree requirements: 85 semester hours**

### Curriculum: Bachelor of Science Program in Radiography (Fast Track) (24 Months)

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
RAD 205	Foundations of Radiography	3
RAD 240	X-ray Radiation Physics	2
RSC 305	Patient Care/Medical Terminology	3
RSC 325	Clinical Pathology	4
TOTAL		12

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 420	Interpersonal Communications	3
RAD 210	Radiographic Procedures I	3
RAD 201L	Radiographic Procedures I Lab	1
RAD 220	Radiographic Exposure Principles I (w/lab)	4
BEH 254	Death and Dying	3
TOTAL		14

NOTE: All Radiography students must fulfill requirements for CPR certification and medical terminology prior to Radiography Internship (RAD 201C).

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
RAD 201C	Radiography Internship I	4
RAD 211	Radiographic Procedures II	3
RAD 211L	Radiographic Procedures II Lab	1
RAD 221	Radiographic Exposure Principles II	3
LIB 512	Healthcare Ethics	3
TOTAL		14

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
RAD 202C	Radiography Internship II	5
RAD 250	Image Critique in Radiography	2
RAD 212	Radiographic Procedures III online	3
TOTAL		10

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
RAD 270	Introduction to Problem Solving	3
RAD 303C	Radiography Internship III	6
RSC 310	Cross-sectional Anatomy	3

RSC 315	Computed Tomography (CT) Imaging	3
TOTAL		15

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
RAD 304C	Radiography Internship IV	6
RAD 370	Problem Solving in Radiography	3
RSC 287	Radiation: Protection and Biology	3
TOTAL		12

**Total credits to complete degree requirements: 77 semester hours**

### Advanced Certificate Programs in Medical Imaging

Two certificate programs for working technologists seeking advanced certification in the advanced imaging modalities are offered by the School of Medical Imaging and Therapeutics. The certificate programs provide both didactic and clinical training, and students, upon successful completion of the program, are eligible to sit for the advanced certification examinations administered by the American Registry of Radiologic Technologists (ARRT). Certificate programs are available in Computed Tomography (CT) and Magnetic Resonance Imaging (MRI).

Eligibility for each certificate program is established in accordance with ARRT guidelines. Applicants must hold current ARRT/NMTCB certification in the appropriate discipline as well as current CPR certification.

#### Prerequisites

- ARRT/NMTCB/ARDMS certification in radiography, nuclear medicine technology or radiation therapy.
- ARSC 310 Cross-sectional Anatomy (3 credits)

A minimum grade of C is required in *all* courses to progress and receive certification.

### Computed Tomography (Boston)

*Summer*

COURSE	TITLE	SEMESTER HOURS
RSC 420	Computed Tomography (CT) Pathology and Procedures	3
RSC 425C	Computed Tomography (CT) Clinical Practicum I	9
TOTAL		12

*Fall*

COURSE	TITLE	SEMESTER HOURS
RSC 435C	Computed Tomography (CT) Clinical Practicum II	9
RSC 315	Computed Tomography (CT) Imaging	3
TOTAL		12

**Total credits to complete Computed Tomography Certificate requirements: 24 semester hours**

### Magnetic Resonance Imaging (Online)

*Prerequisites*

ARRT/NMTCB/ARDMS certification in radiography, nuclear medicine technology, radiation therapy, or sonography is required. A grade of C or better in a cross-sectional anatomy course also is required. A minimum grade of C is required in *all* courses to progress and receive the certificate.

*Summer*

COURSE	TITLE	SEMESTER HOURS
MRI 401O.O	Physical Principles of MRI	3
MRI 405O.O	MRI Safety and Applications	3
TOTAL		6

\* RSC 310 is offered during the summer semester for students who have not taken cross-sectional anatomy.

*Fall*

COURSE	TITLE	SEMESTER HOURS
MRI 4100.O	MRI Procedures	3
RSC 3100.O	Cross-sectional Anatomy	3
TOTAL		6

*Spring*

COURSE	TITLE	SEMESTER HOURS
MRI 4150.O	MRI Image Production and Quality	3
MRI 4300.O	MRI Pathology	3
MRI 425C	Advanced Certificate Clinical Internship (Optional)	8
TOTAL		6 or 15 with clinical rotation

*\*\* MRI clinical rotations at affiliated hospitals will be offered to students who wish to enroll in the fall semester.*

**Total credits to complete MRI Advanced Certificate requirements: 18 semester hours**

### **School of Medical Imaging and Therapeutics Policies and Professional Requirements**

To be in good academic standing, students in the School of Medical Imaging and Therapeutics programs must have a minimum grade point average of 2.5. Students also must earn a minimum grade of C in the professional courses in the major, including all clinical internships. Any student who fails a professional course twice is dismissed from the program.

Students whose clinical performance during the internship rotation is unsatisfactory receive a warning from their clinical supervisor by the middle of the rotation; those who fail two internship rotations are dismissed from the program.

In addition to being in good academic and financial standing, students must complete all professional coursework at MCPHS to receive their degrees in the Diagnostic Medical Sonography, Magnetic Resonance Imaging, Nuclear Medicine Technology, Radiography, or Radiation Therapy programs or the certificate in MRI or CT.

### **BCLS Certification**

All students in School of Medical Imaging and Therapeutics programs must have current certification in Basic Cardiac Life Support (BCLS) for Healthcare Professionals before they begin their clinical rotations (DMS 302C [General track], DMS 306C [Echocardiography track], MRI 402, NMT 330C, RTT 201C, or RAD 201C).

### **Eligibility for Certification—ARRT**

Candidates for certification through the American Registry of Radiologic Technologists (ARRT) must successfully complete a program of formal education that is accredited by a mechanism acceptable to the ARRT. Candidates also must comply with the rules of ethics contained in the ARRT Standards of Ethics. These include but are not limited to compliance with state and federal laws. A conviction of, plea of guilty to, or plea of nolo contendere to a crime that is either a felony or a crime of moral turpitude must be investigated by the ARRT in order to determine eligibility.

### **Pregnancy Policy**

NOTE: This policy applies to all female students in the Radiography, Radiation Therapy, and Nuclear Medicine Technology majors or the Computed Tomography Certificate program.

In the event a female student becomes pregnant, the student may choose to declare her pregnancy, since there is a potential risk to the developing fetus from radiation exposure. In the event a student chooses to declare her pregnancy, the student will notify the program director in writing that she is pregnant and also state the estimated date of conception. The MCPHS Declaration of Pregnancy for Radiation Workers form, available in the School of Medical Imaging and Therapeutics dean's office, shall be used for this purpose. A copy of this declaration will be forwarded to the Radiation Safety Officer. Choosing not to declare a pregnancy will result in exemption from the specific state radiation protection regulations limiting the exposure to the embryo/fetus.

Once the student declares herself to be pregnant, the Radiation Safety Officer will issue to the student

- a second badge to be worn during the gestation period at waist level to serve as a measure of embryo/fetus exposure. The radiation exposure control criterion for this student will be to limit exposures to this waist-level badge to less than 50 mrem/month (0.5 millisieverts).

- a copy of the applicable state regulations (105CMR120.203, 105CMR120.218, 105CMR120.267) that deal with exposure to the embryo/fetus
- a copy of the U.S. Nuclear Regulatory Guide 8.13, *Instruction Concerning Prenatal Radiation Exposure*, and Guide 8.29, *Instruction Concerning Risks from Radiation Exposure*. The student will be given an opportunity to discuss this material with the Radiation Safety Officer or his or her representative.

In order to adhere to Commonwealth of Massachusetts Regulation 105CMR120.218, which requires that “the dose to an embryo/fetus during the entire pregnancy, due to occupational exposure of a declared pregnant woman, does not exceed 500 mrem (5 millisieverts),” the student is offered the following options:

1. The student may continue in the program so long as her embryonic/fetal exposures are in conformance with the requirements of 105CMR120.218. If the student chooses this option, the following procedure must be followed:
  - a. All efforts must be made by the student to ensure that the total exposure to the waist badge does not exceed 500 mrem (5 millisieverts) for the entire gestation period.
  - b. The student and program director are to be notified, in writing, by the Radiation Safety Officer, if more than 80% of this dose (400 mrem) is received.
  - c. The student and program director are to be notified, in writing, by the Radiation Safety Officer if the monthly recommendation of 50 mrem is exceeded.
  - d. The student is expected to utilize her knowledge of radiation control principles at *all* times to further minimize her exposure.
  - e. If the maximum total exposure for the gestation period is reached, the student, Radiation Safety Officer, and program director must agree on an alternate option.
2. The student may request a leave of absence from the career component of the program. The student may continue with general education courses without modification or interruption.
3. The student has the option for withdrawal of the declaration of pregnancy.

*NOTE: Experience shows that the radiation workers in this program generally receive to the whole body well below 500 mrem per year, 50 mrem per month, and it is most unlikely that there will be any problems adhering to the fetal exposure limits.*

#### **Policy for Content Validation after Nonprogression or Leave of Absence**

Students who have not been continuously attending courses for a period of one semester or more in an undergraduate School of Medical Imaging and Therapeutics (SMIT) professional course, or who withdraw from a SMIT program via leave of absence, must validate previous knowledge and skills held prior to program exit before they may reenroll in SMIT clinical professional courses. Reenrollment is subject to clinical placement availability. (NOTE: There is no guarantee that space will be available at the desired time of return of the student; it may take up to two years for reentry due to lack of clinical placement availability.) This policy applies to all undergraduate SMIT programs.

The validation will occur via the student’s demonstration of knowledge and skills, such as meeting established program clinical competencies, in a selected clinical facility or simulation laboratory. This requires that students notify the program director of the desired date of return a minimum of 30 days prior to the anticipated return in order to make arrangements for preparing and performing validation testing. Program faculty will provide guidance as to what content and skills (competencies) need to be reviewed by students prior to the testing, but it is the student’s responsibility to prepare for the validation testing.

Students attempting to return from a leave of absence also must have been cleared to return to classes by the designated staff member in the Center for Academic Success and Enrichment and by the Dean of Students or designee (if a medical leave of absence) prior to performing validation testing. The designated staff member in the Center for Academic Success and Enrichment will notify the Dean of SMIT when the student is eligible to take the validation test. Validation of knowledge will consist of a competency examination. A minimum grade of C on the competency examination is required. Program faculty will determine the content and skills to be included in the validation test.

If a student fails the validation test, he or she must enroll in a one-semester directed study course to remediate prior to reentering the program. This will delay the student’s reentry for at least one semester but likely for one year (or more if there is no clinical space available). The number of semester credits assigned to the directed study course will vary (1–3 semester credits) depending upon the number of semesters successfully completed in the program. If the student completed two or fewer semesters, 1 credit will be assigned; if three or four semesters, 2 credits; and if more than four semesters, 3 credits. Students may take general education courses concurrently with the directed study but may not take any program professional courses until the directed study has been successfully completed.

If a student does not pass the directed study with a minimum of C on the first attempt, he or she will be dismissed from his or her respective program.

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# MCPHS University–Boston

## School of Nursing

Kathleen Polley-Payne, PhD, Rn, MSN PNP, Dean and Associate Professor

Paula James, DNP, RN, CCNS, Associate Dean and Associate Professor

Assistant Professors Dean, Mombrun, Uzoeshi, Van Dyke, Whitfield

### Degree and Certificate Programs

- Bachelor of Science in Nursing

#### Bachelor of Science in Nursing

##### Accelerated 32-Month Curriculum (Boston)

Responding to the growing demand for nurses nationally, MCPHS offers an innovative accelerated 32-month nursing professional program leading to the Bachelor of Science in Nursing (BSN) degree. The curriculum has been developed in collaboration with clinical partners at Boston's Harvard-affiliated hospitals and other selected community agencies and institutions of the Longwood Medical and Academic Area of Boston. Reflecting the American Association of Colleges of Nursing (AACN) Essentials of Baccalaureate Education for Professional Nursing Practice and the National Council of State Boards of Nursing Detailed Test Plan for the National Council of State Boards of Nursing Licensure Examination for Registered Nurses (NCLEX-RN), the program prepares graduates to be able to respond to the complex challenges of a rapidly changing healthcare environment. The curriculum builds on a strong foundation in the liberal arts and sciences, and guides the student toward gaining the knowledge, skills, competencies, and values required to practice as a professional nurse. This program has received approval by the Massachusetts Board of Registration in Nursing (MBORN) and is accredited by the Commission on Collegiate Nursing Education.

The Bachelor of Science in Nursing is offered as a full-time baccalaureate degree program, in a 32-month accelerated, year-round format. The first two years of the program consist of 15-week fall semesters and 15-week spring semesters, along with two 5-week summer sessions in Year I and a 12-week summer session in Year II; the third and final year consists of a 15-week fall semester and a 15-week spring semester, concluding in May of the third year. The program requires 122 semester hours of credit for completion, which includes the core curriculum requirements common to all MCPHS undergraduate and first professional degree programs, additional professional support courses in the natural and social sciences, and courses in the Nursing major. Upon completion of the program, students will be eligible to sit for the NCLEX-RN.

To meet the residency requirement for the Bachelor of Science in Nursing, students must complete at least 61 semester hours at the University.

*NOTE: An exception to the policy that no course examinations or graded assignments worth more than 15% of final course grade may be scheduled during the week before final examinations exists for Nursing courses. Major graded assignments or exams may be administered the week before the final week of the course. A reading day (scheduled only on a weekday, not Saturday or Sunday) will be provided between the end of scheduled classes / clinical rotations and the administration of any final exams.*

#### Nursing Program Curriculum

Year I—fall

COURSE	TITLE	SEMESTER HOURS
BIO 110	Anatomy and Physiology I (w/lab)	4
CHE 110	Basic Chemistry (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
LIB 133	American Culture, Identity and Public Life	3
TOTAL		15



*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 210	Anatomy and Physiology II (w/lab)	4
NUR XXX	Nutrition	3
LIB 112	Expository Writing II	3
LIB 120	Introduction to Psychology	3
TOTAL		13

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
BEH 352*	Human Development through the Life Cycle	3
MAT 261	Statistics	3
	Distribution electives	6
TOTAL		12

\* BEH 352 fulfills the behavioral science core curriculum requirement.

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 255	Medical Microbiology (w/lab)	4
LIB 220	Interpersonal Communication in the Health Professions	3
LIB 512	Healthcare Ethics	3
MAT 142	Math for Nurses	3
	Humanities elective	3
TOTAL		16

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
NUR 207	Fundamentals of Nursing	9
NUR 330	Nursing Informatics and Healthcare Technologies	3
NUR 245	Health Assessment and Promotion (w/labs)	4
TOTAL		16

*Year II—summer\*\**

COURSE	TITLE	SEMESTER HOURS
NUR 326	Introduction to Med-Surg Nursing	9
NUR 226	Pathophysiologic and Pharmacologic Approach to Nursing Practice	6
TOTAL		15

*Year III—fall\*\**

COURSE	TITLE	SEMESTER HOURS
NUR 335	Provider of Care II: Child-Bearing and Child-Rearing Family Health	6
NUR 345	Provider of Care III: Mental and Social Health	6
NUR 350	Scholarly Inquiry	3
TOTAL		15

Year III—spring

COURSE	TITLE	SEMESTER HOURS
NUR 425	Provider of Care IV: Community and Home Health	7
NUR 445	Provider of Care V: Coordinator of Care	8
NUR 451	Nursing Integreation	3
TOTAL		18

**Total credits to complete degree requirements: 120 semester hours**

*\*\* Courses are offered in a block-scheduling format during these semesters, with students taking one or two courses concurrently during each block.*

## School of Nursing Academic Policies

### Academic Progression

A minimum grade of C+ (2.3) is required in selected prerequisite non-Nursing courses (Anatomy and Physiology, Basic Chemistry, Microbiology, Math for Nurses, Statistics, and Human Growth and Development) and all professional Nursing courses. Successful completion of both the theory and the clinical laboratory / practicum in a clinical Nursing course is required to pass the course. A minimum professional grade point average (GPA) of 2.7 is required.

Boston BSN students must achieve a minimum passing grade of 78 (C+) in each professional nursing (NUR) course and must achieve a minimal professional GPA of 2.5 in the first four sequential nursing (NUR) courses in order to progress. A professional GPA of 2.7 is then required at the end of each semester in order to progress in the nursing major and to fulfill University requirements for graduation. Students are also required to achieve the minimum benchmark score on the standardized exit examination to be eligible to graduate.

Students who do not achieve the required professional GPA needed to fulfill School of Nursing graduation requirements must complete a select remediation course(s) to reach the required professional GPA. If a student does not achieve the minimum benchmark score on the standardized exit examination, they will be required to complete remediation until the required score is achieved. Official University graduation and approval to write for the NCLEX will not occur until professional GPA and exit exam standards have been met.

Any Nursing course that is graded below a C+ may be repeated only once. A second grade below C+ in the repeated course will result in dismissal from the Nursing program. Throughout the Nursing program, a student may repeat no more than two separate Nursing courses. Three grades below C+ in any combination of Nursing courses will result in dismissal from the Nursing program.

All courses in the first four (4) semesters must be successfully completed prior to progressing to the nursing (NUR) courses in the fifth (5<sup>th</sup>) semester.

### Test of Essential Academic Skills (TEAS)

The TEAS measures basic essential skills in reading, English, math and science and is used to measure entry-level academic readiness of nursing program applicants. Beginning with the Class of 2019, the TEAS will be a prerequisite assessment tool for progression into the professional nursing (NUR) courses. Students must achieve a *Proficient* level on the TEAS. Students who do not achieve a minimum level of Proficient must complete remediation prior to retesting. Only one retake/retest is permitted (regardless of where the student tested). If a student does not achieve a Proficient level after the second attempt, they will not be allowed to progress into the professional nursing (NUR) courses and will be directed to meet with an advisor in the Center for Academic Success and Enrichment (CASE) to determine an alternate plan of study/major.

- Class of 2019: First TEAS administered at the beginning of Year 1 Summer semester. Retest/retake will be administered at the end of Year 1 Summer semester for those who did not achieve Proficient on the initial administration. [Remediation is required between]. A third retake will be offered for students who have not successfully reached the Proficient level after remediation by arrangement
- Class of 2020: First TEAS administered at the end of Year 1 Spring semester. Retake/retest will be administered at the end of Year 1 Summer semester for those students who did not achieve a minimum level of Proficient on the initial administration.[Remediation is required between tests]. A third retake will be offered for students who have not successfully reached the Proficient level after remediation by arrangement
- Students transferring to MCPHS [both internal and external] must comply with the TEAS requirement to progress into the professional nursing (NUR) courses.

**Progression and Retention Policies**

Students must complete the requirements for the Bachelor of Science in Nursing degree within five years (32-month track). If this time limit from the date of admission into the major has elapsed and the student has not completed degree requirements, the student must request an extension in writing and meet with the Dean of the School of Nursing, who may approve or deny the extension request. The School Dean's decision is final and not subject to further appeal.

**CPR Certification**

All students must complete CPR training prior to beginning clinical experiences in NUR 325 Provider of Care I: Adult and Elder Health. Students must be certified in Basic Cardiac Life Support (BCLS) at the Healthcare Provider Level by the American Heart Association (AHA). Students must provide a copy of the AHA Healthcare Provider Level card indicating active certification. (AHA requires recertification every two years.) It is recommended that the student verify the course in advance to ensure that the course is appropriate.

**Transportation**

Reliable transportation to, from, and during all clinical and field experiences is the responsibility of the student. A number of clinical rotations in the required curriculum may be scheduled at some distance from the campus. This is necessary to provide a range of diverse learning experiences and to ensure availability and quality of clinical rotation sites. The University will make every effort to accommodate requests regarding assignments to experiential education sites, but students generally can expect to be assigned to clinical sites some distance from the campus for at least a portion of their required clinical rotations. In such instances, students are responsible for transportation and other related travel expenses.

**Licensure**

Students who successfully complete the program will be eligible to sit for the National Council Licensure Examination for Registered Nurses (NCLEX-RN).

**Employment**

Due to the rigorous nature of the Nursing program, the demands placed on students are extremely high, particularly with respect to their clinical schedule and course requirements. It is for this reason that students are strongly discouraged from engaging in outside, non-program-related employment throughout the program of study.

**School of Nursing Professional and Technical Standards**

A prelicensure candidate for the Bachelor of Science in Nursing degree must have abilities and skills in four areas: communication, observation, motor function and endurance, and behavioral maturity. Reasonable accommodations may be made for some disabilities. However, prelicensure BSN students must be able to perform in a reasonably independent manner, with or without accommodations.

**Communication**

- Must be able to communicate effectively with patients, families, and members of the healthcare team through oral, written, and interpersonal means
- Must be able to obtain information, describe patient situations, and perceive both oral and nonverbal communication (including ability to understand normal speech without seeing the speaker's face)
- Must be able to speak, comprehend, read, and write in English at a level that meets the need for accurate, clear, and effective communication. Examples include but are not limited to giving clear oral reports, reading watches or clocks with second hands, reading graphs, reading and understanding documents printed in English, writing legibly in English, and discriminating subtle differences in medical terminology.

**Observation**

- Must be able to observe a patient accurately. Examples include but are not limited to listening to heart and breath sounds; visualizing the appearance of a surgical wound; detecting bleeding, unresponsiveness, or other changes in patient status; detecting the presence of a foul odor; and palpating an abdomen.
- Must be able to detect and respond to emergency situations, including audible alarms (e.g., monitors, call bells, fire alarms)

**Motor Function and Endurance**

- Must have sufficient strength and mobility to work effectively and safely with patients and carry out nursing care activities. Examples include but are not limited to lifting and positioning patients (lifting up to 50 pounds, carrying up to 25 pounds), transferring patients in and out of bed, performing cardiopulmonary resuscitation (AHA Healthcare

Provider Level certification), preparing and administering medications (oral, injection, and intravenous, including hanging IV bags at shoulder height), reading and emptying body fluid collection devices below bed level, applying pressure to stop bleeding, clearing/opening an obstructed airway, and providing daily hygiene care.

- Must be able to complete assigned periods of clinical practice, including up to 12-hour shifts, including days, evenings, nights, and weekends
- Must be able to respond at a speed and in a manner sufficient to carry out patient assignments within the allotted time

#### **Behavior**

- Must possess mental and emotional health required for total utilization of intellectual abilities
- Must be able to tolerate physically taxing work loads
- Must be able to respond and function effectively during stressful situations
- Must be capable of adapting to rapidly changing environments and of responding with flexibility in uncertain situations
- Must be able to interact appropriately with others (i.e., patients, families, members of healthcare team) in various healthcare contexts

#### **Policy for Content Validation after Nonprogression or Leave of Absence**

A student who fails or withdraws from an undergraduate Nursing professional course, or who withdraws from a Nursing program via leave of absence, must validate previous knowledge and skills held prior to program exit before he or she may reenroll in Nursing clinical professional courses. Reenrollment is subject to clinical placement availability. (NOTE: There is no guarantee that space will be available at the student's desired return date. It may take up to two years for reentry due to lack of clinical placement availability.)

The validation will occur via the student's demonstration of knowledge and skills—that is, meeting established program clinical competencies—in a selected clinical facility or simulation laboratory. The student must notify the Associate Dean of the desired date of return a minimum of 30 days prior to the anticipated return date to make arrangements for preparing for and performing validation testing. Program faculty will provide guidance as to what content and skills (competencies) the student needs to review prior to the testing, but it is student's responsibility to prepare for the validation testing. The student must pass the validation testing as per the outcome measures determined by the faculty. Failure to meet the required outcome(s) will result in dismissal from the Nursing program and/or the need to repeat identified courses.

A student attempting to return from a leave of absence also must have been cleared to return to classes by designated staff in the Center for Academic Success and Enrichment (CASE) or the Student Affairs office at their campus (if a medical leave of absence) prior to performing validation testing. The Center for Academic Success and Enrichment and/or Student Affairs office and Nursing faculty will coordinate communication regarding student clearance for leave of absence return and subsequent eligibility to schedule validation testing.

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# MCPHS University–Boston

## School of Physician Assistant Studies

Christopher Cooper, PA-C, Program Director and Assistant Professor, Physician Assistant Studies, Boston

John Kelly, MD, Medical Director

Associate Professor Moktar; Assistant Professors Comeau, Graeff, Hurley, Hurwitz, Jones, Kelley, Orrahood, Smith, Vajravelu

### Degree and Certificate Programs

- Master of Physician Assistant Studies
- Doctor of Science in Physician Assistant Studies

#### Physician Assistant Studies (Boston)

*See the MCPHS–Manchester and MCPHS–Worcester sections for information on the Physician Assistant Studies (Accelerated) program.*

The MCPHS Boston Physician Assistant (PA) Studies program is dedicated to the development of clinically competent physician assistants who are thoroughly prepared to deliver quality patient care in various settings within the healthcare delivery system. Upon successful completion of the degree requirements, the Master of Physician Assistant Studies (MPAS) degree is awarded. The program is accredited by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA), and graduates are eligible to sit for the Physician Assistant National Certifying Examination (PANCE).

The MCPHS Boston PA program capitalizes on the extensive educational resources of the University, the Longwood Medical and Academic Area, as well as other regions, to prepare PA students with the skills, competencies, and attitudes needed to provide competent and compassionate medical care to diverse patients in a variety of settings. Students acquire experience in the evaluation and treatment of a broad spectrum of medical problems through the program's clinical clerkships which include surgery, psychiatry, women's health, pediatrics, emergency medicine, family medicine, and internal medicine.

Students applying to the Boston Physician Assistant Studies program must submit a formal application, including official transcripts and essay, through the Central Application Service for Physician Assistants (CASPA) by October 1 of the year prior to admission. CASPA may be contacted at [www.caspaonline.org](http://www.caspaonline.org). In addition, all MPAS applicants are required to complete a supplemental application, which is submitted via CASPA.

#### The Physician Assistant Professional Responsibilities

Physician Assistants are skilled members of the healthcare team who are qualified by academic and clinical experience to provide a broad range of healthcare services under the supervision of a licensed physician. These services include performing medical interviews and physical examinations, identifying and prioritizing healthcare problems, ordering and interpreting laboratory and other diagnostic studies, formulating and implementing treatment plans, counseling patients regarding illness and health-risk behaviors, providing patient education, monitoring responses to therapy, and facilitating access to appropriate healthcare resources.

#### Professional Credentials

Over the past 50 years, several advancements within the profession have increased recognition of PAs as vital members of the healthcare team. These advancements include graduation from an academic program accredited by the ARC-PA, certification through examination by the NCCPA, and registration or licensure by state agencies. Continued professional competence is demonstrated by the completion of continuing medical education requirements and successful passage of a periodic recertification examination.

#### Master of Physician Assistant Studies

##### Admission Prerequisites

Students who have earned a baccalaureate degree and have met the following prerequisite course requirements must

apply through the Central Application Service for Physician Assistants ([www.caspaonline.org](http://www.caspaonline.org)). Students who meet the requirements may be invited to campus for an interview.

The application must include a transcript demonstrating successful completion of the following course prerequisites:

- Two semesters of biology (one lab required), minimum of 7 semester hour credits
- One semester of microbiology with lab, 4 semester hour credits
- Three semesters of chemistry (one lab required), minimum of 10 semester hour credits. One of the three courses must be at the 200 level or higher (acceptable courses include Organic Chemistry, Analytical Chemistry, Physical Chemistry, or Biochemistry).
- Anatomy & Physiology I & II (6 credits). Acceptable substitutions include Anatomy & Physiology I and II or one semester's equivalent of Anatomy and one semester's equivalent of Physiology.
- One semester of psychology, 3 semester hour credits
- One semester of statistics or biostatistics, 3 semester hour credits

A grade of C (2.0) or better is required for all the prerequisite courses. An overall cumulative prerequisite and science GPA of 3.2 or better on a 4.0 scale is required.

All prerequisites must be completed within the past 10 years. Prerequisites must be completed at a regionally accredited institution of higher education in the United States. A minimum of 250 patient contact hours is required.

MCPHS Premedical Pathway: Physician Assistant Studies and Health Studies students seeking admission into the Master of Physician Assistant Studies program should see Admission for MCPHS Students—Undergraduate Curriculum under School of Physician Assistant Studies Policies and Professional Requirements later in this section.

Please note: MCPHS University gives preference to students currently in our Pre-med Pathway: Physician Assistant Studies Program.

Students are required to pass a Medical Terminology Examination during the first week of matriculation.

## **Health and Technical Standards**

### **Technical Standards for Admission, Promotion, and Graduation**

A candidate for the MCPHS Boston Physician Assistant Studies program must have, at a minimum, skills in five categories: observation, communication, motor, intellectual, and behavior/social. Reasonable accommodation for persons with documented disabilities will be considered on an individual basis, but a candidate must be able to perform in an independent manner. The following skills are required with or without accommodation:

#### **Observation**

Candidates must have sufficient capacity to observe in the lecture hall, the laboratory, the outpatient setting, and the patient's bedside. Sensory skills to perform a physical examination are required. Functional vision, hearing, and tactile sensation are required to properly observe a patient's condition and to perform procedures regularly required during a physical examination such as inspection, auscultation, and palpation.

#### **Communication**

Candidates must be able to communicate effectively in both academic and healthcare settings. Candidates must show evidence of effective written and verbal communication skills. Candidates must be able to communicate with patients in order to elicit information, describe changes in mood, activity, and posture, and perceive nonverbal communications. Candidates must be capable of completing thorough medical records and documents in a timely, and appropriate manner.

#### **Motor**

Candidates must be able to participate in basic diagnostic and therapeutic maneuvers and procedures (e.g., palpation, auscultation). Candidates must have sufficient motor function to execute movements reasonably required to properly care for all patients. Candidates must be able to move freely about patient care environments and must be able to move between settings such as clinics, classroom buildings, and hospitals. In addition, physical stamina sufficient to complete the rigorous course of didactic and clinical study is required. Long periods of sitting, standing, or moving are required in classroom, laboratory, and clinical experiences.

#### **Intellectual**

Candidates must be able to measure, calculate, reason, analyze, and synthesize. Problem solving, one of the critical

skills demanded of physician assistants, requires all of these intellectual abilities. Candidates must be able to read and understand medical literature. In order to complete the Physician Assistant Studies program, candidates must be able to demonstrate mastery of these skills and the ability to use them together in a timely fashion in medical problem-solving and patient care.

### Behavioral and Social Attributes

Candidates must possess the emotional health and stability required for full utilization of their intellectual abilities. They must exercise good judgment and be able to promptly complete all academic and patient care responsibilities. The ability to develop mature, sensitive, and effective relationships with patients and other members of the healthcare team is essential. The ability to function in the face of the uncertainties is essential. Flexibility, compassion, integrity, motivation, interpersonal skills, and concern for others are required. Candidates must be able to function effectively under stress. They must be able to accept constructive criticism and handle difficult interpersonal relationships during training.

### Master of Physician Assistant Studies (Boston)

The Master of Physician Assistant Studies (MPAS) program involves an intensive 30-month course of study of clinical medicine and in-depth exposure to people of all ages in various clerkship settings. All courses within the MPAS program must be completed at MCPHS. The MPAS program does not award advanced placement or transfer credit for professional courses.

### Curriculum:

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
PAS 517	Human Physiology and Pathophysiology I	3
PAS 514	Principles of Professional Practice	2
PAS 515	Genetics	2
PAS 516	Primary Care Psychiatry	2
PAS 518	Clinical Pharmacology I	3
PAS 529	Research Methods for PAs I	1
TOTAL		13

*Competencies during the fall semester: library modules and medical terminology*

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
PAS 520	Clinical Pharmacology II	3
PAS 524	Gross Anatomy (w/lab)	5
PAS 525	Diagnostic Methods	2
PAS 527	Human Physiology and Pathophysiology II	3
PAS 534	Introduction to Public Health	1
PAS 535	Electrocardiography	2
PAS 539	Research Methods for PAs II	1
TOTAL		17

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
PAS 551	Clinical Medicine I	5
PAS 552	Clinical Medicine II	5
PAS 536	Patient Assessment I	2
PAS 537	Clinical Therapeutics I	2
PAS 538	Physical Exam I	2
PAS 538L	Physical Exam I Laboratory	2
TOTAL		18

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
PAS 540	Physical Exam II: Skills and Procedures	2
PAS 540L	Physical Exam II: Skills and Procedures Lab	2
PAS 553	Clinical Medicine III	5
PAS 554	Clinical Medicine IV	5
PAS 546	Patient Assessment II	2
PAS 547	Clinical Therapeutics II	2
TOTAL		18

*Beginning in the first summer session following the second year, each student begins a series of required clinical clerkships for a duration of 45 weeks.*

*Year III—Clinical Clerkships*

Summer I and II, 15 semester hours; fall semester, 15 semester hours; spring semester, 15 semester hours

COURSE	TITLE	SEMESTER HOURS
PASC 600	Medicine I	5
PASC 601	Pediatrics	5
PASC 602	Psychiatry	5
PASC 603	Surgery	5
PASC 604	Emergency Medicine	5
PASC 605	Women's Health	5
PASC 606	Elective I	5
PASC 607	Medicine II	5
PASC 608	Elective II	5

**Total credits to complete degree requirements: 111 semester hours**

### **Clinical Clerkships**

Clinical clerkships may be scheduled throughout New England. This is necessary to provide a range of diverse learning experiences and to ensure availability and quality of clinical rotation sites. Students should expect to be assigned to clinical sites outside of Boston for at least a portion of their required clinical rotations. In such instances, students are responsible for transportation, food, parking, housing, and other related incidentals for all clinical clerkships. Students are required to have a 2.85 professional GPA in order to enter into clinical rotations.

In addition to the costs of the MPAS–Boston program delineated in the Tuition, Room and Board, Fees section of this catalog, PA students can expect to spend approximately \$1,000 on medical equipment and approximately \$1,500 for books during the program.

Students in the MPAS program will need to complete a Criminal Offender Record Information (CORI) check prior to starting clerkships. Positive CORI checks may impede or preclude a student's progression in the program and result in a student's being ineligible for placement at a clinical clerkship and/or for state licensure as a physician assistant. Students are responsible for the cost of all CORI checks and for knowing the licensure requirements of the state(s) in which they intend to seek licensure.

### **School of Physician Assistant Studies Policies and Professional Requirements**

#### **Basic and Advanced Life Support**

All students in the Physician Assistant program must present proof of Basic Life Support (BLS) for Healthcare Providers certification prior to entry into the clinical year. Students must maintain this certification throughout the remainder of the program. BLS for Healthcare Providers certification is also required for Advanced Cardiovascular Life Support (ACLS) for Healthcare Providers training, and both active BLS Healthcare Provider and ACLS Healthcare Provider certifications are required for clinical clerkships.

#### **Employment Outside of the University**

The Physician Assistant curriculum is rigorous and requires many hours of study outside the classroom. Further, clinical rotations sometimes require you to be present nights, weekends, and holidays. Therefore, outside employment while in



PA school is strongly discouraged.

### **Transfer of Credit**

The MCPHS PA Studies program does not accept transfer credit for any PAS courses during the 30-month professional PA program.

### **Advanced Placement**

The MCPHS Physician Assistant Studies program does not award advanced placement in its professional PA curriculum.

### **Performance in the Master of Physician Assistant Studies Program**

All PAS-designated courses (500 level and above) count toward the professional grade point average (GPA). The following are requirements for remaining in good academic standing:

- To progress within both the didactic and clinical phases of the PA program, students must achieve a final course grade of C (2.0) or better on a 4.0 scale. Obtaining a course grade below C results in the student's having to remediate or repeat the course and progression through the program may be delayed because PA courses are offered only once a year. Furthermore, poor grades have a significant impact on your GPA, which could jeopardize your progression in the program.
- To remain in good standing, a cumulative professional GPA of 2.85 on a 4.0 scale must be maintained throughout the entire length of the program. Failure to do so may result in non-progression status and may result in dismissal.
- Successful completion of the PA summative examinations, administered during the final professional year of the program, is mandatory before graduation. Students unable to pass the summative examination on the first administration will be offered one retake of the exam which must occur between 14 and 28 days following the first administration. Failure to pass the summative examination on the second attempt may result in delayed graduation and/or a recommendation for dismissal to the Academic Standing Committee.

In order to receive the Master of Physician Assistant Studies (MPAS) degree, students must have earned a cumulative professional GPA of 2.85 or better on a 4.0 scale, have successfully completed all required courses and clerkships, have demonstrated all required skills, and successfully completed the summative examination administered during the final professional year of the program.

### **Admission for MCPHS Students—Undergraduate Curriculum**

For MCPHS undergraduate students seeking admission into the Boston MPAS program, the prerequisite requirements for application to the PA program may be met through matriculation in the Bachelor of Science in Premedical and Health Studies Pre-med Pathway: Physician Assistant Studies program. Students in that program must apply to the PA program through the Central Application Service for Physician Assistants (CASPA) during the fall semester of the third year of their undergraduate curriculum. The verified CASPA application deadline is October 1. All first-year and second-year Bachelor of Science in Premedical and Health Studies courses (including PAS 402 Physician Assistant Preparation course) must be completed successfully prior to applying to the Physician Assistant program. Outstanding third-year courses must be completed prior to admission into the MPAS program.

A grade of C (2.0) or better is required for all prerequisite courses. An overall cumulative prerequisite and science GPA of 3.0 (on a 4.0 scale) is required and 250 patient contact hours is recommended. Also, internal applicants must complete a successful interview to be admitted into the program. Note: beginning in the fall of 2018, internal applicants must have an overall cumulative prerequisite and science GPA of 3.2 (on a 4.0 scale) and must have at least 250 patient contact hours.

**Doctor of Science in Physician Assistant Studies** (DScPAS, jointly offered by the Center for Online Learning and Academic Innovation and the Department of Physician Assistant Studies).

The Doctor of Science in Physician Assistant Studies (DScPAS) program empowers PAs to meet the demands of today's evolving healthcare field. This DScPAS program is offered online and allows you to build on your Master in Physician Assistant Studies (MPAS, or equivalent) degree to further your education and career. By earning a DScPAS degree, students gain the experience, skills, and knowledge they will need to excel in a growing and competitive field and position themselves for future success and mobility. The MCPHS University DScPAS program prepares students to participate effectively in today's evolving healthcare workforce by focusing on collaborative practice and emphasizing evidence-based practice. Students gain the experience, knowledge, and skills they will need to make an impact in an interprofessional setting.

The DScPAS program is offered online, which allows students to balance career advancement with the rest of their busy

lives. Designed for working PAs holding a PA master's degree, the DScPAS program provides an online pathway for PAs to enhance their current practice and expand future opportunities. The format of this program allows students to continue working while advancing their education. During the final half of the program, students are guided through a capstone project that helps them apply their newly acquired knowledge and skills. This hands-on research experience allows students to gain the support, insight, and skills they will need to make significant contributions to interprofessional patient care throughout their careers.

### Admission Requirements

- Master of Physician Assistant Studies degree (or equivalent) from regionally accredited university
- Minimum professional GPA: 3.20
- Work experience as a PA preferred but not mandatory
- Proof of state licensure (or equivalent) and current NCCPA certification (graduate PA applicants only)

### Curriculum

The DScPAS curriculum is new and innovative, It is designed by an interprofessional team to better meet the demands of interprofessional practice. Courses annotated XXX below are courses that have yet to be assigned course numbers. Students may choose electives from a wide variety of MCPHS offerings to better meet their personal and professional goals.

#### *First Semester*

COURSE	TITLE	SEMESTER HOURS
HSC 701	Introduction to Doctoral Studies	3
HSC 805	Conducting Literature Review & Focusing Research	3

#### *Second Semester*

COURSE	TITLE	SEMESTER HOURS
HSC 815	Healthcare Research Methods	3
	Focused elective	3

#### *Third Semester*

COURSE	TITLE	SEMESTER HOURS
PAS XXX	Evidence in Healthcare Practice I	1
PAS XXX	Evidence in Healthcare Practice II	1
PAS XXX	Capstone I – Project Development (Summer)	3

#### *Fourth Semester*

COURSE	TITLE	SEMESTER HOURS
PAS XXX	Capstone II – Project Implementation/Execution (Fall)	3

#### *Fifth Semester*

COURSE	TITLE	SEMESTER HOURS
PAS XXX	Capstone III – Project Dissemination (Spring)	3

**Total credits to complete degree requirements: 23 semester hours**

### **Capstone Project**

The capstone project is designed to permit a student to explore a topic of personal or professional interest. Past capstone projects have included:

- Implementing and assessing a ventilator associated pneumonia prevention protocol. Outcomes result in the advance practice for the entire facility, and by disseminating the outcomes and process, advance the profession, thereby preventing harm and saving lives at patients' most fragile stage.
- Evaluating the best practices and leadership required in the implementation of an antibiotic stewardship program in an acute care hospital. Outcomes result in the leadership required to decrease the potential for infections by reducing indiscriminate use of antibiotics.
- Reducing central line infections in a surgical intensive care unit through the utilization of the IHI central line bundle. Outcomes result in reducing the potential harm and the costs associated with an intensive care stay for surgical patients.
- Increasing high fidelity communication with emergency medical personnel transporting trauma victims to the emergency room. Outcomes result in getting, translating, and effectively communicating actionable information to the entire care team.
- Establishing and upholding family and person-centered care for adults with multiple comorbidities in a primary care practice. Outcomes result in recognizing and promoting the patient as the most valuable link in the delivery of safe and efficient care for chronic illnesses.
- Establishing the PA role in an orthopedic specialty clinic for children injured in sport. Outcomes result in maintaining future health by helping young athletes to actively and safely engaged in sport.

The student's capstone project must be approved by the appropriate members of the DScPAS program faculty.

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## MCPHS University–Boston School of Pharmacy–Boston

Paul DiFrancesco, EdD, Associate Professor and Dean

### **Executive Staff**

Maria Kostka-Rokosz, PharmD, Professor and Assistant Dean for Academic Affairs

Stephen Kerr, PhD, Professor and Interim Senior Associate Dean

Tim Maher, PhD, Sawyer Professor and Interim Department Chair of Pharmaceutical Sciences and Interim Associate Dean of Graduate Studies

Gerard D'Souza, PhD, Associate Professor and Director of Assessment

Michael Carvalho, PharmD, Professor and Assistant Dean of Interprofessional Education, Chair, Department of Pharmacy Practice

William McCloskey, PharmD, Professor and Vice Chair, Department of Pharmacy Practice

David Schnee, PharmD, Associate Professor and Vice Chair, Department of Pharmacy Practice

Gail Marcus, MBA, Assistant Professor and Acting Chair, Department of Pharmaceutical Business and Administrative Sciences

Steven Crosby, MA, Associate Professor and Assistant Dean of Student Engagement and Success

Catherine Basile, PharmD, Assistant Professor and Assistant Dean of Pharmacy Experiential Education

### **Department of Pharmaceutical Business and Administrative Sciences**

Gail Marcus, MBA, Assistant Professor and Acting Chair

Brian Rittenhouse, PhD, Associate Professor of Pharmaceutical Economics and Policy, Interim Director of Pharmaceutical Economic and Policy Program

Associate Professors Babiarz, Eguale, Rittenhouse; Assistant Professors Mekary, Melaragni

### **Department of Pharmaceutical Sciences**

Stephen Kerr, PhD, Professor and Chair

Alejandro Pino, PhD, Associate Professor of Pharmacology & Toxicology, Director BS Program in Pharmacology and Toxicology

Hongwei Zhang, PhD, Assistant Professor of Pharmaceutics, Director BS Program in Pharmaceutical Sciences.

Professors Friel, Kerr, Lahoz, Maher, Mehanna, Montagne; Associate Professors Chuong, D'Souza, Gracz, Kiel, Migliore, Pino-Figueroa, Zaghloul; Assistant Professor Zhang; Faculty Associate Bohlke

### **Department of Pharmacy Practice**

Michael Carvalho, PharmD, Professor and Chair

William McCloskey, PharmD, Professor and Vice Chair

David Schnee, PharmD, Associate Professor and Vice Chair

Professors Amato, Carvalho, Cheng, Couris, Dvorkin-Camiel, Goldman, Kostka-Rokosz, Krikorian, McCloskey, Rudolf, Segal, Zaiken, Zeind; Associate Professors Angelini, Bhatt, Ceresia, Crosby, DiFrancesco, Felix-Getzik, Ferullo, Grgurich, Harris, Hudd, Jacobson, Kiritsy, LaPointe, Machado, Matthews, Mistry, Patel, Schnee, Silvia, Taglieri; Assistant Professors Baker, Basile, Dinsmore, Gammal, Grams, Morelli, Moukhachen, Murray, Nigro, On, Prisco, Schneider, Solodokin, Stanic, Stern, Szumita, Thumar

### **Office of Experiential Education**

Catherine Basile, PharmD, Assistant Professor of Pharmacy Practice and Assistant Dean of Pharmacy Experiential Education

Andrew Szumita, PharmD, Assistant Professor of Pharmacy Practice and Director of Experiential Education

Rita Morelli, PharmD, Assistant Professor of Pharmacy Practice and Experiential Coordinator

Jennifer Prisco, PharmD, Assistant Professor of Pharmacy Practice and Experiential Education Coordinator

## **Degree, Certificate, and Residency Programs**

- Doctor of Pharmacy (PharmD)
- Residencies in Pharmacy Practice
- Doctor of Pharmacy / Master of Public Health (PharmD/MPH)\*
- Doctor of Pharmacy Pathway (Postbaccalaureate PharmD) \*
- Bachelor of Science in Pharmaceutical and Healthcare Business
- Bachelor of Science in Pharmaceutical Sciences / Master of Pharmaceutical Sciences
- Bachelor of Science in Pharmacology and Toxicology
- Certificate in Advanced Pharmacy Practice Studies (CAPPS)

\*Online programs are affiliated with the Center for Online Learning and Academic Innovation.

### **Doctor of Pharmacy (PharmD)**

The School of Pharmacy–Boston offers a six-year program leading to a Doctor of Pharmacy (PharmD) degree. Students follow a curriculum that combines general, specialized, and applied science courses with those in the liberal arts, preparing them for an increasingly visible role on the healthcare team. In addition, required experiential courses provide opportunities to learn while practicing in areas such as ambulatory, community, inpatient, and institutional pharmacy, as well as elective experiences in geriatrics, pediatrics, industry, long-term care, and regulatory agencies. Credits earned in professional courses are valid for up to seven years.

### **Technical Standards**

#### **Introduction**

The School of Pharmacy is committed to a policy of equal educational opportunity and welcomes individuals with diverse backgrounds and abilities. The school therefore prohibits discrimination according to all applicable state and federal laws. The purpose of this document is to ensure that all students entering the PharmD program have read and understand the clinical and nonacademic requirements of the program so that they can make informed decisions regarding their pursuit of the profession of pharmacy.

Candidates for admission to and students enrolled in the Doctor of Pharmacy (PharmD) program must have abilities and skills in multiple domains, including communication, intellectual, behavioral/social, and visual/auditory/tactile/motor competencies. The following technical standards describe the nonacademic qualifications (required in addition to academic standards) that the School of Pharmacy considers essential for successful progression in and completion of the educational objectives of its curriculum.

Although the School of Pharmacy will engage in an interactive process with applicants with disabilities, it reserves the right not to admit any applicant who, upon completion of the interactive process, cannot meet the technical standards set forth below, with or without reasonable accommodations.

Reasonable accommodation for persons with prior documented disabilities will be considered on an individual basis. Students wishing to request accommodations for disabilities should contact the Director of Disability Services (see Disabilities Support Services in the Student Services section of the catalog).

**Domain: Communication***Performance Standards*

- Must have functional English speaking, reading, and writing abilities necessary to communicate clearly with patients, family, caregivers, physicians, and other healthcare professionals, colleagues, and faculty. Communication includes both verbal and nonverbal expression, reading, writing, and computer skills.

*Essential Functions*

- Must have the ability to participate in class discussions, group projects, and practical labs for the purpose of the delivery and receipt of medical information
- Must have the ability to recognize both verbal and nonverbal communication, including facial expressions and body language
- Must have the ability to report accurately and legibly in patients' charts, demonstrating the knowledge of the meaning and spelling of words, rules of composition, and grammar
- Must have the ability to explain to other healthcare team members, patients, and/or caregivers the reason for treatment, preventive measures, disease process, and need for referral
- Must have the ability to use computers and other technology to accurately record information and convey critical health-related documentation
- Must have the ability to recognize and respond to the physical and psychological needs of patients

**Domain: Intellectual***Performance Standards*

- Must have sufficient critical and logical thinking ability to engage in clinical judgment and problem solving to address issues and problems within all learning environments
- Must have the ability to multitask and to perform work in a logical and sequential manner

*Essential Functions*

- Must be able to memorize, perform scientific measurement and calculation, reason, analyze, and synthesize information
- Must demonstrate the ability to retrieve (electronically and manually), read, understand, and interpret medical, scientific, and professional information and literature
- Must demonstrate the intellectual and reasoning abilities required to develop problem-solving and decision-making skills
- Must demonstrate the ability to learn effectively through a variety of modalities including, but not limited to, small group discussion, individual study of materials, preparation and presentation of written and oral reports, and use of computers and other technology
- Must demonstrate the ability to prioritize and complete tasks in laboratory, clinical, and patient care settings with time constraints
- Must perform a variety of duties accurately, often changing from one task to another without loss of efficiency or composure

**Domain: Behavioral/Social***Performance Standards*

- Must possess the ability to relate to patients, caregivers, other members of the healthcare team, and faculty in a professional manner
- Must demonstrate sensitivity to people from a variety of cultural backgrounds
- Must possess the ability to interact with and respond to the needs of patients and caregivers from a variety of cultural backgrounds and with a diversity of emotional, intellectual, and physical health issues

*Essential Functions*

- Must be able to fully utilize intellectual abilities to exercise good judgment; to complete patient care responsibilities appropriately; and to relate to patients, families, and colleagues with courtesy, compassion, maturity, and respect for their dignity
- Must be able to effectively function when faced with challenges and uncertainties in classroom, laboratory, and experiential settings
- Must accept constructive criticism and be able to respond and modify behavior accordingly
- Must be able to interact with faculty, staff, peers, patients, and members of the healthcare team in a mature and professional manner that reflects the core values of the University

**Domain: Visual/Auditory***Performance Standard*

- Must possess sufficient visual and auditory abilities to gather data from written reference material, oral presentations, illustrations, diagrams, and patient observation

#### *Essential Functions*

- Must have the ability to gather data from written reference material, computer-based programs, and oral presentations
- Must have the ability to observe and/or conduct demonstrations and experiments
- Must have the ability to utilize various types of physical assessment skills required for patient-centered care, including reading digital or analog representations of physiologic phenomena
- Must have the ability to execute movements reasonably required to properly participate in the activities of a laboratory or an experiential rotation that are components of pharmacy practice
- Must have the ability to read and interpret prescriptions, prescription labels, and drug labels

#### **Domain: Tactile and Motor Competencies**

##### *Performance Standards*

- Must possess sufficient tactile and motor abilities to prepare pharmaceutical products, evaluate patients, and perform basic laboratory tests
- Must possess the manual dexterity necessary to manipulate and control laboratory equipment and materials

##### *Essential Functions*

- Must possess manual dexterity sufficient to accurately compound and prepare pharmaceutical products for dispensing to patients
- Must possess sufficient manual dexterity and sense of touch to perform basic patient assessments, including but not limited to palpation, auscultation, percussion, and other diagnostic maneuvers
- Must possess sufficient manual dexterity to conduct laboratory diagnostic tests and administer nonoral medications

#### **Pharmacy Experiential Rotations**

Pharmacy Experiential education rotations are required throughout the professional curriculum. Three hundred twenty (320) hours of introductory pharmacy practice experiences are required prior to the sixth (fourth professional) year; 1,440 hours of advanced pharmacy practice experiences are required in the sixth (fourth professional) year. A number of experiential rotations in the required curriculum may be scheduled at some distance from the campus. This is necessary to provide a range of diverse learning experiences and to ensure availability and quality of clinical rotation sites. The University will make every effort to accommodate requests regarding assignments to experiential education sites, but students generally can expect to be assigned to clinical sites at some distance from the campus for at least a portion of their required clinical rotations. In such instances, students are responsible for transportation and other related travel expenses.

#### **Progression Requirements**

Students must have a minimum 2.7 grade point average (GPA) by the end of the spring semester of the second year to progress into the first professional year (third year) of the PharmD program.

Students must also complete all pre-professional courses with a passing grade by the end of spring semester of the second year to progress into the first professional year. In addition to the GPA and course completion and passing requirements, the School of Pharmacy Boston and the Accreditation Council for Pharmacy Education requires all preprofessional students in the second year of the PharmD program to complete an oral interview and writing proficiency exam to progress into the first professional year (third year) of the PharmD program. Students must achieve a satisfactory score on both the verbal and written proficiency exam in order to progress into the first professional year.

*All decisions concerning progression into the first professional year are made at the end of the spring semester of the second pre-professional year.*

*Students must maintain a cumulative GPA of 2.7 in years III-VI of the program. In addition, the minimum passing grade for all required professional courses is C-.*

*All PharmD students must complete all requirements and be in good academic standing before beginning sixth-year advanced clinical rotations.*

*All professional coursework in the PharmD program must be completed within a period of seven years. Any coursework older than seven years must be repeated.*

#### **Policy on Enrollment Management for the School of Pharmacy–Boston**

The MCPHS University, School of Pharmacy–Boston seeks to maintain an appropriate balance of qualified Doctor of

Pharmacy (PharmD) students per class with the need to assure high academic standards that are consistent with those of the profession. Students who are enrolled in the Pharmaceutical Sciences and Premedical Studies degree programs within the University, who have successfully completed all required prerequisites for the PharmD program, and who have attained a *minimum GPA of 3.0 without failing or repeating courses* are eligible to apply for transfer into the first professional year of the PharmD program. Students must successfully fulfill all requirements prior to the fall semester of the first professional year, in accordance with the standards of June 2016 of the Accreditation Council on Pharmacy Education (ACPE) and those described in the policy of the School of Pharmacy–Boston on progression into the Doctor of Pharmacy program.

Applications for internal transfer into the fall semester of a given year must be submitted to the Office of Admissions by January 4<sup>th</sup> of that academic year. Students complete an interview and writing assessment and must achieve a satisfactory score on both the verbal and written proficiency exam in order to progress into the first professional year. Decisions regarding acceptance of internal transfer applicants into the PharmD program will be made by mid-August based on space availability in the first-professional-year class for the following fall semester. Matriculating students who wish to transfer into the PharmD program at any time after the close of final grades at the end of the spring semester of the second year will be required to complete their current program and may then apply after they have been awarded their degree.

External transfers into the PharmD program are required to comply with the transfer admission policy as described in the University catalog.

### Residency Requirement

Students must take all professional courses in residence at MCPHS University and 3 credits of professional electives during the fifth year (i.e., third professional year) of the program.

### Electives

Students are required to take two professional electives during the fifth year of the PharmD program. A list of professional electives will be provided.

### Curriculum: Doctor of Pharmacy

<i>Year I—fall</i>		
COURSE	TITLE	SEMESTER HOURS
BIO 151	Biology I: Cellular and Molecular Biology	3
CHE 131	Chemical Principles I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 150*	Precalculus or	3
MAT 151	Calculus I	3

TOTAL 14

*\* If placed in Precalculus, this course will replace 3 semester hours of general elective credit during Year II.*

<i>Year I—spring</i>		
COURSE	TITLE	SEMESTER HOURS
BIO 152	Biology II: Biology of Organisms (w/lab)	4
CHE 132	Chemical Principles II (w/lab)	4
LIB 112	Expository Writing II	3
LIB 120	Introduction to Psychology or	
LIB 133	American Culture, Identity, and Public Life	3
MAT 151/152*	Calculus I or Calculus II	3

TOTAL 17

*\* Students must complete MAT 152 prior to progression into PHY 270 Foundations of Physics I*



*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 255**	Medical Microbiology (w/lab)	4
CHE 231	Organic Chemistry I (w/lab)	4
LIB 120	Introduction to Psychology or	
LIB 133	American Culture, Identity, and Public Life	3
PHY 270**	Foundations of Physics I	3
PSB 210**	Macroeconomics	3
	Distribution elective	3
TOTAL		17

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
CHE 232	Organic Chemistry II	3
LIB 220**	Introduction to Interpersonal Communication for Health Professionals	3
MAT 261**	Statistics	3
PHY 270**	Foundations of Physics I	3
PSB 210**	Macroeconomics	3
	Distribution elective	3
TOTAL		18

\*\* Students will be block registered for their required courses in Year II. These courses may be taken either semester.

**Professional Years III–VI***Year III (first professional year)—fall*

COURSE	TITLE	SEMESTER HOURS
PPB 325	Introduction to Practice Management I (w/ lab)	3
PSB 328	Physiology/Pathophysiology I	4
PSB 337	Medical Biochemistry I	3
PSB 345	Dosage Forms I	4
PSB 348L	Dosage Forms I Laboratory	1
PSB 320****	Introduction to Healthcare Delivery or	3
	Distribution elective	3
TOTAL		18

*Year III (first professional year)—spring*

COURSE	TITLE	SEMESTER HOURS
PSB 329	Physiology/Pathophysiology II	4
PSB 338	Medical Biochemistry II	3
PPB 335	Introduction to Practice Management II (w/ lab)	2
PSB 351	Dosage Forms II	3
PSB 354L	Dosage Forms II Laboratory	1
PSB 424	Research Methods in Pharmacoepidemiology	2
PSB 320****	Introduction to Healthcare Delivery or	3
	Distribution elective	3
TOTAL		18

\*\*\*\* These courses may be taken either semester.

*Year IV (second professional year)—fall*

COURSE	TITLE	SEMESTER HOURS
PPB 419	Introductory Pharmacy Practice Experience I	2
PPB 485	Drug Literature Evaluation	3
PSB 441	Medicinal Chemistry I	3
PSB 451	Pharmacology I	4
PPB 445	Therapeutics I	3
PSB 450	Pharmaceutical Biotechnology	3
TOTAL		18

*Year IV (second professional year)—spring*

COURSE	TITLE	SEMESTER HOURS
PPB 414	Virology and Anti-infectives	4
PPB 446	Therapeutics II	3
PSB 430	Pharmacokinetics I	3
PSB 442	Medicinal Chemistry II	3
PSB 454	Pharmacology II	4
TOTAL		17

*Year V (third professional year)—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 512	Healthcare Ethics or professional elective*****	3
PPB 519	Introductory Pharmacy Practice Experience II	1
PPB 502	OTC Drugs / Self-Care	3
PPB 545	Advanced Practice Management I (w/lab)	3
PPB 555	Advanced Therapeutics I	4
PPB 551	Advanced Therapeutics Seminar I	1
PSB 432	Pharmacokinetics II	3
TOTAL		18

*Year V (third professional year)—spring*

COURSE	TITLE	SEMESTER HOURS
LIB 512	Healthcare Ethics or professional elective*****	3
PPB 546	Advanced Practice Management II (w/lab)	4
PPB 552	Advanced Therapeutics Seminar II	1
PPB 556	Advanced Therapeutics II	4
PSB 411	Pharmacy Law	3
	Professional elective	3
TOTAL		18

\*\*\*\*\* May be taken either semester.

*Year VI (fourth professional year)*

COURSE	TITLE	SEMESTER HOURS
PPBC 601-606	Advanced Pharmacy Experience Program Rotations	36
	NAPLEX Review Modules and Board Review	0
TOTAL		36

**Total credits to complete degree requirements:\* 206**

### **Sixth Year (Fourth Professional Year)**

During the final year of study, PharmD students earn 36 credit hours by completing 36 weeks of advanced pharmacy practice experiential rotations. The rotations start as early as May and run consecutively through late November or December. The rotations resume in January and finish in May.

Students are required to complete rotations in internal medicine, institutional pharmacy practice, ambulatory care, and community pharmacy practice. Additionally, students complete two elective rotations from areas such as administration, cardiology, community practice, critical care medicine, drug information, emergency medicine, gastroenterology, infectious diseases, nephrology, oncology/hematology, obstetrics/gynecology, pediatrics, poison information, and psychiatry.

Elective rotations chosen by the student are reviewed by the coordinators of experiential education to determine whether the rotations provide appropriate emphasis and balance to the student's overall program. Scheduling of the rotations is completed by the Office of Experiential Education and may be modified at the discretion of the coordinator(s).

Students must also successfully complete on-line NAPLEX review modules during the 6<sup>th</sup> year as a condition for graduation. There are no credits assigned to the work nor will any grade be given. Students are only required to complete the modules prior to their graduation. In addition, students must also attend the mandatory Board Review during the last week of the final APPE rotation as a condition for graduation.

### **School of Pharmacy–Boston, Doctor of Pharmacy (PharmD) Honors Program**

The School of Pharmacy–Boston Honors program is an enrichment of the Doctor of Pharmacy curriculum that expands educational opportunities for highly motivated and academically talented students.

#### **Program Overview**

- Small class seminars with peers that help students develop and improve research and presentation skills
- A research project conducted under the supervision of a research mentor in Pharmaceutical, Clinical, or Social and Administrative Sciences
- Earn an honors designation on their degree transcript with completion of all honors program requirements

#### **Honors Program Eligibility**

A student who is interested in applying for admission to the honors program must

- be a third-year pharmacy student (first professional year) in the PharmD program and
- have a minimum professional grade point average (GPA) of 3.5 by the end of the fall semester of the third year (first professional year)

Applications for admission to the honors program are due by the last Friday in January of the spring semester of the third year (first professional year). The applicant must complete the application form and submit their curriculum vitae / résumé, two references, and an essay that outlines the reasons for pursuing the honors program as well as how the student expects the program to contribute to their professional goals after graduation. All applicants who meet the eligibility criteria are invited for an interview with members of the Honors Program Committee during the spring semester. The Honors Program Committee determines acceptance into the program.

#### **Honors Program Requirements**

- Honors students participate in an honors seminar that meets during the fall and spring semesters of the fourth year (second professional year) and the fall and spring semesters of the fifth year (third professional year). This seminar will foster intellectual inquiry and the technical skills necessary for development, completion and presentation of the honors project.
- During the fourth year (second professional year), each honors student selects one required course in the fall semester and one required course in the spring semester in which to complete additional coursework to meet honors program coursework requirements. The honors student will work under the supervision and guidance of one or more faculty members on a specific area within each course to gain further depth and knowledge in the area of study (laboratory, practicum, and clinical experience can be included) covered within each course. The student must fulfill the honors coursework requirements as specified by the faculty member(s). The student will spend approximately two hours per week to complete the honors program coursework requirements in each course. By the end of the fourth year, the honors student will be paired with a faculty research mentor who will supervise their honors research project throughout the remainder of the student's time in the honors program.
- During the fifth year (third professional year), the student will focus on advancing their honors research project under

the supervision and guidance of their research mentor. In October, the student will submit their research project proposal with a timeline and budget and present their proposal to the Honors Program Committee, who must approve the proposal prior to initiation of the project. The student begins work on his or her research project in the latter portion of the fall semester of the fifth year and continues into the sixth year. The student may elect to work on their honors with their faculty research mentor through completion of an Undergraduate Research elective as a professional elective in the spring semester of the fifth year. The student may also select one or two six-week rotations that will advance the goals of the research project. These rotation selections must be indicated within their proposal. These rotations should occur in the first part of the academic year since the student must complete the research project during the final semester of the sixth year.

- During the sixth year (fourth professional year), the student will focus on the advancement and completion of their research project under the supervision and guidance of their research mentor. The honors student must submit a scientific report and give a formal presentation on the results of their research in the spring semester of their sixth year. Students will be encouraged to submit their projects as abstracts for presentations at regional and national meetings and to prepare manuscripts for publications.

Additional program information is available from the Office of the Dean of the School of Pharmacy-Boston.

### **Doctor of Pharmacy / Master of Public Health (Online MPH)**

The Doctor of Pharmacy and Master of Public Health (PharmD/MPH) program at MCPHS University is a joint program encompassing the requirements of both degrees. Students will have the opportunity to apply for the program in their second year of study at MCPHS University. Upon acceptance to the joint program, students may begin their graduate study in the Master of Public Health course the summer after their second year of the PharmD program, continue to take MPH courses in the summers, and finish their MPH degree in the two semesters following the conferral of the PharmD degree. During the final year at MCPHS University, students can work full time while finishing the MPH.

### **Curriculum: Doctor of Pharmacy / Master of Public Health**

*Students complete the Doctor of Pharmacy as described above. The Master of Public Health courses are delivered online and are completed in summers and in the year following graduation from the PharmD program, as follows:*

<i>Year II—summer</i>		
COURSE	TITLE	SEMESTER HOURS
PBH 705	Introduction to Environmental Health Sciences	3
PBH 710	Introduction to Health Policy and Management	3
TOTAL		6

<i>Year III—summer</i>		
COURSE	TITLE	SEMESTER HOURS
DRA 807	Statistics in Clinical Research	3
PBH 755	Health Promotion and Education	3
TOTAL		6

<i>Year IV—summer</i>		
COURSE	TITLE	SEMESTER HOURS
PBH 890	Public Health Practice Experience	2
PBH 895	Preparatory Seminar, Culminating Experience	1
TOTAL		3

<i>Year VII—fall</i>		
COURSE	TITLE	SEMESTER HOURS
PBH 701	Survey of Public Health	3
PBH 760	Program Design and Evaluation	3
PBH 750	Community Health Science and Practice	3
TOTAL		9

Year VII—spring

COURSE	TITLE	SEMESTER HOURS
PBH 715	Introduction to Social and Behavioral Sciences	3
PBH 765	Community Health Assessments	3
PBH 898	Culminating Experience	3
TOTAL		9

*A total of 9 semester hours count toward completion of both degree programs: two MPH electives (6 semester hours) are fulfilled through selection of PPB 538 Global Infectious Diseases and PPB 540 Diseases and Conditions That Affect the Older Population as the two professional electives required in the fifth year of the Doctor of Pharmacy curriculum; and the third-year PharmD course PSB 424 Research Methods In Pharmacoepidemiology fulfills the DRA 809 Health Epidemiology requirement in the MPH program.*

**Total credits to complete requirements: 206 (PharmD); 42 (MPH); 239 (PharmD/MPH)**

### **Residencies in Pharmacy Practice**

The School of Pharmacy–Boston offers several residencies in pharmacy practice. These postgraduate programs provide 12 months of intensive practice experience in pharmacy. Residents are appointed as adjunct instructors in the School of Pharmacy–Boston and participate in the teaching program at MCPHS University and its clinical affiliates. Further information on these programs may be obtained from the Chair of the Department of Pharmacy Practice.

### **Doctor of Pharmacy Pathway (Postbaccalaureate PharmD) (Online)**

The Doctor of Pharmacy Pathway (Postbaccalaureate) is designed for qualified practitioners with a BS in pharmacy degree who wish to earn a degree on a part-time basis. It is currently offered in a Web-supported format with online lectures and group discussions, reducing required on-site meeting time to once per semester. This program helps pharmacists learn how to collect and interpret data to design a pharmaceutical care plan for their individual patients in collaboration with other healthcare professionals. Pharmacists learn how to recommend and implement a therapeutic plan; perform ongoing patient evaluations; and document and report new, unusual, or severe adverse drug reactions, drug interactions, or unexpected effects of newly marketed drugs.

### **Admission**

Requests for formal admission into the pathway are obtained from and processed through the Admission Office. The PharmD Admission Committee in the School of Pharmacy–Boston is responsible for evaluating the applications and making admission decisions. All applicants to the program must:

- have a Bachelor of Science in Pharmacy from an accredited College/University
- have licensure to practice pharmacy in the United States;
- be employed in a patient care setting or have access to a site that provides opportunities to practice pharmaceutical care (e.g., community pharmacy, hospital pharmacy, managed care pharmacy).

Applications to the Doctor of Pharmacy Pathway (Postbaccalaureate) must include office transcripts from all institutions attended as well as the institution that granted the BS in pharmacy degree, curriculum vitae, a short essay stating professional goals and objectives, and proof of current pharmacy licensure. Course-by course evaluations from World Education Services or equivalent are required of all foreign transcripts.

The priority filing date from submitting application materials to the Admission Office is May 1. The program begins in September-however; a 3-day onsite orientation is required before the start of the program. The online application is available at <http://www.mcphs.edu/apply> beginning in September. Because seats in the pathway are limited, it is important that applications be returned early in the application period.

### **Academic Policies for the Doctor of Pharmacy Pathway (Postbaccalaureate)**

In addition to the academic policies of the Doctor of Pharmacy program, the following requirements apply to PharmD students in the postbaccalaureate pathway:

- The minimum overall grade point average for graduation from the Postbaccalaureate Doctor of Pharmacy program is 2.7. If the cumulative grade point average of any student falls below 2.7, the student is placed on academic probation and has two semesters to correct the deficiency. Failure to achieve a grade point average of 2.7 following the probationary period is grounds for dismissal from the pathway. For a description of the appeal process, refer to the MCPHS University student handbook.
- The minimum acceptable grade is C– in courses and modules in the pathway. Courses in which grades below passing are earned must be repeated until the minimum grade level is met. A student may petition to replace a maximum of one repeated course grade in his or her calculated grade point average.
- All didactic coursework must be completed within a period of three years of matriculation into the

Postbaccalaureate Doctor of Pharmacy program, and all program requirements must be completed within four years of matriculation.

### Curriculum: Doctor of Pharmacy Pathway (Postbaccalaureate)

The current pathway is organized into three phases that provide for progression toward the terminal educational outcomes. Completion of 37 semester hours of coursework is required to earn the degree.

*Phase I—fall*

COURSE	TITLE	SEMESTER HOURS
PPB 600	Principles of Pharmaceutical Care	3
PSB 421	Pharmacoepidemiology	2
TOTAL		5

*Phase II—spring*

COURSE	TITLE	SEMESTER HOURS
PPB 672	Drug Literature Resources and Evaluation	3
PPB 681	Clinical Pharmacokinetics	2
TOTAL		5

*Phase III*

#### Pharmacotherapy I, II, III (17 semester hours)

Three pharmacotherapy courses employ a problem-based approach to pharmacotherapy that involves lectures, literature review, and faculty case discussions. Lectures and faculty discussion are conducted online using textual and audio presentations and interactive discussions. One on-campus meeting will occur each semester for faculty review and student presentations.

#### Pharmacotherapy Practice I, II, III, IV (7 semester hours)

Following lectures and faculty discussion, practitioners are asked to apply the therapeutic information to patients using simulated case histories and/or patients from their work sites (five hours per week in direct patient care activities at an approved work site are required).

Efforts are directed at determining appropriate pharmacotherapeutic care plans and detecting and solving patient drug-related problems through a series of evaluations and interventions. Each student is assigned a faculty preceptor who will evaluate and guide the student through patient care assignments and project work each semester. Students also are expected to lead case discussions among their classmates and participate in other's presentations. Two case presentations are expected each semester. One will be presented online and the second live at the campus-based meetings.

#### Advanced Pharmacy Practice Experience (3 semester hours)

The Advanced Pharmacy Practice Experience consists of a four-week, full-time clinical rotation under the supervision of an MCPHS University preceptor.

*Phase III—summer*

COURSE	TITLE	SEMESTER HOURS
PPB 623	Pharmacotherapeutics I	5
PPB 623A	Pharmacotherapeutics Practice I	1
TOTAL		6

*Phase III—fall*

COURSE	TITLE	SEMESTER HOURS
PPB 625	Pharmacotherapeutics II	6
PPB 625A	Pharmacotherapeutics Practice II	1
TOTAL		7

*Phase III—spring*

COURSE	TITLE	SEMESTER HOURS
PPB 633	Pharmacotherapeutics III	6
PPB 633A	Pharmacotherapeutics Practice III	1
TOTAL		7

*Phase III—summer*

COURSE	TITLE	SEMESTER HOURS
PPB 668A	Pharmacotherapeutics Practice IV	4
PPB 668	Advanced Pharmacy Practice Experience	3
TOTAL		7

**Total credits to complete degree requirements: 37 semester hours**

### **Academic Complaint Policy**

It is the policy of the MCPHS University School of Pharmacy–Boston (SOP-B) to objectively review student grievances related to academic and non-academic issues.

Students with complaints regarding discrimination are referred to the University discrimination grievance policy. Students with issues or complaints regarding their grade or performance in an individual class are referred to the grade appeals policy. Both policies are in the Academic Policies and Procedures section of this course catalog.

If a student wishes to complain about an issue related to the accreditation standards of the Accreditation Council for Pharmacy Education (ACPE), the student should follow the procedure detailed below.

#### **Procedure**

1. The student writes a letter detailing the complaint to the School of Pharmacy–Boston Assistant Dean for Academic Affairs.
2. If the assistant dean is unable to resolve the issue, he or she forms an ad hoc committee of three faculty members (at least one member from each department) and asks the committee to review the complaint and make a recommendation.
3. The student receives a written response within 30 days.
4. If the student wishes to appeal the decision, he or she may appeal to the SOP-B dean within five days.
5. The dean makes a decision and informs the student within 14 days. The decision of the school dean is final.
6. The SOP-B Dean's Office keeps a file of all complaints and responses.

If a student wishes to file a complaint with ACPE, the student should contact the council via email, phone or mail. The ACPE contact information is available in the catalog in the introduction section under Accreditation.

### **Certificate in Advanced Pharmacy Practice Studies (CAPPS)**

The Certificate in Advanced Pharmacy Practice Studies (CAPPS) is a 65-credit-hour, postbaccalaureate certificate of advanced graduate study. The program may be completed over five semesters on a full-time basis. Semesters I and II are composed of didactic coursework and preparation for both the Foreign Pharmacy Graduate Equivalency Examination (FPGEE), which is administered by National Association of Boards of Pharmacy (NABP) and the North American Pharmacist Licensure Examination (NAPLEX). Semesters III through V are composed of pharmacy internships in inpatient and outpatient pharmacy practice settings. Additional presentations are offered during Semester V to assist students in continued preparation for the NAPLEX and Multistate Pharmacy Jurisprudence Examination (MPJE). During the pharmacy internships, students accumulate the 1,500 hours required for pharmacy licensure by the Massachusetts Board of Registration in Pharmacy.

#### **Admission Requirements and Certificate Requirements**

For admission to the CAPPS program, an applicant must meet the following criteria:

- Earned a BPharm or PharmD from a five-year or six-year degree program outside the United States
- Registered for the FPGEE
- Achieved a minimum TOEFL score of 79 prior to acceptance

The CAPPS will be awarded to students who have successfully completed 65 semester hours of required coursework and pharmacy internship rotations. Progression to Semesters III–V is contingent upon a minimum passing grade of 70% on all didactic coursework in the CAPPS program. Students must complete pharmacy internship rotation requirements with a minimum passing grade of 70%.

While the CAPPS program is designed to assist students in applying for pharmacy licensure in the United States, it is the responsibility of each student to meet the licensure requirements of NABP and the Massachusetts Board of

Registration in Pharmacy. Students are responsible for achieving (1) a passing score on the FPGE, as determined by NABP; (2) a passing score on the TOEFL Internet-based Test (iBT), as determined by NABP; and (3) a passing score on NAPLEX and the state law examination, as determined by NABP and the Massachusetts Board of Registration in Pharmacy.

<i>Year I—fall</i>		
COURSE	TITLE	SEMESTER HOURS
INT 400	Seminar in Pharmacy Practice and Pharmaceutical Sciences I	4
LIB 253	Oral Communication in Healthcare	3
PPB 445	Therapeutics I	3
PPB 502	Over-the-Counter Drugs / Self-Care	3
PSB 320	Introduction to Healthcare Delivery	3
TOTAL		16

<i>Year I—spring</i>		
COURSE	TITLE	SEMESTER HOURS
INT 201*	Intensive TOEFL Preparation	0–6
INT 401	Seminar in Pharmacy Practice and Pharmaceutical Sciences II	4
LIB 254	Oral Communication in Healthcare II	3
PPB 411	Pharmacy Law	3
PPB 446	Therapeutics II	3
TOTAL		13–19

\* Students with satisfactory TOEFL scores prior to admission do not take INT 201. Students assigned to INT 201 complete the course off-site.

<i>Year I—summer</i>		
COURSE	TITLE	SEMESTER HOURS
INT 500	Pharmacy Internships I and II	12
TOTAL		12

<i>Year II—fall</i>		
COURSE	TITLE	SEMESTER HOURS
INT 501	Pharmacy Internships III and IV	12
TOTAL		12

<i>Year II—spring</i>		
COURSE	TITLE	SEMESTER HOURS
INT 502	Pharmacy Internships V and VI	12
TOTAL		12

### **Bachelor of Science in Pharmaceutical and Healthcare Business**

*(Formerly Bachelor of Science in Pharmaceutical Marketing and Management)*

This program combines biological and pharmaceutical sciences coursework with marketing and general management studies, preparing students for a variety of careers or for a continuation of their education in postgraduate programs that could include business, science, clinical research and/or regulatory affairs master's degrees. The Bachelor of Science in Pharmaceutical and Healthcare Business provides skills and experience for use in pharmaceutical sales; healthcare and health information management; food, drug, and medical device industry regulatory oversight; and pharmacy distribution systems development and implementation (e.g., wholesaling, contract purchasing, and pharmacoeconomic analysis). Graduates find career opportunities within managed care; drug development, manufacturing, and promotion; pharmacy and healthcare information systems; and other areas where an understanding of the intricacies of the pharmaceutical sciences and an appreciation for their business applications are critical.



To meet the residency requirement for this program, students must complete at least 62 semester hours at MCPHS University.

**Curriculum: Bachelor of Science in Pharmaceutical and Healthcare Business**

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 151	Biology I: Cell and Molecular Biology	3
CHE 110	Basic Chemistry I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 151	Calculus I	3
TOTAL		14

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 152	Biology II: Biology of Organisms (w/lab)	4
CHE 210	Basic Chemistry II (w/lab)	4
LIB 112	Expository Writing II	3
LIB 120	Introduction to Psychology or	
LIB 133	American Culture, Identity, and Public Life	3
MAT 152	Calculus II	3
TOTAL		17

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
BEH 355	Organizational Psychology	3
BIO 110	Anatomy and Physiology I (no lab)	3
LIB 120	Introduction to Psychology or	
LIB 133	American Culture, Identity, and Public Life	3
MAT 261	Statistics	3
PSB 210	Macroeconomics	3
TOTAL		15

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 210	Anatomy and Physiology II (no lab)	3
LIB 220	Introduction to Interpersonal Communication for Health Professionals	3
PSB 215	Microeconomics	3
PSB 235	Intro to Business	3
	Social Science elective	3
TOTAL		15

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
PSB 377	Healthcare Management	4
PSB 375	Fundamentals of Drug Development	4
PSB 376	Healthcare Marketing	4
PSB 415	Accounting	3

Distribution elective	3
<b>TOTAL</b>	<b>18</b>

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
PSB 320	Introduction to Healthcare Delivery	3
PSB 456	Entrepreneurship	3
PSB 380	Applied Business Techniques	4
PSB 416	Managerial Accounting	3
	Distribution Elective	3
<b>TOTAL</b>		<b>16</b>

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 512	Healthcare Ethics	3
PSB 410	FDA and Regulatory Affairs	3
PSB 429	Operations Management	3
PSB 418	Pharmacoeconomics	3
	Program elective	3
<b>TOTAL</b>		<b>15</b>

*Year IV—spring*

COURSE	TITLE	SEMESTER HOURS
PSB 445	Sales of Pharmaceuticals and Medical Products	3
PSB 446	Healthcare Finance	3
PSB 447	Fundamentals of Business Law	3
	Program electives	6
<b>TOTAL</b>		<b>15</b>

**Total credits to complete degree requirements: 125 semester hours**

*NOTE: Students transferring from the PharmD program will have taken Chemical Principles I (CHE 131) and Chemical Principles II (CHE 132), which may be applied to Basic Chemistry I (CHE 110) and Basic Chemistry II (CHE 210). Organic Chemistry I (CHE 231) and Organic Chemistry II (CHE 232) may be applied to two electives.*

**Elective Requirements**

Students in the Bachelor of Science in Pharmaceutical and Healthcare Business program are required to select a minimum of four elective courses (or at least 12 credits) in the area of business administration, including additional coursework in marketing, management, and accounting, or in a related area of study. The following is a list of acceptable courses. Other courses offered by the Colleges of the Fenway also may be acceptable upon approval of the student's academic advisor or the program director.

**Recommended Electives**

COURSE	TITLE
BEH 250	Health Psychology
BEH 350	Abnormal Psychology
MAT 197	Computer Applications
PSB 422	Drug Education
PSB 424	Research Methods in Pharmacoepidemiology
PSB 434	Managed Healthcare Management and Administration
PSB 444	Organizational Development
PSB 530	Undergraduate Research Project
PSB 532	Directed Study
PSB 542	Fundamentals of the Biopharmaceutical Industry

NOTE: While an industry internship is encouraged as a valuable learning experience, it cannot be guaranteed by the University.

**Minor Requirements**

For those students in School of Pharmacy–Boston who desire further study in specialty areas, a minor concentration is available in Business.

Students complete at least three (3) courses that are only applied to one minor; these courses may not be used to fulfill requirements for the major or another minor.

These students declare minors by completing a Declaration of Minor form, and they must fulfill the minor requirements defined for their program.

**Business**

*Coordinator: Professor Melaragni*

This minor includes three required courses that provide a general foundation in business. In addition to the required courses, students would choose two courses from a list of electives.

*Required Courses*

COURSE	TITLE	SEMESTER HOURS
Required Courses:		
PSB 377	Healthcare Management	4
PSB 416	Managerial Accounting or PSB 415 Financial Accounting	3
PSB 429	Operations Management or HCA 730 Healthcare Operations Management	3
TOTAL		9

*Elective Courses*

Two courses selected from the following list for a minimum of 6 semester hours:

PSB 210 Macroeconomics (3); PSB 215 Microeconomics(3); PSB 320 Healthcare Delivery (3); PSB 376 Healthcare Marketing (4); PSB 445 Sales of Pharmaceutical & Healthcare Products(3); PSB 456 Entrepreneurship (3); PSB 447 Fundamentals of Business Law(3) or PSB 411 Pharmacy Law(3); LIB 512 Healthcare Ethics(3) HSC 310 Healthcare Informatics PSB 380 Applied Business Techniques (4); PSB 434 Managed Healthcare Management & Administration (3); PSB 447

**Bachelor of Science in Pharmaceutical Sciences**

The Bachelor of Science in Pharmaceutical Sciences program (BSPS) emphasizes specific coursework in the core areas of the pharmaceutical industry, preparing students for a variety of careers in industry or for a continuation of their education in postgraduate programs that could include pharmaceuticals / industrial pharmacy, biotechnology, and regulatory affairs master’s or doctoral degrees. The BSPS degree provides skills and experience for use in pharmaceutical, biotechnology, and medical device development, formulation, and manufacturing; and in the evaluation and regulatory oversight of the drug and medical device industry. Career opportunities for degree holders will exist within pharmaceutical, biotechnology, and medical device companies; research laboratories; governmental regulatory agencies; and other areas where the application of these skills and capabilities is sought.

Students in the Bachelor of Science in Pharmaceutical Sciences program must have a minimum grade point average (GPA) of 2.20 at the end of Year II and must maintain a minimum GPA of 2.20 thereafter to remain in good academic standing and to progress in the program. To meet the residency requirements for this program, students must complete at least 63 semester hours at MCPHS University.

**Master of Pharmaceutical Sciences**

Accomplished graduates of the BSPS program may continue their studies for one additional year and earn a Master of Pharmaceutical Sciences degree. This accelerated professional master’s degree program requires 30 semester hours of coursework beyond the BSPS curriculum. Students may select from approved master’s-level coursework that allows them to develop competencies and knowledge in basic laboratory manipulations, experimental record keeping, common analytical equipment, basic experimental design, regulatory affairs, pharmaceutical economics, technical record keeping and reporting skills, and so on. In addition, a research internship provides valuable experience pertinent to the pharmaceutical industry. BSPS students with a GPA of 2.75 or better may apply for the master’s track at the end of their third year. For details of the curriculum please refer to the School of Pharmacy–Boston Division of Graduate Studies section of this catalog.

**Curriculum: Bachelor of Science in Pharmaceutical Sciences**

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 151	Biology I: Cell and Molecular Biology	3
CHE 131	Chemical Principles I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 151	Calculus I	3
TOTAL		14

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 152	Biology II: Biology of Organisms (w/lab)	4
CHE 132	Chemical Principles II (w/lab)	4
LIB 112	Expository Writing II	3
LIB 120	Introduction to Psychology or	
LIB 133	American Culture, Identity, and Public Life	3
MAT 152	Calculus II	3
TOTAL		17

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 255	Medical Microbiology (w/lab)	4
CHE 231	Organic Chemistry I (w/lab)	4
LIB 120	Introduction to Psychology or	
MAT 261	Statistics	3
PHY 270*	Foundations of Physics I	3
PHY 272L*	Foundations of Physics I Lab	1
	Distribution Elective	3
TOTAL		18

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
CHE 232	Organic Chemistry II	3
CHE 234L	Organic Chemistry II Laboratory	1
LIB 252	Introduction to Speech	3
PSB 210	Macroeconomics	3
	Distribution electives	6
TOTAL		16

\* PHY 270 Foundations of Physics I with PHY 272L may be taken fall or spring semester.

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
PSB 328	Physiology/Pathophysiology I	4
PSB 331	Biochemistry I	3
PSB 340	Pharmaceutics I	4
PSB 343L	Pharmaceutics Laboratory I	1

Distribution elective	3
<b>TOTAL</b>	<b>15</b>

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
PSB 329	Physiology/Pathophysiology II	4
PSB 332	Biochemistry II	3
PSB 341	Pharmaceutics II	3
PSB 344L	Pharmaceutics Laboratory II	1
PSB 420	Pharmaceutical Analysis (w/lab)	3
<b>TOTAL</b>		<b>14</b>

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 512	Healthcare Ethics	3
PSB 335	Pharmaceutical Technology	3
PSB 346	Physico-chemical Properties of Drug Molecules	3
PSB 350L	Industrial Pharmacy Laboratory	1
PSB 410	FDA and Regulatory Affairs	3
	Program elective	3
<b>TOTAL</b>		<b>16</b>

*Year IV—spring*

COURSE	TITLE	SEMESTER HOURS
PSB 301	Pharmacology for Allied Health Professionals	3
PSB 430	Pharmacokinetics I	2
PSB 440	Molecular Biotechnology	3
PSB 458	Pharmaceutics Seminar	1
	Program electives	6
<b>TOTAL</b>		<b>15</b>

**Total credits to complete degree requirements: 125 semester hours**

### Elective Requirements

Students in the Bachelor of Science in Pharmaceutical Sciences program are required to select a minimum of three elective courses (or at least 9 credits) in the areas of chemistry, pharmaceutics, or industrial pharmacy. The following is a list of acceptable courses. Other courses offered by the Colleges of the Fenway also may be acceptable upon approval by the student's academic advisor or the program director. Students may also use PharmD courses towards fulfilling their program electives when transferring from the PharmD program to the BSPS.

#### Recommended Electives

COURSE	TITLE
BIO 434	Immunology
CHE 340	Inorganic Chemistry (w/lab)
CHE 530	Undergraduate Research Project
CHE 532	Directed Study
CHE 714	Spectroscopic Analysis (w/lab)
CHE 717	Instrumental Analysis (w/lab)
CHE 719	Synthetic Preparations (w/lab)
CHE 755	Stereochemistry
CHE 365	Thermodynamics and Kinetics (w/lab)
CHE 367	Quantum Mechanics and Molecular Structure (w/lab)

INF 210	Survey of the Literature of Chemistry
MAT 763	Advanced Statistics
PHY 274	Foundations of Physics II (w/lab)
PSB 320	Introduction to Health Care Delivery
PSB 333L	Introductory Biochemistry Laboratory
PSB 415	Accounting
PSB 423	Pharmaceutical Marketing
PSB 424	Research Methods in Pharmacoepidemiology
PSB 425	Healthcare Management
PSB 444	Organizational Development
PSB 445	Sales of Pharmaceuticals and Medical Products
PSB 446	Healthcare Finance
PSB 453	Experimental Pharmacology
PSB 456	Entrepreneurship

### **Bachelor of Science in Pharmacology and Toxicology**

This program provides students with a strong foundation in the pharmacological and toxicological sciences for careers in the pharmaceutical and biotechnology research and development sectors, and also provides an excellent preparation for graduate and professional schools. The program is designed to meet the industrial need for qualified Bachelor of Science graduates with strong laboratory skills, particularly in integrative pharmacology and toxicology. Students have the opportunity to perform a senior (Year IV) research project or industrial internship that enhances their career potential.

Students in the Bachelor of Science in Pharmacology and Toxicology program must have a minimum grade point average (GPA) of 2.50 at the end of Year II and must maintain a minimum GPA of 2.50 thereafter to remain in good academic standing and to progress in the program. To meet the residency requirement for this program, students must complete at least 63 semester hours at MCPHS University.

### **Curriculum: Bachelor of Science in Pharmacology and Toxicology**

#### *Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 150L	Biology I Laboratory	1
BIO 151	Biology I: Cell and Molecular Biology	3
CHE 131	Chemical Principles I (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 151	Calculus I	3
TOTAL		15

#### *Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 152	Biology II: Biology of Organisms (w/lab)	4
CHE 132	Chemical Principles II (w/lab)	4
LIB 112	Expository Writing II	3
LIB 120	Introduction to Psychology or	
LIB 133	American Culture, Identity, and Public Life	3
MAT 152	Calculus II	3
TOTAL		17

#### *Year II—fall*

COURSE	TITLE	SEMESTER HOURS
CHE 231	Organic Chemistry I (w/lab)	4

LIB 120	Introduction to Psychology or	
LIB 133	American Culture, Identity, and Public Life	3
LIB 252	Introduction to Speech	3
PHY 270	Foundations of Physics I	3
PHY 272L	Foundations of Physics I Laboratory	1
	Distribution elective	3
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TOTAL		17

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 255	Medical Microbiology (w/lab)	4
BIO 260	Molecular Biology	3
CHE 232	Organic Chemistry II	3
CHE 234L	Organic Chemistry II Laboratory	1
PHY 274	Foundations of Physics II (w/lab)	4
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TOTAL		15

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
MAT 261	Statistics	3
PSB 328	Physiology and Pathophysiology I	4
PSB 331	Biochemistry I	3
PSB 370	Analytical Methods in Pharmacology and Toxicology I	3
PSB 401	Pharmacology and Toxicology Seminar I	1
	Distribution elective	3
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TOTAL		17

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
LIB 512	Healthcare Ethics	3
PSB 329	Physiology and Pathophysiology II	4
PSB 332	Biochemistry II	3
PSB 371	Analytical Methods in Pharmacology and Toxicology II	3
PSB 402	Pharmacology and Toxicology Seminar II	1
	Distribution elective	3
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TOTAL		17

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
PSB 372	Analytical Methods in Pharmacology and Toxicology III	3
PSB 403	Pharmacology and Toxicology Seminar III	1
PSB 460	Principles of Toxicology I	3
PSB 462	Basic Pharmacology I	3
	Program electives	6
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TOTAL		16

### Research or Curricular Track

Fourth year students will be required to designate their selected track (research vs. curricular) by end of add/drop period of fall semester of senior year to facilitate appropriate course registration. The research track provides students the ability to participate in a senior research project in parallel with a seminar course during the spring semester.

#### Year IV—spring (Research Track)

COURSE	TITLE	SEMESTER HOURS
PSB 404	Pharmacology and Toxicology Seminar IV	1
PSB 461	Principles of Toxicology II	3
PSB 464	Basic Pharmacology II	3
PSB 535	Senior Research Project or Industrial Internship	5
TOTAL		1

#### Year IV—spring (CURRICULAR TRACK)

COURSE	TITLE	SEMESTER HOURS
PSB/BIO	Course #1*	3
PSB 461	Principles of Toxicology II	3
PSB 464	Basic Pharmacology II	3
PSB 535	Course #2*	3
TOTAL		12

**\*Course #1 and Course #2 would come from the following select list:**

1. **PSB 440:** Molecular Biotechnology – 3 credits – offered in Spring semester
  2. **PSB 346:** Physicochemical Properties of Drug Molecules – 3 credits – offered in Fall semester
  3. **PSB 430:** Pharmacokinetics – 3 credits – offered in Spring semester
  4. **BIO 434:** Immunology – 3 credits – offered in Fall semester
  5. **PSB 457:** Pharmacognosy – 3 credits – offered in Fall semester
  6. **BIO 430:** Molecular Biology of Cancer – 3 credits – offered in Spring semester
  7. **PSB 420:** Pharmaceutical Analysis/Lab – 3 credits – offered in Fall semester
- Students selecting the curricular track cannot utilize courses from above list as additionally fulfilling program elective requirements.*

**Total credits to complete degree requirements: 126 semester hours**

### Elective Requirements

Students in the Bachelor of Science in Pharmacology and Toxicology program are required to select a minimum of two program elective courses (or at least 6 credits) in areas of pharmacology, biotechnology, or toxicology. The following is a list of acceptable courses. Other courses offered by the Colleges of the Fenway also may be acceptable upon approval of the student's academic advisor or the program director.

#### Recommended Electives

COURSE	TITLE
BIO 430	Molecular Biology of Cancer
BIO 434	Immunology
BIO 465	Medical Parasitology
PSB 210	Economics
PSB 261	Management
PSB 359	Marketing
PSB 375	Fundamentals of Drug Development
PSB 410	FDA and Regulatory Affairs
PSB 415	Accounting
PSB 420	Pharmaceutical Analysis/Laboratory
PSB 430	Pharmacokinetics I
PSB 432	Pharmacokinetics II
PSB 440	Molecular Biotechnology
PSB 444	Organizational Development
PSB 456	Entrepreneurship
PSB 530	Undergraduate Research Credit



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MCPHS University–Boston  
School of Pharmacy–Boston  
Graduate Programs  
Department of Pharmaceutical Sciences  
Department of Pharmaceutical Business and Administrative Sciences

Professors Acquah-Mensah, Belmonte (Emeritus), Camiel, Cohen (Emeritus), Friel, Garafalo, Kerr, Kosegarten (Emeritus), Lahoz, Maher, Mehanna, Montagne, Williams (Emeritus); Associate Professors Babiarz, Campbell, Chuong, D'Souza, Eguale, Gardner, Gracz, Kaplita, Kelley, Kiel, Metcalf, Migliore, Pino-Figueroa, Rittenhouse, Smith, Tataronis, Zaghoul; Assistant Professors Betharia, Landry, Mekary, Zhang

### Degree Programs

- Master of Science in Regulatory Affairs and Health Policy\*
- Master of Science / Doctor of Philosophy in Medicinal Chemistry
- Master of Science / Doctor of Philosophy in Pharmaceutical Economics and Policy
- Master of Science / Doctor of Philosophy in Pharmaceutics
- Master of Science / Doctor of Philosophy in Pharmacology
- Master of Science in Clinical Research\*
- Master of Pharmaceutical Sciences
- Graduate Certificate in Clinical Research\*
- Graduate Certificate in Health Policy\*
- Graduate Certificate in Regulatory Affairs\*
- One year Master of Science in Clinical Research for MCPHS University Undergraduates

\*Online programs are affiliated with the Center for Online Learning and Academic Innovation.

The Division of Graduate Studies is dedicated to the education of advanced students in the pharmaceutical sciences and health sciences. Each graduate program deepens students' understanding in specialized fields of knowledge to prepare them for leadership roles in higher education, industry, government, and healthcare practice.

Graduate education is highly individualized with respect to both coursework and research requirements as relevant to the individual programs. MCPHS University requires specific courses relevant to the discipline that enable the student to develop the requisite conceptual and technical competencies needed to initiate meaningful research towards discovery learning. Students also must develop the communication skills required to disseminate professional and scientific information. Finally, and most important, graduate students are expected to demonstrate an ever-increasing ability to independently identify and resolve significant problems in their areas of specialization.

### Participation in Research

Research, the experimental portion of graduate education, is the major focus of the course of study in many graduate programs and prepares students for their future careers. The advanced degree is awarded after completion of the approved program, which in some programs, includes a written thesis or dissertation on the student's research. This research must be an original work of a quality that merits publication following critical peer review. Experienced faculty mentors work closely with students to guide them in their research and other educational endeavors.

### Degree Requirements

#### Master of Science

The Master of Science (MS) degree is conferred upon graduate students who have mastered the advanced scientific knowledge and basic research methodology in their area of specialization and fulfilled the following basic requirements:

1. Successful completion of a minimum of 30 semester hours of credit at the graduate level, including 3 semester hours of research, a capstone course, or a case study thesis. PEP students must complete 36 hours
2. Maintenance of a cumulative grade point average (GPA) of 3.0 for all coursework taken at the University. Transfer credit is not used in the calculation of the GPA.

3. Presentation of an acceptable thesis or case study embodying the results of original research, which has been openly defended and approved by the student's Graduate Advisory Committee (where applicable)
  4. Passing a general oral examination covering the major field and the thesis (where applicable)
  5. Spending at least one continuous academic year in residence at the University conducting the student's thesis research. All graduate students involved in research continue to register for Graduate Study Extension (PSB 895) until their research is completed and thesis defended. (This requirement does not apply to the Master of Science in Regulatory Affairs and Health Policy, Master of Science in PEP or Master of Science in Clinical Research)
  6. Completion of all requirements for the Master of Science degree within a period of four years
- NOTE: Additional requirements may be established by the individual graduate programs that are included in the program descriptions. The student's individual program of study is planned jointly with his or her Graduate Advisory Committee, which includes at least three graduate faculty members.

### **Doctor of Philosophy**

The granting of the Doctor of Philosophy (PhD) degree is based on evidence of general proficiency and distinctive attainments in a specialized field, particularly on the demonstrated ability to conduct independent and original investigation. For the PhD degree, the student must complete the following basic requirements:

1. A minimum of 50 semester hours at the graduate level and 5 to 7 semester hours of doctoral research. A minimum of 8 semester hours within the minor also may be required. A student who has earned a Master of Science degree from another institution must complete a minimum of 40 semester hours in addition to the other requirements of the PhD program.
2. Maintenance of a cumulative grade point average (GPA) of 3.0 for all coursework taken at the University. Transfer credit is not used in the calculation of the GPA.
3. Successful completion of qualifying examinations, both written and oral, in the major and minor disciplines (areas of concentration). The comprehensive qualifying examinations are determined and conducted twice per year.
4. Presentation of a dissertation that is a contribution to knowledge in the major discipline and that has been openly defended and approved by the student's Graduate Advisory Committee
5. Completion of at least one continuous academic year of residence at the University conducting dissertation research. All graduate students involved in research continue to register for Graduate Study Extension (PSB 895) until their research is completed and dissertation defended.
6. From the date of matriculation into the PhD program, completion of all requirements for the PhD degree within six years following the Bachelor of Science degree or four years if the student transfers credits from an MS degree in the same area

Additional requirements for students who pursue the PhD directly and bypass the MS, may be required to demonstrate a competency in an area related to the major or minor. Individual programs of study are jointly determined by the student and his or her Graduate Advisory Committee, and specify such requirements.

### **Graduate Advisory Committee**

The Graduate Advisory Committee shall consist of at least three graduate faculty members, two from the major discipline and one from a different discipline. The Graduate Advisory Committee is recommended by the graduate student and his/her graduate advisor with the approval of the Associate Dean of Graduate Studies (GRADUATE COMMITTEE APPOINTMENT Form). While graduate faculty are the core of graduate research, the Associate Dean of Graduate Studies can appoint other University faculty or adjunct faculty with unique specialization to serve on Graduate Advisory Committees to provide enrichment to the dissertation research. The advisor is responsible for coordinating the activity of the Graduate Advisory Committee and ensuring compliance with Graduate Studies regulations. The Graduate Advisory Committee should be appointed after a student has chosen his/her field of specialization (discipline), but no later than 12 months after the student matriculates (this timeline may be modified with regard to students pursuing a Master of Science in Regulatory Affairs and Health Policy or Masters in Clinical Research who register for DRA.810 Case Study Thesis).

The student must meet at least once per semester with and provide written progress reports to his/her Graduate Advisory Committee from the time of appointment of the committee until completion of the requirements for the degree. The Associate Dean of Graduate Studies shall be notified in writing of these meetings by the graduate advisor, as well as being provided with copies of the progress reports. More frequent meetings of the Graduate Advisory Committee and the student are encouraged in order to facilitate student-committee interaction. Meetings may be called at the discretion of the student, the advisor, or if two or more members of the Graduate Advisory Committee request such a meeting.

## **Academic advising**

### Graduate Advisory Committee

Graduate faculty have responsibility for ensuring that the standards of graduate academic performance are maintained; and to stimulate the development of creative inquiry, professional integrity, and intellectual honesty. Graduate faculty possess the appropriate terminal degree in their discipline; are actively involved in research and scholarly or creative endeavors appropriate to their discipline; maintain their activities in their graduate discipline by consistently offering graduate coursework and the mentoring of graduate students in their thesis research. While graduate faculty are the core of graduate research, the Associate Dean of Graduate Studies can appoint other University faculty or adjunct faculty with unique specialization to serve on Graduate Advisory Committees to provide enrichment to the thesis research.

### Full-time Master of Science Graduate Students

The Graduate Advisory Committee consists of at least three graduate faculty members, two from the major discipline and one from a different discipline. The Graduate Advisory Committee is recommended by the graduate student and his/her graduate advisor with the approval of the Associate Dean of Graduate Studies (GRADUATE COMMITTEE APPOINTMENT Form). The Graduate Advisory Committee should be appointed after a student has chosen his/her field of specialization (discipline), but no later than 12 months after the student matriculates (this timeline may be modified with regard to students pursuing a Master of Science in Regulatory Affairs and Health Policy or Masters in Clinical Research who register for DRA.810 Case Study Thesis). In the interim, the student is advised by an interim graduate faculty advisor from the student's major discipline.

The student must meet at least once per semester with his/her Graduate Advisory Committee from the time of appointment of the Graduate Advisory Committee until completion of the requirements for the Master of Science degree. The Associate Dean of Graduate Studies is notified in writing of these meetings by the graduate advisor. More frequent meetings of the Graduate Advisory Committee and the student are encouraged in order to facilitate student-committee interaction. Meetings may be called at the discretion of the student, the advisor, or if two or more members of the Graduate Advisory Committee request such a meeting.

### Full-time PhD Students

The Graduate Advisory Committee shall consist of at least three graduate faculty members, two from the major discipline and one from a different discipline. The Graduate Advisory Committee is recommended by the graduate student and his/her research advisor with the approval of the Associate Dean of Graduate Studies (GRADUATE COMMITTEE APPOINTMENT FORM). The advisor is responsible for coordinating the activity of the Graduate Advisory Committee and ensuring compliance with Graduate Studies regulations. The Graduate Advisory Committee should be appointed after a student has chosen his/her field of specialization (discipline), but no later than 12 months after the student matriculates.

The student must meet at least once per semester with and provide written progress reports to his/her Graduate Advisory Committee from the time of appointment of the committee until completion of the requirements for the degree. The Associate Dean of Graduate Studies shall be notified in writing of these meetings by the research advisor, as well as being provided with copies of the progress reports. More frequent meetings of the Graduate Advisory Committee and the student are encouraged in order to facilitate student-committee interaction. Meetings may be called at the discretion of the student, the research advisor, or if two or more members of the Graduate Advisory Committee request such a meeting.

## **Admission to Degree Candidacy**

Formal admission to candidacy occurs when the student with full graduate status actually becomes a candidate for the Master of Science or PhD degree as regulated by the Graduate Council. Such admission requires approval of the student's Advisory Committee, through formal application (Petition to Graduate in Graduate Studies form) on or before the dates stipulated by the current University regulations on file with the Associate Dean of Graduate Studies. Admission to candidacy depends, among other requirements, upon the maintenance of an overall "B" average or higher, and all grades of "I" must be removed. The graduate student seeking candidacy for the doctoral degree may do so following the successful completion of the qualifying examinations. The degree requirements for the PhD degree should be satisfied within two years of satisfactorily completing the qualifying examination and within maximum time limits (see Time for Completion of Degrees).

## **Change of Program**

Graduate students should work carefully with their major professors and advisory committees in designing their degree programs. If a change in the degree program is deemed appropriate, it must be approved by the major advisor, the

Graduate Advisory Committee, and the Graduate Council, with recommendation to the Associate Dean of Graduate Studies. A change of Program form must be completed. Students are not generally allowed to change programs until completion of at least one academic year (two semesters).

## **Dismissal**

### Dismissal Policy

A graduate student can be dismissed from their graduate program in three ways:

1. For students in solely course-based graduate programs or students undertaking didactic courses only, the criteria and processes followed will be those stated under the general guidelines of “academic dismissals”, where students are reviewed by the Graduate Academic Standing Committee (GASC) which may recommend dismissals to the Dean of the School, based upon established progression criteria for the program.
2. For those students in research-based programs who have completed their didactic coursework and are taking research-related credits only, the student's Graduate Advisory Committee may recommend dismissal to the GASC according to the following criteria: a) the student failed to meet the continuation standards (e.g., a PhD student is unsuccessful in the qualifying exams), b) two-thirds of the student's Graduate Advisory Committee formally votes that the student is not making satisfactory research progress in the program, or 3) the student was unsuccessful when defending their thesis or dissertation. If the GASC recommends dismissal from the program, this recommendation will be made to the Associate Dean for Graduate Studies who will review the recommendation and, if warranted, issue the written notice of dismissal.
3. The Dean of Students may recommend dismissal for other situations listed in the *Student Handbook*. A student whose conduct (see Student Code of Conduct in *Student Handbook*) is unsatisfactory may be dismissed from the University at any time. In such a case, tuition fees paid for the current academic term will not be refunded.

In all cases, the dismissed student will receive written notice of dismissal which will include procedures for appeal, and notice of loss of housing, financial aid, and registration. Written notices will also outline any conditions the student should meet in an effort to gain readmission (e.g., taking a specific course and achieving a specific grade).

### Appeal of a Research-related Dismissal Decision

The student may appeal in writing to the Associate Dean of Graduate Studies who will convene a Faculty Panel to review the appeal and make a recommendation to the Dean of the School. This review should include copies of prior documents of the appeals process. The student has the right to directly address the Faculty Panel; the Faculty Panel may conduct any enquiry necessary for the review process. The Faculty Panel's recommendation shall be prepared in writing and submitted to the Dean of the School. The recommendation and all documentation is to be retained in the student's file. A negative decision by the Dean may be appealed to the Vice President for Academic Affairs/Provost, whose decision is final.

## **Repeating Courses**

A student's Graduate Advisory Committee may permit the student to repeat a course under certain circumstances as long as the GPA of the student is not less than 3.0. Credit hours from courses that were repeated are counted only once. A student is not allowed to attempt a course more than twice.

## **Simultaneous Enrollment in another Degree Program**

Any student currently enrolled in the master's or doctoral degree in the Pharmaceutical Sciences, Pharmaceutical Business and Administrative Sciences programs at MCPHS may not enroll simultaneously in another undergraduate or graduate degree program at MCPHS or another University or university unless permitted by the Graduate Council.

## **Student Participation in Proprietary Research**

When the Faculty of the University are involved in research, some of which may be of a proprietary nature, particular care must be taken to ensure that the need for graduate students to publicly present and publicly defend the results of their thesis or dissertation research is not compromised. Graduate student advisors, and graduate students themselves, therefore, share in the responsibility to ensure that graduate students do not become involved in thesis or dissertation research that is, or has the potential to become, proprietary if participation in that research delays completion of their degree requirements or negatively affects their productivity or future employability.

The policy of the Division of Graduate Studies and the University is that a faculty member or a graduate student cannot enter into an agreement that prevents or significantly delays the presentation or publication of research results. Journal

publication delays not exceeding a year are acceptable, but publication of PhD dissertation materials through ProQuest is a requirement of the Division of Graduate Studies and, thus, cannot be delayed. In instances where, despite good faith efforts on the part of the research advisor, and the graduate student, the graduate student's thesis or dissertation research is later found to be of a proprietary nature, the Associate Dean of Graduate Studies will be notified immediately. The Associate Dean of Graduate Studies, in turn, immediately convenes a meeting of the graduate student, the research advisor, and members of the student's thesis or dissertation committee. This group, in consultation with the Associate Dean of Graduate Studies resolves the problem. If the situation cannot be resolved through the efforts of this group, a ruling is made by the Associate Dean of Graduate Studies.

### **Thesis**

A thesis contributing new knowledge is required on a topic in the major discipline. Prior to a student being certified as a candidate for the thesis track MS degree, s/he submits a research proposal on the proposed topic. Master of Science in Regulatory Affairs and Health Policy and Master of Science in Clinical Research students seeking to enroll in DRA 810 Case Study Thesis must submit a one-page proposal letter for approval by the program director or course faculty. The proposal must comply with the Handbook for the Preparation of Graduate Theses and Dissertations and/or MCPHS University School of Pharmacy Division of Graduate Studies Handbook for the Preparation of Graduate Theses and Dissertations as amended from time to time. This proposal should show evidence of creative integration of course material, superimposed on a sound understanding of the pertinent literature.

Upon approval of the research proposal by the research advisor, Graduate Advisory Committee, school dean or department chair, and the Associate Dean of Graduate Studies, the latter with regard to availability and utilization of resources, the student is certified as a candidate for the thesis track Master of Science degree. The Graduate Advisory Committee critically reviews the written proposal. The student should understand that the proposal is acceptable only if it is imaginative and provides a scientifically rigorous test of a meaningful hypothesis. The proposal may be strengthened with data from preliminary experiments. Within two weeks of the submission of the written proposal to the committee, the student presents and defends the research proposal orally before the committee. The student is questioned on those methodologies and background areas needed to complete successfully the proposed research. Such admission to candidacy must occur at least three months prior to completing requirements for the degree. The Division of Graduate Studies recognizes that the student's research may deviate substantially from that originally proposed. The student should be encouraged to pursue promising leads; however, long-term changes in the direction of the student's research should be in consultation with the Graduate Advisory Committee.

Off-campus research is not permitted, except for unusual circumstances that require a portion of the research to be completed off-campus in the continental United States, or for students admitted into an online Master of Science degree program. If such a situation arises, the research advisor with the written approval of the Graduate Advisory Committee submits to the Associate Dean of Graduate Studies and Graduate Council a written request for permission to conduct the research off-campus. Along with the request is a letter from the off-campus researcher agreeing to serve as the off-campus mentor and a description of the resources the off-campus site provides. A visit to the off-campus site for the Associate Dean of Graduate Studies (or his/her designee) and the research advisor is arranged once the research commences off-campus. Such permission is not required for students admitted into an online Master of Science degree program.

Following approval of the Graduate Advisory Committee that the thesis is ready for defense, one copy of the final draft of the thesis must be available to the Associate Dean of Graduate Studies not less than two weeks before a date is set for the student's final examination. After making final corrections, the original and one copy of the thesis, approved by the Graduate Advisory Committee and the Associate Dean of Graduate Studies, per requirements of the Library, must be in the Graduate Office two weeks prior to graduation along with a RECEIPT OF THESIS/DISSERTATION Form. The thesis must comply with the regulations contained in Handbook for the Preparation of Graduate Theses and Dissertations which is Appendix I. Students are responsible for all costs related to preparation of the thesis.

### **Final Examination**

Each candidate is required to pass a general oral examination covering the major field and the thesis/dissertation (MS in Regulatory Affairs and Health Policy, PEP non thesis graduate students, and Master of Science in Clinical Research students are not required to pass an oral examination). This shall begin with a formal presentation with appropriate slides and shall be at least 30 minutes in length for the MS candidate. The examination is conducted by the Graduate Advisory Committee, with his/her research advisor presiding as the chairperson. The Graduate Advisory Committee will have primary responsibility for evaluating the student's research, including the written thesis/dissertation, and the formal oral presentation which is open to the University community.

Approval of the final examination by the Graduate Advisory Committee, with no more than one dissenting vote, is necessary to recommend the awarding of the degree. The decision of the Graduate Advisory Committee is forwarded to the Associate Dean of Graduate Studies (THESIS/DISSERTATION DEFENSE Form). The graduate faculty has the authority, which it has delegated to the Associate Dean of Graduate Studies, to approve the candidate for the awarding of the degree.

Only one opportunity for re-examination shall be given (in not less than three months and not more than one year from the time of the final examination at which this decision was made). Any candidate who is granted the privilege of re-examination shall retain the status and obligations of a graduate student until the time of such re-examination.

## Programs of Study

### **Master of Science in Regulatory Affairs and Health Policy (Boston and Online)**

The University offers a Master of Science degree in Regulatory Affairs and Health Policy (MS in RAHP), and two graduate certificate programs, one in Regulatory Affairs and the other in Health Policy.

The MS in RAHP offers academic training in the law and regulation of healthcare, drugs, devices; and health policy to candidates having attained a prior baccalaureate degree or equivalent professional degree. Candidates for this program are those interested in pursuing careers in regulatory affairs, project/product management, clinical development, marketing, quality assurance, quality control, and manufacturing, or with federal or state healthcare regulatory agencies, clinical research organizations, managed care, or other health-related fields where knowledge of the regulatory and legal environment is a prerequisite. In addition to the general MS degree requirements described in the MCPHS University course catalog, the program may establish additional requirements.

Although the primary emphasis of this program is placed on regulatory affairs, other components such as ethics, policy development, policy analysis, and law are also explored. The program aims to educate a broad range of professionals who are interested in developing expertise in regulatory and policy education.

### **Program Objectives and Outcomes**

Upon successful completion of this program, a graduate with a Master of Science in Regulatory Affairs and Health Policy should be able to

- develop a strategy for a medical product that addresses regulatory, financial, clinical, and ethical requirements;
- evaluate and deconstruct regulatory and policy issues concerning pharmaceuticals, medical devices, biologics, or healthcare in an industry or government workplace;
- provide regulatory guidance and technical support (e.g., on FDA compliance) to members of the healthcare industry and/or regulatory agencies;
- assist pharmaceutical companies in their efforts to gain FDA marketing approval of drugs, medical devices, and biologics by drawing on a comprehensive knowledge base of regulation and policy;
- assist regulatory agencies in developing, analyzing, and evaluating healthcare related policy and regulation;
- assist regulatory agencies in evaluating new or existing drugs and medical devices for marketing approval;
- develop, coordinate, and implement drug, device, or healthcare regulatory schema or policy initiatives; and
- demonstrate and incorporate a broad sensitivity to healthcare-related issues and their regulatory or policy implications.

### **Degree Requirements**

- Successful completion of a minimum of 30 semester hours at the graduate level
- Maintenance of a cumulative GPA of 3.0 for all coursework taken at the University. B is the minimum passing grade in all courses counting toward the degree.
- Successful completion of all requirements for the MS degree within a period of four years

### **Curriculum: Master of Science in Regulatory Affairs and Health Policy**

REQUIRED COURSES	TITLE	SEMESTER HOURS
DRA 802	Law and Health Policy of Drugs and Devices	3
DRA 804	FDA and Regulatory Affairs	3
DRA 815	International Regulatory Affairs	3
DRA 807	Statistics in Clinical Research	3
DRA 808	Protection of Human Research Subjects	3

DRA 809	Health Epidemiology	3
DRA 812	Advanced Topics in Regulatory Affairs	3
DRA 814	Data Analysis and Presentation Capabilities in Regulatory Affairs	3
TOTAL		24

6 CREDITS FROM

ELECTIVE COURSES	TITLE	SEMESTER HOURS
DRA 810	Case Study Thesis	3
DRA 811	Health Policy Development and Analysis	3
DRA 816	Principles of Quality Assurance and Control	3
DRA 817	Development and Production of Medical Devices	3
DRA 818	The Law of Healthcare Compliance	3
PBH 701	Survey of Public Health	3
PBH 710	Introduction to Health Policy and Management	3
PBH 801	Community Organizing	3
PBH 810	Principles of Public Health Emergency Preparedness	3
PEP 802	Introduction to Pharmaceutical Economics and Policy	3
PEP 810	Global Pharmaceutical Policy	3
PSB 720	Good Manufacturing Practices Compliance	3

**Graduate Certificates, Regulatory Affairs and Health Policy (Boston and Online)**

The graduate certificate program is open to applicants who desire advanced study in regulatory affairs or health policy without a commitment to a Master degree program. These certificates complement degrees in business administration, nursing, marketing and management, and public health, for example. Each graduate certificate requires three courses and may be completed in less than one year. Current graduate students wishing to add a graduate certificate should contact the certificate program director.

Admission requirements are more flexible than those of the degree program. A minimum grade of B in each course is required for award of the certificate.

**Graduate Certificate in Regulatory Affairs (Boston and Online)**

REQUIRED COURSES	TITLE	SEMESTER HOURS
DRA 804	FDA and Regulatory Affairs	3
DRA 815	International Regulatory Affairs	3
DRA	An additional RAHP course except DRA 810 Case Study Thesis	3
TOTAL		9

**Graduate Certificate in Health Policy (Boston and Online)**

REQUIRED COURSES	TITLE	SEMESTER HOURS
DRA 802	Law and Health Policy	3
DRA 811	Health Policy Development and Analysis	3
DRA	An additional RAHP course except DRA 810 Case Study Thesis	3
TOTAL		9

**Medicinal Chemistry**

Advanced degrees in chemistry provide a student with a more thorough knowledge of the behavior of chemical substances at the molecular level. The composition of molecules and their interactions in both a chemical and a physical sense are studied, with the aim of predicting the behavior and properties of new substances. A fundamental understanding of the properties of chemical substances finds application in most frontier areas of biologically related scientific research being conducted in industrial, government, and academic laboratories. Programs in chemistry lead to the MS and PhD degrees.

Admission to the chemistry graduate programs requires an undergraduate degree in pharmacy, chemistry, or biology that includes two semesters each of general, organic, and analytical chemistry (one semester of which must include instrumental analysis); physical chemistry; calculus; and physics. Students without these prerequisites may be required to complete American Chemical Society proficiency examinations in general, organic, and/or analytical chemistry during the first semester.

Medicinal chemistry is concerned with the study of those structural, stereochemical, and physical parameters that affect the biological interaction of synthetic and naturally occurring drugs at the molecular level. Research is directed toward a fuller understanding of the pharmacological actions of such substances, leading to improved drug design. Specialization in these programs requires a broad knowledge of organic and heterocyclic chemistry, pharmacy, spectroscopic instrumentation, and pharmacology. Ongoing research programs include the synthesis and evaluation of antiviral and anticancer drugs, the synthesis of new laser dyes, and the isolation and characterization of natural products from plants.

### Curriculum: Master of Science Degree in Medicinal Chemistry

#### Year I—fall

REQUIRED COURSES	TITLE	SEMESTER HOURS
CHE 731	Advanced Organic Chemistry	4
PSB 710	Principles of Pharmaceutical Sciences	3
PSB 818L	Laboratory Rotations	1
PSB 819	Graduate Seminar	1
TOTAL		9

#### Year I—spring

REQUIRED COURSES	TITLE	SEMESTER HOURS
CHE 714	Spectroscopic Analysis (w/lab)	3
PSB 818L	Laboratory Rotations	0
PSB 819	Graduate Seminar	0
CHE 810	Heterocyclic Chemistry	2
PSB 851	Bio-organic Chemistry	2
	Elective	3
TOTAL		10

#### Year II—fall

REQUIRED COURSES	TITLE	SEMESTER HOURS
PSB 819	Graduate Seminar	1
PSB 802	Chemistry of Macromolecules	3
PSB 880	Research	1
	Elective	2–3
TOTAL		7–8

#### Year II—spring

REQUIRED COURSES	TITLE	SEMESTER HOURS
PSB 820	Advanced Medicinal Chemistry I	3
PSB 819	Graduate Seminar	1
PSB 880	Research	1
TOTAL		5



The PhD, \* in addition to the Master of Science requirements, will include the following:

REQUIRED COURSES	TITLE	SEMESTER HOURS
PSB 815	Drug Metabolism	3
PSB 819	Graduate Seminar	2
PSB 880	Research	3
PSB 856G	Advanced Medicinal Chemistry II	3
PSB 856	Advanced Topics in Medicinal Chemistry	3
CHE or PSB 700/800	Elective	3
PSB 850	Grant Proposal	3

\* For entry to the PhD program, students must successfully complete a medicinal chemistry comprehensive exam administered by the medicinal chemistry faculty.

**Total credits to complete degree requirements: minimum 50 semester hours**

### Suggested Elective Courses for Master of Science and PhD Programs

COURSE	TITLE	SEMESTER HOURS
CHE 717	Instrumental Analysis (w/lab)	4
CHE 719	Synthetic Preparations (w/lab)	3
CHE 755	Stereochemistry	3
MAT 763	Advanced Statistics	3
PSB 815	Drug Metabolism	3
PSB 860	Chromatography	2
PSB 861	Chromatography Laboratory	1
PSB 872	Special Problems	1–2

*Minor in Pharmaceutics or Pharmacology: a minimum of 8 semester hours must be taken.*

### Drug Metabolism Minor

A minor in Drug Metabolism integrates the knowledge of drug metabolism, analysis of pharmaceuticals in biological fluids and incubation mixtures, enzyme kinetics, and animal care and use. The suggested courses to complete a Drug Metabolism minor could include a combination of the following courses for a total of 12 semester hours:

### Suggested Courses for a Minor in Drug Metabolism

COURSE	TITLE	SEMESTER HOURS
PSB 815	Drug Metabolism	3
PSB 822	Enzyme Kinetics	2
PSB 835	Advanced Pharmacokinetics	3
PSB 840	Advanced Biopharmaceutics	3
PSB 855	Care and Use of Laboratory Animals	1
PSB 860	Chromatography	2
PSB 861	Chromatography Laboratory	1

### Pharmaceutical Economics and Policy

The graduate program in Pharmaceutical Economics and Policy (PEP) offers a Master of Science (MS) and a Doctor of Philosophy (PhD) in Pharmaceutical Health Economics and Policy with specialty tracks or concentrations in Health and Pharmacoepidemiology and Health Economics and Outcomes Research. This graduate program offers academic training primarily in the areas of pharmaceutical and health economics and drug and health policy, and also provides related training in outcomes research, regulation, marketing, healthcare administration, pharmacy services research, and pharmacoepidemiology.

The curriculum features advanced didactic and experiential education in the areas of pharmacoeconomic and health policy analysis, pharmacoepidemiologic methods and study designs, advanced biostatistics and database management, health policy and behavioral interventions and their assessment, and the role of pharmaceuticals and medical devices

in healthcare and society. The program provides future leaders, educators, and researchers with the knowledge required to enhance access for patient populations to cost-effective pharmaceuticals, biologics, medical devices, and related health services, thus improving the efficiency of the pharmaceutical sector and healthcare systems. Graduates will be prepared for careers in the pharmaceutical, biotechnology, and medical device industries; hospitals and other institutional healthcare organizations; managed care organizations; pharmacy benefits management; contract research organizations; consulting firms; governments; international organizations; nongovernmental organizations; and academic institutions, among other organizations.

### **Master of Science in Pharmaceutical Economics and Policy**

The Master of Science in Pharmaceutical Economics and Policy (PEP) provides a flexible curriculum for advanced training in pharmaceutical economics and policy, and pharmacy administration. Focus areas of the Master of Science program include pharmaceutical economics and policy, global drug policy, pharmacoeconomics and outcomes research, health epidemiology, pharmacoepidemiology, and pharmacy management. The MS Program allows for either a Thesis or Non-Thesis option.

#### **Admission Requirements**

- PharmD or Bachelor of Science in Pharmacy, Bachelor's degree in a related area (e.g., economics, sociology, or statistics) or a professional degree in medicine, dentistry, nursing, public health, or healthcare administration from an accredited college or university
- TOEFL or IELTS, required of all applicants for whom English is not the primary spoken language. This test requirement may be waived on an individual basis for applicants who have attended all four years of high school in the United States or have an earned degree (bachelor's or higher) from a U.S. college or university.
- Minimum grade point average (GPA) of 3.0
- Minimum GRE (Graduate Record Examination, General Test) scores of 1100 total Verbal and Quantitative, and 3.5 in the Analytical Writing Section for Graduate Programs

#### **Degree Requirements**

- Successful completion of a minimum of 36 semester hours at the graduate level, including a minimum of 4 semester hours in thesis research or a required PEP non-thesis capstone source of 3 semester hours. For thesis option, 2 semesters of Graduate Seminar are required; for the non-thesis option 3 semesters are required.
- Maintenance of a cumulative GPA of 3.0 for all coursework taken at the University. The minimum grade for passing a course is B.
- Presentation of an acceptable thesis embodying the results of original research that has been openly defended and approved by the student's Graduate Advisory Committee
- Successful completion of at least one continuous academic year in residence at the University conducting thesis research
- Successful completion of all requirements for the Master of Science degree within a period of four years
- The Non-Thesis option requires additional courses in lieu of the thesis research
- If a student elects for a Non-Thesis MS degree in PEP, they will not be allowed to submit an application to enter the PEP Ph.D. program.

### **Doctor of Philosophy in Pharmaceutical Economics and Policy**

The Doctor of Philosophy (PhD) in Pharmaceutical Economics and Policy is designed to train independent researchers who will assume leadership positions in national and international pharmaceutical economics and policy careers, with focus areas in pharmaceutical economics and policy, global drug policy, and pharmacoeconomics and outcomes research.

#### **Admission Requirements**

- PharmD or an earned master's degree or higher degree in a related area (e.g., economics, sociology, or statistics), or a professional degree in medicine, dentistry, nursing, public health, or healthcare administration from an accredited college or university. Students currently enrolled in the PEP Master of Science Thesis degree program may apply to the PhD program after they complete their MS program.
- TOEFL or IELTS, required of all applicants for whom English is not the primary spoken language. This test requirement may be waived on an individual basis for applicants who have attended all four years of high school in the United States or have an earned degree (bachelor's or higher) from a U.S. college or university.
- Minimum grade point average (GPA) of 3.0
- Minimum GRE (Graduate Record Examination, General Test) scores of 1100 total Verbal and Quantitative, and 3.5 in the Analytical Writing Section for Graduate Programs

### Degree Requirements

- Successful completion of a minimum of 50 semester hours at the graduate level, including a minimum of 4 semester hours in dissertation research and a minimum of 15 semester hours in a specialty track or area of concentration. Four semesters of Graduate Seminar are required. A student who has earned an MS degree from another institution or program must complete a minimum of 40 semester hours in addition to the other requirements of the PhD program.
- Maintenance of a cumulative GPA of 3.0 for all coursework taken at the University. The minimum grade for passing a course is B.
- Successful completion of qualifying examinations
- Presentation of a dissertation that is a contribution of unique knowledge to the discipline and that has been openly defended and approved by the student's Graduate Advisory Committee
- Completion of at least one continuous academic year in residence at the University conducting dissertation research
- Completion of all requirements for the PhD degree within a period of six years

### Curriculum: Master of Science in Pharmaceutical Economics and Policy – Thesis Option

<i>Year I—fall</i>		
COURSE	TITLE	SEMESTER HOURS
PEP 801	Quantitative Methods in Pharmaceutical Economics and Policy	3
DRA 809	Health Epidemiology	3
PEP 802	Introduction to Pharmaceutical Economics and Policy	3
PEP 856B	Introduction to HEOR	3
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
TOTAL		13

<i>Year I—spring</i>		
COURSE	TITLE	SEMESTER HOURS
PEP 810	Global Pharmaceutical Policy	3
	Elective	3
PEP 804	Regression Analysis in Pharmaceutical Economics and Policy	3
TOTAL		9

<i>Year II—fall</i>		
COURSE	TITLE	SEMESTER HOURS
PEP 880	MS Thesis Research in Pharmaceutical Economics and Policy	2
PEP 820	Market Access Pricing & Reimbursement	3
	Elective	3
TOTAL		8

<i>Year II—spring</i>		
COURSE	TITLE	SEMESTER HOURS
PEP 880	MS Thesis Research in Pharmaceutical Economics and Policy	2
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
	Elective	3
TOTAL		6

**Total credits to complete degree requirements: 36 semester hours**

### Master of Science in Pharmaceutical Economics and Policy – Non-Thesis Option

<i>Year I—fall</i>		
COURSE	TITLE	SEMESTER HOURS
PEP 801	Quantitative Methods in Pharmaceutical Economics and Policy	3
DRA 809	Health Epidemiology	3

PEP 802	Introduction to Pharmaceutical Economics and Policy	3
PEP 856B	Introduction to HEOR	3
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
TOTAL		13

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
PEP 810	Global Pharmaceutical Policy	3
	Elective	3
PEP 804	Regression Analysis in Pharmaceutical Economics and Policy	3
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
TOTAL		10

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
PEP 820	Market Access Pricing & Reimbursement	3
	Elective	3
	Elective	3
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
TOTAL		10

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
PEP 840A	Non-Thesis Capstone: Data Analysis and Presentation Capabilities in PEP	3
TOTAL		3

**Total credits to complete degree requirements: 36 semester hours**

**Recommended Electives for both Master of Science Degrees**

COURSE	TITLE	SEMESTER HOURS
DRA 802	Law and Health Policy of Drugs and Devices	3
DRA 804	FDA and Regulatory Affairs	3
DRA 808	Laws and Regulations Governing Human Research	3
DRA 811	Health Policy Development and Analysis	3
DRA 815	International Regulatory Affairs	3
PEP 806	Pharmacoepidemiology Applications	3
PEP 811	Pharmaceutical Marketing Applications	3
PEP 812	Healthcare Management Applications	3
PEP 813	Pharmacoeconomic Applications	3
PEP 814	Healthcare Decision Analysis	3
PEP 856.A	Programming Using SAS	3
PEP 856.D	Health Services and Outcomes Research	3
PEP 856.C	Systematic Review and Meta Analysis	3
PEP 830	Practicum Pharm Business and Administrative internships	3
PEP 899	Selected Topics in Pharmaceutical Economics and Policy	1-3

**Doctor of Philosophy (PhD) in Pharmaceutical Economics and Policy – Health and Pharmacoepidemiology Track**

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
PEP 801	Quantitative Methods in Pharmaceutical Economics and Policy	3
DRA 809	Health Epidemiology	3
PEP 802	Introduction to Pharmaceutical Economics and Policy	3
PEP 856.B.	Introduction to HEOR	3
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
TOTAL		13

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
PEP 810	Global Pharmaceutical Policy	3
PEP 804	Regression Analysis in Pharmaceutical Economics and Policy	3
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
PEP	Elective Application Course	3
TOTAL		10

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
PEP 856.C.	Systematic Review & Meta Analysis	3
PEP	Elective	3
PEP 806	Pharmacoepidemiology Applications	3
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
TOTAL		10

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
PEP 850	Advanced Methods in Epidemiology and Statistics	3
PEP 856.A	Intro to SAS Programming	3
PEP 856.D	Health Services Outcomes Research	3
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
TOTAL		10

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
PEP	Elective	3
PEP 890	Ph.D. Dissertation Research	1
TOTAL		4

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
PEP 890	Ph.D. Dissertation Research	1
TOTAL		1

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
PEP 890	PhD Dissertation in Research in PEP	1
TOTAL		1

*Year IV—spring*

COURSE	TITLE	SEMESTER HOURS
PEP 890	PhD Dissertation in Research in PEP	1
TOTAL		1

**Total credits to complete degree requirements: 50 semester hours**

**Doctor of Philosophy (PhD) in Pharmaceutical Economics and Policy – Health Economics and Outcomes Research Track**

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
PEP 801	Quantitative Methods in Pharmaceutical Economics and Policy	3
DRA 809	Health Epidemiology	3
PEP 802	Introduction to Pharmaceutical Economics and Policy	3
PEP 856.B.	Introduction to HEOR	3
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
TOTAL		13

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
PEP 810	Global Pharmaceutical Policy	3
PEP 804	Regression Analysis in Pharmaceutical Economics and Policy	3
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
PEP 814	Healthcare Decision Analysis	3
TOTAL		10

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
PEP 813	Pharmacoeconomics Applications	3
PEP 820	Market Access Pricing and Reimbursement	3
PEP	Elective	3
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
TOTAL		10

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
PEP	Elective	3
PEP 856.D	Health Services and Outcomes Research	3
PEP	Elective	3
PEP 870	Graduate Seminar in Pharmaceutical Economics and Policy	1
TOTAL		10

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
PEP	Elective	3
PEP 890	Ph.D. Dissertation Research	1
TOTAL		4

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
PEP 890	Ph.D. Dissertation Research	1
TOTAL		1

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
PEP 890	PhD Dissertation in Research in Pharmaceutical Economics and Policy	1
TOTAL		1

*Year IV—spring*

COURSE	TITLE	SEMESTER HOURS
PEP 890	PhD Dissertation in Research in PEP	1
TOTAL		1

**Total credits to complete degree requirements: 50 semester hours**

*The Health and Pharmacoepidemiology Track requires the following:*

COURSE	TITLE	SEMESTER HOURS
PEP 856.C.	Systematic Review & Meta Analysis	3
PEP 856.A.	Introduction to SAS Programming	3
PEP 856.D.	Health Services Outcomes Research (HSOR)	3
PEP 850	Advanced Methods in Epidemiology and Statistics	3
PEP 806	Pharmacoepidemiology Applications	3

*Health and Pharmacoepidemiology Track Electives:*

COURSE	TITLE	SEMESTER HOURS
PEP 820	Market Access Pricing & Reimbursement	3
PEP 814	Healthcare Decision Analysis	3

*The Health Economics and Outcomes Research Track requires the following:*

COURSE	TITLE	SEMESTER HOURS
PEP 813	Pharmaco-economic Applications	3
PEP 814	Healthcare Decision Analysis	3
PEP 856.D.	Health Services Outcomes Research (HSOR)	3
PEP 820	Market Access Pricing & Reimbursement	3
PEP 856.B	Introduction to HEOR	3

*Health Economics and Outcomes Research Track Electives:*

COURSE	TITLE	SEMESTER HOURS
PEP 813	Pharmacoepidemiology Applications	3
PEP 856.C.	Systematic Review and Meta Analysis	3
PEP 850	Advanced Methods in Epidemiology and Statistics	3
PEP 856.A	Introduction to SAS Programming	3

*PhD Program Electives:*

COURSE	TITLE	SEMESTER HOURS
DRA 802	Law and Health Policy of Drugs and Devices	3
DRA 804	FDA and Regulatory Affairs	3
DRA 808	Laws and Regulations Governing Human Research	3
DRA 811	Health Policy Development and Analysis	3
DRA 815	International Regulatory Affairs	3
PEP 806	Pharmacoepidemiology Applications	3
PEP 811	Pharmaceutical Marketing Applications	3
PEP 812	Healthcare Management Applications	3
PEP 813	Pharmacoeconomic Applications	3
PEP 814	Healthcare Decision Analysis	3
PEP 856.A	Programming Using SAS	3
PEP 856.D	Health Services and Outcomes Research	3
PEP 856.C	Systematic Review and Meta Analysis	3
PEP 830	Practicum Pharm Business and Administrative Internships	1
PEP 899	Selected Topics In Pharmaceutical Economics and Policy	1-3

Dissertation Research (both programs) – 4 semester hours

**Pharmaceutics**

Master of Science and Doctor of Philosophy (PhD) programs in Pharmaceutics are intended to prepare students for positions of responsibility in education, government, and the pharmaceutical industries. The programs are designed to provide an appropriate balance between the theoretical and practical aspects of the area of specialization, which enables the student to be immediately productive yet prepared for future growth and development.

Admission to the pharmaceutics graduate programs requires an undergraduate degree in pharmacy, chemistry, or biology that includes two semesters each of general, organic, and analytical chemistry (one semester of which must include instrumental analysis); physical chemistry; calculus; and physics. Holders of undergraduate degrees in nonpharmacy areas are required to complete the following pharmacy courses for no credit: Physical Pharmacy, Dosage Forms, Biopharmaceutics, and Pharmacokinetics.

The student is exposed to a broad range of theory and concepts, intended to promote a firm understanding of the materials and technologies associated with pharmaceutical product development, manufacture, and evaluation. The program encompasses the study of pharmaceutical dosage forms, the release of a drug from the dosage form, drug dissolution, drug absorption, bioavailability, and pharmacokinetics. Pharmacokinetics involves the study of the rates of drug absorption, distribution, and elimination, and the quantitative relationship of these rates to drug therapy and/or toxicity.

Research projects have typically involved development of new drug products, novel dosage forms, the release of a drug from new dosage forms, preformulation investigation of new drug entities, and pharmacokinetics.

**Curriculum: Master of Science in Pharmaceutics**

*Year I—fall*

REQUIRED COURSES	TITLE	SEMESTER HOURS
PSB 710	Principles of Pharmaceutical Sciences	3
PSB 808	Physical Pharmacy	3
PSB 835	Pharmacokinetics	3
TOTAL		9

*Year I—spring*

REQUIRED COURSES	TITLE	SEMESTER HOURS
PSB 818L	Laboratory Rotations	1
PSB 819	Graduate Seminar	1



	Elective	3
PSB 880	Research	1
TOTAL		6

*Year II—fall*

REQUIRED COURSES	TITLE	SEMESTER HOURS
MAT 763	Advanced Statistics	3
PSB 825	Controlled Drug Delivery	3
PSB 880	Research	1
TOTAL		7

*Year II—spring*

REQUIRED COURSES	TITLE	SEMESTER HOURS
PSB 819	Graduate Seminar	1
PSB 826	Targeted Drug Delivery	3
	Elective	3
PSB 880	Research	1
TOTAL		8

**Total credits to complete degree requirements: 30 semester hours**

### Doctor of Philosophy (PhD) in Pharmaceutics

*In addition in the Master of Science degree requirements, PhD students must complete the following:*

REQUIRED COURSES	TITLE	SEMESTER HOURS
PSB 880*	Research	7
	Electives	5
	Minor	8
TOTAL		20

*\* Time and credit approved by major professor*

**Total credits to complete degree requirements: 50 semester hours**

*NOTE: A minimum of one semester of physical chemistry (thermodynamics and kinetics) is required prior to acceptance. CHEM 331 Thermodynamics and Kinetics, or its equivalent, may be taken concurrently at Simmons College without graduate credit.*

### Elective Courses for Master of Science and PhD Programs

COURSE	TITLE	SEMESTER HOURS
PSB 807	Unit Operations (w/lab)	3
PSB 815	Drug Metabolism	3
PSB 822	Enzyme Kinetics	2
PSB 875	Pharmaceutical Dosage Forms Design (w/Lab)	3
PSB 840	Advanced Biopharmaceutics	3
PSB 850	Pharmacogenomics	3
PSB 860	Chromatography	2
PSB 861	Chromatography Laboratory	1

*Electives in other appropriate subject areas may be taken with the approval of the major advisor. Suggested minors are Analytical Chemistry, Business Administration, or Drug Regulatory Affairs.*

### Pharmacology

Pharmacology is the medical science that involves all facets of the action of drugs and environmental chemicals on biological systems and their constituent parts. This includes everything from the intermolecular reactions of chemical compounds within a cell to the evaluation of the effectiveness of a drug in the prevention, treatment, or diagnosis of human disease. Pharmacology offers unique opportunities to contribute to the knowledge, well-being, and survival of mankind.

Admission to the pharmacology graduate program requires an undergraduate degree in pharmacy, chemistry, or biology. While formal training in pharmacology and human physiology at the undergraduate level is helpful, it is not required for

admission. Students who are deficient in these areas are required to audit the undergraduate course sequences in pharmacology / medicinal chemistry and/or physiology.

Programs leading to the degrees of Master of Science and PhD are offered for graduate study in pharmacology. Each comprises two major components: (1) coursework in specific disciplines such as pharmacology, physiology, biochemistry, medicinal chemistry, and related disciplines, and (2) training in research and the scientific method.

The programs prepare students for positions of leadership and responsibility in academic, industrial, and government settings. Theoretical and experiential situations in which pharmacological information may be applied are provided to help students develop an innovative and creative approach to problem solving.

### Curriculum: Master of Science in Pharmacology

*Year I—fall*

REQUIRED COURSES	TITLE	SEMESTER HOURS
PSB 710	Principles of Pharmaceutical Sciences	3
PSB 847	Graduate Biochemistry	3
PSB 818L	Laboratory Rotations	0
PSB 819	Graduate Seminar	0
PSB 841	Advanced Pharmacology: Receptor Pharmacology	3
TOTAL		9

*Year I—spring*

REQUIRED COURSES	TITLE	SEMESTER HOURS
PSB 856B	Advanced Pharmacology: Neuropharmacology	3
PSB 815	Drug Metabolism	3
PSB 818L	Laboratory Rotations	1
PSB 819	Graduate Seminar	1
PSB 855	Care and Use of Laboratory Animals	1
TOTAL		9

*Year II—fall*

REQUIRED COURSES	TITLE	SEMESTER HOURS
MAT 763	Advanced Statistics	3
PSB 856E	Advanced Pharmacology: Anticancer Drugs	3
PSB 819	Graduate Seminar	0
PSB 880	Research	1
TOTAL		7

*Year II—spring*

REQUIRED COURSES	TITLE	SEMESTER HOURS
	Elective	3
PSB 819	Graduate Seminar	1
PSB 880	Research	1
TOTAL		5

**Total credits to complete degree requirements: 30 semester hours**

## Doctor of Philosophy (PhD) in Pharmacology

In addition to the MS degree requirements, PhD students must complete the following:

REQUIRED COURSES	TITLE	SEMESTER HOURS
PSN 856H	Advanced Pharmacokinetics and Dynamics	3
PSB 819	Graduate Seminar	2
PSB 850	Pharmacogenomics	3
PSB 880	Research	3
	Minor	9
TOTAL		20

### Total credits to complete degree requirements: 50 semester hours

Elective courses listed for the MS program also are applicable to the doctoral program. Students may select courses from other areas with the approval of their major advisor. Suggested minors are Biochemistry, Medicinal Chemistry, or Pharmaceutics.

## Elective Courses for Master of Science and PhD Programs

COURSE	TITLE	SEMESTER HOURS
BIO 734	Immunology	3
CHE 717	Instrumental Analysis (w/lab)	4
CHE 731	Advanced Organic Chemistry	4
PSB XXX	Experimental Methods	
PSB 802	Chemistry of Macromolecules	3
PSB 835	Advanced Pharmacokinetics	3
PSB 856	Selected Topics in the Neurosciences	1
PSB 860	Chromatography	2
PSB 861L	Chromatography Laboratory	1
PSB 872	Special Problems (PhD program only)	1–2

Additional electives may be selected from other appropriate graduate courses with the approval of the major advisor and the course instructor.

## Master of Science in Clinical Research (Boston and Online)

The Master of Science in Clinical Research program offers academic training in clinical research to candidates who have attained a prior baccalaureate degree or equivalent professional degree. The program is geared toward students who plan to develop, conduct, and monitor clinical trials or toward students in allied fields within the industry who desire a working knowledge of the field of clinical research. Course material is applicable for career opportunities in either the hospital-based/clinical care setting or the bio/pharmaceutical/medical device industry. The program can be completed as a part-time or full-time student, and all required courses can be taken either onsite or online.

The 30-semester-hour program consists of eight required courses and two elective courses. The elective courses are intended to allow student to focus on either a patient-based clinical research track or an industry-related track. As part of MCR 804 Capstone course, students will complete a capstone project which involves written submission and oral presentation of a clinical research protocol developed by the student, and mentored by the course instructor and an assigned research mentor.

The broad focus of the program, including bioethics and regulations, product (drug, device, biologic, etc.) development, biostatistics, research methodology, protocol design, proposal development, clinical trial management, and regulatory affairs, is designed to address the educational needs of many different career paths within the pharmaceutical healthcare field.

## Curriculum: Master of Science in Clinical Research

REQUIRED COURSES	TITLE	SEMESTER HOURS
MCR 801	Pharmaceutical R&D: From Discovery to Market	3
MCR 802	Research Methodology and the Development of Protocols and Proposals	3
MCR 803	Conducting Clinical Research Studies	3
MCR 804*	Graduate Project in Clinical Research	3

DRA 804	FDA and Regulatory Affairs	3
DRA 807	Statistics in Clinical Research	3
DRA 808	Protection of Human Research Subjects	3
DRA 809	Health Epidemiology	3
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TOTAL		24

*\*course includes capstone project*

#### Approved elective courses

COURSE	TITLE	SEMESTER HOURS
DRA 802	Law and Health Policy of Drugs and Devices	3
DRA 811	Health Policy Development and Analysis	3
DRA 815	International Regulatory Affairs	3
DRA 816	Principles of Quality Assurance and Control	3
DRA 817	Development and Production of Medical Devices	3
PEP 801	Quantitative Methods in Pharmaceutical Economics and Policy	3
PEP 802	Introduction to Pharmaceutical Economics and Policy	3
PEP 803	Qualitative & Survey Methods in Pharmaceutical Economics and Policy	3
PEP 804	Regression Analysis in Pharmaceutical Economics and Policy	3
PEP 806	Pharmacoepidemiology Applications	3
PEP 810	Global Pharmaceutical Policy	3
PEP 811	Pharmaceutical Marketing Applications	3
PEP 812	Healthcare Management Applications	3
PEP 817	Statistical Programming Using SAS	3
PEP 856B	Introduction to Health Economics and Outcomes Research	3
PEP 856C	Systematic Review and Meta-Analysis in Health Outcomes Research	3
PBH 701	Survey of Public Health	3
PBH 705	Introduction to Environmental Health Sciences	3
PBH 710	Introduction to Health Policy and Management	3
PBH 715	Introduction to Social and Behavioral Sciences	3
PBH 750	Community Health Science and Practice	3
PBH 755	Health Promotion and Education	3
PBH 805	Maternal and Child Health	3
PBH 810	Principles of Public Health Emergency Preparedness	3
PBH 815	Mass Communication and Health	3
PBH 820	Genetics and Public Health	3

*\*\*The two required electives may be taken during any semester. \*\*For a full-time schedule, students can take up to four courses in the fall and spring and up to two course in the summer to complete the program in 3-4 semesters.*

**Total credits: 30 semester hours**

#### Graduate Certificate in Clinical Research (Boston and Online)

The graduate certificate program is open to applicants who desire advanced study in clinical research without a commitment to a Master degree program. This certificate complements degrees such as nursing, pharmacy, and public health. The graduate certificate requires three courses and may be completed in less than one year.

Admission requirements are more flexible than those of the degree program. A minimum grade of B in each course is required for award of the certificate.

#### Curriculum: Graduate Certificate in Clinical Research

REQUIRED COURSES	TITLE	SEMESTER HOURS
MCR 802	Research Methodology and the Development of Protocols and Proposals	3

MCR 803	Conducting Clinical Research Studies	3
DRA 808	Protection of Human Research Subjects	3
TOTAL		9

**Master of Science in Clinical Research/Graduate Certificate in Health Policy or Regulatory Affairs (Boston and Online)**

Students enrolled in the Master of Science Clinical Research program may enroll in the Graduate Certificate programs in Health Policy or Regulatory Affairs. These students are required to complete the three courses required by the certificate program in addition to the 30 credits for their masters program for a total of 39 credits. Current graduate students interested in applying for the certificate program should contact the certificate program director.

**One year Master of Science in Clinical Research for MCPHS University Undergraduates**

Undergraduates enrolled in health science degree programs at MCPHS can learn to conduct clinical research and increase their employment opportunities by earning a both the undergraduate degree and a Master of Science in Clinical Research (MS CR) degree. Similar to the existing PharmD/Master of Public Health program, undergraduate students enrolled in the PharmD degree or BS degrees in the School of Pharmacy can apply to the MS CR program at the end of their second year of the program for Bachelor of Science degrees or after the second professional year in the PharmD program. Upon acceptance to the MS CR track, students may begin taking MS CR courses the summer or fall after their second year/second professional year. They would complete a total of 4 MS CR courses over the last two years of the undergraduate program, and then complete the MS CR program in one year after finishing the undergraduate program by taking 3 MS CR courses in the Fall and 3 MS CR courses in the Spring. Undergraduate students would be required to earn a minimum grade of B on the graduate level courses in order to receive credit for those courses.

**Curriculum: One year Master of Science in Clinical Research**

*Students complete their undergraduate degree as required, with option to track into Master of Science in Clinical Research program after finishing the 2<sup>nd</sup> undergraduate year or 2<sup>nd</sup> professional year (PharmD). The MS Clinical Research courses are delivered evenings or online and can be completed by adding courses as follows:*

*Undergraduate Year III or Third Professional Year for PharmD – summer, fall, or spring (all courses offered evenings or online, some offered in summer)*

COURSE	TITLE	SEMESTER HOURS
MCR 801	Pharmaceutical R & D: From Discovery to Market	3
DRA 804	FDA and Regulatory Affairs	3
TOTAL		6

*Undergraduate Year IV or Fourth Professional year—summer, fall or spring (all courses offered evenings or online, some offered in summer)*

COURSE	TITLE	SEMESTER HOURS
MCR 802	Research Methodology and the Development of Protocols and Proposals	3
DRA 807	Statistics in Clinical Research	3
TOTAL		6

*Additional Year—fall*

COURSE	TITLE	SEMESTER HOURS
MCR 803	Conducting Clinical Research Studies	3
DRA 808	Protection of Human Research Subjects	3
DRA 809	Health Epidemiology (or Elective 1)	3
TOTAL		9

*Additional Year—spring*

COURSE	TITLE	SEMESTER HOURS
MCR 804	Graduate Project in Clinical Research	3
DRA 809	Health Epidemiology (or Elective 1)	3

Elective 2	3
TOTAL	9

**Total credits: 30 added credits for MS Clinical Research Degree**

### Master of Pharmaceutical Sciences

The Master of Pharmaceutical Sciences is an accelerated professional master's program with 30 semester hours of coursework that serves as addendum to the existing Bachelor of Science in Pharmaceutical Sciences (BSPS) program. Students of the BSPS program who meet the acceptance criteria transition into MPS and graduate with a master's qualification a year after completing the BSPS program. The Master of Pharmaceutical Sciences program builds on competencies introduced in the BSPS program with a flexible curriculum that allows students to develop advanced skills in technical record keeping and other areas of the pharmaceutical industry. The curriculum also offers students the opportunity to utilize an internship experience to replace coursework before graduation.

### Master of Pharmaceutical Sciences

Two 700-level courses in Year IV fulfill 6 semester hours of elective credit for the Bachelor of Science degree. Students are required to consult with the program director for recommendations on approved courses. Students must achieve a 3.0 or better GPA in these 700-level courses at the end of the spring semester to be eligible for acceptance into the master's program. Once accepted into the program students need to complete an additional 24 credits of graduate course work over the 10-week summer, fall, and spring semesters. A 3.0 GPA is required to remain in good academic standing in the MS program and for graduation. The following is an example of an appropriate course load.

### Curriculum: Master of Pharmaceutical Sciences

#### *BSPS Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 512	Healthcare Ethics	3
PSB 346	Physico-chemical Properties of Drug Molecules	3
PSB 410	FDA and Regulatory Affairs	3
PSB 335	Pharmaceutical Technology	3
MAT 763	Advanced Statistics	3
TOTAL		15

#### *BSPS Year IV—spring*

COURSE	TITLE	SEMESTER HOURS
PSB 301	Pharmacology for Allied Health Professionals	3
PSB 440	Molecular Biotechnology	3
PSB 350L	Industrial Pharmacy Laboratory	1
PSB 430	Pharmacokinetics I	2
PSB 438	Ethics and Research Integrity	3
PSB 458	Pharmaceutics Seminar	1
PSB 707	Pharmaceutical Unit Operations	3
TOTAL		16

#### *Year IV—summer: Year I of graduate program*

COURSE	TITLE	SEMESTER HOURS
PSB 750	Research Methods and Bioanalytical Techniques	4
PSB 856	Technical and Scientific Writing	2
TOTAL		6

#### *Year V—fall: Year I of graduate program*

COURSE	TITLE	SEMESTER HOURS
PSB 808	Advanced Physical Pharmacy	3

PSB 825	Controlled Drug Delivery	3
PSB 710	Principles of Pharmaceutical Science	3
TOTAL		9

*Year V—spring: Internship*

COURSE	TITLE	SEMESTER HOURS
PSB 801	Research Internship	9-12

**Other Recommended Courses**

COURSE	TITLE	SEMESTER HOURS
CHE 714	Spectroscopic Analysis (w/lab)	3
CHE 717	Instrumental Analysis (w/lab)	4
DRA 802	Law and Health Policy of Drugs and Devices	3
DRA 811	Health Policy Development and Analysis	3
PSB 710	Principles of Pharmaceutical Science	3
PSB 875	Dosage Form Design	3

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## MCPHS University–Worcester

### Division of Health Sciences

*More information specific to the Worcester campus may be found in the following sections: Facilities, Interinstitutional Cooperation, and Student Services.*

#### Forsyth School of Dental Hygiene

Linda D. Boyd, RDH, RD, LD, EdD, Dean and Professor

Christine Dominick, CDA, RDA, MOcEd, Associate Dean and Professor

Associate Professors Giblin, Jenkins, Rainchuso, Smallidge; Assistant Professors August, LaSpina, Perry, Smilyanski; Instructors Smethers, Byrne

#### School of Rehabilitation Sciences

##### **Doctor of Physical Therapy Program**

Frances E. Kistner, BS, MS, PhD, Program Director and Associate Professor of Physical Therapy

Elizabeth V. Fuller, PT, EdD, Associate Director and Professor of Physical Therapy

Professors Charrette, Fuller, Kucharski-Howard; Associate Professors Inacio, Kistner; Assistant Professors Babin, Elliott, Lachowski

#### School of Medical Imaging and Therapeutics

##### **Diagnostic Medical Sonography Program**

Jeffrey Hill BS, Department Chair

Erin O'Hora, BS, RDMS, RVT Assistant Professor/Clinical Coordinator - General Track

Bryan Doldt, BS, RDCS, FASE Program Director, Assistant Professor - Echocardiography Track

Jennifer Miller, BS, RDMS Interim Program Director, Assistant Professor - General Track

Debra Crandell, MS, RDMS Assistant Professor/Clinical Coordinator - General Track, Director of DMS Online

Marie Ficociello, MS, RDCS Assistant Professor/Clinical Coordinator - Echocardiography Track

#### Degree Programs

- Bachelor of Science in Dental Hygiene (Fast Track)
- Doctor of Physical Therapy
- Bachelor of Science in Diagnostic Medical Sonography-General and Echocardiology (Fast Track)

#### Forsyth School of Dental Hygiene

##### **Bachelor of Science in Dental Hygiene (Fast Track)**

The Forsyth School of Dental Hygiene Worcester satellite clinic and academic program is a new addition to the University and is located at 10 Lincoln Square on the Worcester campus. This newly renovated 250,000-square-foot building offers fantastic amenities and an independent style of city living. Lincoln Square has furnished rooms with private baths, parking, a fitness center, a dining hall, an outdoor patio, and green space. It is also home to the MCPHS University Dental Hygiene Clinic, Eye and Vision Center, and 10 Optical, a complete retail store, all of which are open to the public. The Fast Track BS 16-month dental hygiene program is available at this site. All didactic courses are provided through distance education technologies originating from either Boston or Worcester. Faculty travel from the Boston and Worcester sites regularly to meet with students and provide face-to-face instruction.

A student who holds a baccalaureate degree or higher from an accredited college or university or transfer student who has completed all of the Bachelor of Science degree requirements and prerequisites may pursue the 16-month Bachelor of Science in Dental Hygiene (Fast Track) program. The candidate for this program must have completed the prerequisite



college courses listed below. An official college/university transcript will be reviewed to determine eligibility for transfer credits. The student in the Bachelor of Science (Fast Track) program takes courses in dental hygiene theory and practice, and receives clinical instruction in the MCPHS University Esther M. Wilkins Dental Hygiene Clinic. Upon successful completion of the program, the student becomes eligible for dental hygiene licensure examinations.

Prerequisites for all applicants to the Bachelor of Science (Fast Track) program include the following:

COURSE	SEMESTER HOURS
Anatomy and physiology I and II (w/labs)	8
Basic chemistry I and II (w/ labs)	8
Microbiology (w/lab)	4
Statistics	3
Introduction to psychology	3
Introduction to sociology	3
Expository Writing I & II	6
Interpersonal communication	3
<b>TOTAL</b>	<b>38</b>

Additional prerequisites for applicants with no prior Bachelor of Science/Bachelor of Arts degree to the Bachelor of Science (Fast Track) program include the following:

COURSE	SEMESTER HOURS
College Algebra	3
American Culture	3
Social Science elective	3
Humanities elective	3
Behavioral Science elective	3
<b>TOTAL</b>	<b>15</b>

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
DHY 202	Dental Anatomy, Embryology, and Histology	2
DHY 204	Head and Neck Anatomy	2
DHY 209	Dental Hygiene Process of Care I	4
DHY 209L	Dental Hygiene Preclinical Laboratory	2
DHY 230	Dental Radiology (w/lab)	3
DHY 231	Dental Materials (w/lab)	3
DHY 232	Nutrition	2
<b>TOTAL</b>		<b>18</b>

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
DHY 211	Dental Hygiene Process of Care II	3
DHY 223	Clinical Dental Hygiene I	3
DHY 233	Periodontology	3
DHY 330	Pathology	3
DHY 343	Pain Management (w/lab)	3
LIB 512	Healthcare Ethics	3
<b>TOTAL</b>		<b>18</b>

*Year I—summer session*

COURSE	TITLE	SEMESTER HOURS
DHY 310	Dental Hygiene Process of Care III	3
DHY 350	Community Oral Health	3
DHY 420	Oral Health Research	3
DHY 323	Clinical Dental Hygiene II	4
PSB 320	Intro to Health Care Delivery	3
TOTAL		16

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
DHY 311	Dental Hygiene Process of Care IV	2
DHY 324	Clinical Dental Hygiene III	4
DHY 342	Pharmacology	3
DHY 460	Capstone Leadership in Dental Hygiene	3
DHY 345	Practice & Career Management	2
	Program elective	3
TOTAL		17

**Total institutional credits to complete degree requirements: 66 semester hours**

Students will graduate with a Bachelor of Science in Dental Hygiene following successful credit transfer of any college prerequisites and completion of the required dental hygiene courses listed above.

## School of Rehabilitation Sciences

### Doctor of Physical Therapy

The entry-level Doctor of Physical Therapy (DPT) program on the Worcester campus prepares graduates to develop the advanced knowledge and skills required for contemporary physical therapy practice. The curriculum includes the elements of foundational sciences, clinical sciences, evidence-based practice, professional roles and practice issues, healthcare systems, and management competencies in the educational preparation of physical therapists. The coursework is designed to reinforce and build on each element so that the student can synthesize and apply the learned material to a variety of clinical, research, and management situations.

This postbaccalaureate program builds on the knowledge acquired from an undergraduate education and has two components: didactic and clinical. Through the didactic component, students acquire the knowledge and skills and develop the attitudes and professional behaviors needed for physical therapy practice. In the clinical education component, students apply their knowledge, skills, attitudes, and professional behaviors in clinical settings away from MCPHS. The clinical education component accounts for about one-third of the curriculum.

The curriculum for the entry-level Doctor of Physical Therapy program has a total of 123 semester hours with approximately 36 weeks of clinical education. The program is made up of five concentration areas: Foundations of PT Practice (32 semester hours), Evidence in PT Practice (8 semester hours), Professional Issues in PT Practice (8 semester hours), Patient/Client management (40 semester hours), and Clinical Education (35 semester hours).

Application for the Doctor of Physical Therapy program is through the Physical Therapy Centralized Application Service (PTCAS) at [www.ptcas.org](http://www.ptcas.org).

### Admission Prerequisites

- Bachelor's degree from a regionally accredited postsecondary institution in the United States
- Minimum overall grade point average (GPA) and prerequisite GPA of 3.0 or better (on a 4.0 scale)
- Minimum grade of B– in all prerequisite courses
- Two letters of recommendation; one professional and one academic preferred

- GRE (Graduate Record Examination)
- Personal statement (500 to 1,000 words)
- On-campus faculty interview (by invitation only)
- Minimum of 10 hours of physical therapy exposure/experience documented from the clinical setting, not time as a patient
- Official TOEFL (minimum of 213 computer-based or 79 iBT) or IELTS (minimum 6.5) scores for all applicants whose primary language is not English
- Official transcripts from international colleges or universities submitted to the Center for Educational Documentation (CED), Educational Credential Evaluators, Inc. (ECE), or World Education Services (WES) for a course-by-course evaluation. MCPHS requires both the official international transcript(s) and an evaluated copy.

#### **Prerequisite Coursework**

- General biology I and II with labs (8 semester hours)
- General chemistry I and II with labs (8 semester hours)
- Anatomy and physiology I and II with labs (8 semester hours)
- Physics I and II with labs (8 semester hours)
- Exercise physiology with lab (3 semester hours)
- Calculus preferred, precalculus accepted (3 semester hours)
- Statistics (3 semester hours)
- Introduction to psychology (3 semester hours)
- Behavioral science elective (3 semester hours)

All math and science prerequisites must have been completed within the last 10 years.

#### **Mission Statement**

The mission of the Doctor of Physical Therapy Program is to prepare qualified students for successful professional careers as Doctors of Physical Therapy consistent with the mission and core values of the University and the American Physical Therapy Association. Graduates of the DPT Program are clinically competent entry level physical therapists who are able to recognize and meet changing health care needs. The program seeks to impart the development of skills for professional and ethical service and autonomous practice; promote lifelong learning, and commit to the enrichment and promotion of the physical therapy profession. The faculty of the DPT Program at MCPHS University are dedicated to excellence in teaching, service and scholarship.

#### **Goals**

1. Provide learner-centered teaching and student engagement that fosters intellectual vitality, critical thinking and continuing professional development;
2. Prepare graduates who will foster the core values of the APTA and MCPHS University through ethical, legal and professional PT practice;
3. Produce graduates who will meet health-care needs and address health promotion in response to the ever-changing environment;
4. Prepare graduates who will contribute to the advancement of the PT profession through evidence based practice, service and scholarship;
5. Inspire a community of life-long learners that includes students, graduates, core faculty and clinical faculty through scholarship, mentorship, and participation in professional organizations, exchanges, and/or development;
6. Prepare graduates who can effectively and efficiently use patient-centered collaborative practice and practice and resources, including technology, to maximize the outcomes of those they serve with attention to diversity, healthcare disparity and cross- cultural perspectives;
7. Promote graduates who will have an understanding of their ability to make a positive influence on the profession and on local and global communities; and
8. Support meaningful service and scholarship that promotes the growth and wellness of the collective faculty.

### **Student Learning Outcomes**

1. Develop knowledge and performance of contemporary physical therapy practice that is safe, legal, ethical, effective and compassionate which includes screening, examination, evaluation, physical therapy diagnosis, development of the plan of care, intervention and assessment of outcomes (**practice**);
2. Demonstrate professional behavior and interactions (**professional behavior**);
3. Develop the ability to communicate effectively with a variety of audiences through writing, listening and speech (**communication**);
4. Acquire knowledge of different cultural, gender, socio-economic, ethical and contextual factors that affect physical therapy practice (**cultural competency**);
5. Demonstrate technological ability to access information and demonstrate basic skills in research methodology that will allow the graduates to evaluate data and draw conclusions for relevance to practice (**evidence-based practice skills**);
6. Develop critical thinking skills by making professional and practice decisions, through analysis of data relevant to their practice (**critical thinking**);
7. Educate others regarding physical therapy practice, prevention, health and wellness using relevant and effective teaching methodologies (**education**);
8. Manage resources to achieve physical therapy goals while understanding economic factors that impact the delivery of service (**resource management**);
9. Provide autonomous care and appropriately address patients' needs for services with the use of support services and/or outside referral (**autonomous practice**);
10. Participate in interprofessional collaboration and consultation in order to achieve better outcomes including health promotion in a constantly changing health care environment (**interprofessional/consultation**);
11. Demonstrate commitment to life-long learning in physical therapy, through scholarship and participation in professional organizations, exchanges, and/or development (**life- long learning**); and
12. Demonstrate commitment to the current and future needs of local and global communities through service (**service**).

### **Essential Functions**

The practice of physical therapy includes the examination, diagnosis, and treatment of people with physical disabilities, movement dysfunction, and pain. Physical therapists must be prepared to conduct in a timely manner a relevant patient examination, evaluate the results of this examination, and synthesize these data to establish an accurate diagnosis, prognosis, and plan of care; implement an intervention; and use the process of reexamination to assess patient outcomes. Physical therapists must also possess the skills necessary to determine when referral of the patient/client to another healthcare professional is appropriate. Physical therapists must provide evidence that the care that they provide is effective, often through the conduct of clinically based research.

Doctor of Physical Therapy students must be able to complete the following:

- Participation in all required aspects of classroom and laboratory activities
- Participation in all required aspects of clinical experience activities
- Effective communication with other students, instructors, assistive personnel, patients, family members, payors, and other healthcare professionals
- Maintenance of a safe environment for other individuals and for one's self, including use of universal precautions
- Provision of emergency patient care, including but not limited to cardiopulmonary resuscitation (CPR)
- Completion of elements of patient/client management, including examination, evaluation of data, formulation of physical therapy diagnosis and prognosis, intervention, assessment of outcomes, and record keeping
- Completion of specific patient/client interventions and treatments, including patient and family education, application of modalities, therapeutic exercise, and functional training

Clinical agencies may have additional or agency-specific technical standards, which take precedence over MCPHS technical standards. The Commission on Accreditation of Physical Therapy Education (CAPTE) accredits professional physical therapy programs and requires that graduates of these programs be able to deliver entry-level clinical services. Graduates of entry-level programs are required to possess a broad base of knowledge and skills requisite for the practice of physical therapy. Physical therapists require *the intellectual-communication, behavioral-social, observational, and motor* abilities to meet the standard of practice.

Certain disabilities can interfere with a student's ability to complete the program of study and acquire the essential functions necessary for the practice of physical therapy. Reasonable accommodation can be made to compensate for some limitations. However, those that interfere with patient care or safety, or require the use of an intermediary may be incompatible with independent professional practice.

### **Technical Standards**

#### **Intellectual-Communication Abilities**

Intellectual skills include the ability to recall and comprehend large amounts of didactic information and to apply this information to the examination, evaluation, and management of routine and complex physical therapy problems. Effective communication skills enable the physical therapist to elicit appropriate information from patients and to effectively explain examination and treatment procedures. Some of the skills an individual must be able to demonstrate include, but are not limited to, the ability to

- communicate clearly and in a timely manner with patients, physicians, other health professionals, community or professional groups, and colleagues;
- report clearly, legibly, and in a timely manner through progress notes in patient charts, reports to physicians, insurance forms, and order forms;
- respond to such things as a patient calling from behind a curtain, warning calls from anyone, and machine alarms; and
- participate in group meetings to deliver and receive information and to respond to questions from a variety of sources.

#### **Behavioral-Social Attributes**

Students must demonstrate the ability to practice in a professional and ethical manner and possess the emotional stability to practice in a stressful work environment. Compassion, integrity, concern for others, interpersonal skills, cultural competence, and motivation are all personal attributes associated with the practice of physical therapy. Some of the skills an individual must be able to demonstrate include, but are not limited to, the ability to

- recognize and respond appropriately to individuals of all ages; genders; races; and socioeconomic, religious, and cultural backgrounds;
- cope with the stress of heavy workloads, demanding patients, and life-threatening clinical situations; and
- recognize and respond appropriately to potentially hazardous situations.

#### **Observational Skills**

Observation is one of the key tools that a physical therapist possesses. To gather data on patient/client condition and to appropriately manipulate machinery are critical to being an effective physical therapist. Some of the skills an individual must be able to demonstrate include, but are not limited to, the ability to

- observe and interpret patient movement, skin condition, safety hazards, and changes in appearance; and
- read and interpret equipment dials; assessment graphs; patient charts; professional literature; and notes from patients, physicians, and other health professionals.

#### **Motor Skills**

The practice of physical therapy requires that the practitioner possess the ability to perform basic evaluative and therapeutic procedures that require specific physical skills and stamina (e.g., palpation, transfers, gait training). A therapist must be able to use vision and somatic sensation in the evaluation and treatment of patients. Some of the skills an individual must be able to demonstrate include, but are not limited to, the ability to

- lift, carry, and push patients (150 pounds) in beds or wheelchairs, heavy equipment, body parts, and patients transferring from bed to chair or mat, or be able to instruct others in the activity, including proper body mechanics;

- walk and balance well enough to help patients walk and transfer with or without equipment, and prevent injury to patient and self;
- palpate anatomical structures and handle injured body parts without causing injury to the subject;
- exhibit sufficient manual dexterity to manipulate very small equipment, provide support and resistance as needed through complex exercise movements, perform CPR, manipulate dials, and treat acutely ill patients without disturbing sensitive monitoring instruments and lines; and
- provide for the patient's safety and well-being in all therapeutic or transporting activities.

### **Professional Behaviors**

In addition to knowledge and skill acquisition, the process of becoming a professional involves developing competence in professional behavior. Students are expected to display professional behavior at all times including during clinical education experiences. This includes displaying a professional demeanor in interactions and boundaries with patients and their families, clinical staff, peers, faculty, and the public at all times in consideration of their representation of the profession of physical therapy and MCPHS. The 10 requisite professional behaviors are defined below.

Any student demonstrating unprofessional behavior will be referred to the PT Professional and Academic Review Committee.

### **Definitions**

**Critical thinking:** The ability to question logically, identify, generate, and evaluate elements of logical argument; recognize and differentiate facts, appropriate or faulty inferences, and assumptions; and distinguish relevant from irrelevant information. The ability to appropriately utilize, analyze, and critically evaluate scientific evidence to develop a logical argument, and to identify and determine the impact of bias on the decision-making process

**Communication:** The ability to communicate effectively (i.e., verbal, nonverbal, reading, writing, and listening) for varied audiences and purposes

**Problem solving:** The ability to recognize and define problems, analyze data, develop and implement solutions, and evaluate outcomes

**Interpersonal skills:** The ability to interact effectively with patients, families, colleagues, other healthcare professionals, and the community in a culturally aware manner

**Responsibility:** The ability to be accountable for the outcomes of personal and professional actions and to follow through on commitments that encompass the profession within the scope of work, community, and social responsibilities

**Professionalism:** The ability to exhibit appropriate professional conduct and to represent the profession effectively while promoting the growth/development of the physical therapy profession

**Use of constructive feedback:** The ability to seek out and identify quality sources of feedback, reflect on and integrate the feedback, and provide meaningful feedback to others

**Effective use of time and resources:** The ability to manage time and resources effectively to obtain the maximum possible benefit

**Stress management:** The ability to identify sources of stress and to develop and implement effective coping behaviors. This applies to interactions with self, patients/clients and their families, and members of the healthcare team in work/life scenarios.

**Commitment to learning:** The ability to self-direct learning to include the identification of needs and sources of learning, and to continually seek and apply new knowledge, behaviors, and skills

Adapted from L.B. Kontney, W. May, and..Z.A. Iglarsh. "Professional Behaviors for the 21st Century." Manuscript in progress, University of Wisconsin–Madison Physical Therapy Educational Program, 2010.

### **Academic Standards for the Doctor of Physical Therapy Program**

- A minimum grade of B– is required for all physical therapy (PTH-designated) courses in the DPT curriculum. Any courses designated as pass/fail must be passed in order to progress with the DPT curriculum.
- The minimum passing grade for all cumulative practical examinations is 80%, or B–.
- All DPT courses must be taken in the specified sequence of the curriculum.
- An individual PTH course may be repeated only once. A second failed attempt with a grade below the B– standard will result in dismissal from the DPT program.

- Throughout the DPT program, failure to meet the required minimum standard (B-) in more than two separate DPT courses will result in dismissal from the DPT program.
- A physical therapy student may be placed on nonprogression status only once during his or her tenure in the Physical Therapy DPT program. A student who receives a second nonprogression status in a subsequent semester will be dismissed from the Physical Therapy program.

### **Progression and Retention**

Progression in the DPT program is dependent upon the student's maintaining a minimum cumulative grade point average (GPA) of 3.0 and a semester GPA of 3.0 as the student progresses.

To progress within both the didactic and the clinical phases of the program, students must achieve a final course grade of B- or better, or a pass for a pass/fail course. In all PTH-designated courses, obtaining a course grade of less than a B- or a fail results in a student's having to repeat the course, which stops progression through the program (i.e., results in nonprogression status) because DPT courses are offered only once a year. The student will decelerate to a class cohort that is targeted to graduate later than the student's original cohort.

Students who fail a professional course are required to repeat the course prior to progressing in the curriculum. Students who fail a clinical education experience may be required to complete PTH 685 prior to completing the clinical education experience. Progression is subject to clinical placement availability. (NOTE: There is no guarantee that space will be available at the desired time of return of the student; it may take up to two years for reentry due to lack of clinical placement availability.)

If a student is unable to progress in a professional course or clinical education after two attempts, the student will be referred to the School of Rehabilitation Sciences Academic Standing Committee with a recommendation for dismissal. Students must complete the requirements for the DPT degree within five years from initial matriculation. If this time limit in the DPT program has elapsed and the student has not completed degree requirements, the student must request an extension in writing and meet with the Director of the Doctor of Physical Therapy Program, who may approve or deny the extension request. Final appeals are to the Vice President of Academic Affairs / Provost.

### **Policy for Reentry and Content Validation after Nonprogression or Leave of Absence**

Students who are not continuously enrolled in the sequence of the DPT curriculum for a period of one semester or more, or who withdraw from the DPT program via leave of absence, must validate previous knowledge and skills held prior to program exit before they may reenroll in Physical Therapy program DPT courses. Reenrollment is subject to clinical placement availability. (NOTE: There is no guarantee that space will be available at the desired time of return of the student; it may take up to two years for reentry due to lack of clinical placement availability.)

In order to ensure that all students are competent and safe in the delivery and application of patient care, any student who has not been continuously enrolled must, at the discretion of the faculty, demonstrate identified clinical competency. The validation will occur via the student's demonstration of knowledge and skills, that is, meeting established program clinical competencies. The student must notify the Director of the Doctor of Physical Therapy Program by March 1 for fall start, February 1 for May start, and October 1 for January start to make arrangements for preparing for and performing validation testing. Students attempting to return from a leave of absence must also be cleared to return to classes by designated staff in the Center for Academic Success and Enrichment and the Dean of Students (if a medical leave of absence) prior to performing validation testing. The Center for Academic Success and Enrichment will notify the Director of the Doctor of Physical Therapy Program when the student is eligible to take the validation test.

Physical Therapy program faculty will provide guidance as to the content and skills (competencies) to be reviewed by the student prior to the testing. The validation testing consists of testing to assess knowledge and clinical skills taught prior to the semester of anticipated reentry. It is the student's responsibility to prepare for the validation testing. If a student fails the validation test, he or she must enroll in a directed study to remediate, followed by a second validation test, prior to reentering the program. Students must pass the validation testing with a minimum grade of B-, at the 80% level, in order to reenter the DPT curriculum. Failure to pass the second validation test after a directed study will result in dismissal from the Physical Therapy program.

The number of semester credits assigned to the directed study course will vary (1-3 semester credits) depending upon the number of semesters successfully completed in the program. If the student completed two or fewer semesters, 1 credit will be assigned; if three or four semesters, 2 credits; and if more than four semesters, 3 credits. Students may not

take any program professional courses until the directed study and content validation testing has been successfully completed.

### Commission on Accreditation in Physical Therapy Education

The Doctor of Physical Therapy program at MCPHS University is accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE), 1111 North Fairfax Street, Alexandria, VA 22314; tel.: 703.706.3245; email: accreditation@apta.org; website: www.capteonline.org.

### Curriculum: Doctor of Physical Therapy

#### *Year I—fall*

COURSE	TITLE	SEMESTER HOURS
PTH 501	PT as a Profession	2
PTH 510	Foundations of PT Management I (w/lab)	3
PTH 520	Clinical Medicine and Pathology I	3
PTH 530	Clinical Human Anatomy I (w/lab)	3
PTH 540	Evidence for PT Practice I	2
PTH 552	PT in the Acute Care Environment (w/lab)	3
PTH 570	Integrated Clinical Education I	2
TOTAL		18

#### *Year I—spring*

COURSE	TITLE	SEMESTER HOURS
PTH 515	Foundations of PT Management II (w/lab)	3
PTH 525	Clinical Medicine and Pathology II	3
PTH 535	Clinical Human Anatomy II (w/lab)	3
PTH 545	Evidence for PT Practice II	1
PTH 550	Pharmacology	3
PTH 560	Standardized Measurement in PT Practice (w/lab)	3
PTH 575	Integrated Clinical Education II	2
TOTAL		18

#### *Year I—summer*

COURSE	TITLE	SEMESTER HOURS
PTH 554	Lifespan Motor Control	3
PTH 556	Human Gait	2
PTH 558	Clinical Kinesiology (w/lab)	3
PTH 565	Cardiopulmonary Patient Management (w/lab)	3
PTH 580	Professional Issues in PT Practice I	1
TOTAL		12

#### *Year II—fall*

COURSE	TITLE	SEMESTER HOURS
PTH 601	Clinical Imaging	2
PTH 610	Musculoskeletal Patient Management I (w/lab)	3
PTH 640	Evidence for PT Practice III	2
PTH 650	Therapeutic Exercise (w/lab)	3
PTH 652	Neuroscience (w/lab)	3
PTH 654	Orthotics and Prosthetics (w/lab)	3
PTH 670	Integrated Clinical Education III	2
TOTAL		18



*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
PTH 615	Musculoskeletal Patient Management II (w/lab)	3
PTH 630	Neuromuscular Patient Management I (w/lab)	3
PTH 645	Evidence for PT Practice IV	2
PTH 656	PT Management for the Geriatric Patient	3
PTH 658	PT Management for the Pediatric Patient	3
PTH 660	Professional Issues in PT Practice II	1
PTH 675	Integrated Clinical Education IV	2
TOTAL		17

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
PTH 620	Musculoskeletal Patient Management III (w/lab)	3
PTH 635	Neuromuscular Patient Management II (w/lab)	3
PTH 665	Professional Issues in PT Practice III	3
PTH 680	Integrated Clinical Education V	2
TOTAL		11

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
PTHC 700	Clinical Education Experience I	8
PTHC 710	Clinical Education Experience II	8
TOTAL		16

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
PTHC 720C	Clinical Education Experience III	8
PTH 7XX	Physical Therapy Elective(s)	(1)
PTH 810	Evidence for PT Practice V	1
PTH 820	Current Topics in PT Practice	2
PTH 830	Professional Issues in PT Practice IV	1
TOTAL		13

**Total credits to complete degree requirements: 123 semester hours**

## School of Medical Imaging and Therapeutics

### **Bachelor of Science in Diagnostic Medical Sonography: General Sonography and Echocardiography Tracks (Fast Track, 16 months)**

The Diagnostic Medical Sonography (DMS) profession uses sound waves (ultrasound) to produce multi-dimensional dynamic images of tissue, organs, and blood flow inside the human body for the diagnosis of various medical conditions. The sonographer, a highly skilled imaging technologist, uses sophisticated ultrasound equipment to identify disease. In addition, the sonographer work closely with physicians in the processing of the ultrasound images to make a diagnosis.

The DMS program offers a full-time, Fast Track, 16 month course of study that begins in the fall semester. The comprehensive curriculum includes primary specialties of ultrasound, plus secondary specialties, offered across two tracks; the General ultrasound track, includes training in abdominal, obstetrics/gynecology, breast, pediatric, musculoskeletal and vascular sonography; the Echocardiography track focuses on adult echocardiography with secondary specialty tracks in pediatric echocardiography and vascular sonography.

Graduates of the DMS programs are eligible to sit for several registry exams offered by the American Registry of Diagnostic Medical Sonography (ARDMS) under exam prerequisite 3B and Cardiovascular Credentialing International (CCI) exam prerequisite RCS5.

The student must pass the ARDMS Sonography Principles & Instrumentation (SPI) registry exam in order to pass the DMS 304, Problem Solving in Physics and Instrumentation course. In addition, passing the SPI registry exam is required to continue into Year III of the program.

All DMS courses during the professional phase of studies must be completed with a weighted grade  $\geq 77\%$  (C+) in order to progress in the program.

Students must complete all professional coursework at MCPHS to receive their degrees in the Diagnostic Medical Sonography programs.

The MCPHS graduate is well suited to work in several DMS specialties and, with the BS degree, has the comprehensive education required to become a leader in the profession.

Students with a bachelor's or associate's degree, or the appropriate amount of college credits and prerequisites, may apply to the fast track program. Courses must have been completed at a regionally accredited college or university with a grade of C or better for transfer. Math and science courses taken more than ten years prior to the anticipated date of matriculation to MCPHS will not be accepted.

***Required prerequisite courses for all students:***

Anatomy and Physiology I & II with lab (8 credits)

Basic Chemistry I with lab (4 credits)

Physics I (Algebra-based) with lab (4 credits)

Algebra and Trigonometry (3 credits) (Acceptable substitutions include Precalculus and Calculus)

Expository Writing I (3 credits)

Statistics (3 credits)

**Total: 25 credits**

***Additional courses required for students without a Bachelor's Degree:***

Basic Chemistry II with lab (4 credits)

Expository Writing II (3 credits)

Introduction to Psychology (3 credits)

American Culture, Identity, and Public Life (3 credits) (Acceptable substitutions include American History, U.S.

History, U.S. Government, Western Civilization)

Humanities elective (3 credits) (Acceptable courses include Literature, Creative Writing, Philosophy, Ethics, Religious Studies, Select Fine Arts, Advanced Level Languages)

Behavioral Science elective (3 credits) (Acceptable courses include any upper level psychology course)

Social Science elective (3 credits) (Acceptable courses include History, Political Science/Government, Anthropology,

Upper-level Sociology, American Studies, Women Studies, Ethnic Studies, Geography, Economics)

**Total: 22 credits**

*Note: Prerequisite courses may be transferred in or completed at MCPHS prior to entering professional DMS courses. Up to six (6) credit hours of electives may be taken concurrently with professional DMS courses.*

**DMS Clinical Rotation Policy**

Clinical experience is an integral part of the Diagnostic Medical Sonography curriculum. MCPHS University has clinical affiliations with excellent medical institutions throughout New England and beyond. We strive to meet each student's requests for clinical locations. However, to ensure all students have adequate exposure to the variety of ultrasound procedures necessary for completion of their degrees, students may be placed in a clinical site beyond their desired location for at least one semester. Students are responsible for transportation to and from all assigned clinical facilities as well any expenses incurred to complete the clinical requirements of the programs. This includes, but may not be limited to: daily transportation, housing, and living expenses.

## **DMS Technical Standards**

Minimum expectations of the DMS programs are to prepare competent, entry-level sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains. To meet these expectations, students enrolled in health sciences professional programs must have abilities and technical skills to be successful healthcare providers. The following technical standards describe the non-academic qualifications the DMS programs considers essential for the successful progression in, and completion of the educational objectives of its curriculum.

Although the DMS program will engage in an interactive process with applicants with disabilities, it reserves the right not to admit any applicant who, upon completion of the interactive process, cannot meet the technical standards set forth below, with or without reasonable accommodations. Reasonable accommodation for persons with prior documented disabilities will be considered on an individual basis. Students wishing to request accommodations for disabilities should contact the Director for Disability Support Services or The Center for Academic Success and Enrichment as applicable.

A DMS professional provides direct care for patients in hospitals or outpatient facilities and must be able to apply acquired knowledge and physical tasks to skillfully perform sonography procedures. These technical standards are based upon the minimum tasks performed by graduates of the program as recommended by the Society of Diagnostic Medical Sonography, Scope of Practice and Clinical Standards for the Diagnostic Medical Sonographer, April 13, 2015 (<http://www.sdms.org/docs/default-source/Resources/scope-of-practice-and-clinical-standards.pdf?sfvrsn=8>)

Listed below are the technical standards that all applicants must meet in order to participate in, and successfully complete the DMS programs:

### **A. Physical Requirements**

The Diagnostic Medical Sonographer must be able to:

1. Work standing on his/her feet 80% of the time.
2. Use both hands, wrists, and shoulders to maintain prolonged arm positions necessary for Scanning and perform fine motor skills.
3. Lift more than 50 pounds routinely.
4. Transport, move, and or lift patients from a wheelchair or stretcher to the examination table or patient bed, and physically assist patients into proper positions for examination.
5. Push, pull, bend and stoop routinely to move and adjust sonographic equipment and perform studies.
6. Use senses (vision, hearing, and touch) to adequately view sonograms, including color distinctions; distinguish audible sounds; perform eye/hand coordination skills required in sonographic examinations; and recognize changes in patient's condition and needs.
7. Work in a semi-darkened room for prolonged periods of time.
8. Be physically capable of carrying out all assigned duties.

### **B. Mental and Intellectual Requirements**

The Diagnostic Medical Sonographer must be able to:

1. Communicate effectively, verbally and nonverbally, with patients and other healthcare professionals to explain procedures, give instructions, and give and obtain information.
2. Organize and accurately perform the individual steps in a sonographic procedure in the proper sequence according to established standards.
3. Understand and reach quickly to verbal instructions and patient needs.
4. Follow directions effectively and work closely with members of the healthcare community.
5. View and evaluate recorded images for the purpose of identifying proper protocol, procedural sequencing, technical qualities and identification of pathophysiology.
6. Apply problem solving skills to help optimize patient care and produce the best diagnostic information possible.

### **C. Emotional Requirements**

The Diagnostic Medical Sonographer must be able to:

1. Provide physical and emotional support to the patient during sonographic procedures.
2. Interact compassionately and effectively with the sick and or the injured.
3. Handle stressful situations related to technical and procedural standards and patient care situations.
4. Adapt to changing environments and be able to prioritize tasks.
5. Project an image of professionalism.
6. Demonstrate a high level of compassion for others, a motivation to serve, integrity, and a consciousness of social values.
7. Interact positively with people from all levels of society and all ethnic and religious backgrounds.

**Curriculum: Diagnostic Medical Sonography - General Track (16 months)**

*fall I*

COURSE	TITLE	SEMESTER HOURS
DMS 200	Introduction to Diagnostic Medical Sonography**	2
DMS 202	Obstetrics and Gynecology Sonography I**	3
DMS 213L	Scanning Techniques	4
DMS 206	Abdominal Sonography I**	3
DMS 208	Sonographic Physics and Instruments I**	3
	Elective*	
TOTAL		15

*spring I*

COURSE	TITLE	SEMESTER HOURS
DMS 212	Obstetrics/Gyn Sonography II**	3
DMS 216	Abdominal Sonography II**	3
DMS 218	Sonographic Physics and Instruments II**	3
DMS 233L	Advanced Scanning Techniques	3
DMS 250	Selected Topics	3
	Elective*	
TOTAL		15

*summer I*

COURSE	TITLE	SEMESTER HOURS
DMS 340C	Sonography Internship I	8
DMS 304	Problem Solving in Physics and Instruments**	3
PSB 320O	Introduction to Healthcare Delivery	3
	Elective*	
TOTAL		14

*fall II*

COURSE	TITLE	SEMESTER HOURS
DMS 430C	Sonography Internship II	10
DMS 460O	Seminar in Sonography	2
DMS 447O	Sonographic Analysis II (Online)	3
	Elective*	
TOTAL		15

**Total credits to complete degree requirements: 59 semester hours**

**\*\*Indicates distance education between the Worcester and Boston campuses**

**\*Additional 6 elective credits, if needed, brings total to 65 credits. If elective courses are needed, students may choose from the following courses:**

COURSE	TITLE	SEMESTER HOURS
HSC 3100	Healthcare Informatics	3
HSC 320	Writing for Health Science Professionals	3
HSC 325	Healthcare Management	3
DHY 425	Educational Theories and Methods	3
HSC 4100	Research Analysis and Methods	3
HSC 427O	Teaching in Clinical Setting	3

**Curriculum: Diagnostic Medical Sonography - Echocardiography Track (16 months)**

*fall I*

COURSE	TITLE	SEMESTER HOURS
DMS 200	Introduction to Diagnostic Medical Sonography**	2
DMS 225	Echocardiography I	5
DMS 225L	Echocardiography Lab I	4
DMS 208	Sonographic Physics and Instruments I**	3
	Elective*	
TOTAL		14

*spring I*

COURSE	TITLE	SEMESTER HOURS
DMS 218	Sonographic Physics and Instruments II**	3
DMS 260	Echocardiography and Congenital Heart Disease	3
DMS 265	Echocardiography II	3
DMS 266L	Echocardiography Lab II	4
PSB 320O	Introduction to Healthcare Delivery	3
TOTAL		16

*summer I*

COURSE	TITLE	SEMESTER HOURS
DMS 350C	Echocardiography Internship I	8
DMS 304	Problem Solving in Physics and Instruments**	3
DMS 355	Advanced Echocardiography	3
	Elective*	
TOTAL		14

*fall II*

COURSE	TITLE	SEMESTER HOURS
DMS 455C	Echocardiography Internship II	10
DMS 460O	Seminar in Sonography	2
DMS 452O	Echocardiography Analysis (Online)	3
	Elective*	
TOTAL		15

**Total credits to complete degree requirements: 59 semester hours**

**\*\*Indicates distance education between the Worcester and Boston campuses**

**\* Additional 6 elective credits, if needed, brings total to 65 credits. If elective courses are needed, students may choose from the following courses:**

COURSE	TITLE	SEMESTER HOURS
HSC 3100	Healthcare Informatics	3
HSC 320	Writing for Health Science Professionals	3
HSC 325	Healthcare Management	3
DHY 425	Educational Theories and Methods	3
HSC 4100	Research Analysis and Methods	3
HSC 427O	Teaching in Clinical Setting	3

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## New England School of Acupuncture

Meredith St. John, MAC, LicAc, Dean

Amy Hull, MAOM, MEd, LicAc, Associate Dean

Maria Broderick, MAOM, EdD, LicAc, Director of Clinical Education, Director of Doctor of Acupuncture & Integrative Health program

Bing Yang, MD(China), LicAc, Associate Professor, Director of Chinese Herbal Medicine Program

Lisa Conboy, ScD, MS, MA, Research Director

Associate Professor Broderick; Assistant Professors Allen, Cina

### Degree and Certificate Programs

- Master of Acupuncture
- Master of Acupuncture and Oriental Medicine
- Certificate of Advanced Graduate Study in Chinese Herbal Medicine
- Doctor of Acupuncture & Integrative Health\*

\* Online programs are affiliated with the Center for Online Learning and Academic Innovation.

#### **Master of Acupuncture (MAc)**

In this program, students will gain the knowledge, skills, and competencies to practice acupuncture effectively as a licensed healthcare provider, in independent practice or as part of an Integrative Medicine team. Upon completion of the program, students will be eligible to sit for national board certification examinations provided by the National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM) and to apply for licensure in Massachusetts.

#### Chinese Acupuncture Studies (CAS Track)

The core program consists of 117 semester hours of study (2115 contact hours), provided in a 33-month, full-time, year-round format, with admission once each year in September. This program is offered in two formats to provide some flexibility for adult learners. Students may attend a program that can be completed in 3 years (8 terms) or 4 years (12 terms). Students enrolled in the 3-year program may also enroll in optional courses in Japanese Acupuncture Styles (JAS Track), as described below, but only Chinese Acupuncture Studies (CAS Track) courses are offered in the 4-year program.

The programs are taught in a brand new facility on the Worcester campus, with clinical experiences in facilities in greater Boston and Worcester. The required core curriculum in Chinese Acupuncture Studies (CAS Track) includes Chinese medical theory, diagnosis and treatment strategies, location and functions of acupuncture points, history of Chinese medicine, research on acupuncture, bodywork, and nutrition. The biomedical model of disease is included as well, including biomedical clinical sciences and pathophysiology and pharmacology. To equip the acupuncturist with excellent skills in the patient-provider relationship, counseling and communication skills, professional ethics, and self-care are taught. Practice management modules build skills to manage successful practices. During Clinical Internships (minimum of 18 semester hours), students treat patients under the supervision of senior faculty.

#### Japanese Acupuncture Styles (JAS Track)

An optional sequence of 5 courses (11 semester hours, 165 contact hours) in Japanese Acupuncture Styles (JAS Track) may be completed concurrent with the 3-year core curriculum. Japanese acupuncture is a highly specialized modality that differs from the core curriculum in its methods of diagnosis and treatment. Students will have an opportunity to sample both Chinese and Japanese styles prior to track selection and must complete comprehensive proficiency examinations and clinical internships in all styles they study.

The following courses may be accepted for transfer credit, with a minimum grade of C within the past 10 years, or may be completed concurrent with the acupuncture program: anatomy and physiology with lab, general biology, general

psychology, and microbiology. For non-native English speakers, English language competency must be demonstrated by a score of 500 or the currently reported mean on the Test of English as a Foreign Language (TOEFL).

**Curriculum: Master of Acupuncture (MAc) 3-year program**

<i>Year I—fall</i>		<i>CAS TRACK</i>	<i>JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SACAS 101	Traditional Chinese Medicine Theory I	4	4
SACAS 111	Point Location I	2.5	2.5
SACAS 121	Materials & Methods of TCM I	2	2
SACAS 131	Living Anatomy I	2	2
SAMTP100	Internal Exercise	1	1
SACLC AA30	Clinical Assistantship I	1	1
SASCI 101	Anatomy & Physiology I	3	3
SASCI 110	Anatomy & Physiology Lab	1	1
TOTAL		16.5	16.5

<i>Year I—spring</i>		<i>CAS TRACK</i>	<i>JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SACAS 102	Traditional Chinese Medicine Theory II	4	4
SACAS 112	Point Location II	2.5	2.5
SACAS 122	Materials & Methods of TCM II	2	2
SACAS 132	Living Anatomy II	2	2
SAJAS 100	Introduction to Japanese Acupuncture Styles	1	1
SACHM 100	Introduction to Chinese Herbal Medicine	2	2
SACLC AA30	Clinical Assistantship II	1	1
SASCI 102	Anatomy & Physiology II	3	3
TOTAL		17.5	17.5

<i>Year I—summer</i>		<i>CAS TRACK</i>	<i>JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SAJAS 111	JAS: Root Treatment I	0	2
SACAS 161	Actions & Effects of Points & Channels	3	3
SACAS 190	Clinical Skills of TCM	2	2
SACAS 211	Western Pathophysiology & Pharmacology I	3	3
SARES 145	Introduction to Epidemiology/Biostatistics	2	2
SAEL	MAc Elective I	1	1
SACLC AA30	Clinical Assistantship III	1	1
SASCI 120	General Biology	3	3
SAEXM CAS1	First Comprehensive Examination	0	0
TOTAL		15	17

<i>Year II—fall</i>		<i>CAS TRACK</i>	<i>JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SAJAS 112	JAS: Root Treatment II	0	2.5
SACAS 171	TCM Etiology & Pathology of Disease I	3	3
SACAS 201	Introduction to Chinese Acupuncture Clinical Internship I	2.5	2.5
SACAS 212	Western Pathophysiology & Pharmacology II	3	3
SARES 100	Research Design & Evaluation	3	3
SABUS 121	Practice Management: Marketing	1	1

SACLC AA30	Clinical Assistantship IV	1	1
TOTAL		13.5	16

<i>Year II—spring</i>		CAS TRACK	JAS TRACK
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SAJAS 120	JAS: Local Treatment	0	2.5
SACAS 172	TCM Etiology & Pathology of Disease II	3	3
SACAS 202	Introduction to Chinese Acupuncture Clinical Internship II	2.5	2.5
SACAS 213	Western Pathophysiology & Pharmacology III	3	3
SACAS 270	Clinical Theater	1	1
SAEL	MAc Elective 2-3	2	2
SACLC AA30	Clinical Assistantship V	1	1
SASCI 130	General Psychology	3	3
SAEXM CAS2	Second Comprehensive Exam	0	0
TOTAL		15.5	18

<i>Year II—summer</i>		CAS TRACK	JAS TRACK
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SAJAS 130	JAS: Introduction to Clinical Internship	0	2
SACAS 220	Patient Provider Relationships	3	3
SACAS 180	Microsystems of Acupuncture Treatment	1	1
SAEL	MAc Elective 4	1	1
SAEL	MAc Elective 5	1	1
SACLC, CAS	*MAc Clinical Internship I, II, III	6	6
SAEXM JAS	JAS Comprehensive Examination	0	0
TOTAL		12	14

<i>Year III—fall</i>		CAS TRACK	JAS TRACK
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SAJAS 140	JAS: Shakuju	0	2
SAMTP 130	Oriental Bodywork Therapy	1	1
SACAS 231	Clinical Case Management	1	1
SACAS 250	Chinese Nutrition	1	1
SAMTP 100	Internal Exercise	1	1
SABUS 122	Practice Management: Business Skills	1	1
SAEL	MAc Elective 6	1	1
SASCI 170	Microbiology	3	3
SACLC CAS JAS	*MAc Clinical Internship IV, V & VI	6	6
TOTAL		15	17

<i>Year III—spring</i>		CAS TRACK	JAS TRACK
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SABUS 123	Practice Management: AOM Professional Issues	1	1
SACAS 240	Survey Classic Chinese Medical Texts	1	1
SACAS 140	History of Chinese Medicine	1	1
SACAS 260	Western Nutrition	1	1
SACAS 280	Acupuncture Channel Treatment	2	2
SACLC CAS, JAS	*MAc Clinical Internship VII, VIII, IX	6	6
TOTAL		12	12

\*CPR/First Aid certification must be current throughout all Clinical Internships.



In the Master of Acupuncture (MAc) 4-year program, students will complete the same courses and total credits as in the 3-year program, but in 4 additional terms. Optional content in Japanese acupuncture is not available in this program.

### Curriculum: Master of Acupuncture (MAc) 4-year program

#### Year I—fall

COURSE	TITLE	SEMESTER HOURS
SACAS 101	Traditional Chinese Medicine Theory I	4
SAMTP100	Internal Exercise	1
SACAS 250	Chinese Nutrition	1
SASCI 101	Anatomy & Physiology I	3
SASCI 110	Anatomy & Physiology Lab	1
TOTAL		10

#### Year I—spring

COURSE	TITLE	SEMESTER HOURS
SACAS 102	Traditional Chinese Medicine II	4
SACHM 100	Introduction to Chinese Herbal Medicine	2
SACAS 140	History of Chinese Medicine	1
SASCI 102	Anatomy & Physiology II	3
TOTAL		10

#### Year I—summer

COURSE	TITLE	SEMESTER HOURS
SARES 145	Introduction to Epidemiology/Biostatistics	2
SAMTP 100	Internal Exercise	1
SAEL	MAc Elective I	1
SASCI 120	General Biology	3
SASCI 130	General Psychology	3
TOTAL		10

#### Year II—fall

COURSE	TITLE	SEMESTER HOURS
SACAS 111	Point Location I	2.5
SACAS 121	Materials & Methods of TCM I	2
SACAS 131	Living Anatomy I	2
SABUS 121	Practice Management: Marketing	1
SAMTP 130	Oriental Bodywork Therapy	1
SACLC AA30	Clinical Assistantship I	1
TOTAL		9.5

#### Year II—spring

COURSE	TITLE	SEMESTER HOURS
SACAS 112	Point Location II	2.5
SACAS 122	Materials & Methods of TCM II	2
SACAS 132	Living Anatomy II	2

SAJAS 100	Introduction to Japanese Acupuncture Styles	1
SAEL	MAc Elective 2	1
SACLC AA30	Clinical Assistantship II	1
TOTAL		9.5

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
SACAS 161	Actions & Effects of Points & Channels	3
SACAS 190	Clinical Skills of TCM	2
SACAS 180	Microsystems of Acupuncture Treatment	1
SACAS 211	Western Pathophysiology & Pharmacology I	3
SACLC AA30	Clinical Assistantship III	1
SAEXM CAS1	First Comprehensive Examination	0
TOTAL		10

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
SACAS 171	TCM Etiology & Pathology of Disease I	3
SACAS 201	Intro to Chinese Acupuncture Clinical Internship I	2.5
SACAS 212	Western Pathophysiology & Pharmacology II	3
SACLC AA30	Clinical Assistantship IV	1
TOTAL		9.5

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
SACAS 172	TCM Etiology & Pathology of Disease II	3
SACAS 202	Intro to Chinese Acupuncture Clinical Internship II	2.5
SACAS 213	Western Pathophysiology & Pharmacology III	3
SACAS 270	Clinical Theater	1
SACLC AA30	Clinical Assistantship V	1
SAEXM CAS2	Second Comprehensive Exam	0
TOTAL		10.5

*Year III—summer*

COURSE	TITLE	SEMESTER HOURS
SACAS 220	Patient Provider Relationships	3
SACAS 280	Acupuncture Channel Treatment	2
SACLC CAS	*MAc Clinical Internship I, II	4
TOTAL		9

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
SARES 100	Research Design & Evaluation	3
SACAS 231	Clinical Case Management	1
SABUS 122	Practice Management: Business Skills	1
SACLC CAS	*MAc Clinical Internship III, IV	4
TOTAL		9

Year IV—spring

COURSE	TITLE	SEMESTER HOURS
SABUS 123	Practice Management: AOM Professional Issues	1
SACAS 240	Survey Classic Chinese Medical Texts	1
SACAS 260	Western Nutrition	1
SAEL	MAc Elective 3	1
SAEL	MAc Elective 4	1
SACLC, CAS	*MAc Clinical Internship V, VI	4
TOTAL		9

Year IV—summer

COURSE	TITLE	SEMESTER HOURS
SAEL	MAc Elective 5	1
SAEL	MAc Elective 6	1
SASCI 170	Microbiology	3
SACLC CAS	*MAc Clinical Internship VII, VIII, IX	6
TOTAL		11

\*CPR/First Aid certification must be current throughout all Clinical Internships.

**Total credits to complete degree requirements: MAc 117**

### Master of Acupuncture and Oriental Medicine (MAOM)

In this program, students will master the entire core curriculum of the MAc program and will also complete both didactic and clinical training in Chinese Herbal Medicine (CHM). Upon completion of the program, students will be eligible to sit for national board certification examinations in acupuncture and herbs, as provided by the National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM), and to apply for a license in Massachusetts specifically designated for the practice of acupuncture and herbal medicine.

The core program consists of 151 semester hours of study (2730 contact hours), provided in a 36-month, full-time, year-round format, with admission once each year in September. The program is taught in a brand new facility on the Worcester campus, with clinical experiences in facilities in greater Boston and Worcester. The required core curriculum in Chinese Acupuncture Studies (CAS Track) includes Chinese medical theory, diagnosis and treatment strategies, location and functions of acupuncture points, history of Chinese medicine, research on acupuncture, bodywork, and nutrition. The biomedical model of disease is included as well, including biomedical clinical sciences, pathophysiology and pharmacology. To equip the acupuncturist with excellent skills in the patient-provider relationship, counseling and communication skills, professional ethics, and self-care are taught. Practice management modules build skills to manage successful practices. During Clinical Internships, students treat patients under the supervision of senior faculty.

#### Chinese Herbal Medicine (CHM Track)

Required courses in the Chinese Herbal Medicine (CHM Track) include courses in single herbs, classic formulas, herb-drug interactions, case studies, and additional clinical supervision.

#### Japanese Acupuncture Styles (JAS Track)

An optional sequence of 5 courses (11 semester hours, 165 contact hours) in Japanese Acupuncture Styles (JAS Track) may be completed concurrent with the core curriculum. Japanese acupuncture is a highly specialized modality that differs from the core curriculum in its methods of diagnosis and treatment. Students will have an opportunity to sample both Chinese and Japanese acupuncture styles and Chinese Herbal Medicine prior to track selection and must complete comprehensive proficiency examinations and clinical internships in all styles they study.

In order to be eligible for admission, applicants must have completed two academic years (60 semester credits/90 quarter credits) of education at the baccalaureate level, or its equivalent. A Bachelor's degree is preferred.

The following courses may be accepted for transfer credit, with a minimum grade of C within the past 10 years, or may be completed concurrent with the acupuncture program: anatomy and physiology with lab, general biology, general psychology, and microbiology. For non-native English speakers, English language competency must be demonstrated.

by a score of 500 or the currently reported mean on the Test of English as a Foreign Language (TOEFL).

**Curriculum: Master of Acupuncture and Oriental Medicine (MAOM)**

<i>Year I—fall</i>		<i>CHM TRACK</i>	<i>CHM &amp; JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SACAS 101	Traditional Chinese Medicine Theory I	4	4
SACAS 111	Point Location I	2.5	2.5
SACAS 121	Materials & Methods of TCM I	2	2
SACAS 131	Living Anatomy I	2	2
SAMTP100	Internal Exercise	1	1
SACLC AA30	Clinical Assistantship I	1	1
SASCI 101	Anatomy & Physiology I	3	3
SASCI 110	Anatomy & Physiology Lab	1	1
TOTAL		16.5	16.5

<i>Year I—spring</i>		<i>CHM TRACK</i>	<i>CHM &amp; JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SACAS 102	Traditional Chinese Medicine Theory II	4	4
SACAS 112	Point Location II	2.5	2.5
SACAS 122	Materials & Methods of TCM II	2	2
SACAS 132	Living Anatomy II	2	2
SAJAS 100	Introduction to Japanese Acupuncture Styles	1	1
SACHM 100	Introduction to Chinese Herbal Medicine	2	2
SACLC AA30	Clinical Assistantship II	1	1
SASCI 102	Anatomy & Physiology II	3	3
TOTAL		17.5	17.5

<i>Year I—summer</i>		<i>CHM TRACK</i>	<i>CHM &amp; JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SAJAS 111	JAS: Root Treatment I	0	2
SACHM 111	CHM: Pharmacopoeia I	4	4
SACAS 161	Actions & Effects of Points & Channels	3	3
SACAS 190	Clinical Skills of TCM	2	2
SACAS 211	Western Pathophysiology & Pharmacology I	3	3
SARES 145	Introduction to Epidemiology/Biostatistics	2	2
SACLC AA30	Clinical Assistantship III	1	1
SASCI 120	General Biology	3	3
SAEXM CAS1	First Comprehensive Examination	0	0
TOTAL		18	20

<i>Year II—fall</i>		<i>CHM TRACK</i>	<i>CHM &amp; JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SAJAS 112	JAS: Root Treatment II	0	2.5
SACHM 112	CHM: Pharmacopoeia II	4	4
SACAS 171	TCM Etiology & Pathology of Disease I	3	3
SACAS 201	Introduction to Chinese Acupuncture Clinical Internship I	2.5	2.5
SACAS 212	Western Pathophysiology & Pharmacology II	3	3
SARES 100	Research Design & Evaluation	3	3
SABUS 121	Practice Management: Marketing	1	1

SACLC DA15	CHM Dispensary Assistantship at NESA	0	0
SACLC AA30	Clinical Assistantship IV	1.5	1.5
TOTAL		18	20.5

<i>Year II—spring</i>		<i>CHM TRACK</i>	<i>CHM &amp; JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SAJAS 120	JAS: Local Treatment	0	2.5
SACHM 121	CHM: Formulas I	4	4
SACAS 172	TCM Etiology & Pathology of Disease II	3	3
SACAS 202	Introduction to Chinese Acupuncture Clinical Internship II	2.5	2.5
SACAS 213	Western Pathophysiology & Pharmacology III	3	3
SACAS 270	Clinical Theatre	1	1
SACLC AA30	Clinical Assistantship V	1.5	1.5
SASCI 130	General Psychology	3	3
SAEXM CAS2	Second Comprehensive Exam	0	0
TOTAL		18	20.5

<i>Year II—summer</i>		<i>CHM TRACK</i>	<i>CHM &amp; JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SAJAS 130	JAS: Introduction to JAS Clinical Internship	0	2
SACHM 122	CHM: Formulas II	4	4
SACHM 130	CHM: Patent Herbal Medicine	2	2
SACAS 220	Patient Provider Relationships	3	3
SACAS 180	Microsystems of Acupuncture Treatment	1	1
SACLC CAS	*MAOM CHM & JAS Clinical Internship I, II & III	6	6
SAEXM JAS	JAS Comprehensive Examination	0	0
TOTAL		16	18

<i>Year III—fall</i>		<i>CHM TRACK</i>	<i>CHM &amp; JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SAJAS 140	JAS: Shakuju	0	2
SACHM 141	CHM: Internal Medicine	4	4
CACHM 150	CHM: Formula Writing	2	2
SAMTP 130	Oriental Bodywork Therapy	1	1
SACAS 231	Clinical Case Management	1	1
SACAS250	Chinese Nutrition	1	1
SABUS 122	Practice Management: Business Skills	1	1
SACLC OM	*MAOM CHM & Dual Clinical Internship IV, V & VI	6	6
SAEXM CHM	CHM Comprehensive Examination	0	0
TOTAL		16	18

<i>Year III—spring</i>		<i>CHM TRACK</i>	<i>CHM &amp; JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SACHM 142	CHM: Internal Medicine II	4	4
SABUS 123	Practice Management: AOM Professional Issues	1	1
SACAS 240	Survey Classic Chinese Medical Texts	1	1
SACAS 140	History of Chinese Medicine	1	1
SACAS 260	Western Nutrition	1	1

SACLC OM CHM	*MAOM CHM & JAS Clinical Internship VII, VIII, IX	6	6
TOTAL		14	14

<i>Year III—summer</i>		<i>CHM TRACK</i>	<i>CHM &amp; JAS TRACK</i>
COURSE	TITLE	SEMESTER HOURS	SEMESTER HOURS
SACHM 160	CHM: Clinical Pharmacology	2	2
SASCI	Advanced Physiology	2	2
SAEL	CHM Elective 1	2	0
SAEL	CHM Elective 2	2	0
SASCI 170	**Microbiology	3	3
SACLC OM CHM	*MAOM CHM & Dual Clinical Internship X, XI, XII	6	6
TOTAL		17	13
<b>Total credits to complete degree requirements: MAOM (CHM and Dual)</b>		<b>151</b>	<b>158</b>

\*CPR/First Aid certification must be current throughout all Clinical Internships.

\*\*If transfer credit is awarded for Microbiology, this course is replaced with a 2-credit elective and the credits for the term and program are reduced by 1.

### **Certificate of Advanced Graduate Study in Chinese Herbal Medicine (CAGS in CHM)**

The Certificate of Advanced Graduate Study in Chinese Herbal Medicine meets the needs of acupuncturists who want to incorporate herbs into clinical practice after initially completing a Master of Acupuncture (MAc) or equivalent program in acupuncture alone. The program provides all courses included in the MAOM degree and complies with standards for licensure in Massachusetts. Upon completion of the program, participants are eligible to take the NCCAOM board examination in Chinese Herbal Medicine, which is also required for licensure.

Participants must be acupuncturists licensed in the Commonwealth of Massachusetts, or eligible, and must have graduated from an accredited program in acupuncture. Participants attend classes with full-time students enrolled in the MAOM program and complete clinical placements in NESA treatment centers and other approved sites in which patents or individualized herbs are discussed or dispensed. The program includes 480 contact hours (32 semester hours) in didactic courses and a minimum of 210 hours (6 semester hours) of clinical training.

### **Curriculum: Certificate of Advanced Graduate Study in Chinese Herbal Medicine (CAGS in CHM)**

<i>Year I—spring</i>		
COURSE	TITLE	SEMESTER HOURS
SACHM 100	Introduction to Chinese Herbal Medicine	2

<i>Year I—summer</i>		
COURSE	TITLE	SEMESTER HOURS
SACHM 111	CHM: Pharmacopoeia I	4
SACLC DA15	CHM Dispensary Assistantship at NESA	0
TOTAL		4

<i>Year I—fall</i>		
COURSE	TITLE	SEMESTER HOURS
SACHM 112	CHM: Pharmacopoeia II	4
SACLC AA15	CHM Assistantship	0
TOTAL		4

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
SACHM 121	CHM: Formulas I	4

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
SACHM 122	CHM: Formulas II	4
SACHM 130	CHM: Patent Herbal Medicine	2
TOTAL		6

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
SACHM 141	CHM: Internal Medicine	4
CACHM 150	CHM: Formula Writing	2
SAEXM CHM	CHM Comprehensive Examination	0
TOTAL		6

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
SACHM 142	CHM: Internal Medicine II	4

*Year III—summer*

COURSE	TITLE	SEMESTER HOURS
SACHM 160	CHM: Clinical Pharmacology	2
SACLC CHM	*CHM: Clinical Internship I	2
TOTAL		4

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
SACLC CHM	*CHM: Clinical Internship II & III	4

**Total credits to complete certificate requirements: 38**

*\*CPR/First Aid certification must be current throughout all Clinical Internships.*

### **Doctor of Acupuncture and Integrative Health (DAIH)**

Designed for practicing acupuncturists who have previously earned a master's degree in acupuncture, the 25-credit Doctor of Acupuncture and Integrative Health (DAIH) prepares students to meet the demands of today's healthcare field and serve successfully as part of an integrative healthcare team. 21 of the 25 required credits are earned online. 4 credits are earned through 2 on-site clinical placements.

Students gain understanding of healthcare practices and policies that guide collaborative care, explore models of integrative care management, learn directly from leaders in the emerging field of integrative health, and develop a foundation of research competencies to guide explorations of integrative healthcare improvement, innovation, and interprofessional delivery. Students gain experience in integrative health delivery during two, one week immersions in integrative care settings in Massachusetts, in cooperation with resident experts in acupuncture and integrative health. Placements cover integrative care delivery methods for chronic pain, oncology, pediatrics and public health/health disparities. Clinical placement experiences are enriched through extensive reading and analysis of literature related to best practices and challenges in care delivery in students' areas of interest. Students conclude the program by designing, completing and disseminating a capstone project which will explore practice-based research problems.

Students will draw inspiration from their coursework and clinical experiences to develop their capstone project, with support from a designated academic advisor.

### Curriculum: Doctorate of Acupuncture and Integrative Health (DAIH)

#### First Semester

COURSE	TITLE	SEMESTER HOURS
HSC 701	Introduction to Doctoral Studies	3
HSC 815	Healthcare Research Methods	3
TOTAL		6

#### Second Semester

COURSE	TITLE	SEMESTER HOURS
PBH 710	Introduction to Health Policy and Management	3
HSC 805	Conducting Literature Review and Focusing Research	3
TOTAL		6

#### Third Semester

COURSE	TITLE	SEMESTER HOURS
SA XXX	Focused Clinical Placement in Integrative Medicine I*	2
SA XXX	Capstone 1: Project Development	3
TOTAL		5

#### Fourth Semester

COURSE	TITLE	SEMESTER HOURS
SA XXX	Focused Clinical Placement in Integrative Medicine 2*	2
SA XXX	Capstone 2: Project Implementation/Execution	3
TOTAL		5

#### Fifth Semester

COURSE	TITLE	SEMESTER HOURS
SA XXX	Capstone 3: Dissemination	3
TOTAL		3

**Total credits to complete degree requirements: DAIH** **25**

\*Placements are on-site in Massachusetts

### Newton Campus Curriculum

Students who matriculated prior to the fall 2016 semester will complete their program at the Newton Campus. Information regarding the Newton Campus can be found on the University website: <https://www.mcphs.edu/academics/school-of-acupuncture/acupuncture>, and the University website link to the Newton campus curriculum can be found at: [file:///C:/Users/czeind/Downloads/MCPHS%20NESA%20Newton%20Curriculum%20\(2\).pdf](file:///C:/Users/czeind/Downloads/MCPHS%20NESA%20Newton%20Curriculum%20(2).pdf)

### New England School of Acupuncture Academic Policies

#### Academic Progression

##### Grading standards

A minimum grade of C (2.0) is required in all professional courses in Acupuncture & Oriental Medicine (AOM). A minimum cumulative grade point average (GPA) of 2.0 is required.



A failed course in the Acupuncture and Oriental Medicine professional curriculum may be repeated only once. A second grade less than C in the repeated course may result in dismissal from the program.

### **Progression and Retention Policies**

Students must complete the requirements for the Master of Acupuncture or Master of Acupuncture and Oriental Medicine within six years. If this time limit from the date of admission has elapsed and the student has not completed degree requirements, the student must request an extension in writing and meet with the Dean, who may approve or deny the extension request. The School Dean's decision is final and not subject to further appeal.

### **CPR Certification**

All students must complete and provide documentation of CPR training prior to beginning and throughout the duration of Clinical Internship.

### **Transportation**

Students are responsible for transportation to all classes and clinical sites.

### **Board Certification and Licensure**

Students who successfully complete the program will be eligible to sit for board certification examinations provided by the National Commission for Certification of Acupuncture and Oriental Medicine (NCCAOM). Students are responsible for managing the application, fees, and preparation for these examinations, which are required for licensure in the Commonwealth of Massachusetts.

Acupuncture licenses are issued by the Committee on Acupuncture of the Board of Registration in Medicine.

Information on application is available through their website:

<http://www.mass.gov/eohhs/gov/departments/borim/acupuncture/licensing/requirements.html>

Requirements for licensure vary by state. Graduates who anticipate relocating or practicing in other states should investigate with local officials.

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## MCPHS University–Worcester School of Nursing

Carol Eliadi, EdD, JD, APRN, Chief Nursing Officer; Dean and Professor

Maria Rosen, PhD, APRN-BC Assistant Dean of for Graduate Nursing and Associate Professor

Bonnie White, EdD, MSN, RN, CNE, CCM Interim Assistant Dean-DNP Program and Associate Professor

Tammy Gravel, MS, RN, Senior Associate Dean of Curriculum and Assessment and Assistant Professor

Associate Professors Claros, White; Assistant Professors Bachour, Carroca, Haynes, Laurent, McGinty, Murray, Reed, Rickan

### Degree Programs

- Bachelor of Science in Nursing (Postbaccalaureate)
- Bachelor of Science in Health Sciences / BSN (Postbaccalaureate) Dual Degree
- Bachelor of Science in Nursing Completion (RN to BSN) (Online)
- RN to Master of Science in Nursing Bridge Program (Online)
- Master of Science in Nursing (Family Nurse Practitioner Track) (Online and Worcester)
- Master of Science in Nursing (Psychiatric/Mental Health Nurse Practitioner Track) (Online)
- Master of Science in Nursing (Nurse Educator Track) (Online)
- Certificate of Advanced Graduate Studies (CAGS) Family Nurse Practitioner
- Certificate of Advance Graduate Studies (CAGS) Psychiatric/Mental Health Nurse Practitioner
- Graduate Certificate (Nurse Educator)

#### **Bachelor of Science Degree in Nursing (BSN) (Postbaccalaureate)**

Designed specifically for students with a bachelor's degree in another field, this 16-month program of study provides an accelerated option for students ready for a challenging transition to a career as a Bachelor of Science in Nursing registered nurse. Building on previous learning and experience gained from the student's first bachelor's degree, the 16-month program of study mirrors the Boston-based program's professional major, guiding students toward gaining the knowledge, skills, competencies, and values required to practice as a registered nurse in the 21st century. Program instruction is conducted in state-of-the-art facilities at the MCPHS Worcester campus with clinical experiences in selected hospital and community agencies in the Greater Worcester and MetroWest regions.

The postbaccalaureate BSN is offered in a 16-month year-round format with a January or September admission. For September admission, please see the Manchester course schedule. The January-admission program consists of a 15-week spring semester, a 12-week summer session, and a 15-week fall semester; the final phase consists of a 15-week spring semester, concluding in May of the second year. The program requires a total of 122 semester hours of credit for completion. In order to be eligible for the program, the student must possess a prior Bachelor of Science or Bachelor of Arts degree and have completed the following prerequisite coursework with a minimum grade of C+ within the past 10 years (see below for specific semester hour requirements): chemistry (with lab), anatomy and physiology (with lab), microbiology (with lab), statistics, and human development. Students with a baccalaureate degree will not be required to meet the MCPHS general education core requirements. Upon completion of the program, students will be eligible to sit for the National Council of State Boards of Nursing Licensure Examination for Registered Nurses (NCLEX-RN).

NOTE: An exception to the policy that no course examinations or graded assignments worth more than 15% of final course grade may be scheduled during the week before final examinations exists for Nursing courses. Major graded assignments or exams may be administered the week before the final week of the course. A reading day (scheduled only on a weekday, no Saturday or Sunday) will be provided between the end of scheduled classes / clinical rotations and the administration of any final exams.

## Curriculum: Bachelor of Science in Nursing (Postbaccalaureate)

### Year I—spring

COURSE	TITLE	SEMESTER HOURS
NUR 206	Nursing History, Knowledge, and Narrative	2
NUR 208	Essential Concepts of Nursing	3
NUR 216	Nursing Skills and Technologies (w/lab)	5
NUR 226	Pathophysiologic and Pharmacologic Approach to Nursing Practice	6
TOTAL		16

### Year I—summer

COURSE	TITLE	SEMESTER HOURS
NUR 245	Health Assessment and Promotion (w/lab)	4
NUR 325	Provider of Care I: Adult and Elder Health (w/lab)	8
NUR 330	Nursing Informatics and Healthcare Technologies	3
TOTAL		15

### Year I—fall

COURSE	TITLE	SEMESTER HOURS
NUR 335	Provider of Care II: Child-Bearing and Child-Rearing Family Health	6
NUR 345	Provider of Care III: Mental and Social Health	6
NUR 350	Scholarly Inquiry	3
TOTAL		15

### Year II—spring

COURSE	TITLE	SEMESTER HOURS
NUR 425	Provider of Care IV: Community and Home Health	7
NUR 445	Provider of Care V: Coordinator of Care	8
NUR 450	Member of a Profession and Capstone Leadership Project	3
TOTAL		18

**Total preprofessional coursework: 58 semester hours\***

**Total professional major: 64 semester hours**

**Total institutional credits to complete BSN requirements: 122 semester hours**

\* A maximum of 58 semester hours of credit for the prior Bachelor of Science or Bachelor of Arts degree from a regionally accredited college or university will be awarded upon matriculation in fulfillment of MCPHS core curriculum requirements.

## Bachelor of Science in Health Sciences / BSN (Postbaccalaureate) Dual Degree

The Bachelor of Science in Health Sciences (BSHS) / BSN (Postbaccalaureate) Dual Degree program provides a pathway to nursing for students not yet holding a BS degree but interested in joining the BSN (Postbaccalaureate) program. The program will allow students to earn a BSHS while at the same time completing some BSN courses that can then be used in the BSN (Postbaccalaureate) program. The only students who will be considered for this dual degree option are those who can fully complete prerequisites prior to matriculation.

A cumulative 3.0 grade point average (GPA) in the 83 semester hours of preprofessional and health sciences courses is preferred prior to admission to the BSN courses. A 2.7 GPA is required for progression and graduation in the BSN curriculum.

## Preprofessional and Core Curriculum Courses (Completion Prior to Admission Is Required)

COURSE	TITLE	SEMESTER HOURS
	Human anatomy and physiology I and II (w/labs)	8

Basic chemistry I and II (w/labs)	8
Microbiology (w/lab)	4
Introduction to psychology	3
American history or political science	3
Human growth and development	3
English composition I and II	6
Statistics	3
College algebra	3
Computer applications or physics	3
Communication studies	3
Ethics	3
Behavioral sciences course	3
Social sciences course	3
Humanities course	3

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TOTAL	59
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### Health Science Courses

COURSE	TITLE	SEMESTER HOURS
BEH 250	Health Psychology	3
HSC 301	Health Promotion	3
HSC 310	Healthcare Informatics	3
HSC 401	Public Health and Policy	3
HSC 410	Research Analysis Methods	3
PSB 320	Introduction to Healthcare Delivery	3
	Health sciences elective	3
	Behavioral sciences elective	3

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TOTAL	24
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### Nursing Professional Courses

COURSE	TITLE	SEMESTER HOURS
NUR 206	Nursing History, Knowledge, and Narrative	2
NUR 208	Essential Concepts of Nursing	3
NUR 216	Nursing Skills and Technologies (w/lab)	5
NUR 226	Pathophysiologic and Pharmacologic Approach to Nursing Practice	6
NUR 245	Health Assessment and Promotion (w/lab)	4
NUR 325	Provider of Care I: Adult and Elder Health (w/lab)	8
NUR 330	Nursing Informatics and Healthcare Technologies	3
NUR 335	Provider of Care II: Child-Bearing and Child-Rearing Family Health	6
NUR 345	Provider of Care III: Mental and Social Health	6
NUR 350	Scholarly Inquiry	3
NUR 425	Provider of Care IV: Community and Home Health	7
NUR 445	Provider of Care V: Coordinator of Care	8
NUR 450	Member of a Profession and Capstone Leadership Project	3

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TOTAL	64
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**Total credits to complete BSHS/BSN dual degree: 147 semester hours**

### School of Nursing BSN Academic Policies

#### Academic Progression

A minimum grade of C+ (2.3) is required in all professional Nursing courses.

A minimum cumulative grade point average (GPA) of 2.7 is required.

Successful completion of both the theory and the clinical laboratory/practicum in a clinical Nursing course is required to pass the course.

Students who do not achieve the required professional GPA needed to fulfill School of Nursing graduation requirements must complete a select remediation course(s) to reach the required professional GPA. A component of the remediation process is the requirement to achieve a minimum score of 850 on the HESI Exit examination. Official University graduation and approval to write for the NCLEX will not occur until professional GPA and HESI standards have been met.

A failed individual Nursing course may be repeated only once. A second grade less than C+ in the repeated course will result in dismissal from the Nursing program. Throughout the Nursing program, a student may repeat no more than two separate Nursing courses. Three grades below C+ in any combination of Nursing courses also will result in dismissal from the Nursing program.

Professional courses (designated NUR) may not be taken pass/fail.

### **Progression and Retention Policies**

Students must complete the requirements for the Bachelor of Science in Nursing degree within five years (32-month track) or three years (16-month track). If this time limit from the date of admission into the major has elapsed and the student has not completed degree requirements, the student must request an extension in writing and meet with the Dean of the School of Nursing, who may approve or deny the extension request. The School Dean's decision is final and not subject to further appeal.

### **CPR Certification**

All students must complete CPR training prior to beginning clinical experiences in NUR 325 Provider of Care I: Adult and Elder Health. Students must be certified in Basic Cardiac Life Support (BCLS) at the Healthcare Provider Level by the American Heart Association (AHA). Students must provide a copy of the AHA Healthcare Provider Level card indicating active certification (AHA requires recertification every two years). It is recommended that the student verify the course in advance to ensure that the course is appropriate.

### **Transportation**

Reliable transportation to, from, and during all clinical and field experiences is the responsibility of the student. A number of clinical rotations in the required curriculum may be scheduled at some distance from the campus. This is necessary to provide a range of diverse learning experiences and to ensure availability and quality of clinical rotation sites. The University will make every effort to accommodate requests regarding assignments to experiential education sites, but students generally can expect to be assigned to clinical sites some distance from the campus for at least a portion of their required clinical rotations. In such instances, students are responsible for transportation and other related travel expenses.

### **Licensure**

Students who successfully complete the program will be eligible to sit for the National Council of State Boards of Nursing Licensure Examination for Registered Nurses (NCLEX-RN).

### **Employment**

Due to the rigorous and accelerated nature of the Nursing program, the demands placed on students are extremely high, particularly with respect to their clinical rotation schedule and associated student requirements. It is for this reason that students are strongly discouraged from engaging in any outside, non-program-related employment throughout the program of study.

### **School of Nursing Professional and Technical Standards**

A prelicensure candidate for the Bachelor of Science in Nursing degree must have abilities and skills in four areas: communication, observation, motor function and endurance, and behavior. Reasonable accommodations may be made for some disabilities. However, prelicensure BSN students must be able to perform in a reasonably independent manner, with or without accommodations.

### **Communication**

- Must be able to communicate effectively with patients, families, and members of the healthcare team through oral, written, and interpersonal means

- Must be able to obtain information, describe patient situations, and perceive both oral and nonverbal communication (including the ability to understand normal speech without seeing the speaker's face)
- Must be able to speak, comprehend, read, and write in English at a level that meets the need for accurate, clear, and effective communication. Examples include but are not limited to giving clear oral reports, reading watches or clocks with second hands, reading graphs, reading and understanding documents printed in English, writing legibly in English, and discriminating subtle differences in medical terminology.

#### **Observation**

- Must be able to observe a patient accurately. Examples include but are not limited to listening to heart and breath sounds; visualizing the appearance of a surgical wound; detecting bleeding, unresponsiveness, or other changes in patient status; detecting the presence of a foul odor; and palpating an abdomen.
- Must be able to detect and respond to emergency situations, including audible alarms (e.g., monitors, call bells, fire alarms)

#### **Motor Function and Endurance**

- Must have sufficient strength and mobility to work effectively and safely with patients and to carry out related nursing care. Examples include but are not limited to lifting and positioning patients (lifting up to 50 pounds, carrying up to 25 pounds), transferring patients in and out of bed, cardiopulmonary resuscitation (AHA Healthcare Provider Level), preparation and administration of medications (oral, injection, and intravenous, including hanging IV bags at shoulder height), reading and emptying body fluid collection devices below bed level, application of pressure to stop bleeding, clearing/opening an obstructed airway, and provision of daily hygiene care.
- Must be able to complete assigned periods of clinical practice, including up to 12-hour shifts (including days, evenings, nights, weekends)
- Must be able to respond at a speed sufficient to carry out patient assignments within the allotted time

#### **Behavior**

- Must possess the mental and emotional health required for total utilization of intellectual abilities
- Must be able to tolerate physically taxing workloads
- Must be able to respond and function effectively during stressful situations
- Must be capable of adapting to rapidly changing environments and of responding with flexibility in uncertain situations
- Must be able to interact appropriately with others (patients, families, members of the healthcare team) in various healthcare contexts

#### **Policy for Content Validation after Nonprogression or Leave of Absence**

A student who fails or withdraws from an undergraduate Nursing professional course, or who withdraws from a Nursing program via leave of absence, must validate previous knowledge and skills held prior to program exit before he or she may reenroll in Nursing clinical professional courses. Reenrollment is subject to clinical placement availability. (NOTE: There is no guarantee that space will be available at the student's desired return date. It may take up to two years for reentry due to lack of clinical placement availability.) This policy applies to all undergraduate Nursing programs.

The validation will occur via the student's demonstration of knowledge and skills, that is, meeting established program clinical competencies, in a selected clinical facility or simulation laboratory. The student must notify the program director of the desired date of return a minimum of 30 days prior to the anticipated return date to make arrangements for preparing for and performing validation testing. Program faculty will provide guidance as to what content and skills (competencies) need to be reviewed by the student prior to the testing, but it is the student's responsibility to prepare for the validation testing. The student must pass the validation testing as per the outcome measures determined by the faculty. Failure to meet the required outcome(s) will result in dismissal from the Nursing program and/or the need to repeat identified courses.

A student attempting to return from a leave of absence also must have been cleared to return to classes by designated staff in the Center for Academic Success and Enrichment (Boston, Worcester/Manchester) and/or the Student Affairs office at their campus (if a medical leave of absence) prior to performing validation testing. The Center for Academic

Success and Enrichment, Student Affairs office and Nursing faculty will coordinate communication regarding student clearance for leave of absence return and subsequent eligibility to schedule validation testing.

### **Bachelor of Science in Nursing Completion (RN to BSN) (Online)**

The RN to BSN program prepares the Associate Degree RN with the opportunity to earn a BSN degree. This online program consists of nursing courses as determined by the AACN document *Essentials of Baccalaureate Nursing Education*. The RN to BSN online program includes an experiential component that can be arranged, with approval, in the students home location. Online students are responsible for assisting the SON with identifying appropriate clinical sites. The total credits for this program are 27. Students are also responsible for attending on-site residencies as specified for the program.

#### **RN to BSN Courses**

COURSE	TITLE	SEMESTER HOURS
NUR 208	Essential Concepts of Nursing	3
NUR 245	Health Assessment (w/clinical)	4
NUR 250	Chemistry of Nutrition	3
NUR 330	Nursing Informatics and Healthcare Technologies	3
NUR 350	Scholarly Inquiry	3
NUR 410	Professional Role Development	3
NUR 426	Community Health Nursing	4
NUR 450	Member of a Profession/Capstone Leadership Project	4
TOTAL		27

### **RN to Master of Science in Nursing Bridge Program (Online)**

The RN to Master of Science in Nursing (MSN) Bridge consists of six courses (20 credits) designed to “bridge” the differences between the educational preparation of the associate degree nurse and that of the baccalaureate nurse. These six courses will be completed prior to the student’s matriculation into the MSN Family Nurse Practitioner (FNP) track or the MSN Nurse Educator track. The Bridge is an entry option to the Master of Science in Nursing program for nurses without a bachelor’s degree. A bachelor’s degree in nursing will *not* be awarded upon completion of the Bridge curriculum. The Bridge courses complement the education of the associate degree-prepared nurse, develop the educational competencies of the baccalaureate nurse, and prepare the student for graduate-level education. Students must maintain an overall grade point average (GPA) of 3.0 in the Bridge courses in order to matriculate into the MSN-FNP track or MSN Nurse Educator track. The MSN program provides a high-quality education that prepares nurses to become competent, ethical, and compassionate nurse practitioners who will provide primary care to patients across the lifespan.

#### **RN to MSN Bridge Program Admission Requirements**

- An earned Associate’s Degree from a state-approved program
- 42 approved transfer credits (see “Arts and Sciences Prerequisite Courses” below)
- A minimum cumulative GPA of 2.0 (on a 4.0 scale) in Arts and Sciences courses and a cumulative GPA of 2.7 (on a 4.0 scale) in prelicensure Nursing courses
- RN licensure in the state in which you intend to perform your clinical hours
- Official transcripts
- A résumé or curriculum vitae
- Two reference letters (one professional and one academic)
- A personal statement (500 to 1,000 words)

Forty-two (42) nontransferable transfer credits will be awarded to the licensed nurse upon matriculation into the MCPHS Bridge program. There is no time limit on accepting science courses for registered nurses. Formal matriculation into the MSN-FNP track or MSN Nurse Educator track requires the completion of the six MCPHS Nursing Bridge courses with a cumulative GPA of 3.0 (on a 4.0 scale).

### Arts and Sciences Prerequisite Courses

COURSE	TITLE	SEMESTER HOURS
	Human anatomy and physiology I and II (w/labs)	8
	General or medical microbiology (w/lab)	4
	Introduction to psychology	3
	Introduction to sociology	3
	Human development	3
	English composition I and II	6
	Statistics	3
	Algebra and trigonometry	3
	Healthcare or biomedical ethics	3
	History or social sciences elective	3
	Humanities elective	3
TOTAL		42

### Bridge Courses

COURSE	TITLE	SEMESTER HOURS
NUR 245	Health Assessment (w/clinical)	4
NUR 250	Chemistry of Nutrition	3
NUR 330	Nursing Informatics and Healthcare Technologies	3
NUR 350	Scholarly Inquiry	3
NUR 410	Professional Role Development	3
NUR 426	Community Health Nursing	4
TOTAL		20

### Master of Science in Nursing Program (Online or Worcester)

The primary goal of the Master of Science in Nursing (MSN) degree program is to prepare the graduate nurse to meet ever-changing healthcare needs. The MSN curriculum is based on the American Association of Colleges of Nursing (AACN) Core Curriculum for an MSN program, including health promotion and disease prevention; human diversity and social issues; theoretical foundation of nursing practice; professional role development; research, ethics, and policy; and organization and financing of healthcare. Upon the completion of the MSN program, students will be able to

- Provide safe, effective, culturally competent, and advanced nursing care to individuals and families across the lifespan as a member of an interdisciplinary team and in the context of community;
- Integrate the core competencies of research, diversity, healthcare policy, ethics, health promotion and disease prevention, and theoretical foundations of nursing in the advanced nursing practice role;
- Demonstrate a leadership role in the profession of nursing;
- Engage in ongoing nursing knowledge development to guide practice
- Successfully pass the Family Nurse Practitioner certification examination, the Psychiatric/Mental Health Nurse Practitioner certification examination; or demonstrate competency requisite skill set as a novice nurse educator.

The MSN program offers (1) an MSN Family Nurse Practitioner (FNP) degree option, for which candidates complete all FNP core courses plus three family health nursing courses, which include 630 clinical hours, (2) an MSN Psychiatric/Mental Health Nurse Practitioner (PMHNP) degree option, candidates complete the core MSN courses plus an additional pharmacology course and three psychiatric/mental health nursing courses, which include 630 clinical hours(3) an MSN Nurse Educator degree option with a concentration in teaching and learning for nurses that provides the graduate with a broader understanding of the discipline of nursing and the ability to engage in higher-level practice and leadership in a variety of settings. Candidates in the nurse educator track complete 180 clinical/practicum hours.



**Admission Criteria**

Master of Science in Nursing applicants must show proof of having attained a baccalaureate degree in nursing and/or successful completion of the MCPHS RN to MS in Nursing Bridge program. Some undergraduate studies may be credited, provided the student can demonstrate that he or she has had significant professional experience in a similar or related field.

Candidates whose primary language is not English will be required to have a minimum TOEFL score of 550.

**Degree Requirements**

All students must complete the required 37 or 42 credit hours and maintain a cumulative grade point average (GPA) of 3.0. For the FMHNP program, all students must complete the required 45 credit hours and maintain a cumulative grade point average (GPA) of 3.0.

The required courses for completion of the MSN program are as follows:

**Curriculum: Master of Science in Nursing (Family Nurse Practitioner Track)**

COURSE	TITLE	SEMESTER HOURS
NUR 701	Professional Role Development for Advanced Practice Nursing	3
NUR 702	Human Diversity, Social, and Policy Issues	3
NUR 703	Advanced Health Assessment Across the Lifespan (90 clinical hours)	4
NUR 706	Advanced Pathophysiology	3
NUR 707	Advanced Pharmacology	3
NUR 708	Scholarship for Advance Nursing: Building an Evidence-Based Practice	4
NUR 809	Family Primary Care I (OB/Pedi) (180 clinical hours)	6
NUR 810	Family Primary Care II (Adult) (180 clinical hours)	6
NUR 811	Family Primary Care III (Geri) (180 clinical hours)	6
NUR 820	Translating and Integrating Scholarship Practicum (completed over 2 semesters)	4
TOTAL		42

**Curriculum: Master of Science in Nursing (Psychiatric/Mental Health Nurse Practitioner Track)**

COURSE	TITLE	SEMESTER HOURS
NUR 701	Professional Role Development for Advanced Practice Nursing	3
NUR 702	Human Diversity, Social, and Policy Issues	3
NUR 703	Advanced Health Assessment Across the Lifespan (90 clinical hours)	4
NUR 706	Advanced Pathophysiology	3
NUR 707	Advanced Pharmacology	3
NUR 715	Psychopharmacology for the Psychiatric Mental Health Nurse Practitioner	3
NUR 708	Scholarship for Advance Nursing: Building an Evidence-Based Practice	4
NUR 815	Psychiatric Mental Health Nursing I (Child/Adolescent) (180 clinical hours)	6
NUR 825	Psychiatric Mental Health Nursing II (Adult) (180 clinical hours)	6
NUR 835	Psychiatric Mental Health Nursing III (Older Adult) (180 clinical hours)	6
NUR 820	Translating and Integrating Scholarship Practicum (completed over 2 semesters)	4
TOTAL		45

**Curriculum: Master of Science in Nursing (Nurse Educator Track)**

COURSE	TITLE	SEMESTER HOURS
NUR 701	Professional Role Development for Advance Practice Nursing	3
NUR 702	Human Diversity, Social, and Policy Issues	3
NUR 703	Advanced Health Assessment Across the Lifespan (90 clinical hours)	4
NUR 505	Policy, Organizational Management and Leadership in Health Care	3
NUR 706	Advanced Pathophysiology	3

NUR 707	Advanced Pharmacology	3
NUR 708	Scholarship for Advance Nursing: Building an Evidence-Based Practice	4
NUR 509	Educational Theory and Curriculum Design	3
NUR 510	Curriculum Design, Outcomes Assessment and Evaluation	3
NUR 511	Teaching and Learning for Nurse Educators: Practicum	4
NUR 820	Translating and Integrating Scholarship Practicum (completed over 2 semesters)	4
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TOTAL		37

**Certificate of Advanced Graduate Study (CAGS) in Family Nurse Practitioner, Psychiatric Mental Health Nurse Practitioner, and Nurse Educator**

The Certificate of Advanced Graduate Study (CAGS) in Family Nurse Practitioner, Psychiatric Mental Health Nurse Practitioner, and Nurse Educator programs are open to applicants who have previously earned a master's degree in nursing from an accredited program by either Collegiate Commission on Nursing Education (CCNE) or the National League for Nursing Accreditation Commission (NLNAC).

**Certificate of Advanced Graduate Studies (CAGS) (Family Nurse Practitioner)**

Students in the CAGS FNP program must have evidence of successful completion of advanced pathophysiology, advanced pharmacology and advanced health assessment.

COURSE	TITLE	SEMESTER HOURS
NUR 809	Family Primary Care I (OB/Pedi) (180 clinical hours)	6
NUR 810	Family Primary Care II (Adult) (180 clinical hours)	6
NUR 811	Family Primary Care III (Geri) (180 clinical hours)	6
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TOTAL		18

**Certificate of Advanced Graduate Studies (CAGS) (Psychiatric/Mental Health Nurse Practitioner)**

Students in the CAGS Psychiatric/Mental Health Nurse Practitioner program must have evidence of successful completion of advanced pathophysiology, advanced pharmacology and advanced health assessment.

COURSE	TITLE	SEMESTER HOURS
NUR 715	Psychopharmacology for the Psychiatric Mental Health Nurse Practitioner	3
NUR 815	Psychiatric Mental Health Nursing I (Child/Adolescent) (180 clinical hours)	6
NUR 825	Psychiatric Mental Health Nursing II (Adult) (180 clinical hours)	6
NUR 835	Psychiatric Mental Health Nursing III (Older Adult) (180 clinical hours)	6
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TOTAL		21

**Graduate Certificate (Nurse Educator)**

Students completing the graduate certificate for the nurse educator may be eligible upon graduation to sit for the NLN Certified Nurse Educator (CNE) examination.

COURSE	TITLE	SEMESTER HOURS
NUR 509	Educational Theory and Curriculum Design	3
NUR 510	Curriculum Design, Outcomes Assessment and Evaluation	3
NUR 511	Teaching and Learning for Nurse Educators: Practicum	4
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TOTAL		10

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## MCPHS University–Worcester School of Optometry

Morris S. Berman, OD, MS Dean, School of Optometry

Amy Falk, OD, Associate Dean for Academic Programs

Greg Waldorf, OD, Associate Dean for Clinical Programs

Larry Baitch, OD, PhD, Associate Dean for Research

Anne Reuter, OD, Director of Externships, Assistant Professor of Optometry

Professors Berman, Baitch, Coletta; Associate Professors Frank, Hendricks, Neiberg, Shivanna; Assistant Professors Contardo, Deliso, Falk, Han, Khalaf, Malloy, O'Leary, Ramaswamy, Reuter, Waldorf

### Degree Program

#### **Doctor of Optometry (OD)**

The Doctor of Optometry (OD) program on the Worcester campus offers a student-oriented, learner-centered program designed to provide a world-class education. The four-year program uses the latest in instructional and clinical technology to assure that its graduates possess the state-of-the-art education necessary to diagnose and manage the wide variety of ocular and systemic conditions encountered in today's diverse clinical settings. The program features clinically relevant instruction and patient care; dedicated faculty who place a high importance on teaching, advising, and individual student development; and clinical experiences in selected facilities in on-campus and off-campus optometric and ophthalmologic clinics as well as Veterans' Administration Centers, community health centers, hospitals, and community agencies in and beyond the Greater Worcester region.

#### **Technical Standards**

In order to fully describe elements required for successful completion of its professional optometric degree program, the MCPHS School of Optometry has adopted guidelines developed and adopted by the Association of Schools and Colleges of Optometry (ASCO). All students are expected to demonstrate each of the competencies contained within these functional guidelines:

#### **Functional Guidelines for Didactic and Clinical Optometric Education at MCPHS University**

To provide guidance to those considering optometry as a profession, the Association of Schools and Colleges of Optometry (ASCO) has established functional guidelines for optometric education. The ability to meet these guidelines, along with other criteria established by individual optometric institutions, is necessary for graduation from an optometric professional degree program.

Our mission is to produce graduates fully qualified to provide quality comprehensive eye care services to the public. To fulfill this mission, each institution must ensure that students demonstrate satisfactory knowledge and skill in the provision of optometric care. Admission committees therefore consider a candidate's capacity to function effectively in academic and clinical environments as well as a candidate's academic qualifications and personal attributes.

The functional guidelines in optometric education require that the candidate/student possess appropriate abilities in the following areas: (1) observation; (2) communication; (3) sensory and motor coordination; (4) intellectual–conceptual, integrative, and quantitative abilities; and (5) behavioral and social attributes. Each of these areas is described in this document.

In any case where a student's abilities in one of these areas are compromised, he or she must demonstrate alternative means and/or abilities to meet the functional requirements. It is expected that seeking and using such alternative means and/or abilities shall be the responsibility of the student. Upon receipt of the appropriate documentation, the school or college will be expected to provide reasonable assistance and accommodation to the student.

### **Observation Abilities**

The student must be able to acquire a defined level of required knowledge as presented through lectures, laboratories, demonstrations, patient interaction, and self-study. Acquiring this body of information necessitates the functional use of visual, auditory, and somatic sensation enhanced by the functional use of other sensory modalities. Examples of these observational skills in which accurate information needs to be extracted in an efficient manner include the following:

Visual abilities (as they relate to such things as visual acuity, color vision, and binocularity):

- Visualizing and reading information from papers, films, slides, video, and computer displays
- Observing optical, anatomic, physiologic, and pharmacologic demonstrations and experiments
- Discriminating microscopic images of tissue and microorganisms
- Observing a patient and noting nonverbal signs
- Discriminating numbers, images, and patterns associated with diagnostic tests and instruments
- Visualizing specific ocular tissues in order to discern three-dimensional relationships, depth, and color changes

Auditory abilities:

- Understanding verbal presentations in lecture, laboratory, and patient settings
- Recognizing and interpreting various sounds associated with laboratory experiments as well as diagnostic and therapeutic procedures
- Tactile abilities:
- Palpating the eye and related areas to determine the integrity of the underlying structures
- Palpating and feeling certain cardiovascular pulses

### **Communication Abilities**

The student must be able to communicate effectively, efficiently, and sensitively with patients and their families, peers, staff, instructors, and other members of the healthcare team. The student must be able to demonstrate established communication skills using traditional and alternative means. Examples of required communications skills include the following:

- Relating effectively and sensitively to patients, conveying compassion and empathy
- Perceiving verbal and nonverbal communication such as sadness, worry, agitation, and lack of comprehension from patients
- Eliciting information from patients and observing changes in mood and activity
- Communicating quickly, effectively, and efficiently in oral and written English with patients and other members of the healthcare team
- Reading and legibly recording observations, test results, and management plans accurately
- Completing assignments, patient records, and correspondence accurately and in a timely manner

### **Sensory and Motor Coordination Abilities**

Students must possess the sensory and motor skills necessary to perform an eye examination, including emergency care. In general, this requires sufficient exteroception sense (touch, pain, temperature), proprioceptive sense (position, pressure, movement, stereognosis, and vibration) and fine motor function (significant coordination and manual dexterity using arms, wrists, hands, and fingers). Examples of skills required include, but are not limited to, the following:

- Instillation of ocular pharmaceutical agents
- Insertion, removal, and manipulation of contact lenses
- Assessment of blood pressure and pulse
- Removal of foreign objects from the cornea
- Simultaneous manipulation of lenses, instruments, and therapeutic agents and devices
- Reasonable facility of movement
- Injections into the eye, lids, or limbs

### **Intellectual-Conceptual, Integrative, and Quantitative Abilities**

Problem solving, a most critical skill, is essential for optometric students and must be performed quickly, especially in emergency situations. In order to be an effective problem solver, the student must be able to accurately and efficiently utilize such abilities as measurement, calculation, reasoning, analysis, judgment, investigation, memory, numerical recognition, and synthesis. Examples of these abilities include being able to

- determine appropriate questions to be asked and clinical tests to be performed;
- identify and analyze significant findings from history, examination, and other test data;
- demonstrate good judgment and provide a reasonable assessment, diagnosis, and management of patients;
- retain, recall, and obtain information in an efficient manner; and
- identify and communicate the limits of one's knowledge and skill.

### **Behavioral and Social Attributes**

The student must possess the necessary behavioral and social attributes for the study and practice of optometry. Examples of such attributes include the following:

- Satisfactory emotional health required for full utilization of one's intellectual ability
- High ethical standards and integrity
- An empathy with patients and concern for their welfare
- Commitment to the optometric profession and its standards
- Effective interpersonal relationships with patients, peers, and instructors
- Professional demeanor
- Effective functioning under varying degrees of stress and workload
- Adaptability to changing environments and uncertainties
- Positive acceptance of suggestions and constructive criticism

Candidates with questions or concerns about how their own conditions or disabilities might affect their ability to meet these functional guidelines are encouraged to meet with an admission counselor prior to submitting an application.

### **Admission Prerequisites**

- Bachelor's degree from a regionally accredited postsecondary institution in the United States strongly recommended; a minimum of 90 semester hours or 135 quarter hours of college education must be completed prior to matriculation.
- Recommended minimum overall grade point average (GPA) and prerequisite GPA of 3.0 or better (on a 4.0 scale)
- Minimum grade of C in all prerequisite courses
- Completed Optometry Centralized Application Service (OptomCAS) application
- Optometry Admission Test (OAT) report; score of 300 or higher recommended
- Two letters of recommendation; one professional and one academic preferred
- Résumé
- Personal statement (500 to 1,000 words)
- Evidence of familiarity with optometry (shadowing a practitioner, volunteer work in optometric offices, etc.)
- Official Advanced Placement (AP) or College-Level Examination Program (CLEP) scores, if applicable (transfer credit granted for AP scores of 4 or 5 and CLEP scores of 50 or higher)
- Official TOEFL (minimum of 213 computer-based or 79 iBT) or IELTS (minimum 6.5) scores for all applicants whose primary language is not English
- Official transcripts from non-U.S. secondary schools, colleges, or universities submitted to World Education Services (WES) for a course-by-course evaluation. Prerequisite Coursework
- General biology I and II with labs (8 semester hours)

- Microbiology with lab (4 semester hours)
- General chemistry I and II with labs (8 semester hours)
- Organic chemistry with lab (4 semester hours)
- Physics I and II with labs (8 semester hours)
- Calculus (3 semester hours)
- English (6 semester hours)
- Psychology (3 semester hours)
- Statistics (3 semester hours)
- Biochemistry (3 semester hours) (not required but strongly recommended)

All math and science prerequisites must have been completed within the last 10 years.

### Accreditation Council on Optometric Education (ACOE)

The Doctor of Optometry (OD) program on the Worcester campus has been granted the classification of Accredited with Conditions by the Accreditation Council on Optometric Education (243 N. Lindbergh Blvd., St. Louis, MO 63141; phone: 800.365.2219).

### Curriculum: Doctor of Optometry

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
OPT 610	Clinical Anatomy (with lab)	4
OPT 630	Geometrical and Physical Optics (with lab)	5
OPT 650	Optometry Theory and Methods I	2
OPT 650L	Optometry Theory and Methods I Lab	1
OPT 651	Optometry and Health Care	1
OPT 656	Histology and Embryology	3
OPT 721	Visual Development	2
TOTAL		18

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
OPT 612	Ocular Biochemistry	2
OPT 631	Visual Optics (with lab)	4
OPT 652	Optometry Theory and Methods II	2
OPT.652L	Optometry Theory and Methods II Lab	1
OPT 622	Visual Perception	3
OPT.613	Neuro Anatomy and Physiology	3
TOTAL		15

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
OPT 653	Optometry Theory and Methods III	2
OPT 653L	Optometry Theory and Methods III Lab	1
OPT 711	Immunology and Microbiology	2
OPT 722	Oculomotor Function	2
OPT 632	Ophthalmic Optics I (w/lab)	4
OPT 710	Systemic Pharmacology	4

OPT 640	Systems Based Physiology	3
TOTAL		18

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
OPT 712	Ocular Pharmacology	3
OPT 750	Anterior Segment Ocular Disease I	4
OPT 751	Optometry Theory and Methods IV	2
OPT 751L	Optometry Theory and Methods IV Lab	1
OPT 756	Foundations of Binocular Vision	2
OPT 770C	Primary Care Clinic I	1
OPT 766	Pathophysiology	3
OPT 732	Ophthalmic Optics II (w/lab)	3
TOTAL		19

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
OPT 757	Clinical Binocular Vision	4
OPT 854	Ocular Manifestations of Systemic Disease	2
OPT 765	Introduction to Practice Management	2
OPT 753	Posterior Segment Ocular Disease I	4
OPT 771C	Primary Care Clinic II	1
OPT 853 (*)	Optometry Theory and Methods V	2
OPT 853L (*)	Optometry Theory and Methods V Lab	1
TOTAL		16

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
OPT 759	Anterior Segment Ocular Disease II	1
OPT 752	Contact Lens I (with lab)	4
OPT 851	Glaucoma I	2
OPT 852	Vision Therapy (with lab)	3
OPT 758	Neuro Optometry	2
OPT 772C	Primary Care Clinic III	2
TOTAL		14

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
OPT 754	Low Vision and Geriatrics (w/lab)	3
OPT 855	Contact Lens II	1
OPT 857	Posterior Segment Ocular Disease II	1
OPT 859	Glaucoma II	1
OPT 755	Pediatrics (with lab)	3
OPT 870C	Primary and Specialty Care Optometry I	3
TOTAL		12

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
OPT 853	Optometry Theory and Methods V	2
OPT 853L	Optometry Theory and Methods V Lab	1
OPT 691	Optometry and Public Health	1
OPT 741	Practice and Business Management	2
OPT 879C	Primary and Specialty Care Optometry II	3
OPT 860	Research and Statistical Methods	1
OPT 845	Applied Optometric Theory	2
OPT 840	Special Populations and Topics	2
OPT 830	Professional Ethics	1
TOTAL		15

*Year III—summer and Year IV—fall and spring*

COURSE	TITLE	SEMESTER HOURS
OPT 951	Online Clinical Seminar	3
OPTC 971	Externship Rotation I	16
OPTC 972	Externship Rotation II	16
OPTC 973	Externship Rotation III	16
TOTAL		51

**Beginning Spring 2017 the Optometry program rolled out a new curriculum. Courses listed for Years I, II, III and IV are accurate during this transitional year for the Classes of 2021, 2020, 2019 and 2018, respectively. The finalized, new curriculum can be found at the optometry program's website.**

**(\* Due to the ongoing curriculum changes, OPT.853 Optometry Theory and Methods V is offered to both students in the ODII and ODIII classes during Academic Year 2017-2018 only.**

### **Progression and Retention**

Progression in the Doctor of Optometry program is dependent upon the student's maintaining a minimum cumulative grade point average (GPA) of 2.0.

To progress within both the didactic and the clinical phases of the program, students must achieve a final course grade of C or better, or a pass for a pass/fail course. In all OPT-designated courses, obtaining a course grade of less than a C or a fail results in a student's having to repeat the course, which stops progression through the program (i.e., results in nonprogression status) because OD courses are offered only once a year. The student will decelerate to a class cohort that is targeted to graduate later than the student's original cohort. An optometry student may be placed on nonprogression status only once during his or her tenure in the School of Optometry (OD) program. A student who receives a second nonprogression status in a subsequent semester will be dismissed from the optometry program.

Directed study during the first three years may be required as remediation in lieu of repeating one year (1) if the student fails one course that is not sequential and/or (2) at the recommendation of the instructor of record and the Academic Standing Committee. The final decision for approval of the directed study requirement during the four-year program will be at the dean's discretion.

Students in their fourth professional year who fail a clinical education experience may be required to complete a directed study course (ranging from 1 to 3 credit hours) prior to completing their clinical education experience. Progression is subject to clinical placement availability. (NOTE: There is no guarantee that space will be available at the desired time of return of the student; it may take up to two years for reentry due to lack of clinical placement availability.)

If a student is unable to progress in a professional course or clinical education experience after two attempts, the student will be referred to the program's Academic Standing Committee with a recommendation for dismissal. Students must complete the requirements for the Doctor of Optometry (OD) degree within five years from initial



matriculation. If this time limit in the OD program has elapsed and the student has not completed degree requirements, the student must request an extension in writing and meet with the Dean of the School of Optometry, who may approve or deny the extension request. Final appeals are to the Vice President of Academic Affairs / Provost.

### **Clinical Rotations**

At a minimum, optometry clinical rotations require background screenings. For additional information, please contact the MCPHS Chief Compliance Officer.

### **CPR Certification**

All students must complete CPR training prior to beginning clinical experiences in OPT 650 Clinical Optometry. Students must be certified in Basic Cardiac Life Support (BCLS) at the Healthcare Provider Level by the American Heart Association (AHA). Students must provide a copy of the AHA Healthcare Provider Level card indicating active certification. It is recommended that the student verify the course in advance to ensure that the course is appropriate.

### **Transportation/Housing**

Reliable transportation to, from, and during all clinical experiences is the responsibility of the student. A number of clinical rotations in all years of the required curriculum may be scheduled at some distance from the campus. This is necessary to provide a range of diverse learning experiences and to ensure availability and quality of clinical education sites. The University will make every effort to accommodate requests regarding assignments to experiential education sites, but students generally can expect to be assigned to clinical sites some distance from the campus for at least a portion of their required clinical rotations beginning in the first year. In such instances, students are responsible for transportation and other related travel or housing expenses.

### **Employment**

Due to the rigorous nature of the optometry program, the demands placed on students are extremely high, particularly with respect to their clinical rotation schedule and associated student requirements. It is for this reason that students are strongly discouraged from engaging in any outside, non-program-related employment throughout the program of study.

### **Doctor of Optometry / Master of Public Health Dual Degree (OD/MPH)**

This program option enables matriculated Doctor of Optometry (OD) students to also earn a Master of Public Health degree. Students will apply to the OD/MPH in the spring of their first year, and if accepted, begin MPH courses that summer. Optometrists with training and experience in public health can provide assessment of community needs for eye care services. They are able to assist in the definition of factors that contribute to the treatment and prevention of visual system anomalies, to develop and apply quality assurance systems, to participate and provide leadership in health-related agencies, and to foster public awareness of the need for eye care. An individual qualified both in optometry and public health is expected to have the capability to develop, administer, and evaluate eye and vision health programs in research projects; design and conduct epidemiological field studies; use statistical methods in data analysis of case-control and cohort studies; develop and implement vision health education programs; and develop occupational health and eye safety programs.

Students complete all credits for both degrees with one modification—a total of 4 semester hours from the OD program also fulfill MPH requirements: OPT 691 (1 semester hour), OPT 695 (1 semester hour), and OPTC 874 (2 semester hours) fulfill the requirement for PBH 701 (3 semester hours) and PBH 890 (2 semester hours). A total of 210 semester hours are required for the dual degree.

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## MCPHS University–Worcester School of Physician Assistant Studies (Manchester/Worcester program)

Kristy Altongy-Magee, MPAS, PA-C, Program Director and Assistant Professor

Nicole Dettmann, MSHS, MPH, PA-C, Associate Program Director / Director of Clinical Education, Assistant Professor

Rosanne Washington, MPAS, PA-C, Assistant Program Director / Director of Didactic Education, Assistant Professor

Dan Tzizik, MPAS, PA-C, Assistant Director of Clinical Education and Assistant Professor

David Fredenburg, MD, MA, FAAP, Medical Director and Clinical Associate Professor

John (Jack) Kelly, MD, Medical Director and Clinical Assistant Professor

Michael Whitehead, PA-C, DHSc, DFAAPA, Research Coordinator and Associate Professor

Associate Professors Whitehead, Stowell; Assistant Professors Altongy-Magee, Cerreto, Chouinard, Dettmann, Geary, Gerald, Hricz, Maclary, Martino, Petrillo-Deluca, Tzizik, Washington

### Degree Program

#### **Master of Physician Assistant Studies (MPAS) (Accelerated)**

The MCPHS University Physician Assistant (PA) Studies program is dedicated to the education of clinically competent medical professionals who are prepared to deliver quality patient care in a dynamic healthcare delivery system. The program is accredited by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) and graduates are eligible to sit for the Physician Assistant National Certifying Examination (PANCE) required for licensure or registration.

This program capitalizes on the extensive educational resources of the University, including the New England region and beyond, to prepare physician assistants with the skills, competencies, and attitudes to provide compassionate, high-quality, and comprehensive care to patients of all ages in a variety of clinical settings. The emphasis is on community-oriented primary care, and students acquire experience in the evaluation and treatment of a broad spectrum of medical problems through the program's clinical rotations. These experiential elements of the program provide training in emergency medicine, primary care medicine, internal medicine, pediatrics, psychiatry, surgery, and women's health in addition to an elective specialty.

Students applying to the program must submit a formal application and designate whether they are applying to the Manchester or Worcester campus. Students cannot apply to both campuses. The application must include official transcripts and an essay through the Central Application Service for Physician Assistants (CASPA) and must be received by October 1. CASAPA, the centralized national application service of the Physician Assistant Education Association, may be contacted at [www.caspaonline.org](http://www.caspaonline.org).

#### **About the Program**

In the spring of 2008, a two-year Master of Physician Assistant Studies (MPAS) program began on the Worcester campus. While based on the Worcester campus, the program is a satellite of the MCPHS–Manchester program with an identical curriculum—both delivered with faculty on each campus via use of synchronized distance education. For both campuses, the first year is dedicated to didactic and laboratory learning and the second to clinical experience in a variety of patient-care settings. Students attend classes at their respective campus, with didactic courses simultaneously delivered at both campuses using technologically sophisticated interactive videoconferencing. This technology allows students at each site to interact with other students and faculty members in real time. Laboratory courses and small-group activities are facilitated by Physician Assistant Studies faculty located on each campus.

For details on the curriculum, prerequisites, and other information about the program, refer to the MCPHS–Manchester School of Physician Assistant Studies section of this catalog. For the most current information regarding the program in Worcester, refer to the MCPHS website at [www.mcphs.edu](http://www.mcphs.edu).

## **Technical Standards for the Master of Physician Assistant Studies**

### **Observation**

Candidates and students must have sufficient capacity to observe in the lecture hall, laboratory, and diagnostic and treatment areas of outpatient and inpatient settings. Sensory skills to perform the procedures of the healthcare profession in which students are enrolled are required. In any case where a candidate's or a student's ability to observe or acquire information through sensory modalities is compromised, the candidate or student must demonstrate alternative means and/or abilities to acquire and demonstrate the essential information conveyed in this fashion.

### **Communication**

Candidates and students must be able to communicate effectively in both academic and healthcare settings. Candidates and students must show evidence of effective written and oral communication skills, and must be able to communicate with patients in order to elicit and impart information.

### **Motor**

The ability to participate in basic diagnostic and therapeutic maneuvers and procedures is required. Candidates and students must have sufficient motor function to execute movements reasonably required to properly care for all patients, and must be able to perform motor functions with or without assistive devices.

### **Intellectual**

Candidates and students must be able to measure, calculate, reason, analyze, and synthesize. Problem solving, one of the critical skills demanded of healthcare professionals, requires all of these intellectual abilities. Candidates and students must be able to read and understand medical literature. In order to complete the specific Health Sciences program, students must be able to demonstrate mastery of these skills and the ability to use them together in a timely fashion in healthcare problem solving and patient care.

### **Behavioral and Social Attributes**

Candidates and students must possess the emotional health and stability required for full utilization of their intellectual abilities, the exercise of good judgment, and the prompt completion of all academic and patient care responsibilities. The development of mature, sensitive, and effective relationships with patients and other members of the healthcare team is essential. The ability to function in the face of uncertainties inherent in clinical practice, flexibility, compassion, integrity, motivation, interpersonal skills, and concern for others are all required.

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## MCPHS University–Worcester School of Pharmacy–Worcester/Manchester

Anna Morin, PharmD, Professor and Dean of Pharmacy

Paul Belliveau, PharmD, Professor, Assistant Dean, and Chair

Abir Kanaan, PharmD, Professor and Assistant Dean of Curriculum and New Programs

Paula Evans, PharmD, Associate Professor and Director of Pharmacy Outreach

Michael Steinberg, PharmD, Professor and Director of Assessment

Karyn Sullivan, Professor and Director of Interprofessional Education

### **Department of Pharmaceutical Sciences**

George Acquaaah-Mensah, PhD, Professor and Interim Chair

Professors Acquaaah-Mensah, Cohen (Emeritus), Kearney, Gardner, Goldsmith; Associate Professors Campbell, Kaplita, Sharma, Smith; Assistant Professors Andey, Metcalf, Yan; Faculty Associate Pollano

### **Department of Pharmacy Practice**

Paul Belliveau, PharmD, Professor, Assistant Dean, and Chair

Cheryl Durand, PharmD, Associate Professor and Vice-Chair

Professors Dunican, Kanaan, Lynch, Morin, Seed, Silva, Spooner, Steinberg, Sullivan, Willett; Associate Professors Abel, Bartlett, Carey, Conway, Cooper, Cross, Durand, Evans, Fong, Horton, Pervanas; Assistant Professors Aungst, Bear, Cabrera, Coppentrath, Dietle, Lamothe, Lepage, Morrill, Mukherjee, Towle, Yogaratnam

### **Office of Experiential Education**

Catherine Basile, PharmD, Assistant Professor of Pharmacy Practice and Assistant Dean of Pharmacy Experiential Education

Kara Bonaceto, PharmD, Associate Professor of Pharmacy Practice and Experiential Education Coordinator

Nicole Carace, PharmD, MS, Assistant Professor of Pharmacy Practice and Experiential Education Coordinator

Gretchen Jehle, PharmD, Assistant Professor of Pharmacy Practice and Experiential Education Coordinator

### **Mission Statement**

MCPHS University School of Pharmacy–Worcester/Manchester educates students to become competent pharmacists, capable of providing contemporary pharmacy care to patients in all practice areas and in collaboration with other healthcare providers. The school provides an accelerated, learner-centered environment that promotes critical thinking, problem solving, communication skills development, scholarship, professionalism, and a spirit of caring and responsibility through the use of innovative and creative teaching methods, state-of-the-art technology, and an expert, dynamic, and diverse faculty.

### **Core Values**

The School of Pharmacy–Worcester/Manchester embraces the following set of core values that reflect commitment to the faculty and staff and to preparing competent, caring, ethical pharmacy professionals to meet the public's need for high-quality healthcare:

- Honesty, integrity, professionalism, and personal responsibility;

- Respect for diversity and appreciation of cross-cultural perspectives;
- Adaptability and flexibility in response to the ever-changing external environment;
- Effective and efficient use of resources to maximize value to those we serve;
- Excellence and innovation in pharmacy education, scholarship, and service (including outreach to the community);
- A productive, satisfying work and learning environment;
- Integration of the pharmaceutical sciences with professional studies;
- Scholarship that contributes to knowledge development, improvement of pharmacy education, and promotion of pharmacy care and health outcomes;
- Experiences that foster interprofessional collaboration among healthcare team members delivering patient-centered care;
- Leadership opportunities that advance personal and professional goals;
- Lifelong learning and continuing professional development;
- Retention, development, and engagement of students and alumni;
- Growth and development of certificate programs, dual degrees, and postgraduate training opportunities.

## Degree and Certificate Programs

- Doctor of Pharmacy (Accelerated)
- Graduate Certificate in Medication Safety\*
- Doctor of Pharmacy (Accelerated)/ Master of Public Health\*
- Doctor of Pharmacy (Accelerated)/Graduate Certificate in Public Health\*
- Master of Patient Safety\*

Online programs are affiliated with the Center for Online Learning and Academic Innovation.

### **Doctor of Pharmacy (Accelerated)**

Admission to the MCPHS–Worcester/Manchester Doctor of Pharmacy (PharmD) degree program is a competitive process open only to transfer students. Applicants must have completed, or be in the process of completing, their preprofessional coursework at a regionally accredited college or university. If an applicant has completed coursework at a foreign college or university, the student must submit evidence of U.S. course/degree equivalency.

The professional curriculum in pharmacy at the School of Pharmacy–Worcester/Manchester (SOP-W/M) is offered as a year-round program that allows students to complete their degree requirements for the Doctor of Pharmacy in less than three years.

### **Technical Standards for Programs in the Schools of Pharmacy at MCPHS (Admission and Progression)**

#### **Introduction**

The School of Pharmacy is committed to a policy of equal educational opportunity and welcomes individuals with diverse backgrounds and abilities. The school therefore prohibits discrimination according to all applicable state and federal laws. The purpose of this document is to ensure that all students entering the PharmD program have read and understand the clinical and nonacademic requirements of the program so that they can make informed decisions regarding their pursuit of the profession of pharmacy.

Candidates for admission to and students enrolled in the PharmD program must have abilities and skills in multiple domains, including communication, intellectual, behavioral/social, and visual/auditory/tactile/motor competencies. The following technical standards describe the nonacademic qualifications (required in addition to academic standards) that the School of Pharmacy considers essential for successful progression and completion of the educational outcomes of its curriculum.

Although the School of Pharmacy will engage in an interactive process with applicants with disabilities, it reserves the right not to admit any applicant who, upon completion of the interactive process, cannot meet the technical standards

set forth below, with or without reasonable accommodations.

Reasonable accommodations for persons with prior documented disabilities will be considered on an individual basis. Students wishing to request accommodations for disabilities should contact the Director of Disability Services (see Disabilities Support Services in the Student Services Section of the catalog).

### **Domain: Communication**

#### *Performance Standards*

- Must have functional English speaking, reading, and writing abilities necessary to communicate clearly and professionally with faculty, staff, peers, patients, and healthcare professionals in a mature and professional manner that reflects the core values of the University.
- Communication includes both verbal and non-verbal expression, reading, writing, and computer skills

#### *Essential Functions*

- Must have the ability to participate in class discussions, group projects, and practical labs for the purpose of the delivery and receipt of medical information
- Must have the ability to recognize both verbal and non-verbal communication, including facial expressions and body language
- Must have the ability to report accurately and legibly in patients' charts, demonstrating the knowledge of the meaning and spelling of words, rules of composition and grammar
- Must have the ability to explain to other healthcare team members, patients, and/or caregivers reason for treatment, preventive measures, disease process, and need for referral
- Must have the ability to use computers and other technology to accurately record information and convey critical health-related documentation
- Must have the ability to recognize and respond to physical and psychological needs of patients

### **Domain: Intellectual**

#### *Performance Standards*

- Must have critical and logical thinking ability sufficient to engage in clinical judgment and problem solving to address issues and problems within all learning environments
- Must have ability to multi-task and to perform work in a logical and sequential manner

#### *Essential Functions*

- Must be able to memorize, perform scientific measurement and calculation, reason, analyze, and synthesize information
- Must demonstrate the ability to retrieve (electronically and manually), read, understand, and interpret medical, scientific and professional information and literature
- Must demonstrate the intellectual and reasoning abilities required to develop problem-solving and decision-making skills
- Must demonstrate the ability to learn effectively through a variety of modalities including, but not limited to classroom instruction, small group discussion, individual study of materials, preparation and presentation of written and oral reports, and use of computers and other technology
- Must demonstrate the ability to prioritize and complete tasks in laboratory, clinical, and patient care settings with time constraints
- Must perform a variety of duties accurately, often changing from one task to another without loss of efficiency or composure

### **Domain: Behavioral/Social**

#### *Performance Standards*

- Must possess the ability to relate to patients, caregivers, other members of the healthcare team, and faculty in a professional manner
- Must demonstrate sensitivity to people from a variety of cultural backgrounds

- Must possess the ability to interact with and respond to needs of patients and caregivers from a variety of cultural backgrounds and with a diversity of emotional, intellectual, and physical health issues
- *Essential Functions*
- Must be able to fully utilize intellectual abilities to exercise good judgment; to complete patient care responsibilities appropriately; and to relate to patients, families, and colleagues with courtesy, compassion, maturity, and respect for their dignity
- Must be able to effectively function when faced with challenges and uncertainties in classroom, laboratory, and experiential settings
- Must be able to accept criticism and be able to respond and modify behavior accordingly
- Must be able to interact with faculty, staff, peers, patients, and members of the healthcare team in a mature and professional manner that reflects the core values of the University and the School.

### **Domain: Visual/Auditory**

#### *Performance Standard*

- Must possess sufficient visual and auditory abilities to gather data from written reference material, oral presentations, illustrations, diagrams, and patient observation

#### *Essential Functions*

- Must have the ability to gather data from written reference material, computer-based programs, and oral presentations
- Must have the ability to observe and/or conduct demonstrations and experiments
- Must have the ability to utilize various types of physical assessment skills required for patient-centered care including reading digital or analog representations of physiologic phenomena
- Must have the ability to execute movements reasonably required to properly participate in the activities of a laboratory or an experiential rotation that are components of pharmacy practice
- Must have the ability and vision to sufficient to read and interpret prescriptions, prescription labels, and drug labels

### **Domain: Tactile and Motor Competencies**

#### *Performance Standards*

- Must possess sufficient tactile and motor abilities to prepare pharmaceutical products, evaluate patients, and perform basic laboratory tests
- Must possess the manual dexterity necessary to manipulate and control laboratory equipment and materials

#### *Essential Functions*

- Must possess manual dexterity sufficient to accurately compound and prepare pharmaceutical products for dispensing to patients
- Must possess manual dexterity and sense of touch sufficient to perform basic patient assessments including, but not limited to palpation, auscultation, percussion, and other diagnostic maneuvers
- Must possess sufficient manual dexterity to conduct laboratory diagnostic tests and administer non-oral medications

### **Real-Time Distance Education Technology**

Two years of classroom and laboratory coursework must be completed in residence at MCPHS–Worcester/Manchester. All core courses for the Doctor of Pharmacy program, except for laboratory courses, are delivered via real-time distance education technology between campuses. Approximately 85% of the program is taught synchronously from the Worcester campus to the Manchester campus, and the other 15% of the program is taught synchronously from the Manchester campus to the Worcester campus.

### **Clinical Rotations**

A number of clinical rotations in the required curriculum may be scheduled at some distance from the campus. This is necessary to provide a range of diverse learning experiences and ensure availability and quality of clinical rotation sites. The University will make every effort to accommodate requests regarding assignments to experiential education sites, but students generally can expect to be assigned to clinical sites at some distance from the campus for at least a portion

of their required clinical rotations. In such instances, students are responsible for transportation to and from their clinical sites and other related travel or housing expenses.

### Progression Requirements

Students must maintain a cumulative professional 2.20 grade point average (GPA) to progress into the second and third professional years of the program. All PharmD students must complete all requirements and be in good academic standing before beginning experiential education rotations.

A student who has a cumulative professional GPA of less than or equal to 1.50 and has one or more course grades of F will be dismissed from the Doctor of Pharmacy program.

All progression evaluations will be based on the student's cumulative professional GPA.

### Electives

Electives are campus specific and will be taught by faculty on the respective campus. A limited number of electives will be available on both campuses via distance education technology. Students will not be offered the opportunity to travel to a distant campus to participate in electives.

### Curriculum: Doctor of Pharmacy (Accelerated)

#### Preprofessional Courses

REQUIRED COURSE	SEMESTER HOURS
Biology (general and human)	8
Microbiology	3
Chemistry (general)	8
Chemistry (organic)	8
English composition	6
Introduction to psychology	3
Introduction to sociology	3
Introduction to history and political science	3
Calculus	3
Probability and statistics	3
Physics	3
Economics (macro, micro, or general)	3
Mathematics or computer science	3
Subtotal for required preprofessional courses	57

ELECTIVES	SEMESTER HOURS
Humanities	3
Social sciences	3
Behavioral sciences	3
Subtotal for elective preprofessional courses	9

**Total preprofessional credits: 66 semester hours**

### Professional Courses

#### Year I—fall

COURSE	TITLE	SEMESTER HOURS
PPW 340	U.S. Healthcare and Public Health Systems	3
PPW 330	Introduction to Patient Care I	3
PSW 300	Pharmaceutical Biochemistry I	2
PSW 311	Pharmaceutics	3
PSW 323	Immunology	2
PSW 350	Service and Care in the Community (a pass/fail course)	1



PPW 360	Pharmacy Law	2
PPW 380	Dean's Seminar	0
TOTAL		16

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
PPW 331	Introduction to Patient Care II	2
PPW 379	Drug Literature Evaluation and Informatics in Healthcare I	2
PSW 301	Pharmaceutical Biochemistry II / Nutrition	3
PSW 312	Pharmaceutics II (w/lab)	2
PSW 313	Pharmacokinetics/Biopharmaceutics	3
PSW 325	Introduction to Physiology/Pathophysiology	2
PPW 378	Pharmacy Administration/Pharmacoeconomics	3
TOTAL		17

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
PPW 333	Introduction to Patient Care III (w/lab)	2
PPW 348	Self-Care Therapeutics/Pharmacotherapeutics I	3
PSW 385	Pharmacology / Toxicology / Medicinal Chemistry I	3
PSW 335	Human Physiology and Pathophysiology I	2
PPW 384	Drug Literature Evaluation and Informatics in Healthcare II	1
	Elective	2
TOTAL		13

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
PPW 401*	Introductory Pharmacy Practice Experiences—Community (a pass/fail course)	4
PPW 402*	Introductory Pharmacy Practice Experiences—Institutional (a pass/fail course)	4
PPW 460^	Ethics, Professionalism, and Leadership	2
PPW 440**	Patient Care Seminar I	1
PPW 450**	Pharmacotherapeutics II	4
PSW 445**	Pharmacology / Toxicology / Medicinal Chemistry II	2
PSW 435**	Human Physiology and Pathophysiology II	1
TOTAL		18

\* Four weeks ^ 14 weeks \*\* Six weeks

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
PPW 445	Patient Care Seminar II (w/lab)	2
PPW 453	Pharmacotherapeutics III	6
PSW 475	Pharmacology / Toxicology / Medicinal Chemistry III	7
PSW 470	Human Physiology and Pathophysiology III	2
	Elective	2
TOTAL		19

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
PPW 448	Patient Care Seminar III (w/lab)	2
PPW 457	Pharmacotherapeutics IV	5
PSW 485	Pharmacology / Toxicology / Medicinal Chemistry IV	3
PSW 473	Pharmacogenomics	2
TOTAL		12

*Year III*

COURSE	TITLE	SEMESTER HOURS
PPWC 500*	Advanced Pharmacy Practice Experience 1	6
PPWC 501*	Advanced Pharmacy Practice Experience 2	6
PPWC 502*	Advanced Pharmacy Practice Experience 3	6
PPWC 503*	Advanced Pharmacy Practice Experience 4	6
PPWC 504*	Advanced Pharmacy Practice Experience 5	6
PPWC 505*	Advanced Pharmacy Practice Experience 6	6
PPW 550	Graduate Project	2
TOTAL		38

\* Six weeks each

**Total credits required to complete degree requirements: 133 semester hours**

### **Academic Complaint Policy for the Accreditation Council for Pharmacy Education**

It is the policy of MCPHS and the School of Pharmacy–Worcester/Manchester (SOP-W/M) to objectively review student grievances related to academic and non-academic issues. Those students who wish to file a specific complaint relating to the Doctor of Pharmacy program's adherence to Accreditation Council for Pharmacy Education (ACPE) standards for accreditation should utilize the following procedure:

#### **Procedure**

1. The student must file a written complaint with the Dean of SOP-W/M.
2. The dean will forward the complaint to an ad hoc committee of three faculty with representatives from the Department of Pharmacy Practice and the Department of Pharmaceutical Sciences. The ad hoc committee will review the complaint and render a decision concerning the complaint. The committee will inform the student of its decision via a written response within 30 working days upon receipt of the complaint.
3. If the student wishes to appeal the committee's decision, then the student must file a written appeal to the dean within 5 working days upon receipt of the written response from the committee.
4. The dean will review the appeal and render a written response to the student within 14 working days upon receipt of the student's written appeal. The decision of the dean is final.
5. The office of the dean will maintain a copy of all written correspondence.

If a student wishes to file a complaint with the ACPE, the student should contact the council via email, phone, or mail. The ACPE contact information is available in the catalog in the Introduction section under Accreditation.

### **Doctor of Pharmacy (Accelerated) / Master of Public Health (Online MPH)**

The Doctor of Pharmacy (Accelerated) and Master of Public Health (PharmD/MPH) program at MCPHS University is a joint program encompassing the requirements of both degrees. Students will have the opportunity to apply to the program in their first year of professional study in the PharmD (Accelerated) program at MCPHS University Worcester/Manchester. Upon acceptance to the joint program, students may begin their graduate study in the MPH program in the summer of their first professional year, replacing their elective with an MPH course. Students will continue to take MPH courses throughout the curriculum and finish their MPH in three semesters following the conferral of the Doctor of Pharmacy degree. During the final year at MCPHS University, students will be able to work full time while

finishing their MPH degree requirements online.

### Professional Courses

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
PPW 340	U.S. Healthcare and Public Health Systems	3
PPW 330	Introduction to Patient Care I	3
PSW 300	Pharmaceutical Biochemistry I	2
PSW 311	Pharmaceutics	3
PSW 323	Immunology	2
PSW 350	Service and Care in the Community (a pass/fail course)	1
PPW 360	Pharmacy Law	2
PPW 380	Dean's Seminar	0
TOTAL		16

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
PPW 331	Introduction to Patient Care II	2
PPW 379	Drug Literature Evaluation and Informatics in Healthcare I	2
PSW 301	Pharmaceutical Biochemistry II / Nutrition	3
PSW 312	Pharmaceutics II (w/lab)	2
PSW 313	Pharmacokinetics/Biopharmaceutics	3
PSW 325	Introduction to Physiology/Pathophysiology	2
PPW 378	Pharmacy Administration/Pharmacoeconomics	3
TOTAL		17

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
PPW 333	Introduction to Patient Care III (w/lab)	2
PPW 348	Self-Care Therapeutics/Pharmacotherapeutics I	3
PSW 385	Pharmacology / Toxicology / Medicinal Chemistry I	3
PSW 335	Human Physiology and Pathophysiology I	2
PPW 384	Drug Literature Evaluation and Informatics in Healthcare II	1
	Elective	2
PBH 705*	Intro to Environmental Health	3
TOTAL		14

\* *Public Health course*

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
PPW 401*	Introductory Pharmacy Practice Experiences—Community (a pass/fail course)	4
PPW 402*	Introductory Pharmacy Practice Experiences—Institutional (a pass/fail course)	4
PPW 460^	Ethics, Professionalism, and Leadership	2
PPW 440**	Patient Care Seminar I	1
PPW 450**	Pharmacotherapeutics II	4
PSW 445**	Pharmacology / Toxicology / Medicinal Chemistry II	2
PSW 435**	Human Physiology and Pathophysiology II	1

DRA 809 <sup>^</sup> &	Health Epidemiology	3
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TOTAL		21
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*\* Four weeks ^ 14 weeks \*\* Six weeks & Public Health Course*

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
PPW 445	Patient Care Seminar II (w/lab)	2
PPW 453	Pharmacotherapeutics III	6
PSW 475	Pharmacology / Toxicology / Medicinal Chemistry III	7
PSW 470	Human Physiology and Pathophysiology III	2
DRA 807*	Statistics of Clinical Research	3

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TOTAL		20
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*\* Public Health course*

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
PPW 448	Patient Care Seminar III (w/lab)	2
PPW 457	Pharmacotherapeutics IV	5
PSW 485	Pharmacology / Toxicology / Medicinal Chemistry IV	3
PSW 473	Pharmacogenomics	2

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TOTAL		12
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*Year III*

COURSE	TITLE	SEMESTER HOURS
PPWC 500***	Advanced Pharmacy Practice Experience 1	6
PPWC 501***	Advanced Pharmacy Practice Experience 2	6
PPWC 502***	Advanced Pharmacy Practice Experience 3	6
PPWC 503***	Advanced Pharmacy Practice Experience 4	6
PPWC 504***	Advanced Pharmacy Practice Experience 5	6
PPWC 505***	Advanced Pharmacy Practice Experience 6	6
PPW 550	Graduation Project	2
PBH 715*	Intro to Social & Behavioral Sciences (Fall semester)	3

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TOTAL		41
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*\* Public Health course*

**Total credits required to complete requirements for Accelerated Doctor of Pharmacy: 141 semester hours with Public Health Courses replacing Pharmacy Electives.**

*Year III Summer (following PharmD Graduation)*

COURSE	TITLE	SEMESTER HOURS
PBH 890	Public Health Practice Experience	2
PBH 895	Preparatory Seminar, Culminating Experience	1
PBH 755	Health Promotion and Education	3
PBH 710	Introduction to Health Policy and Management	3

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TOTAL		9
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*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
PBH Elective*****	Public Health Elective Course	3

PBH 760	Program Design Research and Evaluation	3
PBH 750	Community Health Science and Practice	3
TOTAL		9

\*\*\*\*\* Electives are chosen from PBH 801, PBH 805, PBH 810, PBH 815, or DRA 811

Year IV—spring

COURSE	TITLE	SEMESTER HOURS
PBH Elective*****	Public Health Elective Course	3
PBH 765	Community Health Assessments	3
PBH 898	Culminating Experience	3
TOTAL		9

A total of 9 semester hours will count toward completion of both degree programs: two MPH courses (6 semester hours) are fulfilled through PBH 705 and DRA 807, replacing PharmD electives in year I summer and year II spring. An additional 3 credits of the MPH program are satisfied by completion of PPW 340 U.S. Healthcare and Public Health.

**Total credits: 133 (PharmD); 42 (MPH); 168 (PharmD/MPH)**

### Doctor of Pharmacy (Accelerated) / Graduate Certificate of Public Health (Online)

The Doctor of Pharmacy (Accelerated) and Graduate Certificate of Public Health program at MCPHS University is a program allowing students the opportunity to gain a certificate during the accelerated pharmacy program. Students may begin their graduate study in the Graduate Certificate of Public Health program in the summer of their first professional year, replacing their elective with a Graduate Certificate of Public Health course. Students will continue to take public health courses throughout the curriculum and obtain their certificate with the conferral of the Doctor of Pharmacy degree.

### Professional Courses

Year I—fall

COURSE	TITLE	SEMESTER HOURS
PPW 340	U.S. Healthcare and Public Health Systems	3
PPW 330	Introduction to Patient Care I	3
PSW 300	Pharmaceutical Biochemistry I	2
PSW 311	Pharmaceutics	3
PSW 323	Immunology	2
PSW 350	Service and Care in the Community (a pass/fail course)	1
PPW 360	Pharmacy Law	2
PPW 380	Dean's Seminar	0
TOTAL		16

Year I—spring

COURSE	TITLE	SEMESTER HOURS
PPW 331	Introduction to Patient Care II	2
PPW 379	Drug Literature Evaluation and Informatics in Healthcare I	2
PSW 301	Pharmaceutical Biochemistry II / Nutrition	3
PSW 312	Pharmaceutics II (w/lab)	2
PSW 313	Pharmacokinetics/Biopharmaceutics	3
PSW 325	Introduction to Physiology/Pathophysiology	2
PPW 378	Pharmacy Administration/Pharmacoeconomics	3
TOTAL		17

Year I—summer

COURSE	TITLE	SEMESTER HOURS
PPW 333	Introduction to Patient Care III (w/lab)	2

PPW 348	Self-Care Therapeutics/Pharmacotherapeutics I	3
PSW 385	Pharmacology / Toxicology / Medicinal Chemistry I	3
PSW 335	Human Physiology and Pathophysiology I	2
PPW 384	Drug Literature Evaluation and Informatics in Healthcare II	1
	Elective	2
PBH 705*	Intro to Environmental Health	3

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TOTAL 16

\* Public Health course

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
PPW 401*	Introductory Pharmacy Practice Experiences—Community (a pass/fail course)	4
PPW 402*	Introductory Pharmacy Practice Experiences—Institutional (a pass/fail course)	4
PPW 460^	Ethics, Professionalism, and Leadership	2
PPW 440**	Patient Care Seminar I	1
PPW 450**	Pharmacotherapeutics II	4
PSW 445**	Pharmacology / Toxicology / Medicinal Chemistry II	2
PSW 435**	Human Physiology and Pathophysiology II	1
DRA 809^&	Health Epidemiology	3

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TOTAL 21

\* Four weeks ^ 14 weeks \*\* Six weeks & Public Health Course

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
PPW 445	Patient Care Seminar II (w/lab)	2
PPW 453	Pharmacotherapeutics III	6
PSW 475	Pharmacology / Toxicology / Medicinal Chemistry III	7
PSW 470	Human Physiology and Pathophysiology III	2
DRA 807*	Statistics of Clinical Research	3

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TOTAL 20

\* Public Health course

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
PPW 448	Patient Care Seminar III (w/lab)	2
PPW 457	Pharmacotherapeutics IV	5
PSW 485	Pharmacology / Toxicology / Medicinal Chemistry IV	3
PSW 473	Pharmacogenomics	2

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TOTAL 12

*Year III*

COURSE	TITLE	SEMESTER HOURS
PPWC 500***	Advanced Pharmacy Practice Experience 1	6
PPWC 501***	Advanced Pharmacy Practice Experience 2	6
PPWC 502***	Advanced Pharmacy Practice Experience 3	6
PPWC 503***	Advanced Pharmacy Practice Experience 4	6
PPWC 504***	Advanced Pharmacy Practice Experience 5	6
PPWC 505***	Advanced Pharmacy Practice Experience 6	6

PPW 550	Graduation Project	2
PBH 715*	Intro to Social & Behavioral Sciences (Fall semester)	3

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TOTAL 41

\* *Public Health course*

**Total credits required to complete requirements for Accelerated Doctor of Pharmacy: 141 semester hours with Public Health Courses replacing Pharmacy Electives.**

### **Graduate Certificate in Medication Safety (Online)**

The Graduate Certificate in Medication Safety program is available to all healthcare professionals, including physicians, pharmacists, and nurses who are interested in promoting a culture of safety. Several healthcare agencies such as the Joint Commission, Institute for Safe Medication Practices, Institute for Healthcare Improvement, and Agency for Healthcare Research and Quality are encouraging institutions to create a “culture of safety.” In fact, the Center for Medicare Services has established quality measurements for several disease states. As a result, institutions have created positions and formed committees to better assess and improve healthcare quality and patient and medication safety. This certificate program prepares graduates to understand the fundamental concepts and tools that will guide them in developing various initiatives in medication safety at their practice settings. This includes creating a culture of safety, aligning medication safety plans with the goals of the organization, learning from defects in medication-related processes, incorporating human and environmental factors to reduce medication error and adverse events, and effectively implementing change. Certificate courses also may be used to satisfy course requirements for the Master of Science in Medication Safety program.

#### **Curriculum: Graduate Certificate in Medication Safety (Online)**

REQUIRED COURSES	TITLE	SEMESTER HOURS
MSM 701	Introduction to Medication Safety	2
MSM 702	Introduction to Quality in Healthcare	2
MSM 703	Communication and the Team Approach	2
MSM 704	Medication Safety Tools, Analysis, and Application	3
MSM 705	Longitudinal Application Project	3
TOTAL		12

### **Master of Patient Safety (Online)**

Patient safety and quality of care are in the minds of all health professionals as they journey toward excellence in healthcare delivery, promote a culture of safety, and ensure transparency of patient safety measures. Healthcare institutions are integrating a variety of methods to enhance patient safety, including enhanced communication and healthcare informatics strategies. The elimination of error and risk in the healthcare system can improve care and reduce costs.

The Master of Patient Safety program has its foundation in the Institute of Medicine’s core competencies for health professionals, which include providing patient-centered care within an interdisciplinary team, emphasizing evidence-based practice, and incorporating quality improvement and informatics. Building on these competencies, the program focuses on communication, medical error science, organizational change, and leadership. Graduates of the program will integrate these competencies to enhance patient safety within the healthcare organization, enhance the culture of safety, and reduce both the risk and the frequency of medical error.

#### **Admission**

Requirements include a Bachelor of Science or higher in a healthcare or related field, a minimum of two years of relevant work experience, and a 2.8 or higher undergraduate grade point average (GPA).

The priority filing date for this program is June 1 each year for a fall semester start. We continue to review applications until all available seats in the program have been filled.

#### **Curriculum: Master of Patient Safety (Online)**

REQUIRED COURSES	TITLE	SEMESTER HOURS
MSM 701	Introduction to Medication Safety	2

MSM 702	Introduction to Quality in Healthcare	2
MSM 703	Communication and the Team Approach	2
MSM 704	Medication Safety Tools, Analysis, and Application	3
HCA 710	Systems of Healthcare Delivery	3
HCA 720	Organization and Systems Thinking	3
MSM 830	Error Science, Risk Assessment, and Disclosure	3
MSM 810	Research in Patient Safety	3
Electives	Electives (can be taken in public health, healthcare administration, or regulatory affairs)	9
MSM 850	Patient Safety Capstone/Practicum	4
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TOTAL		34

### **Technical Nonacademic Standards for School of Pharmacy–Worcester/Manchester**

In conjunction with the applicable academic and accreditation standards, the faculty in each of the programs at MCPHS has established certain abilities and characteristics defined as technical standards. Candidates for enrollment in programs at MCPHS University must meet these technical standards, which may include but are not limited to observation; communication; sensory and motor coordination and function; intellectual, conceptual, integrative, and quantitative abilities; and behavioral and social attributes. These standards may be met with or without reasonable accommodations. Please carefully review the technical standards for the program to which you have applied. The standards may be found in this catalog in the program description sections.



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## MCPHS University—Manchester School of Nursing

*More information specific to the Manchester campus may be found in the following sections: Facilities, Interinstitutional Cooperation, and Student Services.*

Carol Eliadi, EdD, JD, APRN, Chief Nursing Officer; Dean and Professor

Cindy Heden, DNP, RN Interim Assistant Dean and Assistant Professor

Assistant Professors Adams, Britt, Kersbergen, Normile

### Degree Programs

- Bachelor of Science in Nursing (Postbaccalaureate BSN)
- Master of Science in Nursing—Family Nurse Practitioner Track (MSN)

#### **Bachelor of Science Degree in Nursing (Postbaccalaureate BSN)**

MCPHS offers an accelerated 16-month Bachelor of Science in Nursing (Postbaccalaureate BSN) degree program at the Manchester campus. The New Hampshire Board of Nursing and the New Hampshire Postsecondary Education Commission have approved the 16-month accelerated BSN program implemented at the MCPHS—Worcester campus, and the first Manchester-based students enrolled in September 2007. The curriculum is identical to that currently offered at the Worcester campus. Students attend classes in Manchester.

For detailed prerequisites and other information about the program, refer to the MCPHS—Worcester School of Nursing section of this catalog. For the most current information regarding the program in Manchester, refer to the MCPHS website at [www.mcphs.edu](http://www.mcphs.edu).

#### **Curriculum: Bachelor of Science in Nursing (Postbaccalaureate)\***

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
NUR 206	Nursing History, Knowledge, and Narrative	2
NUR 208	Essential Concepts of Nursing	3
NUR 216	Nursing Skills and Technologies (w/lab)	5
NUR 226	Pathophysiologic and Pharmacologic Approach to Nursing Practice	6
TOTAL		16

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
NUR 245	Health Assessment and Promotion (w/lab)	4
NUR 325	Provider of Care I: Adult and Elder Health (w/lab)	8
NUR 350	Scholarly Inquiry	3
TOTAL		15

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
NUR 330	Nursing Informatics and Healthcare Technologies	3
NUR 335	Provider of Care II: Child-Bearing and Child-Rearing Family Health	6
NUR 345	Provider of Care III: Mental and Social Health	6
TOTAL		15

Year II—fall

COURSE	TITLE	SEMESTER HOURS
NUR 425	Provider of Care IV: Community and Home Health	7
NUR 445	Provider of Care V: Coordinator of Care	8
NUR 450	Member of a Profession and Capstone Leadership Project	3
TOTAL		18

**Total preprofessional coursework: 58 semester hours\*\***

**Total professional major: 64 semester hours**

**Total credits required for BSN: 122 semester hours**

\* Courses will be offered in a block-scheduling format each semester, with students taking three or fewer courses concurrently during each block.

\*\* A maximum of 58 semester hours of credit for the prior BS/BA degree from a regionally accredited college or university will be awarded upon matriculation in fulfillment of MCPHS core curriculum requirements.

### **Master of Science in Nursing—Family Nurse Practitioner Track (MSN)**

The primary goal of the Master of Science in Nursing (MSN) degree program is to prepare the graduate nurse to meet ever-changing healthcare needs. The MSN curriculum is based on the American Association of Colleges of Nursing (AACN) Core Curriculum for an MSN program, including health promotion and disease prevention; human diversity and social issues; theoretical foundation of nursing practice; professional role development; research, ethics, and policy; and organization and financing of healthcare. Upon the completion of the MSN program, students will be able to

- Provide safe, effective, culturally competent, and advanced nursing care to individuals and families across the lifespan as a member of an interdisciplinary team and in the context of community;
- Integrate the core competencies of research, diversity, healthcare policy, ethics, health promotion and disease prevention, and theoretical foundations of nursing in the advanced nursing practice role;
- Demonstrate a leadership role in the profession of nursing;
- Engage in ongoing nursing knowledge development to guide practice
- Successfully pass the Family Nurse Practitioner certification examination, the Psychiatric/Mental Health Nurse Practitioner certification examination; or demonstrate competency requisite skill set as a novice nurse educator.

The MSN program offers (1) an MSN Family Nurse Practitioner (FNP) degree option, for which candidates complete all FNP core courses plus three family health nursing courses, which include 630 clinical hours.

### **Admission Criteria**

Master of Science in Nursing applicants must show proof of having attained a baccalaureate degree in nursing and/or successful completion of the MCPHS RN to MS in Nursing Bridge program. Some undergraduate studies may be credited, provided the student can demonstrate that he or she has had significant professional experience in a similar or related field.

Candidates whose primary language is not English will be required to have a minimum TOEFL score of 550.

### **Degree Requirements**

All students must complete the required 37 or 42 credit hours and maintain a cumulative grade point average (GPA) of 3.0. For the FMHNP program, all students must complete the required 45 credit hours and maintain a cumulative grade point average (GPA) of 3.0.

The required courses for completion of the MSN program are as follows:

### **Master of Science in Nursing (Family Nurse Practitioner Track)**

COURSE	TITLE	SEMESTER HOURS
NUR 701	Professional Role Development for Advanced Practice Nursing	3
NUR 702	Human Diversity, Social, and Policy Issues	3
NUR 703	Advanced Health Assessment Across the Lifespan (90 clinical hours)	4

NUR 706	Advanced Pathophysiology	3
NUR 707	Advanced Pharmacology	3
NUR 708	Scholarship for Advance Nursing: Building an Evidence-Based Practice	4
NUR 809	Family Primary Care I (OB/Pedi) (180 clinical hours)	6
NUR 810	Family Primary Care II (Adult) (180 clinical hours)	6
NUR 811	Family Primary Care III (Geri) (180 clinical hours)	6
NUR 820	Translating and Integrating Scholarship Practicum (completed over 2 semesters)	4
TOTAL		42

## School of Nursing Academic Policies

### Academic Progression

A minimum grade of C+ (2.3) is required in all professional nursing courses.

A minimum grade point average (GPA) of 2.7 is required.

Successful completion of both the theory and the clinical laboratory/practicum in a clinical Nursing course is required to pass the course.

Students who do not achieve the required professional GPA needed to fulfill School of Nursing graduation requirements must complete a select remediation course(s) to reach the required professional GPA. A component of the remediation process is the requirement to achieve a minimum score of 850 on the HESI Exit examination. Official University graduation and approval to write for the NCLEX will not occur until professional GPA and HESI standards have been met.

A failed individual Nursing course may be repeated only once. A second grade below C+ in the repeated course will result in dismissal from the Nursing program. Throughout the Nursing program, a student may repeat no more than two separate Nursing courses. Three grades below C+ in any combination of Nursing courses also will result in dismissal from the Nursing program.

Professional courses (NUR-designated) may not be taken pass/fail.

### Progression and Retention Policies

Students must complete the requirements for the Bachelor of Science in Nursing degree within five years (32-month track) or three years (16-month track). If this time limit from the date of admission into the major has elapsed and the student has not completed degree requirements, the student must request an extension in writing and meet with the Dean of the School of Nursing, who may approve or deny the extension request. The School Dean's decision is final and not subject to further appeal.

### CPR Certification

All students must complete CPR training prior to beginning clinical experiences. Students must be certified in **Basic Life Support (BLS) by the American Heart Association (AHA)**. **Acceptable AHA courses include BLS (instructor lead) or HealthCode BLS (blended online/skill sign off)**. Students must provide a copy of the card, indicating active certification (AHA requires recertification every two years), to campus Clinical Placement Coordinator. It is recommended that the student verify the course in advance to ensure that the course is appropriate.

Note: It is the responsibility of the student to submit evidence of all required annual updates of immunizations and certification renewals. Students will not be permitted to participate in clinical learning experiences until all information is received, and consequently may be unable to meet program requirements or experience a delay in graduation.

### Transportation

Reliable transportation to, from, and during all clinical and field experiences is the responsibility of the student. A number of clinical rotations in the required curriculum may be scheduled at some distance from the campus. This is necessary to provide a range of diverse learning experiences and to ensure availability and quality of clinical rotation sites. The University will make every effort to accommodate requests regarding assignments to experiential education sites, but students generally can expect to be assigned to clinical sites some distance from the campus for at least a portion of their required clinical rotations. In such instances, students are responsible for transportation and other related travel expenses.

**Licensure**

Students who successfully complete the program will be eligible to sit for the National Council of State Boards of Nursing Licensure Examination for Registered Nurses (NCLEX-RN).

**Employment**

Due to the rigorous and accelerated nature of the Nursing program, the demands placed on students are extremely high, particularly with respect to their clinical rotation schedule and associated student requirements. It is for this reason that students are strongly discouraged from engaging in any outside, non-program-related employment throughout the program of study.

**School of Nursing Professional and Technical Standards**

A prelicensure candidate for the Bachelor of Science in Nursing degree must have abilities and skills in four areas: communication, observation, motor function and endurance, and behavioral maturity. Reasonable accommodations may be made for some disabilities. However, prelicensure BSN students must be able to perform in a reasonably independent manner, with or without accommodations.

**Communication**

- Must be able to communicate effectively with patients, families, and members of the healthcare team through oral, written, and interpersonal means
- Must be able to obtain information, describe patient situations, and perceive both oral and nonverbal communication (including ability to understand normal speech without seeing the speaker's face)
- Must be able to speak, comprehend, read, and write in English at a level that meets the need for accurate, clear, and effective communication; examples include but are not limited to giving clear oral reports, reading watches or clocks with second hands, reading graphs, reading and understanding documents printed in English, writing legibly in English, and discriminating subtle differences in medical terminology

**Observation**

- Must be able to observe a patient accurately; examples include but are not limited to listening to heart and breath sounds; visualizing the appearance of a surgical wound; detecting bleeding, unresponsiveness, or other changes in patient status; detecting the presence of a foul odor; and palpating an abdomen
- Must be able to detect and respond to emergency situations, including audible alarms (e.g., monitors, call bells, fire alarms)

**Motor Function and Endurance**

- Must have sufficient strength and mobility to work effectively and safely with patients and carry out nursing care activities; examples include but are not limited to lifting and positioning patients (lifting up to 50 pounds, carrying up to 25 pounds), transferring patients in and out of bed, cardiopulmonary resuscitation (AHA Healthcare Provider Level), preparation and administration of medications (oral, injection, and intravenous, including hanging IV bags at shoulder height), reading and emptying body fluid collection devices below bed level, application of pressure to stop bleeding, clearing/opening an obstructed airway, and providing daily hygiene care
- Must be able to complete assigned periods of clinical practice, including up to 12-hour shifts, including days, evenings, nights, and weekends
- Must be able to respond at a speed and in a manner sufficient to carry out patient assignments within the allotted time

**Behavior**

- Must possess mental and emotional health required for total utilization of intellectual abilities
- Must be able to tolerate physically taxing workloads
- Must be able to respond and function effectively during stressful situations
- Must be capable of adapting to rapidly changing environments and of responding with flexibility in uncertain situations
- Must be able to interact appropriately with others (i.e., patients, families, members of healthcare team) in various

healthcare contexts

**Policy for Content Validation after Nonprogression or Leave of Absence**

A student who fails or withdraws from an undergraduate Nursing professional course, or who withdraws from a Nursing program via leave of absence, must validate previous knowledge and skills held prior to program exit before he or she may reenroll in Nursing clinical professional courses. Reenrollment is subject to clinical placement availability. (NOTE: There is no guarantee that space will be available at the student's desired return date. It may take up to two years for reentry due to lack of clinical placement availability.) This policy applies to all undergraduate Nursing programs.

The validation will occur via the student's demonstration of knowledge and skills, that is, meeting established program clinical competencies, in a selected clinical facility or simulation laboratory. The student must notify the program director of the desired date of return a minimum of 30 days prior to the anticipated return date to make arrangements for preparing for and performing validation testing. Program faculty will provide guidance as to what content and skills (competencies) need to be reviewed by the student prior to the testing, but it is the student's responsibility to prepare for the validation testing. The student must pass the validation testing as per the outcome measures determined by the faculty. Failure to meet the required outcome(s) will result in dismissal from the Nursing program and/or the need to repeat identified courses.

A student attempting to return from a leave of absence also must have been cleared to return to classes by designated staff in the Center for Academic Success and Enrichment (Boston, Worcester/Manchester) and/or Student Affairs office at their campus (if a medical leave of absence) prior to performing validation testing. The Center for Academic Success and Enrichment, Student Affairs office and Nursing faculty will coordinate communication regarding student clearance for leave of absence return and subsequent eligibility to schedule validation testing.

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# MCPHS University–Manchester

## School of Rehabilitation Sciences

### **Occupational Therapy Program**

Professor C. Douglas Simmons, PhD, OTR/L, FAOTA, Program Director

Associate Professor Susan C. Merrill, PhD, OTR/L, FAOTA, Academic Fieldwork Coordinator

Assistant Professors Butler, Finch

### **Degree Program**

#### **Master of Science in Occupational Therapy**

The Master of Science Occupational Therapy Program (MSOT) on the MCPHS Manchester campus prepares graduates with the advanced knowledge and skills for contemporary occupational therapy practice. The curriculum includes foundational arts and sciences, basic tenets and theoretical perspectives of occupational therapy, clinical sciences, service delivery and management, professional responsibilities and ethics, and scholarship competencies in the educational preparation of occupational therapists. The coursework is designed to reinforce and build on required elements that allow students to acquire, synthesize, analyze and apply knowledge and skills in a variety of clinical, community-based, research and management environments.

The MSOT program builds on the knowledge acquired from an undergraduate arts or science education and has two components: didactic and fieldwork education. Through the didactic component, students gain knowledge and skills and develop professional behavior required for occupational therapy practice. Through fieldwork education students apply knowledge, skills, and professional behavior in clinical, school, and community-based settings both at MCPHS and off-campus. The fieldwork education accounts for about one half of the curriculum.

The curriculum for the MSOT has a total of 84 semester hours with approximately 30 weeks of fieldwork education. The program consists of five areas of concentration: Basic Tenets of Occupational Therapy Theory and Practice (24 semester hours), Foundations of Occupational Practice (18 semester hours), Scholarship (12 semester hours), Management of Occupational Services (6 semester hours), and Fieldwork Education (24 semester hours).

#### **Admission Prerequisites**

- Baccalaureate degree from an accredited postsecondary institution. Official transcripts from all colleges or universities attended.
- Minimum overall grade point average of 3.0 or better on a 4.0 scale.
- Two letters of recommendation
- Resume
- Personal Essay (Why You Selected Occupational Therapy As Your Profession)
- Official TOEFL (minimum of 213 computer-based or 79 iBT) or ELTS (minimum 6.5) scores for all applicants whose primary language is not English
- Official transcripts for international colleges or universities must be submitted to the Center for Educational Documentation (CED), Educational Credential Evaluators, Inc. (ECE) or World Education Services (WES) for a course-by-course evaluation. MCPHS requires both the official international transcript(s) and an evaluated copy.

#### **Prerequisite Coursework**

- Human Anatomy & Physiology with Lab (8 semester hours)
- Social Sciences (6 semester hours)
- Psychology (3 semester hours)
- Abnormal Psychology (3 semester hours)

- Child and Adolescent Development (3 semester hours)
- Adult Development (3 semester hours)
- Statistics (3 semester hours)

Recommended (not required):  
Kinesiology or Exercise Physiology with Lab (3-4 semester hours).

All prerequisite coursework must have been completed within the last 10 years and must be completed at the time of application.

### **Essential Functions**

The practice of occupational therapy includes the examination, diagnosis, and treatment of people with physical disabilities, movement dysfunction, pain, and mental health disorders. Occupational therapists must be prepared to conduct in a timely manner a relevant patient examination, evaluate the results of this examination and synthesize these data to establish an accurate occupational diagnosis/profile, prognosis and plan of care, implement an intervention and use the process of re-examination to assess patient outcomes. Occupational therapists must also possess the skills necessary to determine when referral of the patient/client to another healthcare professional is appropriate. Occupational therapists must provide evidence that the care that they provide is effective, often through the conduct of clinically based research.

Master of Science in Occupational Therapy students must be able to complete the following:

- Participation in all required aspects of classroom and laboratory activities.
- Participation in all required aspects of both level one and level two fieldwork experience activities.
- Effective communications with other students, instructors, assistive personnel, patients/clients, family members, payors, and other health care professions.
- Maintenance of a safe environment for other individuals and for one's self, including use of universal precautions.
- Completion of elements of patient/client management, including examination, evaluation of data, formulation of occupational diagnosis and prognosis, intervention, assessment of outcomes, and record keeping.
- Completion of specific patient/client interventions and treatments, including patient and family education, occupation-focused activities, application of modalities, therapeutic exercise, and functional skill training.

Fieldwork agencies may have additional or agency-specific technical standards, which take precedence over MCPHS technical standards. The Accreditation Council for Occupational Therapy Education (ACOTE) accredits professional occupational therapy programs and requires that graduates of these programs be able to deliver entry-level generalist clinical services. Graduates of entry-level programs are required to possess a broad base of knowledge and skills requisite for the practice of occupational therapy. Occupational therapists require the intellectual-communication, behavioral-social, observational, and motor abilities to meet the standard of practice.

Certain disabilities can interfere with a student's ability to complete the program of study and acquire the essential functions necessary for the practice of occupational therapy. Reasonable accommodation can be made to compensate for some limitations. However, those that interfere with patient/client care, safety or require the use of an intermediary may be incompatible with independent professional practice.

### **Technical Standards**

#### **Intellectual and Communication Skills**

Intellectual skills include the ability to recall and comprehend large amounts of didactic information and to apply this information to the examination, evaluation, and management of intervention with patients/clients who have complex occupational performance problems. Effective communication skills enable the occupational therapist to elicit appropriate information from patients/clients and to effectively explain assessment and intervention processes and procedures. Some of the skills an individual must be able to demonstrate include, but are not limited to, the ability to:

- Communicate clearly and in a timely manner with patients/clients, families and care providers, physicians and other health professionals, community and professional groups, and colleagues.
- Document clearly, and in a timely manner in patient/client records, reports to physicians, insurance reports, and order forms.

- Respond to emergency situations.
- Participate in group meetings to deliver and receive information and to respond to questions from a variety of sources.

### **Behavioral and Social Attributes**

Students must demonstrate the ability to practice in a professional and ethical manner and possess the emotional maturity to practice in a stressful work environment. Compassion, integrity, concern for others, interpersonal skills, cultural competence, and motivation are all personal attributes associated with the practice of occupational therapy.

Some of the skills an individual must be able to demonstrate include but are not limited to the ability to:

- Recognize and respond appropriately to individuals of all ages, genders, ethnicities, socio-economic, religious, and cultural backgrounds.
- Cope with the stress of heavy workloads, demanding patients/clients, and life-threatening clinical situations.
- Recognize and respond appropriately to potentially hazardous situations.

### **Observational Skills**

Observation is integral to effective occupational therapy practice. Some of the skills an individual must be able to demonstrate include but are not limited to the ability to:

- Observe and interpret patient/client participation in a wide variety of occupations applying a broad range of biopsychosocial knowledge and perspectives.
- Read and interpret patient/client records, specialized equipment, patient/client assessment data, professional literature, and notes from patients/clients, physicians, and other health professionals.

### **Motor Skills**

The practice of occupational therapy requires that practitioners possess the ability to perform evaluative and therapeutic procedures, requiring specific physical skills and stamina. An occupational therapist must be able to use vision and somatic sensation in the evaluation and treatment of patients/clients. Some of the skills an individual must be able to demonstrate include but are not limited to the ability to:

- Lift, carry, and push patients (150 lbs.) in bed or wheelchairs, heavy equipment, and patients/clients transferring from one surface to another using proper body mechanics.
- Walk and balance well enough to help patients/clients walk and transfer with or without equipment, and prevent injury to patient/client and self.
- Exhibit sufficient manual dexterity to manipulate small equipment, provide support and resistance as needed during the performance of complex occupations, perform CPR, and treat acutely ill patients without disturbing sensitive monitoring instruments and lines.
- Provide for patient/client's safety and well-being in all intervention activities.

### **Accreditation**

The Master of Science in Occupational Therapy program at MCPHS has been granted Candidacy Status by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 4720 Montgomery Lane, Suite 200, Bethesda, MD 20814-3449. ACOTE's telephone number c/o AOTA is 301.652.AOTA and its web address is [www.acoteonline.org](http://www.acoteonline.org). The Master of Science in Occupational Therapy program has been approved for granting of degree by the NH Department of Education, Division of Higher Education, Higher Education Commission.

Once accreditation of the program has been obtained, its graduates will be eligible to sit for the national certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy (NBCOT). After successful completion of this exam, the individual will be an Occupational Therapist, Registered (OTR). In addition, most states require licensure in order to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination. Note that a felony conviction may affect a graduate's ability to sit for the NBCOT certification examination or attain state licensure.



Many of our programs have different admission requirements and deadlines. To see the specific admission requirements for this program, please click on the link below.

### **Admission Requirements for Occupational Therapy (MSOT) (Manchester)**

We recognize that applying to graduate school can be a daunting process; our Admission staff is here to help you. Contact us if you have questions along the way.

#### **Faculty/Staff**

Angela Butler, MS, OTR/L – *Assistant Professor of Occupational Therapy*

(P) 603.314.1751/angela.butler@mcphs.edu

Denise Finch, OTD, OTR/L, CHT – *Assistant Professor of Occupational Therapy*

(P) 603.314.1774/denise.finch@mcphs.edu

Susan Cook Merrill, PhD, OTR/L, FAOTA - *Associate Professor Occupational Therapy*

(P) 603.314.1721 | susancook.merrill@mcphs.edu

Douglas Simmons, PhD, OTR/L, FAOTA – *Professor and Program Director - Occupational Therapy*

(P) 603.314.1775 | douglas.simmons@mcphs.edu

### **Professional Behaviors**

In addition to knowledge and skill acquisition, the process of becoming a professional involves developing competence in professional behavior. Students are expected to display professional behavior at all times including during fieldwork experiences. This includes displaying a professional demeanor in interactions and boundaries with patients/clients and their families, clinical/school/healthcare staff, peers, faculty and the public at all times in consideration of their representation of the profession of occupational therapy and MCPHS University.

### **Academic Standards, Progression and Retention**

All credits in the degree must be obtained in the MCPHS program. The Masters of Science in Occupational Therapy (MSOT) does not award credits for prior experiential learning and/or credits by examination.

The academic progress of each student will be reviewed at the end of each academic semester. Progression in the MSOT program is dependent on the student's maintaining a minimum cumulative grade point average (GPA) of 3.0 and a semester GPA of 3.0 in all MSOT courses.

To progress in the didactic phases of the program, students must achieve a final course grade of B- or better. To progress within the clinical phases of the program students must obtain a pass (P) score on Level I experiences and obtain a minimal score of 122 on the American Occupational Therapy Association Fieldwork Performance Evaluation for the Occupational Therapist for Level II Fieldwork experiences.

In all MSOT courses, obtaining one course grade lower than a B- results in a student having to develop a remediation plan associated with OTH 685 Directed Study in Occupational Therapy. The student will take this remediation course in conjunction with other courses to remain in sequence. A student may only take OTH 685 once to remediate a grade below B-.

If a student obtains another course grade below a B- this course(s) must be repeated, which stops progression in the program. The student is placed into a non-progression status as MSOT courses are offered only once per year. The student will be placed into a cohort that is targeted to graduate later than the students' original cohort. Students may be placed into a non-progression status once; a student who receives a second non-progression in a subsequent semester will be recommended for dismissal from the MSOT program.

Students who receive a failing fieldwork grade on the American Occupational Therapy Association Fieldwork Performance Evaluation for the Occupational Therapists (below 122) or are requested to leave a fieldwork site prior to completion will need to arrange with the AFWC to complete another fieldwork rotation at another site. The timing of this clinical rotation cannot be guaranteed to follow program sequence and may result in a later graduation date. Failure or dismissal from 2 fieldwork rotations will result in dismissal from the program. Level II fieldwork must be completed within 2 years of completion of all coursework that is prerequisite to fieldwork.

If a student is unable to progress in the didactic portion or the fieldwork portion of the program, the student will be referred to the School of Rehabilitation Sciences Academic Standing Committee with a recommendation for dismissal. Final appeals are to the Vice President of Academic Affairs/Provost.

If there is a disruption in the sequence of the MSOT curriculum by a student for a period of one semester or more, or a student has a leave of absence, the student must validate previous knowledge and skills from previous didactic and fieldwork experiences to ensure that she/he is competent and safe in the delivery and application of patient care. (NOTE: There is no guarantee that fieldwork space for Level I and Level II fieldwork experience and be maintained, it could take a year or more for reentry due to lack of clinical placement availability.)

Application for the MSOT program is through the Occupational Therapy Centralized Application Service (OTCAS) at <https://otcas.liasoncas.com/applicant-ux/#/login>.

**Accreditation Council for Occupational Therapy Education (ACOTE)** of the American Occupational Therapy Association (AOTA) at 4720 Montgomery Lane, Suite 200, Bethesda, MD 20814-3449. ACOTE's telephone number c/o AOTA is 301.652.AOTA and its web address is [www.acoteonline.org](http://www.acoteonline.org).

### Curriculum: Master of Science in Occupational Therapy (MSOT)

#### *Year I—fall*

COURSE	TITLE	SEMESTER HOURS
OTH 500	Contemporary Theory in Occupational Therapy Practice	3
OTH 505	Clinical Reasoning in Occupational Therapy	3
OTH 510	Practice Engagement: Mental Health	3
OTH 511	Practice Engagement: Therapeutic Groups	3
OTH 520	Scholarship in Practice: Evidence-Based Practice	3
TOTAL		15

#### *Year I—spring*

COURSE	TITLE	SEMESTER HOURS
OTH 525	Practice Engagement: Environments and Technology (w/lab)	4
OTH 530	Motor Performance Across the Lifespan (w/lab)	4
OTH 535	Scholarship in Practice: Methodologies	3
OTH 540	Practice Engagement: Assessment Fundamentals Across the Lifespan	3
OTH 565	Apprenticeship: Community Mental Health (Level I)	3
TOTAL		17

#### *Year I—summer*

COURSE	TITLE	SEMESTER HOURS
OTH 545	Neuroscience Foundations for Practice	3
OTH 550	Practice Engagement: Adult Rehabilitation (w/lab)	4
OTH 555	Scholarship in Practice: Applied Designs and Methods	3
OTH 560	Systems of Practice: Managing the Practice of Occupational Therapy	3
OTH 570	Apprenticeship: Adult Rehabilitation (Level I)	4
TOTAL		17

#### *Year II—fall*

COURSE	TITLE	SEMESTER HOURS
OTH 600	Practice Engagement: Children and Adolescents (w/lab)	4
OTH 605	Scholarship in Practice: Capstone	3
OTH 610	Practice Engagement: Cognitive and Visual Challenges Across the Lifespan	3
OTH 615	Systems of Practice: Public Health and Advanced Management	3
OTH 630	Apprenticeship: Children and Adolescents (Level I)	4
TOTAL		17

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
OTH 620	Preparing for Professional Life I	2
OTH 640	Level II Fieldwork	7
TOTAL		9

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
OTH 625	Preparing for Professional Life II	2
OTH 645	Level II Fieldwork	7
TOTAL		9

**Total credits to complete degree requirements: 84 semester hours**

**OTH 685 Directed Study in Occupational Therapy (variable credits 1-3) is offered each semester for those students who have an active remediation plan.**

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## MCPHS University–Manchester School of Physician Assistant Studies (Manchester/Worcester program)

Kristy Altongy-Magee, MPAS, PA-C, Program Director and Assistant Professor

Nicole Dettmann, MSHS, MPH, PA-C, Associate Program Director / Director of Clinical Education, Assistant Professor

Rosanne Washington, MPAS, PA-C, Assistant Program Director / Director of Didactic Education, Assistant Professor

Dan Tzizik, MPAS, PA-C, Assistant Director of Clinical Education and Assistant Professor

David Fredenburg, MD, MA, FAAP, Medical Director and Clinical Associate Professor

John (Jack) Kelly, MD, Medical Director and Clinical Assistant Professor

Michael Whitehead, PA-C, DHSc, DFAAPA, Research Coordinator and Associate Professor

Associate Professors Stowell, Whitehead; Assistant Professors Altongy-Magee, Cerreto, Chouinard, Dettmann, Geary, Gerald, Hricz, Maclary, Martino, Petrillo-Deluca, Tzizik, Washington

### Degree Program

#### **Master of Physician Assistant Studies (MPAS) (Accelerated)**

The MCPHS University Physician Assistant (PA) Studies Program is dedicated to the education of clinically competent medical professionals who are prepared to deliver quality patient care in a dynamic healthcare delivery system. The program is accredited by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) and graduates are eligible to sit for the Physician Assistant National Certifying Examination (PANCE) required for licensure or registration.

This program capitalizes on the extensive educational resources of the University and the New England region to prepare physician assistants with the skills, competencies, and attitudes to provide compassionate, high quality, and comprehensive care to patients of all ages in a variety of clinical settings. The emphasis is on community-oriented primary care, and students acquire experience in the evaluation and treatment of a broad spectrum of medical problems through the program's clinical rotations. These experiential elements of the program provide training in emergency medicine, primary care medicine, internal medicine, pediatrics, psychiatry, surgery, and women's health in addition to an elective specialty.

Students applying to the program must submit a formal application and designate whether they are applying to the Manchester or Worcester campus. Students cannot apply to both campuses. The application must include official transcripts and an essay through the Central Application Service for Physician Assistants (CASPA) and must be received by October 1. CASAPA, the centralized national application service of the Association of the Physician Assistant Programs, may be contacted at [www.caspaonline.org](http://www.caspaonline.org).

#### **About the Program**

In 2002, MCPHS acquired the Notre Dame College (New Hampshire) PA program that had been first accredited in 1998 and enrolled its first class in 1999. MCPHS-Manchester graduated its first class of Master of Physician Assistant Studies (MPAS) students in December 2002. While based on the Manchester campus, the program has a satellite on the MCPHS–Worcester campus with an identical curriculum—both delivered with faculty on each campus via use of synchronized distance education. For both campuses, the first year is dedicated to didactic and laboratory learning and the second to clinical experience in a variety of patient-care settings. Students attend classes at their respective campus, with didactic courses simultaneously delivered at both campuses using technologically sophisticated interactive videoconferencing. This technology allows students at each site to interact with other students and faculty members in

real time. Laboratory courses and small-group activities are facilitated by Physician Assistant Studies faculty located on each campus.

### **Technical Standards for the Master of Physician Assistant Studies**

#### **Observation**

Candidates and students must have sufficient capacity to observe in the lecture hall, laboratory, and diagnostic and treatment areas of outpatient and inpatient settings. Sensory skills to perform the procedures of the healthcare profession in which students are enrolled are required. In any case where a candidate's or a student's ability to observe or acquire information through sensory modalities is compromised, the candidate or student must demonstrate alternative means and/or abilities to acquire and demonstrate the essential information conveyed in this fashion.

#### **Communication**

Candidates and students must be able to communicate effectively in both academic and healthcare settings. Candidates and students must show evidence of effective written and oral communication skills, and must be able to communicate with patients in order to elicit and impart information.

#### **Motor Skills**

The ability to participate in basic diagnostic and therapeutic maneuvers and procedures is required. Candidates and students must have sufficient motor function to execute movements reasonably required to properly care for all patients, and must be able to perform motor functions with or without assistive devices.

#### **Intellectual Abilities**

Candidates and students must be able to measure, calculate, reason, analyze, and synthesize. Problem solving, one of the critical skills demanded of healthcare professionals, requires all of these intellectual abilities. Candidates and students must be able to read and understand medical literature. In order to complete the specific Health Sciences program, students must be able to demonstrate mastery of these skills and the ability to use them together in a timely fashion in healthcare problem solving and patient care.

#### **Behavioral and Social Attributes**

Candidates and students must possess the emotional health and stability required for full utilization of their intellectual abilities, the exercise of good judgment, and the prompt completion of all academic and patient care responsibilities. The development of mature, sensitive, and effective relationships with patients and other members of the healthcare team is essential. The ability to function in the face of uncertainties inherent in clinical practice, flexibility, compassion, integrity, motivation, interpersonal skills, and concern for others are all required.

#### **Course Prerequisites for Admission**

Candidates for the Master of Physician Assistant Studies (Accelerated MPAS) program (Manchester/Worcester) must have achieved overall a 3.0 grade point average (GPA) (on a 4.0 scale) as an undergraduate. Candidates also must have earned a C or better and a 3.0 cumulative GPA in the following prerequisites:

COURSE	SEMESTER HOURS
Anatomy and physiology (w/labs)	8
General chemistry (w/lab)	4
Organic chemistry (w/lab)	4
Biochemistry (w/lab)	3
Microbiology (w/lab)	4
Statistics	3
Introduction to psychology	3
Recommended only: immunology	3
Recommended only: genetics	4

#### **Prerequisite Policy**

Seven prerequisites (as indicated in the previous section) must have been completed at a regionally accredited college or university no more than 10 years prior to the anticipated date of matriculation to MCPHS. For example, for matriculation

into the class starting in January 2012, the eight courses must have been completed since January 2002. All prerequisite coursework must have been completed with a final grade of C or better. The number of times a course has been taken to achieve a passing grade will be considered. Prerequisite coursework taken at a four-year institution is preferred.

If prerequisite coursework was completed more than 10 years prior, the candidate should submit a letter of request to the PA Program Admission Committee in care of the campus Admission Office. The formal letter must include when and where the course was taken, the grade received in the course, and the rationale for requesting the exception. A current résumé and copies of transcripts supporting the applicant's argument must be included.

While previous healthcare experience is not required, the majority of applicants have obtained a year or more of direct patient care experience. In addition, job shadowing of a practicing physician assistant for a minimum of 50 hours is strongly recommended. PA shadowing information should be included on the CASPA application under Related Healthcare Experience.

This program is available only to applicants who have already earned a bachelor's degree from a regionally accredited institution in any field, and who have fulfilled the prerequisite course requirements.

**Prerequisites include the following:**

- An earned bachelor's degree from a regionally accredited college or university with an overall cumulative grade point average (GPA) of 3.0 on a 4.0 scale
- A minimum TOEFL (Test of English as a Foreign Language) score for all candidates for whom English is not the primary language (see International Applicants in the Admission section for details)
- Ability to fulfill the technical standards for admission, promotion, and graduation
- Other requirements for international students as outlined in the Admission section

**Professional Responsibilities**

Physician Assistants (PAs) are skilled members of the healthcare team qualified by academic and clinical experience to provide a broad range of healthcare services under the supervision of a licensed physician. The healthcare services that PAs provide include performing appropriate medical interviews and physical examinations, identifying healthcare problems in need of evaluation and management, screening results of laboratory diagnostic studies, implementing treatment plans, counseling patients regarding illness and health-risk behaviors, monitoring responses to physician-directed programs of therapy, and facilitating access to appropriate healthcare resources. These services may be provided to individuals of any age in those various settings considered part of the physician's practice.

**Professional Credentials**

Over the past 30 years, several milestones within the profession have become markers by which the appropriately trained physician assistant is identified. These markers include graduation from an academic program accredited by the Accreditation Review Commission on Education for the Physician Assistant, certification through examination by the National Commission on Certification of Physician Assistants (NCCPA), and registration or licensure by state boards of medical examiners. Continued professional competence is evidenced by the completion of 100 hours of continuing medical education every two years and successful passage of a recertification examination as required by NCCPA.

**Course Requirements**

The undergraduate educational requirements for admission to the MPAS program in Manchester/Worcester are listed in the Admission section of this catalog. Following are the course requirements for the PA program in Manchester/Worcester.

**Physician Assistant Studies Program Sequence**

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
MPA 527	Healthcare Issues I	1
MPA 530	Clinical Medicine I	6
MPA 538	Patient Assessment I	4
MPA 541	Pharmacology I	2

MPA 544	Clinical Anatomy	3
MPA 546	Physiology/Pathophysiology I	2
TOTAL		18

*Year I—summer*

COURSE	TITLE	SEMESTER HOURS
MPA 528	Healthcare Issues II	3
MPA 531	Clinical Medicine II	6
MPA 539	Patient Assessment II	3
MPA 542	Pharmacology II	3
MPA 547	Physiology/Pathophysiology II	3
TOTAL		18

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
MPA 555	Clinical Research Methods	1
MPA 532	Clinical Medicine III	4
MPA 543	Pharmacology III	2
MPA 550	Emergency Medicine	2
MPA 552	Medical Procedures and Surgery	2
MPA 554	Special Populations	4
MPA 540	Patient Assessment III	3
TOTAL		18

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
MPAC	Clinical Rotations (3 rotations)	15
TOTAL		15

*Year II—summer*

COURSE	TITLE	SEMESTER HOURS
MPAC	Clinical Rotations (3 rotations)	15
MPA 620	Professional Development	1
TOTAL		16

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
MPAC	Clinical Rotations (3 rotations)	15
MPA 622	Capstone for Physician Assistants	1
TOTAL		16

**Total credits to complete degree requirements: 101 semester hours**

The breakdown of the Professional Year II clinical rotations includes rotations in the following areas:

MPAC 600	Medicine I	5 weeks	5 semester hours
MPAC 601	Medicine II	5 weeks	5 semester hours
MPAC 602	Primary care	5 weeks	5 semester hours
MPAC 603	Pediatrics	5 weeks	5 semester hours

MPAC 604	Psychiatry	5 weeks	5 semester hours
MPAC 605	Surgery	5 weeks	5 semester hours
MPAC 606	Women's health	5 weeks	5 semester hours
MPAC 607	Emergency medicine	5 weeks	5 semester hours
MPAC 609	General elective rotation	5 weeks	5 semester hours
MPAC 609T	General elective (international) rotation	5 weeks	5 semester hours

### **Clinical Rotations**

Clinical rotations are integral to the Physician Assistant Studies program at MCPHS University–Manchester and Worcester. It is during this phase of training that students apply and improve their clinical and patient management skills. There are 9 required clinical rotations. Each rotation is 5 weeks in duration. In addition to clinical rotations, students participate in on-campus professional seminars during the clinical phase of training. Students are also engaged in writing a Capstone Research paper/poster during the clinical year.

The program has clinical affiliations with a variety of clinical sites in New England. Additional national and international clinical sites are also available. Learning experiences occur in ambulatory and hospital-based settings and include rural, suburban and urban clinical sites. Students are encouraged to choose rural health facilities for a portion of their clinical experience. The breadth of clinical settings offers the future Physician Assistant the ability to acquire skills and competencies practices in a variety of settings.

Rotations in the required curriculum may be scheduled at some distance from the campus. This is necessary to provide a range of diverse learning experiences and ensure availability and quality of clinical rotation sites. Students are responsible for providing their own housing and transportation to and from the clinical sites and campus. Housing and travel costs for the clinical year vary widely depending on the site and location. Physician Assistant students are not responsible for identifying or arranging their own clinical sites. However, the possibility exists for students to coordinate, with the program, a maximum of two out-of-network clinical sites. To ensure quality educational training the sites must be approved by the Physician Assistant Studies Program and University and proper protocol must be followed to arrange for out- of-network clinical rotations.

*The School of Physician Assistant Studies reserves the right to make changes to all policies and procedures at any time.*

### **School of Physician Assistant Studies Policies and Professional Requirements (Manchester/Worcester)**

Students who are enrolled in the program must earn grades of C (2.0) or better in all courses and maintain an overall grade point average (GPA) of 3.0 to remain in good academic standing in the program. Students are expected to understand and adhere to the codes and standards of the profession and to exhibit professional behavior.

Students are required to be in good academic standing to enter the clinical year. Students who receive below a C in a didactic course will be required to repeat the course before progressing to the next semester. This will result in a delay of one year to complete the program. Students must receive a 3.0 cumulative GPA in order to enter the clinical year. Such repetitions will lengthen the program beyond two years.

Failure to achieve a cumulative 3.0 GPA at the end of the first semester of the didactic year results in being placed on probation. If the student does not demonstrate improvement by the end of the second semester of the didactic year, the student may be dismissed. If the student does not achieve a cumulative GPA of 3.0 by the end of the didactic year, the student will be dismissed.



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## MCPHS University–Manchester School of Pharmacy–Worcester/Manchester

Anna Morin, PharmD, Professor and Dean of Pharmacy

Paul Belliveau, PharmD, Professor, Assistant Dean, and Chair

Abir Kanaan, PharmD, Professor and Assistant Dean of Curriculum and New Programs

Paula Evans, PharmD, Associate Professor and Director of Pharmacy Outreach

### **Department of Pharmaceutical Sciences**

George Acquaaah-Mensah, PhD, Professor and Interim Chair

Professors Acquaaah-Mensah, Cohen (Emeritus), Gardner, Goldsmith, Kearney; Associate Professors, Campbell, Kaplita, Sharma, Smith; Assistant Professors Andey, Metcalf, Yan; Faculty Associate Pollano

### **Department of Pharmacy Practice**

Paul Belliveau, PharmD, Professor, Assistant Dean, and Chair

Cheryl Durand, PharmD, Associate Professor and Vice-Chair

Professors Dunican, Kanaan, Lynch, Morin, Seed, Silva, Spooner, Steinberg, Sullivan, Willett; Associate Professors Abel, Bartlett, Carey, Conway, Cooper, Cross, Durand, Evans, Fong, Horton, Pervanas; Assistant Professors Aungst, Bear, Cabrera, Coppentrath, Dietle, Lamothe, Lepage, Morrill, Mukherjee, Towle, Yogaratnam

### **Office of Experiential Education**

Catherine Basile, PharmD, Assistant Professor of Pharmacy Practice and Assistant Dean of Pharmacy Experiential Education

Kara Bonaceto, PharmD, Associate Professor of Pharmacy Practice and Experiential Education Coordinator

Nicole Carace, PharmD, MS, Assistant Professor of Pharmacy Practice and Experiential Education Coordinator

Gretchen Jehle, PharmD, Assistant Professor of Pharmacy Practice and Experiential Education Coordinator

## Degree Program

### **Doctor of Pharmacy (Accelerated)**

MCPHS–Manchester offers an accelerated Doctor of Pharmacy (PharmD) degree in conjunction with the School of Pharmacy–Worcester/Manchester. The core pharmacy curriculum is identical to that currently offered at the Worcester campus. Students attend classes in Manchester, while the instructors and other students are based in Worcester. Sophisticated technology and interactive videoconferencing are utilized to deliver the core courses and some electives to the Manchester campus. Some electives, all labs, and some didactic courses are taught on site by Manchester-based faculty and qualified adjunct faculty, similar to those at the Worcester campus. Introductory and advanced clinical experiences are offered in a variety of approved settings (hospitals, clinics, community pharmacies, etc.) primarily in New England as well as outside the region, including other states and Canada, consistent with the assignments of students based in Worcester. This academically rigorous program is completed in two years and 10 months. Accepted applicants must have successfully completed all prerequisite courses prior to enrollment in the program. For details on the curriculum and other information on the accelerated PharmD program, refer to the School of Pharmacy–Worcester/Manchester section of this catalog.

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## Center for Online Learning and Academic Innovation

Barbara Macaulay, EdD, Associate Provost, Online Learning and Academic Innovation

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Gail Marcus, MBA, MSE, Assistant Professor and Director of Global Healthcare Management, Interim Director of Biomedical Informatics Programs

Michael Spooner, MHA, Faculty Associate, Senior Director of Online Healthcare Education & Academic Innovation; Director, Doctor of Health Sciences Program

Assistant Professor Briggs; Instructor Tallon; Faculty Associate Lewis

### **Center for Online Learning and Academic Innovation (Formerly MCPHS Online)**

The Center for Online Learning and Academic Innovation, formed in May 2016, serves as the University's incubator for new, cross-disciplinary programs and incorporates the development and oversight of online programs. MCPHS Online was formally created in January 2011 and grew from 5 online programs to more than 30. Most of these programs are fully online and affiliate with the various schools. Some of the online programs have residency component, which include orientation, clinical assessment, and/or capstone research experiences. In addition, the Center now owns several programs: BS in Biomedical Informatics, BS in Global Healthcare Management, Master of Healthcare Administration, Doctor of Health Sciences, and the Graduate Certificate in Healthcare Management. Several other programs are under development or revision.

All of the programs offered by the Center for Online Learning and Academic Innovation are designed to give students opportunities to reach greater potential as healthcare professionals through online and/or campus-based learning in convenient and accessible formats.

For the online programs, students are educated by the same faculty, are immersed in the same professional environment, and earn the same sought-after degrees as if they were on our physical campus.

For those students taking online programs and courses, these are some helpful tips (some can be helpful for campus-based offerings as well):

- Online courses require discipline—typically, successful online students report spending more time, not less, on an online course. Do not make the mistake of thinking that online learning is easier than going to class—it is not.
- Plan ahead. You need to understand all of the requirements for your online course, which are typically mapped out for each week, with assignments, readings, tests or quizzes, and writing tasks each week.
- Time management is one of the most important aspects of success in an online class. Create a schedule for your online course and keep it! Plan on spending 5 to 10 hours a week on a typical online course.
- Good writing skills are very helpful in an online course. Most of the communication with your professors and other students is in writing.
- Log on to your online course regularly, at least every day. Communication with your instructor and peers provides great insight into the subject you are studying. You learn by communicating, reading, and applying the content.

The following programs are currently offered through MCPHS Online, a division of the Center for Online Learning and Academic Innovation:

#### Acupuncture

- Doctor of Acupuncture and Integrative Health

#### Dental Hygiene

- AS to MS in Dental Hygiene Bridge Program
- Bachelor of Science in Dental Hygiene Completion
- Master of Science in Dental Hygiene
- Graduate Certificate in Oral Health Professions Education

#### Health Sciences / Health Professions

- Advanced Certificate in Magnetic Resonance Imaging (MRI)
- Bachelor of Science in Health Sciences Completion
- Master of Health Sciences
- Master of Healthcare Administration
- Doctor of Science in Physician Assistant Studies
- Doctor of Health Sciences
- Graduate Certificate in Healthcare Management

#### Nursing

- RN to MS in Nursing Bridge Program (Family Nurse Practitioner track)
- RN to MS in Nursing Bridge Program (Nurse Educator track)
- RN to BSN Completion
- Master of Science in Nursing (Family Nurse Practitioner track)
- Master of Science in Nursing (Nurse Educator track)
- Master of Science in Nursing (Psychiatric/Mental Health Nurse Practitioner track)
- Certificate of Advanced Graduate Studies in Nursing (Family Nurse Practitioner track)
- Certificate of Advanced Graduate Studies in Nursing (Psychiatric/Mental Health Nurse Practitioner track)
- Graduate Certificate in Nursing, Nurse Educator

#### Pharmacy and Pharmaceutical Sciences

- Doctor of Pharmacy Pathway (Postbaccalaureate)
- Master of Science in Clinical Research
- Master of Patient Safety
- Master of Science in Regulatory Affairs and Health Policy
- Graduate Certificate in Clinical Research
- Graduate Certificate in Health Policy
- Graduate Certificate in Medication Safety
- Graduate Certificate in Regulatory Affairs
- Doctor of Pharmacy (Accelerated) / Master of Public Health (School of Pharmacy–Worcester/Manchester)
- Doctor of Pharmacy / Master of Public Health (School of Pharmacy–Boston)

#### Physician Assistant Studies

- Doctor of Science in Physician Assistant Studies

#### Public Health

- Master of Public Health
- Graduate Certificate in Public Health
- Bachelor of Science in Public Health/Master of Public Health (BS/MPH dual degree)
- Master of Science in Dental Hygiene/Master of Public Health (MSDH/MPH dual degree)
- Doctor of Optometry/Master of Public Health (OD/MPH dual degree)
- Doctor of Pharmacy-Boston/Master of Public Health (PharmD/MPH dual degree)
- Doctor of Pharmacy-Worcester/Manchester/Graduate Certificate of Public Health
- Doctor of Pharmacy-Worcester/Manchester/Master of Public Health (PharmD/MPH dual degree)

Detailed information and curriculum requirements for the above online programs may be found in the corresponding school sections of this catalog and on the MCPHS website

The following campus-based programs are currently housed within the Center for Online Learning and Academic Innovation, with classes offered face-to-face on the Boston Campus:

- Bachelor of Science in Biomedical Informatics
- Bachelor of Science in Global Healthcare Management
- Master of Public Health

### **Master of Healthcare Administration (Online)**

Healthcare administration combines leadership, healthcare knowledge, strategy and management skills to address the complex and continuously evolving demands of healthcare. The Healthcare Administration program focuses students on the dynamic needs of patients, clinicians, and organizations in the context of healthcare delivery. The program is designed to prepare graduate students for leadership positions in hospitals, managed care organizations, long-term care settings, and other health delivery environments.

The Master of Healthcare Administration curriculum draws from the Healthcare Leadership Alliance (HLA) Competency Model with an intense focus on developing healthcare leader's communication and relationship management skills, professionalism, leadership, knowledge of health systems, and strategic management skills. Subject areas including the analysis of the healthcare systems, current challenges, management and organizational behavior of healthcare organizations, economic and financial aspects of health administration, strategic planning and marketing, healthcare policy, and ethical and legal aspects of healthcare management are areas of focused study. The MHA program is flexible to meet the demands of working professionals. The courses are delivered 100% online, and can be completed part-time in 24 months or full-time in 16 months.

### **Curriculum: Master of Healthcare Administration**

COURSE	TITLE	SEMESTER HOURS
HCA 710	Systems of Healthcare Delivery	3
OR		
PBH 710	Introduction to Health Policy and Management	3
HCA 720	Organizations & Systems Thinking in Healthcare	3
HCA 730	Healthcare Operations Management	3
HCA 740	Human Resources for Healthcare Managers	3
HCA 752	Quality Improvement in Healthcare	3
DRA818	Law of Healthcare Compliance	3
HCA 780	Managing Healthcare Information Systems	3
HCA 825	Managing and Delivering Engaged Healthcare	3
PBH 815	Mass Communication & Health	3
HCA 830	Strategic Healthcare Marketing Seminar	3
OR		
PBH 755	Health Promotion	3
HCA 840	Healthcare Leadership	3
HCA 850	Strategic Healthcare Management Seminar/Capstone	3
TOTAL		36

### **Graduate Certificate in Healthcare Management (Online)**

The Graduate Certificate in Healthcare Management is open to applicants who desire graduate-level study of healthcare management concepts without the commitment of a master's degree program. The Graduate Certificate in Healthcare Management is available to all healthcare professionals, including physicians, pharmacists, and nurses who are interested in improving their knowledge of healthcare management. The certificate enhances interdisciplinary approaches and complements degrees in pharmacy, business administration, nursing, marketing, and management.

The graduate certificate requires four courses (12 credits) and may be completed in one year. All of the courses are offered online, students should be prepared for the rigor and challenges of the online learning environment. Upon completion of the certificate, students may elect to count the coursework towards the completion of the MHA.

### **Curriculum: Graduate Certificate in Healthcare Management**

Students choose four courses (substitutions may be allowed by the program director):

COURSE	TITLE	SEMESTER HOURS
HCA 720	Organizations & Systems Thinking in Healthcare	3
HCA 730	Healthcare Operations Management	3

HCA750	Managerial Epidemiology for Healthcare	3
HCA 780	Managing Healthcare Information Systems	3
HCA 840	Healthcare Leadership	3

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### **Bachelor of Science in Biomedical Informatics (Boston)**

The Bachelor of Science in Biomedical Informatics program on the Boston Campus is designed to formalize biomedical informatics education and to bring academic rigor to the application of information technology to improve clinical science and care.

The undergraduate degree in biomedical informatics is designed as a four-year, 130-credit program for students interested in learning the skills required to turn raw data into one of the most valuable assets of healthcare-related industries. The program prepares students for careers at the intersection of healthcare and information technology and uniquely positions its graduates for a number of entry-level positions including programmer, analyst, researcher, quality improvement specialist, quality assurance specialist, consultant, information officer, and others.

To do so, the program adds courses related to programming, software development and deployment processes, and the healthcare information environment to existing MCPHS University healthcare-related and general education offerings. In keeping with MCPHS University's educational philosophy, individual courses strive to be as hands-on as possible. To capitalize on the rich Boston biomedical informatics community, students are encouraged to participate in an internship program offering opportunities at local hospitals, IT service providers, and pharmaceutical companies.

### **Curriculum: Bachelor of Science in Biomedical Informatics**

#### *Year I—fall*

COURSE	TITLE	SEMESTER HOURS
BIO 151	Biology I: Cell and Molecular Biology	3
CHE 110	Basic Chemistry (w/lab)	4
ITM 101	Introduction to the Major	1
LIB 111	Expository Writing I	3
MAT 151	Calculus I	3
BMI 101	Introduction to Informatics	2
TOTAL		16

#### *Year I—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 152	Biology II: Biology of Organisms (w/lab)	4
CHE 210	Basic Chemistry II (w/lab)	4
LIB 112	Expository Writing II	3
LIB 120	Introduction to Psychology	3
MAT 261	Statistics	3
TOTAL		17

#### *Year II—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 252	Introduction to Speech	3
LIB 133	American Culture, Identity, and Public Life	3
PSB 320	Introduction to Healthcare Delivery	3
BMI 202	Programming I	3
BMI 204	Healthcare Information Systems	3
	Distribution elective	3
TOTAL		18

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
BIO 260	Molecular Biology	3
PSB 444	Organizational Development	3
BMI 210	Programming II	3
BMI 220	Healthcare Information System Design	3
BMI 230	Survey of Healthcare Data Sources and Standards	3
TOTAL		15

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 512	Healthcare Ethics	3
MAT 461	Biostatistics	3
PSB 375	Fundamentals of Drug Development	4
PSB 410	FDA and Regulatory Affairs	3
	Distribution elective (HUM, SSC or BEH)	3
TOTAL		16

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
BMI 240	Database 1	3
BMI 350	Introduction to Bioinformatics	3
BMI 340	Program Management	3
	Distribution Elective (HUM, SSC or BEH)	3
	Program Elective	3
TOTAL		15

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
BMI 320	Database II	3
BMI 420	Emerging Topics in health informatics	3
BMI 410	Data Visualization	3
PSB 429	Operations management	3
	Elective*	3
TOTAL		15

\* Students may substitute a biostatistics course.

*Year IV—spring*

COURSE	TITLE	SEMESTER HOURS
BMI XXX	Internship	15
OR		
BMI XXX	Consumer Health Informatics	3
BMI XXX	Capstone Project	3
PSB 235	Introduction to Business	3
PSB 380	Applied Business Techniques	3
	Program Elective	3
TOTAL		15

**Total credits to complete degree requirements: 127 semester hours**

*Program Electives for the BS in Biomedical Informatics*

COURSE	TITLE	SEMESTER HOURS
PSB 301	Pharmacology for Allied Health Sciences	3
PSB 377	Health care management	4
PSB 412	Patient rights and professional responsibilities	3
PSB 456	Entrepreneurship	3
PSB 376	Health care Marketing	4
PSB 415	Financial Accounting	3
HCM 101	Foundations of Global Healthcare Management	3

### **Bachelor of Science in Global Healthcare Management**

The Bachelor of Science in Global Healthcare Management on the Boston Campus provides classroom and experiential education in the structure and management of domestic and global healthcare systems. Required courses in business management, public policy and public health, the sciences, and the humanities provide a foundation for advanced classes focused on two concentrations: International Healthcare Business, and Global Public Health and Policy. In Spring of the program's third year, each student participates in an Internship or research project. In the fourth year, all students develop a capstone project that brings together the learnings from the program. The internship is a full-time experience, and each student is encouraged to develop this experience at an off-campus domestic or international site. This process provides graduates with extensive hands-on experience with the complexities of healthcare systems. The four year, 124-credit curriculum prepares students for careers in global healthcare management in a variety of settings, including public and private hospitals, ambulatory care organizations, long-term care institutions, health maintenance organizations, community health settings, government agencies, and insurance companies. Given the globalization within the healthcare industry, our program is designed to prepare students for career paths in global health management and international healthcare business. Graduates are also equipped for entry into graduate programs in global healthcare management/administration, public administration, and public policy.

### **Curriculum: Bachelor of Science in Global Healthcare Management**

*Year I—fall*

COURSE	TITLE	SEMESTER HOURS
LIB 111	Expository Writing I	3
BIO110	Anatomy & Physiology	3
HCM 101	Found of Global Healthcare Management	3
MAT 144	Business Math & Computer Applications	3
ITM 101	Introduction to the Major	1
TOTAL		13

*Year I—spring*

COURSE	TITLE	SEMESTER HOURS
LIB112	Expository Writing II	3
PSB 215	Microeconomics	3
LIB 133	American Culture and Identity	3
LIB 120	Introduction to Psychology	3
LIB 252	Introduction to Speech	3
HCM 102	Seminar in Global Health Service	1
TOTAL		16

*Year II—fall*

COURSE	TITLE	SEMESTER HOURS
CHE 113/L113	Chemistry and Society (with lab)	4
PSB 210	Macroeconomics	3

HCM 210	Globalization of Healthcare	3
PBH 250	Introduction to Public Health	3
MAT 261	Statistics	3
TOTAL		16

*Year II—spring*

COURSE	TITLE	SEMESTER HOURS
PSB 235	Introduction to Business	3
SSC 230	Cultural Anthropology	3
BEH 250	Health Psychology	3
PBH 330	Epidemiology	3
HCM XXX	Advanced Global Healthcare Management	3
TOTAL		15

*Year III—fall*

COURSE	TITLE	SEMESTER HOURS
HCM XXX	Global Healthcare Law	3
PSB 320	Introduction to Healthcare Delivery	3
SSC 432	Medical Anthropology	3
SSC	Social Sciences Elective	3
	Concentration Course	3
TOTAL		15

*Year III—spring*

COURSE	TITLE	SEMESTER HOURS
LIB 512	Healthcare Ethics	3
HCM XXX	Internship	9
	Concentration Course	3
TOTAL		15

*Year IV—fall*

COURSE	TITLE	SEMESTER HOURS
HSC 4200	Grant writing for the Health Sciences	3
PBH 360	Health Data Collection and Management	3
	Concentration course	3
	Concentration course	3
BEH	Behavioral Science Elective	3
TOTAL		15

*Year IV—spring*

COURSE	TITLE	SEMESTER HOURS
HCM XXX	Capstone	6
HUM XXX	Humanities Elective	3
	Concentration Course	3
	Concentration Course	3
	General elective	3
TOTAL		18

**Total credits to complete BS degree requirements: 123 semester hours**



## Concentrations

Students choose one of the following Program Concentrations, with accompanying courses:

### Global Public Health and Policy

#### Required Courses

COURSE	TITLE	SEMESTER HOURS
PBH 350	Global Health	3
PBH XXX	Public Health Surveillance	3
PBH 435	Public Policy & Public Health	3
HCM XXX	Comparative Global Policy	3
BEH 451	Research Methods in Health and Behavior	3
PBH XXX	Program Development and Management – Low Resource Countries	3

### International Healthcare Business

#### Required Courses

COURSE	TITLE	SEMESTER HOURS
HCM XXX	Global Health Economics, Policy and Management	3
PSB 429	Operations Management	3
PSB 415	Financial Accounting	3
PSB 456	Entrepreneurship	3
HSC 325	Healthcare Management	3
HCM XXX	Global Consulting	3

### Master of Health Sciences (MHS), (Online)

*Director: Michael Spooner*

The Master in Health Sciences (MHS) degree is designed to prepare and advance educational leaders and scholars who will promote excellence in teaching and learning; translate theory and novel strategies to the learning environment; expand the evidence base in health professions education; and link education, research, and practice in transforming systems of healthcare. This is a 36-credit program that may be completed in approximately three years. The program's flexible format meets the needs of working professionals by offering required and elective courses online.

### Curriculum: Master of Health Sciences (MHS)

#### Health Sciences Required Courses

COURSE	TITLE	SEMESTER HOURS
HSC 710	Health Professions Education Across the Higher Education Spectrum	3
HSC 715	Educator Competencies in Academic Health Sciences	3
DHY 753	Curriculum and Course Design for Health Professions Education	
HSC 725	Interprofessional Core Competencies for Health Professionals	3
HSC 730	Educational Leadership: Departments and Schools	3
DHY 751	Adult Learning Theory & Clinical Teaching for Health Professions	
HSC 805	Literature Reviews and Focused Research	3
HSC 815	Healthcare Research Methods	3
HSC 732	Independent Study: Graduate Health Sciences	3
HSC Elec	Health Sciences Elective Courses (graduate level)	9

**Total credits to complete degree requirements: 36 semester hours**

### Admission Requirement

To qualify for admission, prospective applicants should have experience as health professionals. Admission decisions are based on the following:

- An earned bachelor's degree from an accredited college or university

- Proof of credentials as a health professional or experience/current employment in a healthcare setting
- A minimum TOEFL (Test of English as a Foreign Language) score of 90 (Internet-based), 213 (computer-based) or 550 (written) for all candidates for whom English is not the primary language

### **Doctor of Health Sciences (Online)**

*Program Director: Michael Spooner*

The Doctor of Health Sciences (DHS) program prepares leaders in healthcare professions, public health and healthcare professions education for advancement in academic health centers, universities, colleges and schools of health professions, as well as health services and healthcare delivery organizations. Students explore the health sciences through a variety of modalities, develop research methodologies and apply scholarship to address the challenges of practice.

Upon successful completion of the DHS program, students will be able to:

- Demonstrate critical thinking through analyses of practice-based problems in health professions, and health professions education;
- Identify, evaluate and synthesize evidence and research to advance and support professional practice;
- Investigate and disseminate evidence-based approaches to advance health sciences, health professions education and health professions;
- Practice interdisciplinary and interprofessional leadership in pursuit of sustainable change in educational and health services institutions;
- Assess complex organizational issues in health professions and health professions education and present evidence-based solutions;
- Demonstrate innovative leadership in the practice of health professions education, health professions, and health sciences;
- Advance professional practice through mastery of the design, development, and application of ethical research protocols to practice-based problems.

### **Curriculum: Doctor of Health Sciences (DHS)**

The practice-based approach of the DHS program advances health management, health professions education, and population health through the application of scholarship in interprofessional practice, leadership, and education in the health professions. The program can be completed in 4 years of part-time study representing a total 54 credits. The curriculum is comprised core courses in leadership and research, a student-selected concentration in academic health sciences, healthcare management, healthcare quality and safety, or public health and 6 credits of elective courses. Students will visit campus at least once for a residency requirement, typically at the end of the proposal development seminar.

Major core courses	33 semester hours
Elective courses	6 semester hours
Concentration courses	15 semester hours
<b>TOTAL</b>	<b>54 semester hours</b>

### **Curriculum Core Courses**

Health Sciences Required Courses (33 semester hours)

COURSE	TITLE	SEMESTER HOURS
HSC 701	Intro to Doctoral Studies and Learning	3
HSC 718	Qualities and Characteristics of Leadership in Healthcare	3
HSC 722	Leading with Vision and Direction in Healthcare	3
HSC 742	Contextual Leadership	3
HSC 763	Managing Crisis, Conflict, and Change in Healthcare	3
HSC 805	Conducting Literature Review & Focusing Research	3

HSC 820	Qualitative Research Methods	3
HSC 825	Quantitative Research Methods	3
HSC 830	Research Design and Applied Statistics	3
HSC 850	Proposal Development Seminar	3
HSC 861	Dissertation Seminar I	1
HSC 862	Dissertation Seminar II	1
HSC 863	Dissertation Seminar III	1
Health Sciences Required Courses		33
Graduate HEALTH SCIENCES ELECTIVE COURSES		6
DHS CONCENTRATION		15

**Total credits to complete degree requirements: 54 semester hours**

### Doctor of Health Sciences Concentrations

#### **Academic Health Sciences**

Students pursuing a concentration in Academic Health Sciences will investigate unique challenges facing the academic health sciences and health professions education today. Students will focus on scholarship and research in preparing to take on leadership roles in academic health sciences and contribute to research and scholarship in health professions education.

COURSE	TITLE
HSC 710	Health Professions Education across the Higher Education Spectrum
DHY 753	Curriculum and Course Design in Health Professions Education
HSC 720	Health Professions Program Development, Evaluation & Accreditation
HSC 730	Educational Leadership: Departments and Schools
DHY 751	Adult Learning Theory and Clinical Teaching for Health Professions Education

#### **Healthcare Management**

Students pursuing a concentration in Healthcare Administration evaluate and assess challenges facing health services and health services delivery organizations. Students prepare for leadership roles through the application of research and scholarship to practice in areas including organizational behavior and strategic planning in health services and health delivery.

COURSE	TITLE
PBH 710	Intro to Health Policy & Management
HCA 720	Organizations and Systems Thinking in Healthcare
HCA 730	Healthcare Operations Management
DRA 818	Law of Healthcare Compliance
PBH 815	Mass Communication & Health

#### **Healthcare Quality and Safety**

The concentration in healthcare quality and safety focuses students on identifying, analyzing, and providing solutions to the complex challenges of delivering safe, consistent, high-quality healthcare that is centered on the patient. Students learn to evaluate and understand the relationships between human systems, organizational cultures, and the delivery of healthcare to improve quality.

COURSE	TITLE	SEMESTER HOURS
MSM 701	Introduction to Quality	2
MSM 702	Introduction to Medication Safety	2
MSM 703	Communication & Team Approach	2
MSM 704	Safety Tools, Applications, and Analysis	3

MSM 830	Measurement, Error & Improvement	3
HCA 752	Quality Improvement	3
TOTAL		15

### **Public Health**

Population-level health and the future of healthcare delivery are inextricably intertwined with health policy. The Public Health concentration introduces students to the challenges of managing population-level health as well as implementing and evaluating health policy. Students will confront health and healthcare in the context of communities and populations, determine appropriate messaging and consider program design and concepts that focused on improvements in the health of the population.

COURSE	TITLE
PBH 710	Introduction to Health Policy & Management.
PBH 750	Community Health Science
PBH 755	Health Promotion & Education
PBH 760	Program Design, Research, & Evaluation
PBH 815	Mass Communication & Health

### **Admission Requirement**

Prospective applicants should have healthcare or health professions experience, such as being a credentialed health professional, experienced educators, or a researchers in a health related field. Admission decisions are based on the following:

- An earned Masters degree or equivalent from an accredited college or university
- Proof of credentials or experience as a health professional
- A minimum TOEFL (Test of English as a Foreign Language) score of 90 (Internet-based), 213 (computer-based) or 550 (written) for all candidates for whom English is not the primary language.

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## MCPHS University Center for International Studies—English Language Services

Sunnia Ko Davis, MA, Coordinator, English Language Resource Center

ESL Faculty Associates Cole-French, Gleeson, and Greene

### **English Language Services**

The Academic Bridge program, offered on the Boston campus, provides a full-time, structured transition-to-university curriculum in which students take content courses for degree credit while continuing to improve their English language and study skills through classes taught by ESL faculty. While enrolled in the Academic Bridge, students who are conditionally accepted into undergraduate and graduate degree programs develop foundational knowledge in the health sciences as they achieve an academic level of English proficiency. Among the skills developed are critical reading of academic course materials, genre-specific writing, note taking, test taking, study strategies, and giving oral presentations. Students are also introduced to program resources, University policies, the Center for Academic Success and Enrichment resources, professional practices, and cocurricular opportunities.

Assessment of English language involves both standardized and alternative approaches to evaluating students' proficiency levels. Prior to entering the program, students' language skills are assessed through the MCPHS English Proficiency Exam. In addition to individual class assessments based on performance outcomes, at the end of each semester students again take the MCPHS English Proficiency Exam. The ESL faculty also review each student's overall course performance in order to make recommendations for progression from the Academic Bridge.

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## Course Descriptions

*NOTE: Some course changes are approved following catalog printing. Please consult [www.mcphs.edu](http://www.mcphs.edu) for updated information. Descriptions of courses being developed for future years will be available in future catalogs and on the website.*

*Please refer to Grading System under Academic Policies and Procedures for course key information.*

### Applied Natural Products (ANP)

#### ANP 701

##### Pharmacognosy and Phytopharmacology

Using selected classes of plants from the *materia medica*, the course discusses the principles of pharmacognosy and phytopharmacology, the chemistry of active ingredients, and the validation of herbal therapeutics, and it evaluates the recent scientific evidence used in the discovery of newer therapeutic agents.

*Class, 3 hrs.; credit, 3 s.h.; fall.*

#### ANP 708

##### Natural Products Selected Topics

Students are offered several electives and experiences to choose from in the area of natural products.

*Class, 3 hrs.; credit, 3 s.h.; spring.*

#### ANP 709

##### Safety in Natural Products

Students cover several major topics—safety issues associated with different organ systems, direct and indirect toxicities of plants and natural products, and pharmacovigilance, as well as principles of quality and efficacy. Students focus on how to find, evaluate, review, and apply the current literature around issues of botanical quality and safety.

*Class, 3 hrs.; credit, 3 s.h.; spring.*

### Behavioral Sciences (BEH)

#### BEH 101, BEH 102, and BEH 103

##### Health Psychology Seminar

This seminar course for health psychology majors focuses on the breadth of the field of psychology. Students read and discuss articles published in professional journals as well as articles on topics related to the various career paths in psychology. Health Psychology majors are required to take three consecutive semesters of this seminar for a total of three credit hours.

*Prerequisites: Health Psychology major, LIB 120; class, 1 hr.; credit, 1 s.h.*

#### BEH 250

##### Health Psychology

This course provides an overview of the perspective,

theories, and topics of health psychology, focusing on the psychosocial factors in the understanding of the relationship of health to behavior.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

#### BEH 254

##### Death and Dying

This course explores the sociocultural evolution of death and dying, focusing particularly on cultural adaptations in the United States. Topics include factors influencing attitudes toward death and dying, socialization toward death, facing life-threatening illness, the role of healthcare systems, last rites and survivors, and the law and death. (Formerly BEH 252, Sociology of Death and Dying.)

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; varies.*

#### BEH 260

##### Behavioral Health

Students examine evidence-based health behavior change interventions, which are utilized in healthcare settings to prevent and treat chronic diseases. They will focus on principles of behaviorism, social-learning theory, and cognitive-behavioral models. They also will learn and practice motivational approaches that support the adoption and maintenance of healthy behaviors. Students will apply these principles and interventions to specific chronic diseases.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; varies.*

#### BEH 340

##### Psychology of Aggression

An introduction to the study of aggressive behavior, this course is intended to provide a basic understanding of ethological, sociocultural, and clinical approaches to aggression research. Topics discussed will include pathological violence in human beings (including domestic violence and child maltreatment), species-typical aggressive behavior in animals, the role of drugs and alcohol, and the neurobiological mechanisms of aggressive behavior.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; varies.*

#### BEH 341

##### Biological Psychology

An introduction to behavioral neuroscience, this course explores the physiological bases of human behavior. With an emphasis on the brain and neural communication, it covers the basic neurological processes that underlie various human behaviors,

including sensation and perception, learning and memory, hormonal control of sexual development, psychopharmacology, and psychological/neurological disorders.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **BEH 345**

##### **Myths and Misconceptions in Psychology**

Using psychology to explore myths and misconceptions of human behavior, this course provides both a theoretical and a practical understanding of how myths and misconceptions arise, how they are perpetuated, and how research can be used to evaluate their validity. Students are expected to learn and share accurate information about selected myths and misconceptions.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **BEH 350**

##### **Abnormal Psychology**

Presents a survey of the assessment, classification, and treatment of a variety of psychiatric diagnoses described in the *DSM-IV*. Attention is paid to the continuum between normal and abnormal behavior and to the importance of cultural factors in diagnosing and treating these conditions.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

#### **BEH 351**

##### **Social Psychology**

This course investigates the effect of the social environment on individual behavior. Phenomena such as attitude formation and change, group processes, and social perception are analyzed with a view toward their application in various real-world settings.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **BEH 352**

##### **Human Development through the Life Cycle**

Designed to expose students to human development across the lifespan, this course is intended to provide both a theoretical and a practical understanding of individual growth and change, distinguishing the characteristics of different stages of development, and the issues and processes that recur throughout the entire lifespan.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

#### **BEH 353**

##### **Nutrition and Health**

Students examine evidence-based relationships between nutrition and the maintenance of good health and prevention of chronic disease. They become familiar with the U.S. Dietary Guidelines, explore current topics in nutrition, and gain practical skills to make healthful food choices. Additionally, students examine strategies to influence people's food choices and apply these strategies to a specific chronic disease.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **BEH 355**

##### **Organizational Psychology**

This course is a study of the ways in which basic psychological principles and research are applied to organizational behavior. Topics include personnel selection, motivation, leadership, group dynamics, and work stress.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

#### **BEH 356**

##### **Gender Roles**

Designed to introduce students to the social psychology of sex and gender, this course places contemporary U.S. norms in their biological, historical, and cross-cultural contexts. Emphasis is placed on female gender roles, but male roles, work, and family also are discussed.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **BEH 357**

##### **Positive Psychology**

Students critically review theory and empirical research in the emerging field of positive psychology. Topics include positive affect, engagement, optimism, character strengths, values, goals, and healthy aging. Students link course content to their personal lives and professional disciplines.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **BEH 405**

##### **Mind-Body Medicine**

Students critically review current scientific literature that addresses the mechanisms and efficacy of mind-body medicine, a category of complementary and alternative medicine. Topics include psychoneuroimmunology, the relaxation response, mindfulness, meditation, yoga, tai chi, nutrition, and beliefs. Students also practice interventions, examine their utilization in healthcare settings, and consider how they may apply these in their future professional careers.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **BEH 450**

##### **Selected Topics**

This course is designed to explore in depth the issues of special interest to the faculty that otherwise are not offered as regular courses. The theme of each course is announced in advance.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **BEH 451**

##### **Research Methods in Health and Behavior**

This course is designed to give the student an appreciation of the scientific method in general and

knowledge of the techniques used by psychologists and sociologists in particular. Students become involved in small-scale empirical research projects.

*Prerequisites: LIB 120; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **BEH 453**

##### **Behavior Modification**

Students examine behavior modification strategies based on the principles of behaviorism and cognitive-behavioral models. They also study how the evolving field of behavioral health is utilizing these interventions in healthcare settings to prevent and treat chronic diseases. Students apply behavior change techniques to self-modification projects, and they practice client-centered counseling skills that promote patient motivation and adherence.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **BEH 454**

##### **Stress and Illness**

This course is designed to investigate the relationship between environmentally induced stress and illness. Particular emphasis is placed on the health-related effects of changes in the physical environment, sociological status, and sociocultural conditions.

*Prerequisites: LIB 120; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **BEH 456**

##### **Applications of Research Methods**

Students apply concepts and skills developed in BEH 451 to make ethical evidence-based decisions about real-world problems. Working in collaborative teams, students create and implement a literature search strategy, critically read and synthesize sources, and design a study that adds to the literature. Students develop and demonstrate the skills needed to communicate in a variety of oral and written formats.

*Prerequisites: Health Psychology major (or permission of instructor), minimum of C- in BEH 451; class, 3 hrs.; credit, 3 s.h.; fall.*

#### **BEH 457**

##### **Drugs and Behavior**

An introduction to the study of psychopharmacology, this course covers the principles of drug action and the effects of drugs on behavior. Students learn the pharmacological, psychological, and health outcomes of each major class of psychoactive drugs (recreational and therapeutic), including patterns of use and abuse by individuals, along with medical and sociocultural factors that determine the use of psychoactive drugs.

*Prerequisite: LIB 120; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **BEH 458**

##### **Child and Adolescent Development**

Students will examine the biological, psychological, and social factors of development, and the interplay among

them. Students will study human development from conception through adolescence.

*Prerequisites: LIB120 and BEH 352; class, 3 hrs.; credit, 3 s.h.; spring.*

## **Biology (BIO)**

#### **BIO 110/110L**

##### **Anatomy and Physiology I**

This course provides first-year students with directed study of the anatomical structure and physiological processes of the human body. Topics include subatomic, atomic, cellular, tissue, integumentary, skeletal, muscular, and nervous systems.

*Class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; fall.*

*NOTE: Students in the Bachelor of Science in Pharmaceutical and Health Care Business program are required to take only the lecture portion of this class.*

#### **BIO 150L**

##### **Biology I Laboratory**

This laboratory course emphasizes experimental approaches to understanding basic and applied aspects of cellular and molecular biology. Topics include cell structure and function, biochemistry, genetics and heredity, and biotechnology.

*Co-requisite or prerequisite: BIO 151; lab, 3 hrs.; credit, 1 s.h.; fall, spring.*

#### **BIO 151**

##### **Biology I: Cell and Molecular Biology**

This course emphasizes the experimental approaches to understanding the basic and applied aspects of cellular and molecular biology. Topics include cell structure and function, metabolism, the cellular and molecular basis of development and heredity, and healthcare applications of molecular biotechnology.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

#### **BIO 152/152L**

##### **Biology II: Biology of Organisms**

This course introduces the fundamental principles that unify the vast diversity of organisms, including evolutionary theory, ecology, human anatomy and histology, the evolution of organ systems, and the normal functioning of the human organism.

*Prerequisite: BIO 151; class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; spring.*

#### **BIO 210/210L**

##### **Anatomy and Physiology II**

A continuation of BIO 110. The following systems are explored: endocrine, immune, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive. The concept of homeostasis and the underlying principles common to all systems are applied from the submolecular to the organismal level for each system.

*Prerequisite: BIO 110; class, 3 hrs.; lab, 3 hrs.; credit, 4*



s.h.; spring.

*NOTE: Students in the Bachelor of Science in Pharmaceutical and Health Care Business program are required to take only the lecture portion of this class.*

### **BIO 255/255L**

#### **Medical Microbiology**

An introduction to microbial principles, this course is designed to give a functional understanding of microorganisms, their role in disease and the environment, and our defenses against infections. The laboratory covers the principles of microscopy, aseptic techniques, and microbial cultivation and control.

*Prerequisite: BIO 152 or BIO 210; class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; fall, spring.*

### **BIO 260**

#### **Molecular Biology**

The replication, expression, and regulation of genetic information will be learned in detail, including a comprehensive review of the mechanisms involved in genetic variation and signal transduction. In-depth analysis of recombinant DNA technology and RNA interference are included with a stress on medical applications. Scientific reading comprehension and data analysis also are emphasized.

*Prerequisite: BIO 152; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

### **BIO 321**

#### **Nutrition Science**

This course is designed to introduce the principles of nutrition science, with emphasis on nutrients important to the human body and life cycle, dietary guidelines, food composition, disease prevention, weight control, and dietary modifications. Other contemporary nutrition issues will be addressed.

*Prerequisite: BIO 152 or BIO 210 and CHE 132 or CHE 210; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

### **BIO 332**

#### **Genetics**

This course studies the gene at the cellular and organismal levels of expression, with an emphasis on human and medical genetics. Topics include classical genetics, multifactorial traits, pedigree analysis, gene-mapping methods, cytogenetics, and population genetics. Testing, diagnostics, and treatment of genetic disorders also are discussed.

*Prerequisite: BIO 360 or consent of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

### **BIO 335**

#### **Experimental Techniques in Molecular Biology**

Building upon techniques learned in prior laboratory courses, students explore the theoretical and practical applications of common techniques performed in biomedical research laboratories and apply them in a research project over the course of the semester.

Techniques include the polymerase chain reaction; restriction enzyme digestion; gene cloning; DNA purification and analysis; cell culture techniques; and protein expression, purification, and analysis.

*Prerequisites: BIO 260 and BIO 360, restricted to Medical and Molecular Biology majors; lab, 3 hrs.; credit, 3 s.h.; spring.*

### **BIO 345/BIO 345L**

#### **Exercise Physiology Lecture and Lab**

Students considering Health Science professional careers will learn the essential components of Exercise Physiology (EP). Students will explore the foundations of EP through lecture, discussion, laboratory assignments, and participate in exercise assessments using interviews and exercise testing to prepare an exercise prescription. EP provides students practical experience in the process health care professionals use to make clinical decisions. Students must enroll in both BIO 345 and BIO 345L. Lecture and lab cannot be taken separately. *Prerequisites: BIO 152 or BIO 210; class, 3 hrs; lab, 3 hrs.; credit, 4 s.h.; varies*

### **BIO 346**

#### **Applied Concepts in Public Health**

Biological and social determinants of health and illness are investigated. Students will actively engage in case studies to apply concepts important in public health, including epidemiology, disease prevention, control of epidemics, environmental health, and policy development.

*Prerequisite: BIO 255; class, 3 hrs.; credit, 3 s.h.; fall.*

### **BIO 351**

#### **Advanced Anatomy and Physiology I**

The first of a two-part sequence exploring the anatomical design of the human body and its functional relationships. Given that this course is geared for healthcare providers, the systems approach will be integrated with case histories. Classes will be a combination of traditional lecture and in-class case studies using a group discussion format.

*Prerequisites: BIO 152, CHE 132; class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; fall.*

### **BIO 352**

#### **Advanced Anatomy and Physiology II**

The second of a two-part sequence exploring the anatomical design of the human body and its functional relationships. Given that this course is geared for healthcare providers, the systems approach will be integrated with case histories. Classes will be a combination of traditional lecture and in-class case studies using a group discussion format.

*Prerequisite: BIO 351; class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; spring.*

**BIO 360****Cellular Biochemistry**

Students learn the structure, metabolism, and biochemical function of major macromolecules (proteins, carbohydrates, lipids, and nucleic acids). Bioenergetics, enzyme kinetics, cell signaling, and regulation are studied at the molecular level. An emphasis is placed on cellular and physiological applications of biochemistry (in particular, competencies important for study in medical school).

*Prerequisites: CHE 232; class, 4 hrs.; credit, 4 s.h.; fall.*

**BIO 405****Plagues of the Past, Present, and Future**

Major diseases throughout history are reviewed from a scientific and medical standpoint, with an emphasis on molecular biology. The course covers "older" infectious diseases that are resurfacing as public health threats, current diseases negatively impacting society, and "newer" health threats including West Nile virus and potential bioterrorism agents. Treatment and prevention strategies from the 1900s until today also are discussed.

*Prerequisites: BIO 151 and BIO 255, or consent of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

**BIO 420****Communication in the Biological Sciences**

This course covers the many facets of communication in the biological sciences. Students will be expected to produce written summaries of primary scientific literature and a special project involving either a professional poster or a grant proposal. Students also will learn to gear oral presentations to different audiences and use communication-oriented technologies, including the creation of original podcasts and blogs.

*Prerequisite: BIO 360 or permission of instructor; restricted to Medical and Molecular Biology majors; class, 3 hrs.; credit, 3 s.h.; spring.*

**BIO 430****Molecular Biology of Cancer**

Understanding the causes of and potential treatments for human cancers requires a detailed analysis of the molecular and cellular mechanisms that are disrupted in cancer cells. Students will learn the current understanding of biomedical research on such topics as oncogenes, tumor suppressor genes, signal transduction pathways, cell cycle regulation, apoptosis, angiogenesis, and metastasis.

*Prerequisite: BIO 360; prerequisite or Co-requisite: BIO 332; class, 3 hrs.; credit, 3 s.h.; varies.*

**BIO 434 / 734****Immunology**

This course provides an introduction to the cellular and clinical aspects of immunology. Topics include clonal selection theory, immunoglobulin function, B cell and T cell development and functioning, cytokines,

histocompatibility complex restriction mechanisms, tolerance, and autoimmunity, hypersensitivity, and immunodeficiency states and transplantation immunology.

*Prerequisites: BIO 152, BIO 360, or permission of instructor; class, 3 hrs.; credit, 3 s.h.; fall.*

**BIO 440****Cell Biology**

An in-depth study of the molecular structure and function of the most fundamental unit of life, with an emphasis on analysis of scientific literature in the field of cell biology. The unique biological properties of stem cells will be a recurring theme throughout the course, along with the impact of stem cell research on medicine and human health.

*Prerequisites: BIO 360, or permission of instructor; class, 3 hrs.; credit, 3 s.h.; varies*

**BIO 445****Advanced Human Physiology**

This course will provide students with advanced study of the physiological processes of the major systems of the human body. Using a systems approach this course covers the cellular, histological and organ functions of the body.

*Prerequisites: BIO 210 or BIO 152; class, 3 hrs.; credit, 3 s.h.; fall.*

**BIO 450****Selected Topics**

This course is an in-depth study of a particular topic in biology, and the course content will vary with each offering.

*Class, 3 hrs.; credit, 3 s.h.; varies.*

**BIO 455/455L****Advanced Microbiology**

This lecture and laboratory course in microbiology covers advanced material in microbial physiology, genetics, diversity, ecology, and biotechnology. The laboratory will include exercises coordinated with the lecture topics and will feature specialized laboratory techniques and instrumentation, and an independent study component.

*Prerequisite: BIO 255; class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; spring.*

**BIO 465****Medical Parasitology**

Students will explore the various aspects of parasite biology, host interactions, and the pathogenesis of parasitic diseases. Emphasis will be placed on major parasitic organisms that impact human populations. Students will learn the fundamentals pertaining to diagnosis, treatment, transmission, and control of human parasites as an introduction for those pursuing careers in the medical industry.

*Prerequisites: BIO 152, 255; class, 3 hrs.; credit, 3 s.h.;*

fall.

### **BIO 530**

#### **Undergraduate Research Project**

Research participation at the undergraduate level is offered to superior students in biology and microbiology. Emphasis is placed on teaching the methods and techniques used in solving research problems.

*Prerequisites: consent of instructor and dean; lab, 3–9 hrs.; credit, 1–3 s.h.; varies.*

### **BIO 532**

#### **Directed Study**

Supervised study in biology and microbiology involves a survey of existing knowledge, self-instructed and/or faculty-assisted inquiry into previously published data or methodologies, or other faculty-approved study of a nonresearch nature.

*Prerequisites: consent of instructor and dean; credit, 1–3 s.h.; varies.*

## **Biomedical Informatics (BMI)**

### **BMI 101**

#### **Introduction to Informatics**

This survey course provides students with an overview of the discipline of biomedical informatics, and is intended for first-year students majoring in Biomedical Informatics. Students will learn and apply principles of bioinformatics and research data management to case-based examples.

*Prerequisites: INF 101, INF 102, INF 103; credit, 2 s.h.; fall.*

### **BMI 202**

#### **Programming I**

Students will be introduced to Java programming focusing on the basics of procedural programming (methods, parameters and arguments and function return values), basic control structures (sequence, branching, for loop, while loop), file, arrays and vectors. The course finishes with introduction to Java classes and objects.

*Class, 3 hrs.; credit, 3 s.h.; fall.*

### **BMI 204**

#### **Healthcare Information Systems**

Student will learn different healthcare information systems environments. They will follow the flow of information in healthcare, starting with end user systems and tracking across networks and databases. Student will learn standard practices applied in all healthcare environments from patients, providers to submission of data to Federal agencies. Student will learn the differences between pharmaceutical versus hospital and ambulatory systems.

*Class, 3 hrs.; credit, 3 s.h.; fall.*

### **BMI 210**

#### **Programming II**

This follow up to Programming I introduces students to more advanced programming topics including advanced data structures, algorithms, and incorporation of classes from class libraries, web services, and integration with a database. Students will also gain exposure to advances related to “big data” such as functional programming. Like Programming 1, this course will be hands-on and rely heavily on cumulative assignments and a healthcare-related final project

*Prerequisite: BMI 202; Credit 3 s.h.; spring.*

### **BMI 220**

#### **Healthcare Information System Design**

In this course students will gain a thorough understanding of the software development and implementation lifecycle. They will learn the importance of identifying and gathering the success criteria of key stakeholders, the pros and cons of building versus buying information systems, the key factors in open source versus commercial software, and they will understand the key concepts of versioning and maintenance of systems. The course introduces students to the various roles within the IT team and the pros and cons of different team configurations.

*Prerequisite: Health Information Systems.*

*Prerequisite: BMI 204; Class, 3 hrs; credit 3 s.h.; spring.*

### **BMI 230**

#### **Survey of Health Care Data Sources and Standards**

Students will explore the different sources of data in the healthcare environment and the different formats with which they are structured. They will build a solid understanding of different information standards as well as the challenges in setting healthcare standards and the organizations responsible for their development. Standards covered will include information transfer standards (e.g., HL7, CDA), billing standards (ICD, CPT, and DRG codes), practice-specific standards (e.g., PACs), and standards used by pharma for clinical trials (e.g., CDISC). *Prerequisites: Introduction to Informatics and Health Information Systems.*

*Prerequisite: BMI 101 and BMI 204; Class, 3 hrs; credit 3 s.h.; spring.*

### **BMI 240**

#### **Databases I**

Students will be introduced to fundamental concepts of data storage and retrieval. They will explore models of data storage with emphasis on relational databases. Topics include normalization, primary and foreign key relationships, and entity relationship diagramming. Students will study Structured Query Language (SQL) and use it to create, populate, and query databases, culminating in a healthcare-related final project.

*Prerequisite: BMI 210; class, 3hr; credit, 3 s.h; varies.*

**BMI 340****Software Program Management**

Students will learn and apply comprehensive project management techniques in healthcare operations, software development and biomedical informatics, including task specification, task scheduling, and the development and definition of task relationships. Students complete a final program plan in a collaborative team-based environment, where they experience the impact of communications and learn the importance of risk management and risk mitigation. *Class, 3hrs.; credit 3 s.h.; varies.*

**BMI 350****Introduction to Bioinformatics**

The course will present bioinformatics in the context of health informatics. Some of the specific areas to be covered include: genome analysis, sequence alignment, transcription profiling, translational research, web-based tools and the impact of this work on society and healthcare services. *Prerequisite: BMI 101; class, 3 hrs.; credit 3 s.h.; varies*

**Chemistry (CHE)****Chemistry 1XX****Chemistry and Society**

This course provides an overview of basic principles of chemistry that apply to everyday life. The course is designed to generate an appreciation of chemistry. Topics covered will include unit conversion, periodic table trends, acid/base chemistry, solubility and chemical reactions. *Class, 3 hrs; credit, 3 s.h.; spring.*

**CHE 110/110L****Basic Chemistry I**

This course introduces the basic principles of chemistry, including gas laws, acid-base chemistry, stoichiometry, energy, structure and bonding, nuclear chemistry, and solutions. Laboratory exercises are designed to complement the didactic material. *Class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; fall.*

**CHE 131/131L****Chemical Principles I**

This course emphasizes the construction of scientific concepts based on observation and the development of reasoning skills based on active learning. Topics include mass, force, energy, interpreting phenomena in terms of atomic theory, gases, stoichiometry, periodic properties of the elements, and solutions. *Class, 3 hrs.; lab, 4 hrs.; credit, 4 s.h.; fall, spring.*

**CHE 132/132L****Chemical Principles II**

This course emphasizes the construction of scientific concepts based on observation and the development of

reasoning skills based on active learning. Topics include atomic structure, bonding, molecular geometry, reaction energetics and rates, equilibrium, redox, and acid-base chemistry.

*Prerequisite: CHE 131 or equivalent; class, 3 hrs.; lab, 4 hrs.; credit, 4 s.h.; spring.*

**CHE 210/210L****Basic Chemistry II**

This course is a continuation of CHE 110 and covers the basic principles of organic chemistry and biochemistry and their application to the life sciences. Laboratory exercises are designed to complement the didactic material.

*Prerequisite: CHE 110; class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; spring.*

**CHE 230****Organic Chemistry for Health Professions**

The structure, nomenclatures, stereochemistry, properties and reactions of carbon-containing compounds are introduced. The mechanisms of reactions are emphasized.

*Prerequisite: CHE 132; restricted to PT, OT, and OPT pathways; class, 3 hrs., credit, 3 s.h.; fall, spring.*

**CHE 231/231L****Organic Chemistry I**

The structure, nomenclature, stereochemistry, properties, and reactions of carbon-containing compounds are introduced, and the mechanisms of reactions are emphasized. Laboratory experiments develop manipulative skills in the classical methods of purification and separation of organic compounds.

*Prerequisite: CHE 132; class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; fall, spring.*

**CHE 232****Organic Chemistry II**

The chemical reactions of alkenes, aldehydes, ketones, carboxylic acids, and their derivatives and amines are surveyed, and a mechanistic understanding of reactions is further developed. The structure and properties of multifunctional compounds, including amino acids, carbohydrates, and steroids, are presented.

*Prerequisite: CHE 231; class, 3 hrs.; credit, 3 s.h.; spring.*

**CHE 234L****Organic Chemistry II Laboratory**

More chemical reactions of organic compounds are carried out. A multistep sequence of reactions results in the preparation of a known pharmaceutical agent. Infrared and nuclear magnetic resonance spectra are discussed and applied to the identification of reaction products.

*Co-requisite or prerequisite: CHE 232; prelab, 1 hr.;*

lab, 3 hrs.; credit, 1 s.h.; spring.

#### **CHE 314/314L**

##### **Analytical Chemistry**

This course introduces students to the theory and practice of quantitative analysis. Laboratory experiments are designed to be a practical realization of the topics discussed in class.

*Prerequisite: CHE 132 or equivalent; class, 3 hrs.; lab, 4 hrs.; credit, 4 s.h.; spring.*

#### **CHE 333L**

##### **Introductory Biochemistry Laboratory**

Introduces the physical methods used to isolate, identify, and characterize proteins and nucleic acids.

*Prerequisite: PSB 331; lab, 4 hrs.; credit, 1 s.h.; spring.*

#### **CHE 340/340L**

##### **Inorganic Chemistry**

The occurrence and physical and chemical properties of elements and their compounds are examined with emphasis on periodic relationships. Topics include solubility, acid-base, redox reactions, coordination compounds, and elemental properties. Laboratory exercises illustrate lecture concepts and provide background for discussion.

*Prerequisite: CHE 132 or permission of instructor; class, 3 hrs.; lab, 4 hrs.; credit, 4 s.h.; spring.*

#### **CHE 365/365L**

##### **Thermodynamics and Kinetics**

Physical chemistry uses concepts and techniques from physics to understand chemistry. In this first semester of a two-semester series, students study states of matter, phase changes, laws of thermodynamics, principles of equilibrium, and reaction kinetics and mechanisms. The laboratory portion of the course provides an experimental basis for the topics covered in the lectures.

*Prerequisite: CHE 132, PHY 274, or PHY 284; class, 3 hrs.; lab, 4 hrs.; credit, 4 s.h.; fall.*

#### **CHE 367/367L**

##### **Quantum Mechanics and Molecular Structure**

This course explores the basic tenets of quantum chemistry and their application to model systems (e.g., particle in a box) and to atomic and molecular systems. Rotational and vibrational spectra and the use of symmetry in quantum chemistry will be covered. The laboratory portion of the course provides an experimental basis for the topics covered in the lectures.

*Prerequisite: CHE 365 or equivalent or by permission of instructor; class, 3 hrs.; lab, 4 hrs.; credit, 4 s.h.; spring.*

#### **CHE 435**

##### **Green Chemistry**

Students will learn various chemistry and chemical

engineering skills and apply these skills to the principles and practices of green chemical processing and environmental sustainability. Topics include tools and principles of green chemistry, alternative solvents, green organic chemistry, polymers and catalysts, biotransformation, and sustainable energy.

*Prerequisite: CHE 234; class, 2.5 hrs.; lab, 0.5 hr.; credit, 3 s.h.; fall.*

#### **CHE 437**

##### **Computational Methods in Chemistry**

This course covers the essentials in modern computational chemistry, including methods, concepts, ideas, and computational programs. Students will learn to use simulation package Gaussian09 to carry out theoretical predictions on properties of molecular systems and chemical reactions, and develop a sense about the accuracy and limitations of these calculations. Exercises on literature search and project presentation will also be included.

*Prerequisite: CHE 367; 3 credits; credit, 3 s.h.; fall*

#### **CHE 445**

##### **Experimental Techniques in Chemistry**

Introduces advanced techniques in chemical synthesis and characterization applicable to organic, inorganic, and organometallic compounds. Students will perform synthetic techniques including working under inert atmosphere and handling moisture-sensitive reagents. Students will perform characterization of compounds using NMR, IR, and UV-VIS spectroscopy.

*Prerequisites: CHE 232, 234L, 714; lab, 8 hrs.; credit, 2 s.h.; spring.*

#### **CHE 450**

##### **Pharmaceutical Chemistry I**

This course covers drug discovery, design, and development; physiochemical properties of drug molecules; stereochemistry in drug molecules; reactions and mechanisms in drug synthesis; characterization of drug molecules; and drug stability and metabolism. The focus will be on the synthesis of selected marketed small-molecule drugs.

*Prerequisites: CHE 234, CHE 717, PSB 332, or consent of instructor; class, 3hrs.; lab, 4 hrs.; credit, 4 s.h.; spring.*

#### **CHE 530**

##### **Undergraduate Research Project**

Through this course, students become involved in the ongoing faculty research in chemistry. Students learn advanced laboratory techniques in natural products isolation, chemical synthesis, and spectroscopic analysis.

*Prerequisites: consent of faculty sponsor and dean; lab, 3–9 hrs.; credit, 1–3 s.h.; varies.*

**CHE 532****Directed Study**

Supervised study in chemistry involving a survey of existing knowledge, self-instructed and/or faculty-assisted inquiry into previously published data or methodologies, or other faculty-approved study of a nonresearch nature.

*Prerequisites: consent of instructor and dean; credit, 1–3 s.h.; varies.*

**CHE 710/CHE 711****Chemistry Seminar**

Advanced-level presentations by students, faculty members, and guest speakers from other universities and pharmaceutical and biotechnology companies. Students search, read, and present journal articles that are relevant to research topics. Master's-level students are required to take two consecutive semesters of this seminar for a total of 2 credit hours. During the second semester, students will present the master's thesis.

*Prerequisite: CHE 445; Co-requisite: CHE 880 or consent of instructor; class, 1 hr.; credit, 1 s.h. each semester; fall, spring.*

**CHE 714/714L****Spectroscopic Analysis**

The acquisition and interpretation of infrared, nuclear magnetic resonance (NMR), and ultraviolet spectra are taught. Students interpret sets of spectral data, including carbon-13 NMR and mass spectra, from unknown compounds to identify the structures of the compounds.

*Prerequisite: CHE 232; class, 2 hrs.; lab, 3 hrs.; credit, 3 s.h.; spring.*

**CHE 717/717L****Instrumental Analysis**

Covers the fundamentals of instrumental methods of analysis, emphasizing spectroscopic, chromatographic, and surface techniques. Laboratory projects make use of the techniques discussed in lectures.

*Prerequisites: CHE 232, CHE 314, PHY 270, MAT 152 or equivalent, or permission of instructor; class, 3 hrs.; lab, 4 hrs.; credit, 4 s.h.; fall.*

**CHE 719/719L****Synthetic Preparations**

The preparation of pure organic compounds is taught. Preparations may include a multistep synthesis or a series of one-step transformations. Methods of handling organometallic reagents are taught, as well as the techniques of scaling up preparations.

*Prerequisite: CHE 714; class, 1 hr.; individual conferences and lab, 6 hrs.; credit, 3 s.h.; varies.*

**CHE 731****Advanced Organic Chemistry**

This course covers the principles of physical organic

chemistry and the application of reaction mechanisms to the design and synthesis of organic structures. The mechanisms of organic reactions and the relationships between reactivity and structure are stressed.

*Prerequisites: CHE 232 and physical chemistry; class, 4 hrs.; credit, 4 s.h.; fall.*

**CHE 751****Pharmaceutical Chemistry II**

In this course, students will explore the methodology used by medicinal chemists in the organic synthesis, purification, and characterization of drugs. Topics include asymmetric synthesis, organometallic chemistry, carbon-carbon bond formation, formation of ring systems, the manipulation of functional groups, and methods of purification and characterization. Process chemistry used for the large-scale synthesis of drugs entering clinical trials will be discussed.

*Prerequisites: CHE 450 or consent of instructor; class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; fall.*

**CHE 755****Stereochemistry**

The concept of stereoisomerism in organic chemistry is systematically studied in simple and complex molecules, with an emphasis on the effects of molecular configuration and conformation on organic reactions.

*Prerequisite: CHE 232; class, 3 hrs.; credit, 3 s.h.; fall.*

**CHE 810****Heterocyclic Chemistry**

An introduction to heterocyclic chemistry is presented along rational lines. Nomenclature, methods of synthesis, and chemical properties of various heterocyclic ring systems are discussed.

*Prerequisites: CHE 232 and physical chemistry, or consent of instructor; class, 2 hrs.; credit, 2 s.h.; fall.*

**CHE 825****Internship**

This course provides students an advanced experience in chemical and/or pharmaceutical research either in an institutional or industrial environment. Students will apply information and techniques acquired in the program to current problems of applied and/or basic research.

*Prerequisite: Graduate standing in Pharmaceutical Chemistry Program; class, 36 hrs.; credit, 12 s.h.; spring.*

**CHE 885****Literature-Based Research**

This course is for the students in the MS in Pharmaceutical Chemistry program who choose the Literature-based research option. Students will complete a case study thesis, consisting of scholarly non-laboratory research culminating in a written report and presentation on a topic of the student's choosing,

all subject to the approval of the student's Graduate Advisory Committee.

*Prerequisites: Graduate standing in Pharmaceutical Chemistry Program; Corequisites: CHE 710; class 12 hrs.; credit, 3 s.h.; fall, spring, summer.*

**CHE 880  
Chemistry Research**

This course involves research investigation through both literature and bench work in the area of pharmaceutical chemistry. Nine (9) semester hours are required, which are divided over three semesters—spring and summer of Year IV, and fall of Year V. Within this course, students will complete the master's thesis.

*Prerequisite: CHE 445; credit, 3 s.h. each semester; spring, summer, fall.*

**CHE 895  
Graduate Study Extension**

Students are expected to remain continuously enrolled each semester, excluding summer semesters, until all requirements for the degree have been completed. Students maintain continuing registration by indicating CHE 895 Graduation Study Extension on the registration form and paying a fee.

*Prerequisites: Students must have completed all the course work for the program and have completed the research proposal defense; class, 0 hours; credit, 0 s.h. fall, spring.*

## Dental Hygiene (DHY)

**DHY 202**

**Dental Anatomy, Embryology, and Histology**

Students study oral histology and embryology, dental anatomy, and tooth development and function. Material covered provides the basic anatomical knowledge required for the clinical component of the dental hygiene program.

*Prerequisite: admission to dental hygiene professional phase or permission of the dean; class, 2 hrs.; credit, 2 s.h.; fall.*

**DHY 204**

**Head and Neck Anatomy**

Students study the anatomy of the head and neck. Material covered provides the basic anatomical knowledge required for the clinical component of the dental hygiene program.

*Prerequisite: admission to dental hygiene professional phase or permission of the dean; class, 2 hrs.; credit, 2 s.h.; fall.*

**DHY 209**

**Dental Hygiene Process of Care I**

This course is the first in a four course series that builds upon the basic principles of the dental hygiene process of care and introduces concepts regarding wellness,

health promotion, disease prevention emphasizing assessment, diagnosis, and treatment planning for patients. Basic concepts studied in the classroom setting are coordinated with DHY209L Pre-clinical lab. *Class, 4 hrs.; credit, 4 s.h.; fall.*

**DHY 209L**

**Dental Hygiene Pre-clinical Laboratory**

This course is an introduction to the dental hygiene process of care emphasizing assessment, diagnosis, treatment planning, implementation and evaluation in preparation for direct patient care in a supervised lab setting. Skill development in this lab is introduced in coordination with concepts presented in DHY 209. Instrumentation skills are also learned and developed using typodonts and student partners.

*Lab, 8 hrs.; credit, 2 s.h.; fall.*

**DHY 211**

**Dental Hygiene Process of Care II**

This course is the second in a four course series that builds upon the basic principles of the dental hygiene process of care, introduced in DHY 209 and 209L, and designed to expand student's knowledge of comprehensive oral hygiene care. Patient care considerations pertaining to human growth and development, supplemental care, special needs population and other disorders are emphasized.

*Prerequisites: DHY 202, 204, 209, 209L, 230, 231; class, 3 hrs.; credit, 3 s.h.; spring.*

**DHY 223**

**Dental Hygiene Clinic I**

This course is the first in a series of clinical experiences in which students apply integrated multidisciplinary learning in clinical practice. Students will begin to incorporate laboratory skills into a clinical environment. The course will focus on developing clinical competencies to the beginner clinician level.

*Prerequisites: DHY 202, 204, 209, 230, 231; clinic, 8 hrs.; seminar, 1 hr.; credit, 3 s.h.; spring.*

**DHY 230/230L**

**Dental Radiology**

Students gain a basic understanding of the fundamentals of dental radiography, including radiation physics, hygiene, and safety. Emphasis is placed on the fundamentals of radiographic technique, the interpretation of radiographs for diagnostic acceptability, and quality assurance. Concurrent lab sessions include exposure of traditional and digital intraoral images on manikins and patients to achieve lab and clinical competence.

*Class, 2 hrs.; lab, 3 hrs.; credit, 3 s.h.; fall.*

**DHY 231/231L**

**Dental Materials**

This course is a study of the basic properties, selection, manipulation, and clinical management of

dental materials. Laboratory/clinic sessions provide students with the opportunity to practice techniques such as pit/fissure sealants, fabricating athletic mouth guards and whitening trays, impression taking, study models, and suture removal.

*Class, 2 hrs.; lab, 3 hrs.; credit, 3 s.h.; fall.*

### **DHY 232**

#### **Nutrition**

Based upon the principles of biochemistry, students review the nature and function of micronutrients and macronutrients essential for health. The role of diet/nutrition and its form and frequency, related to general and oral disease prevention and health promotion are studied

*Class, 2 hrs.; credit, 2 s.h.; summer (accelerated program only), fall (Fast Track BS program).*

### **DHY 233**

#### **Periodontology**

This course focuses on the etiology, histopathology, and clinical manifestations of diseases and conditions of the periodontium. Emphasis is placed on the assessment, diagnosis, and clinical management of periodontal diseases, as well as the relationship between systemic health/disease and periodontal health/disease.

*Prerequisites: DHY 202, 204, 209, 209L, 230; class, 3 hrs.; credit, 3 s.h.; spring.*

### **DHY 310**

#### **Dental Hygiene Process of Care III**

Students will examine etiology; systemic and oral manifestations related to medical conditions and illnesses that may require specialized considerations and management related to the process of care. Students apply knowledge from previous courses and explore scientific literature for relevant information to assess risk, management of risk, and linkages between systemic health and oral disease to plan patient-centered treatment.

*Prerequisites: DHY 211, 223; class, 3 hrs.; credit, 3 s.h.; fall (accelerated BS program), summer (fast track BS program; take concurrent with DHY323).*

### **DHY 311**

#### **Dental Hygiene Process of Care IV**

Students apply knowledge of the dental hygiene process of care to explore scientific literature to support evidence-based patient care. Students research medical and psychosocial conditions as they relate to periodontal health and connect them to clinical practice.

*Prerequisites: DHY 310, 323; class, 2 hrs.; credit, 2 s.h.; fall (fast track BS program), spring (accelerated BS program).*

### **DHY 323**

#### **Dental Hygiene Clinic II**

The second in a series of clinical experiences in which students apply integrated multidisciplinary learning in clinical practice. Students will use critical thinking skills to develop and implement dental hygiene care plans based on evidence-based standards of care.

Principles of time management, quality assessment and assurance are applied to clinic management and patient care. The course will focus on developing clinical competence to the novice clinician level.

*Prerequisites: DHY 209, 209L, 223, 211; clinic, 12 hours; extramural clinic, 4 hours (optional); seminar, 1 hour; credit, 4 s.h.; fall (accelerated BS program only), summer (Fast Track BS program only, concurrent with DHY 310).*

### **DHY 324**

#### **Dental Hygiene Clinic III**

The last in a series of clinical experiences in which students apply integrated multidisciplinary learning in clinical practice. Students will use critical thinking skills to develop and implement dental hygiene care plans based on evidence-based standards of care.

Principles of time management, quality assessment and assurance are applied to clinic management and patient care. The course will focus on developing clinical competence to the entry clinician level.

*Prerequisites: DHY 310, 323; clinic, 12 hrs.; extramural clinic, 4 hrs. (optional); credit, 4 s.h.; spring (accelerated BS program only), fall (Fast Track BS program).*

### **DHY 330**

#### **Pathology**

This course is a study of basic pathology with emphasis on oral pathology and systemic disease. Diseases of the oral tissues and oral environment are presented with clinical features, histopathology, and treatment modalities.

*Prerequisites: DHY 202, 204, 209, 209L; class, 3 hrs.; credit, 3 s.h.; spring.*

### **DHY 342**

#### **Pharmacology**

An introductory pharmacology course focusing on commonly used drugs, mechanisms of action, pharmacokinetics, indications and major adverse effects. Pharmacotherapy of cardiovascular, nervous system, gastrointestinal, respiratory, endocrine, infections and malignant conditions, along with the principles of drug administration and dental implications are discussed.

*Prerequisites: DHY 211, 223; class, 3 hrs.; credit, 3 s.h.; fall.*

### **DHY 343**

#### **Pain Management**

Lectures discuss the recognition and management of pain, fear, and anxiety associated with dental



treatment. Neurophysiology, pharmacology and local and systemic complications related to the administration of local anesthesia are covered including nitrous oxide sedation. The laboratory covers the clinical application and practice of local anesthesia techniques on student partners. Additional coursework may be required for individual state licensure.

*Prerequisites: DHY 202, 204, 209, 209L; class, 2 hrs.; credit, 2 s.h.; summer (accelerated BS program only); spring (Fast Track BS program only).*

#### **DHY 345**

##### **Practice and Career Management**

This course focuses on ethical decision making, including principles of professionalism, ethics, jurisprudence, and social responsibility; dental practice management with emphasis on productivity, remuneration, risk management, quality assurance, and team-building skills; and preparation for employment, including licensure requirements, professional résumés, and interviewing techniques.

*Prerequisites, DHY 310, 323, 350; class, 2 hrs.; credit, 2 s.h.; fall (Fast Track BS program), spring (accelerated BS program).*

#### **DHY 350**

##### **Community Oral Health**

Community Oral Health examines topics related to public health. Basic principles of epidemiology, biostatistics, health care delivery systems, methods of financing and quality assessment are reviewed. Students learn to develop programs in community-based settings, focusing on assessment, prevention, and policy development.

*Co-requisites: All 1<sup>st</sup> professional year courses; class, 2 hrs.; fieldwork, 3 hrs.; credit, 3 s.h.; fall (accelerated BS program), summer (Fast Track BS program).*

#### **DHY 420/420O**

##### **Oral Health Research Methods**

Introduction to the fundamentals of research including Evidence-Based Decision Making (EBDM). EBDM is the formalized process of using a specific set of skills to identify, search for and interpret clinical and scientific evidence used in making care decisions for individuals and populations. Topics include developing answerable research questions, research design, data collection and analysis, sources of evidence, levels of evidence, critical appraisal of the evidence and applying the evidence.

*Prerequisites: MAT 261, 197, or their equivalent; credit, 3 s.h.; summer.*

#### **DHY 425O**

##### **Educational Theories and Methods**

Students will explore educational theories as well as didactic and clinical teaching and learning models appropriate for health sciences educational programs. Emphasis will be placed upon learner-centered, active

teaching models. The development and use of competency-based student learning outcomes as a guide to instruction will be discussed.

*Credit, 3 s.h.; fall.*

#### **DHY 432/432O**

##### **Directed Study**

This course gives students an opportunity to explore in depth a subject relevant to their interests.

*Credit varies.*

#### **DHY 442O**

##### **Evidence-Based Dental Practice**

Critical analysis and application of evidence-based practice to the dental hygiene process of care as it relates to a diverse patient population.

*Credit, 3 s.h.; spring.*

#### **DHY 446O**

##### **Oral Hygiene in Special Care Populations**

Concepts related to providing oral healthcare for special care populations. Emphasis on the assessment, planning, implementation, and evaluation of care for individuals with transient or lifelong physical, mental health, medical, or social healthcare needs.

*Credit, 3 s.h.; fall.*

#### **DHY 460**

##### **Capstone Leadership in Dental Hygiene**

Students in the last professional year will integrate clinical concepts and expertise with the principles of leadership acquired throughout the curriculum into a reflection paper and develop a project related to oral health.

*Prerequisites: DHY 310, 323, 350; class, 3 hrs.; credit, 3 s.h.; fall (Fast Track BS program), spring (accelerated BS program).*

#### **DHY 490**

##### **Practicum I**

Practicum I is a specialized course where students select an alternative career path in dental hygiene to explore. Students spend 8 hours per week working with their field assignment. Placement opportunities are available in business, public health, research, government, and education.

*Credit, 3 s.h.*

#### **DHY 701O**

##### **Essentials of Public Health**

Overview of the history, philosophy, and scope of public health and an orientation to core public health functions. Incorporates the foundation for understanding population health, including the organization, financing, and delivery of healthcare services; health policy; and public health ethics. Emphasizes the scientific method as a basis for community health practice, program planning and evaluation, health policy, and research.

*Credit, 3 s.h.; fall.*

### **DHY 703O**

#### **Program Planning and Evaluation**

Develops the comprehension of and ability to conduct a community assessment and to design, develop, implement, and evaluate strategies to improve individual and community health. Employs problem-based learning to create project work plans, logic models, logical frameworks, and budgets.

*Prerequisites: DHY 701, 714; credit, 3 s.h.; summer.*

### **DHY 706O**

#### **Health Education and Health Behavior**

Surveys the theoretical basis for social, behavioral, psychological, and environmental determinants of individual and population health. Addresses health disparities; social inequalities; and cultural, gender, and economic issues in oral healthcare.

*Credit, 3 s.h.; summer.*

### **DHY 714O**

#### **Research Methodology and Statistics**

Students will learn fundamental biostatistical and study design concepts routinely used in epidemiologic and clinical research, with a special emphasis on oral health research. Concepts will be reinforced through critical evaluation of peer-reviewed oral health research. Furthermore, basic data management and statistical software tools will be discussed.

*Credit, 3 s.h.; fall.*

### **DHY 715O/DRA 809**

#### **Epidemiology**

Study of patterns of disease and injury in the population. Acquaints student with epidemiologic methods, including measures of disease frequency and association, data collection systems, surveillance and monitoring, study designs, sampling, control of bias and confounding, and principles of disease screening.

*Prerequisite: DHY 714; credit, 3 s.h.; fall.*

### **DHY 722O**

#### **Health Policy and Finance**

Covers key concepts in the formulation and implementation of health policy with emphasis on delivery, quality, and finance of healthcare for individuals and populations. Explores current health policy issues to develop policy analysis and advocacy skills.

*Prerequisite: DHY 701; credit, 3 s.h.; spring.*

### **DHY 751O**

#### **Adult Learning Theory and Clinical Teaching for Oral Health Professions Education**

Overview of adult learning theory with emphasis on linking theory to practice in dental hygiene educational settings. Addresses the transition from clinician to

educator and the role of the clinical educator in the development and facilitation of learning activities to meet the needs of a diverse student population.

*Prerequisite: admission to MS program or Certificate in Oral Health Professions Education; credit, 3 s.h.; fall.*

### **DHY 753O**

#### **Curriculum and Course Design in Oral Health Professions Education**

Emphasizes application of adult learning theory and best practices in student-centered learning as they apply to development of curricular frameworks, outcomes, and competencies along with course design.

*Prerequisite: admission to MS program or Certificate in Oral Health Professions Education; DHY 751; credit, 3 s.h.; spring.*

### **DHY 755O**

#### **Oral Health Professions Education Practicum**

Individualized experience to apply principles and theories in oral health professions education to practice. Advance approval and arrangements are required.

*Prerequisites: DHY 751, 753; experiential, 12 hrs.; credit, 3 s.h.; summer.*

### **DHY 818O**

#### **Research Fundamentals**

Covers quantitative and qualitative designs for health research, including data collection, description, and manipulation; formulation of research objectives and hypotheses; and presentation and interpretation of results. Emphasizes application of principles through critiques of oral health research and development of a research protocol.

*Prerequisites: DHY 714; credit, 3 s.h.; fall.*

### **DHY 827O**

#### **Administration and Management**

Provides essential knowledge, skills, and values needed to manage an organization, including strategic planning, financial administration, personnel management, marketing, legislative and regulatory priorities, and communications. Overview of management, leadership, and organizational theories.

*Credit, 3 s.h.; spring.*

### **DHY 831O**

#### **Thesis I**

The capstone course for the degree is a master's thesis related to oral health that consists of a scholarly written report and presentation on a topic of the student's choosing, all subject to approval by the student's program Graduate Advisory Committee.

*Prerequisites: DHY 701, 703, 706, 714, 722, 818, 827; credit, 3 s.h.; fall, spring, summer.*

**DHY 8320****Thesis II**

Second-semester continuation of master's thesis study under the direction of the student's program Graduate Advisory Committee.

*Prerequisite: DHY 8310; credit, 3 s.h.; fall, spring, summer.*

**DHY 8350****Public Health Practicum**

Individualized public health experience designed to apply curriculum content to practice. Advance approval and arrangements are required.

*Prerequisites: DHY 701, 703, 706, 714, 722; credit, 3 s.h.; summer.*

**DHY 8400****Advanced Dental Hygiene Practice**

The course will focus on a broad view of alternative practice settings for dental hygienists with attention to scope of practice for oral health professionals with expanded functions. An introduction to alternative practice models including program development, business planning, risk management, and legislative advocacy.

*Credit, 3 s.h.; spring.*

**DHY 8950****Graduate Extension of Thesis**

All degree students are expected to remain continuously enrolled each semester, until thesis requirement for the degree has been completed.

*Credit, none.*

**Diagnostic Medical Sonography (DMS)****DMS 200****Introduction to Diagnostic Medical Sonography**

An introduction to the profession of diagnostic medical sonography and the role of the sonographer. Students will learn sonographic terminology, communication, and professionalism in the clinical setting, and will examine the history of ultrasound, accreditation, professional organizations, and registry significance.

*Prerequisite: LIB 220; class, 2 hrs.; credit, 2 s.h.; fall.*

**DMS 202****Obstetrics/Gynecology Sonography I**

Students will learn about the normal and abnormal female pelvis, including tumors, pelvic inflammatory diseases, and congenital pelvic pathology. They also will learn the applications and scanning methods of obstetrical sonography, including embryology and the sonographic examination in early pregnancy.

*Prerequisite: BIO 210/210L; class, 3 hrs.; credit, 3 s.h.; fall.*

**DMS 204L****Sonography Laboratory Procedures I**

This lab course offers beginning hands-on and experiential learning in the basics of selected sonography protocols: abdomen, pelvis, and individual organs / blood vessels. Under supervision of faculty / clinical coordinator, students will apply the didactic information and integration to practical lab techniques. Cross-sectional anatomy of these structures and their appearance on the sonogram also will be emphasized.

*Prerequisite: BIO 210/210L; Lab, 12 hrs.; credit, 4 s.h.; fall.*

**DMS 205****Breast Sonography**

Students learn the principles and fundamentals of breast sonography. Exploration of the physics of sonography as it relates to normal and abnormal breast tissue and anatomy. Correlation with other imaging modalities and surgical techniques in breast pathology is stressed and correlated with sonomammography and breast implants.

*Prerequisite: BIO 210/210L; class, 3 hrs.; credit, 3 s.h.; summer*

**DMS 206****Abdominal Sonography I**

The first course in a two-course series covering sonographic imaging of the abdomen. Students will apply the general principles of sonography scanning procedures; lab values related to patient disease processes; ultrasound characteristics of the various organs; and pathology of the abdominal vasculature, liver, biliary system, pancreas, and spleen.

*Prerequisite: BIO 210/210L ; class, 3 hrs.; credit, 3 s.h.; fall.*

**DMS 207****Fetal and Pediatric Echocardiography (w/lab)**

Students participate in a comprehensive discussion about anatomy, physiology, embryology, and pathologies. Special heart views in fetal and pediatric populations are included. Students will apply the echocardiography technology for the diagnosis of congenital and acquired heart diseases.

*Prerequisite: BIO 210/210L; class, 3 hrs.; lab 3 hrs; credit, 4 s.h.; fall.*

**DMS 208****Sonographic Physics and Instruments I**

Students will apply the principles of sound, sound propagation, pulse echo instrumentation, image formation, transducers, and system operation for accurate interpretation of sonographic information and image methodology. The integration of these theories and abstract principles with their practice in clinical applications will be emphasized.

*Prerequisites: MAT 141, MAT 261; class, 3 hrs.; credit, 3 s.h.; fall.*

**DMS 209****Cardiovascular Principles**

Students will learn normal anatomy, physiology, embryology, and hemodynamics of the heart; common pathologies of the heart; the most common medications for the treatment of heart disease; and interpretation of normal and abnormal EKGs. Sonographic studies of the heart are coordinated with the sonography lab.

*Prerequisite: BIO 210/210L; class, 3 hrs.; credit, 3 s.h.; fall.*

**DMS 210L****Cardiovascular Laboratory Procedures I**

Complete testing protocols are practiced in the lab while reviewing the physical principles related to common pathologies of the heart. Emphasis on Doppler, A-mode, 2-D, 3-D, 4-D, vascular, and fundamental hands-on training in preprocedural, intraprocedural, and postprocedural activities and rhythm analysis. This course includes EKG and electrophysiology of the heart.

*Prerequisite: BIO 210/210L; lab, 9 hrs./wk.; credit, 3 s.h.; fall.*

**DMS 212****OB/GYN Sonography II**

Applications and scanning methods of obstetrical sonography will be the focus of this course. Students will learn the sonographic examination in the estimation of gestational age, the placenta, late pregnancy, abnormal growth and development, and special procedures. Pathology associated with pregnancy will be discussed. The application of sonography in the diagnosis and treatment of infertility also will be studied.

*Prerequisite: DMS 202; class, 3 hrs.; credit, 3 s.h.; spring.*

**DMS 213L****Scanning Techniques**

Students will receive hands-on, experimental learning. The students learn to use the imaging equipment controls, transducer position relative to the anatomy to be scanned, scanning techniques for selected protocols. Under supervision of faculty/clinical coordinator, students will apply the didactic information they have learned into practical lab techniques in the general sonography protocol: abdomen complete, pelvic and ob.

*Prerequisite: Admission to the program; lab 12 hrs.; credit, 4 s.h.; fall.*

**DMS 214L****Sonography Laboratory Procedures II**

This course provides a comprehensive overview of the normal and pathological processes of the abdomen, thyroid, and transabdominal uterus and ovaries and allows students to examine their appearance on ultrasound. Requires mastering the sonography

protocols.

*Prerequisite: DMS 204; lab, 12 hrs./wk.; credit, 4 s.h.; spring.*

**DMS 216****Abdominal Sonography II**

The second course in a two-course series covering sonographic imaging of the abdomen and small parts. Students will learn scanning procedures; lab values; ultrasound characteristics; and pathology of the gastrointestinal tract, kidneys, urinary tract, adrenal glands, prostate, thyroid/parathyroid glands, and scrotum.

*Prerequisite: DMS 206; class, 3 hrs.; credit, 3 s.h.; spring.*

**DMS 217****Cardiac Doppler**

This course comprehensively covers the basic principles, and clinical applications of cardiac Doppler (Doppler echocardiography) in healthy patients and in patients with cardiovascular disease. Topics will include the various types of Doppler (PW, CW, color, DTI) and their utility in the assessment of ventricular function, assessment of valvular disease, congenital heart disease.

*Prerequisites: DMS 209, 210L; class, 2 hrs.; credit, 2 s.h.; spring.*

**DMS 218****Sonography Physics and Instruments II**

This course continues exploring the theoretical and abstract principles that form the technological basis of diagnostic medical sonography. Topics will include Doppler physics and instrumentation, artifacts, quality assurance, and hemodynamics. Physics applications and collaborative learning will be highly emphasized.

*Prerequisite: DMS 208; class, 3 hrs.; credit, 3 s.h.; spring.*

**DMS 219****Adult Echocardiography I**

This course is the continuation of cardiovascular principles. In this course, the emphasis is on abnormal echocardiography and includes systolic function, diastolic function, coronary artery disease, valvular heart disease, and diseases of great arteries. Cardiac protocols and cardiac packages will be discussed.

*Prerequisites: DMS 209, 210L, class, 3 hrs.; credit, 3 s.h. spring.*

**DMS 220L****Cardiovascular Laboratory Procedures II**

This hands-on course that is the continuation of Cardiovascular Lab Procedures I. Students will complete full echocardiography protocols in the lab. Focus will be measurement accuracy, image quality,

and speed. Students will also learn how to perform an aortic stenosis echocardiogram.

*Prerequisites: DMS 209, 210L; Lab 15 hrs./wk.; credit, 5 s.h.; spring*

#### **DMS 224L**

##### **Sonography Laboratory Procedures III**

This course will offer multiple simulation exercises that will allow students to apply their knowledge and practical skills gained in previous coursework.

Emphasis will be on correlation between clinical signs/symptoms and ultrasound findings, as well as patient interaction. Advanced scanning protocols and new technologies will also be discussed.

*Prerequisite: DMS 214L, 216, 212; lab, 3 hrs.; credit, 1 s.h.; summer.*

#### **DMS 225**

##### **Introduction to Echocardiography**

This course will cover basic cardiovascular anatomy and principles of the cardiovascular system. Students will learn the cardiac cycle with a focus on event timing, basic cardiovascular pharmacology, and electrocardiograms (EKG). Also included in this course is an introduction to the ultrasound appearance of basic cardiac anatomy as well as an introduction to cardiac abnormalities seen in echocardiography.

*Prerequisite: Admission to the program; Corequisite: DMS 225L; class, 12 hrs./wk.; credit, 4 s.h.; fall.*

#### **DMS 225L**

##### **Introduction to Echocardiography Lab**

This lab course provides hands-on learning. The student becomes familiar with imaging equipment controls, transducer positions relative to anatomy, scanning techniques for a complete transthoracic protocol and the utilization of the non-imaging CW transducer. Under supervision, students will apply didactic information to practical lab techniques in echocardiography. The sonographic appearance of cardiac anatomy and function will be emphasized with hemodynamics.

*Corequisite: DMS 225; Lab 12 hrs/wk.; credit, 4 s.h.; fall.*

#### **DMS 230L**

##### **Cardiovascular Laboratory Procedures III**

This course will offer multiple simulation exercises that will allow students to apply their knowledge and improve practical skills gained in previous coursework.

Emphasis will be on correlation between clinical signs/symptoms and ultrasound findings, as well as patient interaction. Advanced scanning techniques and stress echocardiography will also be discussed.

*Prerequisite: DMS 217, 219, 220; Lab 3hrs./wk. ; credit, 1 s.h.; summer*

#### **DMS 233L**

##### **Advanced Scanning Techniques**

Students will receive hands on, experimental learning. Students will build upon skills learned in DMS 213, strengthen their skills, accuracy, and image optimization in preparation for clinical rotations. Under supervision of the faculty/clinical coordinator, students will apply the didactic information they have learned into practical lab techniques in the general sonography protocols: abdomen complete, pelvic, thyroid, and lower extremity venous.

*Prerequisite: DMS 213L; Lab 9 hrs/week; credit, 3 s.h.; spring*

#### **DMS 250**

##### **Selected Topics**

Students will learn the sonographic appearance of normal gross anatomy, pathologic conditions, and vasculature. The student will learn and practice select protocols following the guidelines of the American Institute of Ultrasound in Medicine for thyroid, breast, and lower extremity vasculature as well as simulated testicular and prostate examinations.

*Prerequisites: DMS 202 and DMS 206; 3 hrs.; credit, 3 s.h.; spring.*

#### **DMS 260**

##### **Echocardiography and Congenital Heart Disease**

This course covers pathophysiology and ultrasound appearances of complex congenital heart defects as presented in adult populations. Students will learn how to evaluate patients with arterial and/or ventricular septal defects as well as transposition of the great arteries. Students will then progress to assessment of other congenital anomalies such as Tetralogy of Fallot, Eisenmenger's Syndrome, Cor Triatriatum, and Ebstein's Anomaly.

*Prerequisite: DMS 225; Class, 3hrs; credit, 3 s.h.; spring*

#### **DMS 265**

##### **Echocardiography II**

This course covers pathophysiology of heart disease and the role of ultrasound, including stress echocardiograms and fast scans performed in the emergency room. Topics will include calculation of valve area with degree of regurgitation and evaluation of systolic function. Ultrasound findings associated with multiple cardiac abnormalities, including cardiac tumors will be discussed.

*Prerequisite: DMS 225; Corequisite: DMS 266L; Class, 3hrs; credit, 3 s.h.; spring*

#### **DMS 266L**

##### **Echocardiography Lab II**

This course is a hands-on laboratory procedure course designed to promote mastery of the basics learned in DMS 225L and introduction to the more advanced concepts in transthoracic echocardiography. This

course will prepare the student for their clinical education rotation. Students will work on mastering image quality, the speed of their exams and accuracy of measurements.

*Prerequisite: DMS 225L; Corequisite: DMS 265; Lab 12 hrs/wk; credit, 4 s.h.; spring*

### **DMS 302C**

#### **General Clinical Sonography I**

Consecutive clinical sonography courses are an internship of supervised clinical practicum hours in which the student acquires the knowledge and skills relevant to abdominal, vascular, and gynecological sonography specialties. Students must achieve specific levels of clinical competence before advancing to the next clinical course. Includes an emphasis on patient care and supervised scanning.

*Prerequisites: DMS 212, DMS 216, DMS 214L; Co-requisite: DMS 310 (Gen); experiential, 32hrs/wk.; credit, 8 s.h.; fall*

### **DMS 304**

#### **Problem Solving in Physics and Instruments**

This course is the cumulative physics preparation for the ARDMS credentialing board examination. This course involves interactive applications of physics and instrumentation of the ultrasound equipment. Theory and application of ultrasound physics principles and Doppler are included. Students will review through directed group activities. Students will participate in interactive mock examinations as preparation for the ARDMS examination.

*Prerequisite: DMS 218; class, 3 hrs; credit, 3 s.h.; summer.*

### **DMS 306C**

#### **Cardiovascular Clinical Sonography I**

The first of three consecutive clinical courses providing an internship of supervised practicum hours. The student utilizes knowledge and skills relevant to adult and pediatric echocardiography, as well as vascular sonography, learned in classes and labs and builds upon that knowledge and skillset in the clinical setting. Specific levels of clinical proficiency before advancing to the next clinical course.

*Prerequisites: DMS 217, 219, 220L; Co-requisite: DMS 310 (Echo); experiential, 32 hrs./wk.; credit, 8 s.h.; fall*

### **DMS 310**

#### **Critical Thinking I (Echocardiography Program)**

This is the first of two consecutive courses that offer the opportunity to integrate the academic and clinical concepts of echocardiography through interpretation and critique of normal and abnormal anatomy and physiology with correlation of didactic, clinical and image information. Emphasis is on critical thinking and communication skills via written and oral case presentations and critiques on cardiovascular

sonography applications.

*Prerequisite: DMS 319; Co-requisite: DMS 306C; class, 2 hrs.; credit, 2 s.h.; fall.*

### **DMS 310**

#### **Critical Thinking I (General Program)**

Based on a critical thinking model developed for student sonographers, this the first of two courses that offers the opportunity to integrate the academic and technical concepts of diagnostic medical sonography, through interpretation and critique of normal and abnormal anatomy with correlation of didactic, clinical and image information. Emphasis is on communication skills via written and oral case presentations and critiques on general sonography applications

*Prerequisites: DMS 212, 216; Co-requisite: DMS 302C; class, 2 hrs.; credit, 2 s.h.; fall.*

### **DMS 312C**

#### **General Clinical Sonography II (General Program)**

Consecutive clinical sonography courses are an internship of supervised clinical practicum hours in which the student acquires the knowledge and skills relevant to abdominal, vascular, and gynecological sonography specialties. Students must achieve specific levels of clinical competence before advancing to the next clinical course. With emphasis on performing proficiency and some competency under close supervision.

*Prerequisites: DMS 302C; experiential, 32 hrs./wk.; credit, 8 s.h.; spring*

### **DMS 315**

#### **Pediatric Sonography**

The Pediatric Sonography course is a comprehensive didactic course which include an in depth knowledge and skills essential in the areas of the head, spine, chest, hips/joint and male and female genitourinary system of the pediatric patient. The course successfully fulfill the curriculum for the pediatric ultrasound certification exam with the ARDMS. The course also includes the variables techniques and protocols for the pediatric patients. *Prerequisites: DMS 212, 216; class 3 hrs, credits 3 s.h. fall.*

### **DMS 316C**

#### **Cardiovascular Clinical Sonography II (Echocardiography Program)**

Consecutive clinical sonography courses are an internship of supervised clinical practicum hours in which the student acquires the knowledge and skills relevant to adult, fetal, and pediatric echocardiography and vascular sonography. Students must achieve specific levels of clinical competence before advancing to the next clinical course. With emphasis on performing proficiency and some competency under close supervision.

*Prerequisites: DMS 306C; experiential, 32 hrs/week; credit, 8 s.h.; spring*

**DMS 319****Adult Echocardiography II**

This course is a continuation of topics covered in Adult Echocardiography I. Abnormal echocardiography associated with endocarditis, diseases of the aorta, prosthetic heart valves, cardiac and respiratory arrest, chemotherapy complications, and systemic diseases will be covered.

*Prerequisites: DMS 219, 220L; class, 3 hrs./wk.; credit, 3 s.h.; summer.*

**DMS 320****Introduction to Vascular Sonography**

This course studies the uses of sonography in the diagnosis of vascular disease. Students will learn vascular anatomy and pathophysiology to include cerebrovascular, upper and lower extremity venous and arterial. Routine vascular protocols will be introduced. Indications, patient history, physical examinations, imaging techniques, and vascular pathology will be covered in depth.

*Prerequisites: DMS 218, DMS 214L or DMS 220L; class, 4 hrs.; lab 3 hrs/week; credit 5 s.h.; summer*

**DMS 340C****Sonography Internship I**

This is the first course of two consecutive clinical sonography courses providing an internship of supervised clinical practicum hours in which the student acquires the knowledge and skills relevant to abdominal/small parts, and obstetrical and gynecological sonography specialties. Students must achieve specific levels of clinical proficiency before advancing to the next clinical course.

*Prerequisite: DMS 212 and DMS 216 or DMS 221 and DMS 240, DMS 233; Experiential, 32 hrs/wk.; credit, 8 s.h.; summer.*

**DMS 350C****Echocardiography Internship I**

This is the first course of two consecutive clinical sonography courses providing an internship of supervised clinical practicum hours in which the student acquires the knowledge and skills relevant to adult echo sonography specialties. Students must achieve specific levels of clinical proficiency before advancing to the next clinical course.

*Prerequisite: DMS 265, DMS 266L; Experiential, 32 hrs/wk.; credit, 8 s.h.; summer.*

**DMS 355****Advanced Echocardiography**

This course is a continuation of topics covered in Echocardiography II. Endocarditis clinical signs & symptoms and associated ultrasound findings will be discussed. Sonographers' role with emergent echocardiography, sonographic findings associated

with chemotherapy use, as well as stress echocardiography will also be covered.

*Prerequisites: DMS 265; class, 3 hrs.; credit, 3 s.h.; summer*

**DMS 408****Advanced Doppler**

Students learn advanced Doppler color flow; power angio; spectral analysis; and basic protocols for carotid artery, duplex evaluation of the upper and lower extremities, upper and lower extremity venous Doppler protocols, and vein mapping.

*Prerequisites: DMS 217; class, 1 hr./wk.; credit, 1 s.h.; fall*

**DMS 410****Critical Thinking II (General Program)**

The continuation of DMS 310 to include interpretation and critique of normal and abnormal anatomy with correlation of didactic, clinical and image information with written and oral case presentations with emphasis on pediatric, vascular, musculoskeletal and general sonography applications. Discussion and summarization of pertinent journal articles are included. The student will prepare a written document following common publishing guidelines.

*Prerequisites: DMS 310 (General); Co-requisite: DMS 312C; class, 2 hrs.; credit, 2 s.h.; spring.*

**DMS 410****Critical Thinking II (Echocardiography Program)**

Students will use evaluation methodologies and apply them toward case analysis and critique as well as pertinent scholarly reading assignments. Case presentations and readings will focus on applicable normal and pathologic anatomy and physiology. Emphasis is on the differential diagnosis of cardiovascular diseases as they relate to echocardiography.

*Prerequisites: DMS 310 (Echo), 306C; Co-requisite: DMS 316C; class, 2 hrs.; credit, 2 s.h. spring.*

**DMS 412C****General Clinical Sonography III**

Consecutive clinical sonography courses are an internship of supervised clinical practicum hours in which the student acquires the knowledge and skills relevant to abdominal, vascular, and gynecological sonography specialties. Students must achieve specific levels of clinical competence before advancing to the next clinical course. With emphasis on performing proficiency and competency with minimal supervision.

*Prerequisites: DMS 312C; experiential, 32 hrs./wk.; credit, 8 s.h.; summer.*

**DMS 420****Musculoskeletal Sonography**

This course will explore the use of ultrasound to evaluate the musculoskeletal system. Students will

examine relevant anatomy and pathology, sonographic appearance, scanning techniques and protocols for ultrasound diagnoses associated with the shoulder, elbow, hand/wrist, knee, and foot/ankle conditions.

*Prerequisites: DMS 214L, 216, 304; class, 3 hrs.; credit, 3 s.h. spring*

#### **DMS 426C**

##### **Cardiovascular Clinical Sonography III**

Consecutive clinical sonography courses are an internship of supervised clinical practicum hours in which the student acquires the knowledge and skills relevant to adult, fetal, and pediatric echocardiology and vascular sonography. Students must achieve specific levels of clinical competence before advancing to the next clinical course. With emphasis on performing proficiency and competency with minimal supervision.

*Prerequisites: DMS 316C; experiential, 32hrs./wk.; credit, 8 s.h.; summer*

#### **DMS 430C**

##### **Sonography Internship II**

This is the final course clinical sonography course providing an internship of supervised clinical practicum hours in which the student acquires the knowledge and skills relevant to abdominal, and obstetrical and gynecological sonography specialties. As a requirement for graduation, students must achieve clinical competency on all mandatory ultrasound procedures. Student may include clinical competencies from previous clinical rotation.

*Prerequisites: DMS 340C; experiential, 40 hrs/wk.; credit, 10 s.h.; fall.*

#### **DMS 440**

##### **Advanced Problem Solving in Sonography**

This comprehensive course is designed as a review of the principles and practices of diagnostic medical sonography in abdominal, OB/GYN, vascular, breast, and pediatric sonography. The course includes problem-solving and self-assessment techniques to embed knowledge and skills, identify the student's weak areas, and provide guidelines for independent study to resolve those weaknesses.

*Prerequisites: DMS 410; class, 2 hrs.; credit, 2 s.h.; summer*

#### **DMS 441**

##### **Advanced Problem Solving in Echocardiography**

This comprehensive course will review the basic principles of echocardiography including but not limited to, cardiac anatomy and pathophysiology, valvular heart disease, cardiomyopathies, pericardial disease, cardiac tumors and adult congenital heart disease. The course will include problem solving and self-assessment techniques to embed knowledge, identify the students' weak areas, and provide

guidelines for independent study to resolve those weaknesses.

*Prerequisites: DMS 316C, 410; class, 3 hrs.; credit; 2 s.h.; summer (10 week session); credit, 10 s.h; fall.*

#### **DMS 443**

##### **Advanced Problem Solving in Vascular Sonography**

This course is designed as a review of the principles and practices of vascular sonography. The course includes problem solving and self-assessment techniques to embed knowledge and skills, identify the students' weak areas, and provide guidelines for independent study to resolve those weaknesses.

*Prerequisite: DMS 320; class, 3 hrs.; credit, 1 s.h.; summer.*

#### **DMS 447O**

##### **Sonographic Analysis**

Sonographic Analysis facilitates critical thinking providing the student the skills to integrate technological concepts of diagnostic medical sonography with application in clinical situations. The critique and analysis will include; image identification, orientation, production and quality, critical reasoning skills utilized in interpretation and examination performance, and the overall significance the acquired sonographic information plays in the management of patient care.

*Prerequisites: DMS 221 or 212, 240 or 216, 250 and 340; class, 3 hrs.; credit, 2 s.h.; fall.*

#### **DMS 450**

##### **Transesophageal Echocardiography and Invasive Procedures**

Students will learn basic transesophageal echocardiogram (TEE) protocols, views, and structures. Students will also learn indications for TEE and the medications administered for the procedure. The course will also give an introduction into other cardiac invasive procedures including: cardiac catheterization, electrophysiology, left ventricular assist devices and cardiac transplant.

*Prerequisites: DMS 209, 210L; class, 2 hrs.; credit, 2 s.h.; spring*

#### **DMS 452O**

##### **Echocardiography Analysis**

This course introduces critical thinking techniques to integrate technological concepts of echocardiography with practical application in clinically pertinent situations. Critique and analysis will include: Image identification, orientation, production and quality, critical reasoning skills utilized in interpretation and examination performance and, the significance of the sonographer's role in acquiring information and how it relates to the management of patient care.

*Prerequisites: DMS 350C Echocardiography Internship*



*I; Co-requisite: DMS 455C Echocardiography Internship II; class, 3 hrs.; credit, 3 s.h.; fall.*

#### **DMS 455**

##### **Echocardiography Internship II**

This is the final course in clinical echocardiography courses providing an internship of supervised clinical practicum hours in which the student acquires the knowledge and skills relevant to adult echocardiography. As a requirement for graduation, students must achieve clinical competency in all modalities utilized with adult echocardiography. Student may include clinical competencies from previous clinical rotations.

*Prerequisite: DMS 350C Echocardiography Internship I; Experiential, 40 hrs/wk*

#### **DMS 460.O**

##### **Seminar in Sonography**

This course is the cumulative preparation for the ARDMS credentialing board examinations in abdominal sonography and OB/GYN sonography. Review of anatomy, physiology, patient care, clinical signs and symptoms, correlation with other diagnostic testing and sonographic presentation of normal, abnormal variants and pathologies. Student will participate in discussions utilizing critical thinking and problem solving skills and mock examinations.

*Prerequisites: DMS 221 or 212, 216 or 240, and 340; class, 2 hrs.; credit, 2 s.h.; fall.*

#### **DMS 465.O**

##### **Seminar in Echocardiography**

This course is the cumulative preparation for the ARDMS credentialing board examinations in adult echocardiography. Review of anatomy, physiology, patient care, clinical signs and symptoms, correlation with other diagnostic testing and sonographic presentation of normal, abnormal variants and pathologies. Student will participate in discussions utilizing critical thinking and problem solving skills and mock examinations.

*Prerequisites: DMS 350, DMS 355; class, 2 hrs.; credit, 2 s.h.; fall*

## **Regulatory Affairs and Health Policy (DRA)**

#### **DRA 802**

##### **Law and Health Policy of Drugs and Devices**

A study of the legal principles governing the commercial use of drugs and devices, including contract, tort, intellectual property, and regulatory law. Policy decisions and risk allocations from the legal, social, ethical, and economic perspectives are emphasized.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

#### **DRA 804**

##### **FDA and Regulatory Affairs**

Examines the pertinent aspects of the Federal Food, Drug, and Cosmetic Act as it applies to human drug and device development and manufacturing. Special consideration is given to the drug approval process, CGMPs, and corresponding documentation requirements.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring*

#### **DRA 807**

##### **Statistics in Clinical Research: Interpretation and Application**

Emphasizes the interpretation and application of common statistical procedures found in clinical research. Topics include experimental design, sampling, descriptive statistics, estimation, hypothesis testing, p-values, power, analysis of variance, correlation, regression, nonparametric statistics, and analysis of survey data. The use of statistical software for analyzing clinical patient data also is discussed.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring, summer.*

#### **DRA 808**

##### **Protection of Human Research Subjects**

Focuses on the principal ethical and regulatory concepts that formally govern the use of human subjects in biomedical and behavioral research: subjects' informed consent, researcher-physician conflicting interests, confidentiality, the use of deception/placebos in research, vulnerable research subjects, research in emergency settings, the question of the obligation to participate in biomedical research, scientific misconduct, and risks to research.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

#### **DRA 809**

##### **Health Epidemiology**

Introduces students to the basic concepts and principles of epidemiology as they relate to healthcare. Students learn the basic skills needed to critically evaluate epidemiological literature and apply these data to healthcare decision making.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

#### **DRA 810**

##### **Case Study Thesis**

A case study thesis, consisting of a scholarly written report and presentation on a topic of the student's choosing, all subject to approval of the student's Graduate Advisory Committee. Students are graded solely on submitting the written case study thesis and successfully defending it.

*Prerequisites: DRA 814 or MCR 804; Credit, 3 s.h.; fall, spring.*

#### **DRA 810E**

##### **Case Study/Thesis Extension**

As all degree students are expected to remain

continuously enrolled each semester, excluding summer semesters, until all requirements for the degree have been completed, this course allows students who were previously registered for, but earned an Incomplete in, DRA.810 the opportunity to continue the research, writing, and/or defense of their thesis.

*Credit, 1 s.h.; fall, spring.*

#### **DRA 811**

##### **Health Policy Development and Analysis**

Examines the roles of the federal government and the private sector in developing healthcare policy and drug regulatory policy in a social, political, and economic context. Focuses on healthcare reform, pharmaceutical research, and systems of financing healthcare.

*Prerequisite: consent of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **DRA 812**

##### **Advanced Topics in Regulatory Affairs**

Examines advanced, specific areas of regulatory affairs with special emphasis on in-depth analysis of emerging issues in agency developments, interagency agreements, and international conferences. A single course coordinator facilitates discussion among students and invited lecturers to explore the depth and breadth of their respective fields.

*Prerequisite: DRA 804; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

#### **DRA 814**

##### **Data Analysis and Presentation Capabilities in Regulatory Affairs**

This course is designed for students to conduct a research capstone project pertinent to professional interests. Students will practice research skills and demonstrate the process of scientific writing of a manuscript suitable for submission to a peer-reviewed journal. By the end of this course, students will present an abstract, paper, and poster. Additionally, students will present findings to MCPHS University faculty, peers, and staff, and community partners.

*Prerequisites: completion of three semesters of the DRA program or consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall, spring (offered online during the summer).*

#### **DRA 815**

##### **International Regulatory Affairs**

Examines international regulations governing medical product development and commercialization.

*Prerequisite: DRA 804; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

#### **DRA 816**

##### **Principles of Quality Assurance and Control**

Examines all aspects of quality assurance and quality control, including current good manufacturing practices

(CGMPS), as they apply to the development and commercialization of medical products.

*Prerequisite: DRA 804; class, 3 hrs.; credit, 3 s.h.; fall.*

#### **DRA 817**

##### **Development and Production of Medical Devices**

Examines all aspects of development and commercialization of medical devices, including the quality system regulations (QSRs).

*Prerequisite: DRA 804; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **DRA 818**

##### **The Law of Healthcare Compliance**

Students will learn the foundational principles of the law underlying Healthcare Compliance and be able to recognize potential “red flags” regarding issues that should be brought to the attention of the Legal or Compliance Office. Students will examine the complex and constantly evolving practice of Healthcare Compliance and learn to analyze and apply the law.

*Class, 3 hrs; credit 3 s.h.; fall*

## **English Language Services**

#### **ELA 041**

##### **Academic Bridge: Biology I**

Students strengthen their academic language and study skills using the content of BIO 151, an introductory college biology course in which the student is concurrently enrolled. Among the skills developed are critical reading of academic course materials, note-taking, test-taking, study strategies, and giving oral presentations. Students are introduced to program resources, college policies, the Center for Academic Success and Enrichment resources, professional practices, and co-curricular opportunities.

*Prerequisite: MCPHS English Proficiency Exam score of 51–56 and consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall.*

#### **ELA 042**

##### **Academic Bridge: Anatomy & Physiology I**

Students strengthen their academic language and study skills using the content of BIO 110, an introductory college anatomy and physiology course in which the student is concurrently enrolled. Among the skills developed are critical reading of academic materials, note-taking, test-taking, study strategies, and giving oral presentations. Students are introduced to program resources, college policies, the Center for Academic Success and Enrichment resources, professional practices, and co-curricular opportunities.

*Prerequisite: MCPHS English Proficiency Exam score of 51–56 and consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall.*

**ELA 043****Academic Bridge: Intro to Psychology**

Students strengthen their academic language and study skills using the content of LIB 120, an introductory college psychology course in which the student is concurrently enrolled. Among the skills developed are critical reading of academic course materials, note-taking, test-taking, study strategies, and giving oral presentations. Students are introduced to program resources, college policies, the Center for Academic Success and Enrichment resources, professional practices, and co-curricular opportunities.

*Prerequisite: MCPHS English Proficiency Exam score of 51–56 and consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall, spring, summer.*

**ELA 044****Academic Bridge: Intro to Human Development**

Students strengthen their academic language and study skills using the content of BEH 352 Human Development Through the Life Span in which the student is concurrently enrolled. Among the skills developed are critical reading of academic course materials, note-taking, study strategies, and giving oral presentations. Students are introduced to program resources, college policies, the Center for Academic Success and Enrichment resources, professional practices, and co-curricular opportunities.

*Prerequisite: Prerequisite: MCPHS English Proficiency Exam score of 51–56 and successful completion of LIB 120; class, 3 hrs.; credit, 3 s.h.; spring.*

**ELA 055****Academic Writing**

Students develop critical reading skills through engaging with nonfiction texts from the health sciences disciplines. Students complete basic rhetorical analysis and structure paragraphs and short essays in a variety of modes. Students integrate sources into their writing as well as refine their grammar and writing mechanics. Students develop and use advanced academic vocabulary throughout all readings and writings.

*Prerequisite: MCPHS English Proficiency Exam score of 51–56 and consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall, spring, summer.*

**ELA 065****Academic Listening/Speaking**

Students acquire listening and speaking strategies and skills for successful academic study. By examining various academic topics including the health sciences, students enhance their listening comprehension, improve the clarity and comprehensibility of their speech, and strengthen their knowledge of academic vocabulary. Students learn strategies for engaging in and leading class discussions, delivering academic presentations, and taking notes.

*Prerequisite: MCPHS English Proficiency Exam score of 51–56 and consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall, spring, summer.*

**ELA 075****Communication for Pharmaceutical Sciences I**

To prepare for participation in academic reading and writing assignments, students work on developing academic reading strategies such as previewing, annotating, outlining, and summarizing through reading juried journal articles in the field of pharmaceutical sciences. Students write laboratory reports, engage in class discussions, and participate in cooperative group work. Students also acquire basic library skills.

*Class, 3 hrs.; credit, 3 s.h.; varies.*

**ELA 076****Communication for Pharmaceutical Sciences II**

To prepare for graduate-level reading and writing assignments, students read, summarize, and critique juried journal articles in the field of pharmaceutical sciences. Students master the academic writing process of planning, drafting, revising, and editing through the production of a literature review. Students engage in group presentations, acquire advanced library skills, and present a poster based on their research.

*Prerequisite: Successful completion of ELA 075 and consent of instructor; class, 3 hrs.; credit, 3 s.h.; varies.*

**Healthcare Administration (HCA)****HCA 710****Systems of Healthcare Delivery**

Students study the complexities and challenges of the U.S. healthcare system through analysis of the major systems and their historical evolution. Emphasis is placed upon developing administrative perspectives and building managerial decision-making skills. Students are challenged to consider the evolving context of healthcare through comparative analysis and future forecasts of major issues, such as cost containment and proliferation of technology.

*Credit, 3 s.h.*

**HCA 720****Organizations and Systems Thinking in Healthcare**

Students experience and interpret organizational theory from the structural, cultural, and organizational learning perspectives. Students perform in-depth analysis of organization attributes and determine organizational capacity. Students will be challenged to think systemically in response to specific organizational issues and develop core competencies for the edification of learning organizations.

*Prerequisite: HCA 710; credit, 3 s.h.*

**HCA 730****Foundations of Healthcare Financial Management**

Students research, discuss, and apply the role operations management in the efficient delivery of goods and services, with a focus on healthcare systems. The course will make extensive use of case studies, and students will be expected to prepare and communicate their understanding and insights on a regular basis. The course will make extensive use of key concepts and tools in Operations Management including, Shingo, Lean, Six Sigma, Kanban, JIT, Theory of Constraint, and Supply Chain Management.  
*Credit, 3 s.h.*

**HCA 740****Human Resources for Healthcare Managers**

Students will work through the fundamental concepts of human resources to develop a critical understanding of how human resource management supports institutional goals. Students will focus upon human resources functions including training, performance appraisals, benefits administration, and support of the hiring and recruitment process. Special attention will be focused upon legal requirements for employees and proper recruitment and selection.  
*Credit, 3 s.h.*

**HCA752****Quality Improvement**

Students explore continuous quality improvement through case studies in five focus area, PDSA cycles and applied tools, organizing for continual improvement, educational and social applications of CQI, assessment and incentives for CQI, and the process of improvement through applied research. Students will complete weekly case analyses directly related to the weekly topic and present a scholarly project.

*Prerequisite: HCA 710; credit, 3 s.h.*

**HCA 760****Legal and Ethical Concepts for Healthcare Administrators**

Students review the U.S. legal system and healthcare, with a focus on the influence of law upon developing healthcare organizations and responsible decision making. Students learn by interpreting and applying legal/ethical concepts in case briefs. Scope of cases includes contracts, liability, confidentiality, malpractice, and administrative law. Students explore a major legal or ethical concern in healthcare and provide legal/ethical justifications.

*Credit, 3 s.h.*

**HCA 780****Managing Healthcare Information Systems**

Students will examine the use of information systems in the healthcare sector, focusing on the following areas: clinical information systems, data quality,

healthcare information systems standards, and information exchange standards and regulations. Students will utilize case studies to deepen their understanding of healthcare information security and systems acquisition, implementation, and support. Time will also be spent on managing service challenges and strategic considerations in the healthcare IT environment.

*Credit, 3 s.h.*

**HCA 825****Managing and Delivering Engaged Healthcare**

Students explore patient-centered care, patient-centered decision-making, and patient engagement from educational-behavioral perspectives. Students research and present a scholarly paper exploring relevant patient or provider perspectives on chronic illness and the evolving role of the patient in the management of their health and their participation in health care encounters.

*Prerequisite: HCA 710; Credit, 3 s.h.*

**HCA 830****Strategic Healthcare Marketing Seminar**

Students will collaboratively research, develop, and design a comprehensive healthcare services marketing plan. Students will be introduced to internal and external assessment tools, competitive analysis, marketing strategy, and marketing plan development. In conjunction with the marketing plan, students will select the appropriate marketing mix, determine appropriate marketing actions and communications, and evaluate critical success factors.

*Credit, 3 s.h.*

**HCA 840****Healthcare Leadership**

Students will survey leadership concepts, constructs, and theories in support of organizational and interdisciplinary requirements. Students will develop and refine their own individual leadership action plans in relation organizational roles or profile. To this end, students will explore values, ethics, and skills required for healthcare leaders and be introduced to internal and external forces shaping the dynamic of healthcare leadership.

*Credit, 3 s.h.*

**HCA 850****Strategic Healthcare Management Seminar/Capstone**

Strategic management theory, models, and techniques are applied in the development and presentation of a strategic plan addressing a complex problem in healthcare. Strategic change management is a focus throughout. Knowledge from previous coursework, as well as research and analytical skills, are applied in the analysis of organizational strategy, position, and competition.

*Credit, 3 s.h.*

## **Global Healthcare Management (HCM)**

### **HCM101**

#### **Foundations of Global Healthcare Management**

This course provides an introduction to global healthcare management in both public and private organizations. Students will gain a broad understanding of the field and the required competencies. Students will learn basic concepts and terminology in global healthcare and develop an appreciation for different types of health systems. This is a core course for the Global Healthcare Management degree.

*Class, 3 hr; credit 3 s.h.; fall.*

### **HCM 102**

#### **Service Seminar in Global Healthcare Management**

This course provides an opportunity for students studying global healthcare management to engage with non-profit organizations serving a diverse and/or global population. Students will volunteer at least 3 hours/week with an organization, maintain a journal and discuss the experience weekly in class. In this manner, students will gain an appreciation for the issues faced by these organizations and the clients.

*Class 1 hr., credit 1 s.h.; spring.*

### **HCM 210 Globalization of Health Care**

This course establishes a strategic framework for students to evaluate the challenges and issues in global healthcare, comprehend variables and thoroughly consider the unique perspective and responsibilities of stakeholders. The course facilitates understanding of globalization and the way in which different "borders", including geographic, political and cultural, impact healthcare and business.

*Class, 3 hr; credit 3 s.h.; fall.*

## **Health Sciences (HSC)**

### **HSC 110**

#### **Health Sciences Seminar**

This introductory course is designed for learners in the health sciences major and provides an introduction to health care delivery systems and the health sciences industry. The course focuses on essential core qualities and competencies required of healthcare professionals and those working in the health industry. The course also introduces and emphasizes successful strategies for health career development.

*Class, 1 hr., credit, 1 s.h.; spring.*

### **HSC 210**

#### **Introduction to Health Sciences I**

This introductory course is the second seminar for

health sciences majors. The course continues the focus on essential core qualities and competencies required of healthcare professionals and those working in the health industry. The course also introduces the concentrations in the major, potential minor programs, and strategies on choosing learning pathways and courses of study applicable to health career goals.

*Prerequisite: HSC110, Class, 1 hr., credit, 1 s.h.; fall.*

### **HSC 301O**

#### **Health Promotion**

Students relate major models and theories of the field of health promotion to strategies for increasing health-enhancing behaviors, decreasing health risk behaviors, and creating environments supportive of healthy lifestyles.

*Class, 3 hrs.; credit, 3 s.h.; varies.*

### **HSC 310O**

#### **Healthcare Informatics**

Provides an overview of the role of information systems in healthcare organizations. Students correlate these roles to the integration of evidence-based practice and research into clinical decision making and determine the influence of information systems on health outcomes.

*Class, 3 hrs.; credit, 3 s.h.; varies.*

### **HSC 315O**

#### **Planning Health Education and Promotion Programs**

This course provides practical exposure to the process of program planning by organizations that provide health education. Students will study needs assessment, goal setting, commonly used program planning models, the marketing mix, behavior change models, and program evaluation. Students will assume the role of a program planning team to create viable program plans for local public health entities.

*Prerequisite: LIB112 and LIB 220, 3 s.h.; spring*

### **HSC 320O**

#### **Writing for Health Science Professionals**

Health science professionals must present their work clearly, technically, and competently for colleague and patient comprehension. Students will review the writing process with an emphasis on writing better sentences and paragraphs, choosing better words, editing, and proofreading. They will learn how to write research and technical papers, position papers, patient case studies / histories, manuscripts for publication, and a personal statement.

*Prerequisites: LIB 111 and LIB 112; credit, 3 s.h.*

### **HSC 325O**

#### **Healthcare Management**

Students will explore the history, role, purpose, and necessary skills of the healthcare manager position.

They will become familiarized with and skilled at using the necessary techniques that a healthcare manager uses. Students also will learn how to handle general healthcare management responsibilities such as conflict resolution, budgeting, strategic planning, and leadership.

*Class, 3 hrs.; credit, 3 s.h.; varies.*

### **HSC 3300**

#### **Leadership in Healthcare Education and Promotion**

This course provides an introduction to the fundamental concepts of management, administration, and leadership and their application in a variety of health education, health promotion, and wellness programs.

*Prerequisite: LIB112 and LIB 220, 3 s.h.; spring*

### **HSC 4XX**

#### **Health Leadership Development**

This course focuses on the core values, qualities and characteristics of emerging and experienced leaders in healthcare. Case studies, exercises, and self-assessments are used to help students internalize and apply concepts. The course will offer practical strategies for leadership development planning and strengthening leadership skills.

*Prerequisite: LIB112, 512; 3 s.h.; summer.*

### **HSC 4010**

#### **Public Health and Policy**

Students discuss the evolution of the public health system in the United States and its impact on healthcare delivery. With this foundation for understanding local, state, national, and global issues and initiatives, and their impact on health and wellness across populations, students propose health policy solutions.

*Class, 3 hrs.; credit, 3 s.h.; varies.*

### **HSC 4100**

#### **Research Analysis and Methods**

Students critically evaluate allied health and nursing peer-reviewed and non-peer-reviewed professional literature and correlate research to the concepts of evidence-based practice. Students apply research design and methods in individual or group projects.

*Prerequisite: HSC 310; class, 3 hrs.; credit, 3 s.h.; varies.*

### **HSC 4200**

#### **Grant Proposal Writing for the Health Sciences**

Students learn the various stages of grant writing and the grant submission process. General and specific techniques that can increase the chances of funding of grant proposals will be discussed, including the various sources of funding. With this foundation, each student will be asked to write a grant proposal, including the relevant components, on a research topic of his or her choice.

*Prerequisite: LIB 112; credit, 3 s.h.; varies.*

### **HSC 4250**

#### **Educational Theories and Methods**

Students will explore educational theories as well as didactic and clinical teaching and learning models appropriate for health sciences educational programs. Emphasis will be placed upon learner-centered, active teaching models. The development and use of competency-based student learning outcomes as a guide to instruction will be discussed.

*Credit, 3 s.h.; fall.*

### **HSC 4270**

#### **Teaching in the Clinical Setting**

This course provides an overview of the clinical setting as a teaching environment and the roles/responsibilities of the clinical instructor/preceptor/mentor. Focus is on the concept of clinical competence and theories related to clinical education and competency development. Students examine the selection and application of various clinical teaching/learning approaches and the importance of constructive feedback and evaluation.

*Prerequisite: LIB 112; credit, 3 s.h.; spring.*

### **HSC 4300**

#### **Law for Healthcare Managers**

Students study laws related to healthcare management in the United States. Included are those that regulate the nation's healthcare institutions and those related to patient rights, medical malpractice, medical ethics, legal issues, quality of care, and risk management, as well as current topics related to the health sciences profession.

*Prerequisite: LIB 112; credit, 3 s.h.; fall.*

### **HSC 4350**

#### **Healthcare Marketing**

Students learn the foundation of the healthcare marketing process: marketing strategies, environmental structure, consumer relationships, product strategies, and channels of distribution that are applied within the healthcare system. Students apply critical thinking approaches to marketing research processes, strategic marketing processes, decision-making models, and developing a business plan.

*Prerequisite: LIB 112; credit, 3 s.h.; spring.*

### **HSC 460**

#### **Health Communications, Literacy and Disparities**

Health literacy is defined as the capacity to obtain, process, and understand basic health information and services to make appropriate decisions about health. Poor health literacy impacts access to health information and quality health services. This course explores the link between health literacy and health disparities in relation to health information and health

communications products, programs and interventions.  
*Prerequisites: HSC 301, BEH 250; class, 3 hrs; credit, 3 s.h.*

### **HSC 5320**

#### **Directed Study**

Supervised study in health sciences involving a survey of existing knowledge, self-instructed or faculty-assisted inquiry into previously published data or methodologies, or other faculty-approved study of a nonresearch nature.

*Prerequisites: consent of instructor and dean; credit, 1–3 s.h.*

### **HSC 470**

#### **Health Sciences Practicum**

This course provides supervised, non-clinical, practical experience in the healthcare industry related to health sciences major and/or minor concentration areas of study. A combination of classroom review, online reporting, and field study experience will be involved. Students will identify a practicum site and supervisor prior to enrollment in this course.

*Prerequisite: Third or fourth year health sciences student and prior permission of program director; 3 hours/week (45 hours total); credit, 3 s.h.; fall.*

### **HSC 701**

#### **Introduction to Doctoral Studies**

Students are introduced to core learning theories, familiarized with the scholar-practitioner role, the requirements of doctoral research, expectations of graduate study, and the demands of academic writing. Course assignments challenge students to identify, evaluate, and refine their practice-based research concepts through critical review.

*Credit, 3 s.h.; fall, spring, summer.*

### **HSC 710**

#### **Educator Competencies in Health Professions**

This course focuses on the essential skills and competencies for health professions faculty and educators. The course covers the four educator competency domains: teaching, research and scholarship, professional and institutional service and administration. Students develop a personal education and scholarship philosophy statement, engage in self-assessment and review the literature for evidence-based best practices for each competency domain.

*Credit, 3 s.h.; spring.*

### **HSC 715**

#### **Educator Competencies in Health Professions**

This course focuses on the essential skills and competencies for health professions faculty and educators. The course covers the four educator competency domains: teaching, research and scholarship, professional and institutional service and administration. Students develop a personal education

and scholarship philosophy statement, engage in self-assessment and review the literature for evidence-based best practices for each competency domain.  
*Credit, 3 s.h.; spring.*

### **HSC 718**

#### **Qualities and Characteristics of Leadership in Healthcare**

This course focuses on the competencies that distinguish good leadership and great leadership in healthcare. Case studies, exercises, and self-assessments are used to help participants internalize and apply concepts. Participants will explore both personal and team values in improving behavior, performance, and morale. The course will offer practical strategies for strengthening leadership and interaction skills and for enhancing overall effectiveness.

*Credit, 3 s.h.; spring.*

### **HSC 720**

#### **Health Professions Program Development, Evaluation, and Accreditation**

Focusing on academic planning, assessment, and accreditation in health professions schools participants explore curriculum development and evaluation, models and strategies. Particular emphasis is placed upon constructing a curriculum proposal document where participants will learn about national, regional and specialized accreditation processes by conducting an in-depth analysis of accreditation issues in general and specifically related to their health profession.

*Credit, 3 s.h.; fall.*

### **HSC 722**

#### **Leading with Vision and Direction in Healthcare**

Students explore the roles and responsibilities of academic and healthcare leaders through the visioning and strategic planning processes. Through the application of strategic planning, students set priorities, focus organizational resources, strengthen operations, and ensure progress towards shared goals. This experience requires students to establish agreement around intended results, assessments, and the organization's direction in response to a changing environment.

*Credit, 3 s.h.; fall.*

### **HSC 730**

#### **Educational Leadership: Departments and Schools**

Students explore current issues and theoretical perspectives on academic leadership in health professions education. Students focus on the role of the department leader in managing change, communicating with stakeholders, dealing with the changing faculty workforce, developing and retaining faculty, and curricular development.

*Credit, 3 s.h.; spring*

**HSC 732****Independent Study Graduate Health Sciences**

Under the guidance of a graduate faculty member, students demonstrate and apply the core concepts of research and scholarship to study or address a specific problem of practice. The independent study culminates with a presentation of findings to faculty and fellow students.

*Credit, 1-6 s.h.*

**HSC 735****Classroom, Clinical, and Simulation Learning for Health Professionals**

This course explores core health professions education topics such as designing, developing, implementing and evaluating classroom, clinical and simulation learning programs, courses, presentations and educational materials using a systematic competency-based education approach. Students will address many of the challenges such as dealing with students in difficulty, developing competencies in simulated and clinical settings, and evaluating learning and program outcomes.

*3 s.h.*

**HSC 742****Contextual Leadership**

This course provides a theoretical and practical examination of leadership behaviors, organizational culture, policy formulation and implementation, and intra- and interpersonal dynamics. It examines how individuals are influenced by social environments; how they perceive themselves and others; and how to effectively use political savvy to influence personal and interpersonal growth and formulate policy.

*Credit, 3 s.h.; spring.*

**HSC 763****Managing Crisis, Conflict, and Change in Healthcare**

Conflict in interpersonal and organizational contexts is explored from the position of paradox and consideration for opposing views. Crises and conflicts are also viewed and evaluated in the framework of a learning organization considering genuine learning opportunities. Students will work in interdisciplinary teams to assess and present crisis and/or conflict relevant communication plans.

*Credit, 3 s.h.; fall.*

**HSC 805****Conducting Literature Review and Focusing Research**

Students are guided through the literature review process. Each of the four sections of the literature review (background, methods, results and discussion) will be taught through a series of reading assignments and focused exercises. Upon completion, students will

have a draft of a literature review for their doctoral dissertation.

*Credit, 3 s.h.; fall, spring, summer.*

**HSC 815****Healthcare Research Methods**

Students investigate and evaluate possible research alignments integrating their previously identified problem of practice and literature review, collaborating to refine the research questions. Quantitative, Qualitative, and mixed method alignments, along with underlying theoretical positions, and design considerations are evaluated. A formal research outline is presented and assessed.

*Credit, 3 s.h.; fall, spring, summer.*

**HSC 820****Qualitative Research Methods**

Qualitative research theory, approaches, and health services considerations are discussed along with the importance and relationship of positionality, theoretical framework, and paradigms of inquiry. The role of qualitative research in the evaluating and informing professional practice is considered. Students work in interdisciplinary groups to design and conduct research, including protocol design, data collection, coding, analysis, validation and presentation of findings.

*Credit, 3 s.h.; fall.*

**HSC 825****Quantitative Research Methods**

Students encounter hands on experience collecting, organizing and analyzing quantitative health-related data, as well as methods for summarizing and describing data. Students are introduced to basic statistical analyses (e.g. means, frequencies, statistical significance), as well as the use of statistical software to perform statistical analysis (Excel and SAS), and the presentation of results (PowerPoint and Microsoft Word).

*Credit, 3 s.h.; fall.*

**HSC 830****Doctoral Research Design Seminar**

This course builds doctoral competencies in assessing research methods and alignment with the problem of practice, purpose and research question. Selection of the best method for the problem under study, ethical considerations, and data collection tools and analytic principles are discussed. The goal is to introduce the methods and analytical tools required in preparation for the student's research proposal.

*Credit, 3 s.h.; summer, spring.*

**HSC 850****Proposal Development Seminar**

Students and course faculty collaborate to guide the development of the doctoral proposal from a one-page



document to a draft of the proposal. The course culminates with an on-campus experience where students complete Qualifying Exams, present and defend their doctoral proposal draft.

\*An on-campus residency is required with this course  
*Credit, 3 s.h.; summer, spring.*

### **HSC 860**

#### **Dissertation Seminar I: Proposal Refinement and Data Collection**

This course draws together the community of DHS scholars to review, refine, revise, and finalize the doctoral proposals. Students will be required to provide critical peer feedback throughout the semester and work to revise all aspects of the Doctoral Proposal continually.

*Credit, 1 s.h.; fall, spring, summer.*

### **HSC 861**

#### **Dissertation Seminar I**

This course draws together the community of DHS scholars to review, refine, revise, and finalize the doctoral proposals. Students will be required to provide critical peer feedback throughout the semester.

*Credit, 1 s.h.; fall, spring, summer.*

### **HSC 862**

#### **Dissertation Seminar II**

This course draws together the community of DHS scholars to periodically discuss the collection and analysis of data. Students will be required to provide critical peer feedback at certain points during the semester.

*Credit, 1 s.h.; fall, spring, summer.*

### **HSC 863**

#### **Dissertation Seminar III**

This course draws together the community of DHS scholars to periodically discuss the analysis of data and reporting of results. Students will be required to provide critical peer feedback at certain points during the semester.

*Credit, 1 s.h.; fall, spring, summer.*

### **HSC 880**

#### **Doctoral Continuation: Research / Data Collection**

This course provides additional opportunity and advising support for DHS scholars to collect data and begin to analyze results. Students are expected to maintain an active and engaged relationship with their advisor while actively collecting data / conducting research. Students will be required to provide progress updates throughout the semester.

*Prerequisite HSC 850; fall, spring, summer.*

### **HSC 881**

#### **Dissertation Seminar II: Research Findings**

This course draws together the community of DHS scholars to periodically discuss the collection and analysis of data as well as the presentation of research findings. Students will be required to provide critical peer feedback at certain points during the semester, to revise research findings and previous chapters as required.

*Prerequisites HSC 850, 860; credit, 1 s.h.; fall, spring, summer.*

### **HSC 890**

#### **Dissertation Seminar III: Discussion and Defense**

The community of DHS scholars and course faculty periodically discuss the analysis of data and reporting of results. Students are expected to accept and provide critical peer feedback throughout the semester. Students revise Chapter 5 Discussion, and other chapters as necessary. Finally, students will defend their dissertation to a body of faculty, peers, and invited guests.

*Prerequisites HSC 850, 860, 881; credit, 1 s.h.; fall, spring, summer.*

### **HSC 895**

#### **DHS Doctoral Continuation**

DHS scholars and faculty periodically discuss and evaluate dissertation revisions to Chapter 5, or other required revisions. Students are expected to accept critical feedback throughout the semester. Finally, students will defend their dissertation to a body of faculty, peers, and guests.

*Prerequisites HSC 850, 860, 881; fall, spring, summer.*

## **Humanities (HUM)**

### **HUM 251**

#### **The Novel**

Representative novels are read and discussed as examples of a distinct literary form, as reflections of social and historical events, or as representations of different realities or cultures.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

### **HUM 252**

#### **The Short Story**

Through a survey of short prose fiction, students study definitions and problems associated with the short story genre; the origins and evolution of the "modern" short story; and connections between texts and their historical, social, and gender contexts. Emphasis is on American stories.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

**HUM 291****Introduction to Film**

Application of visual, literary, historiographic, and semiotic analysis to film. Topics include aesthetics, film theory, visual composition, editing, and narrative. Representative films by such directors as Eisenstein, Huston, Hitchcock, De Sica, and Kurosawa are viewed and discussed.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

**HUM 3XX****Gilgamesh to Star Trek: Adapting the Epic in World Literature**

In this course, students evaluate what epics say, how genres create meaning, and evaluate the success of these adaptations. For *Gilgamesh*, we analyze such texts as Komunyakaa's *Gilgamesh* and Star Trek The Next Generation's "Darmok." For the *Odyssey*, we evaluate such works as Canto 18 from Dante's *Inferno*, Atwood's *Penelopiad*, Glück's *Meadowlands* and the film *O Brother, Where Art Thou?*

*Prerequisites: LIB 112: Expository Writing II; class, 3 hrs.; credit, 3, s.h.; spring.*

**HUM 3XX****Gothic Narrative in Literature and Popular Culture**

This course surveys gothic narrative in its popular forms, tracing its development from the literary fiction of the 18<sup>th</sup> and 19<sup>th</sup> centuries to its contemporary iterations in popular culture (horror, fantasy, science fiction). Students engage in critical reading and research, and apply principles of literary and cultural analysis to better understand the interplay of popular media, history, and culture.

*Prerequisite: LIB 111, 112 or the equivalent; class, 3 hrs.; credit, 3 s.h.; spring.*

**HUM 340****Introduction to Philosophy**

Inquiry concerning the quest for certain knowledge, beginning with ancient Greek philosophy of nature and reality (reading Aristotle or his predecessors, especially Pythagoreans, the Skeptics, and the Atomists); transitioning to the scientific revolution of the 17th and 18th centuries (Bacon, Descartes, La Mettrie, and Hume); and culminating in our century's two cultures, the sciences and the humanities.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

**HUM 341****World Literature**

This course reads world literature to explore a chosen topic in depth (e.g., war in world literature). Readings, discussions, and lectures engage literatures from various continents; genres such as the novel, poetry, and short stories; and various time periods.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.;*

*varies.*

**HUM 350****Selected British Writers**

An introduction to some of the major British writers from the Middle Ages to the present. Although attention is paid to historical and biographical materials, the focus of the course is on the literary texts themselves.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

**HUM 352****Survey of World Religions**

Religion is key in U.S. politics, commerce, pop culture, and everyday life, yet few Americans are knowledgeable in any faith, including their own. One must understand both what others believe and also how they believe. This course introduces students to the essential principles and histories of several world religions, with no background in any faith required or favored.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

**HUM 353****Literary Boston in the 19th Century**

Students will read fiction, nonfiction, and poetry writings by 19th-century Boston-based authors such as Emerson, Thoreau, Fuller, and others who viewed literature as a means of shaping America's political and social landscapes. They will consider how authors sought to answer the country's call for a unique American literature to establish a unique American identity. Boston field trips included.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

**HUM 345****Healthcare Humanities**

An introduction to the principles, disciplines, and values associated with healthcare humanities. Students review medical and health humanities literature; study illness, health, and healthcare through the perspectives of literature, film, philosophy, history, anthropology, and memoir; and write analytical and reflective essays that develop knowledge of how the humanities contribute to healthcare and the education of health professionals.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

**HUM 354****Poet and Warrior: Irish Literature, Film, and Culture**

This course is an introduction to Irish film from *Man of Aran* to contemporary films, and Irish literature from the Iron Age to the present, emphasizing contemporary genres: short stories, plays, poetry, and novels. A selection of Irish films and readings/discussion will introduce students to Irish history and culture. Students analyze the connections between Irish culture, history,

film, and literature.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

### **HUM 355**

#### **Science, Technology, and Values**

What is the relationship between science and values? Popular culture often portrays scientific endeavor as diametrically opposed to value-laden activities like religion. This course explores the complex dynamics between the two. In the process, we also will explore the rationality of scientific revolutions and the role novel technologies play in them.

*Prerequisite: LIB 112, LIB 512, HUM 340, or HUM 450; class, 3 hrs.; credit, 3 s.h.; varies.*

### **HUM 356**

#### **Children: Fiction, Film, and Fact**

Children in fiction and films—by adults for adults—are portrayed in a variety of ways, from demonic to angelic, from resourceful to helpless. The class discusses these and other portrayals of children, their significance for children, and their relationship to factual information about children.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

### **HUM 357**

#### **Immigrant Literature**

Through the study of literature, students will investigate the fundamental motivations that prompt people to immigrate. Students will be encouraged to assess how immigrants contribute to their new discourse community through language, culture, and religion. Furthermore, students will be urged to consider alternative ways of looking at the world and to enjoy the linguistic and formal elements of immigrant literature.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

### **HUM 385**

#### **Detective Film and Fiction**

This course will focus on analyzing the detective story in film and fiction. Students will see classic films and clips from films that feature detectives and/or mystery plots. Students will read short fiction by masters of the genre, analyze the genre conventions, and learn analysis of film technique to recognize and compare the style of the films and fiction.

*Prerequisites: LIB 112; class 3 hrs.; credit, 3 s.h.; spring.*

### **HUM 444**

#### **Creative Writing**

Introduction to writing poetry and creative nonfiction essays informed by analysis of writing techniques. Focus on developing creative expression skills through writing and revising in response to feedback, close

reading, and critique of the work of peers and contemporary writers.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

### **HUM 450**

#### **Selected Topics**

In-depth study of a particular topic in the humanities. Course content varies with each offering.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

### **HUM 452**

#### **Women Writers**

Literature by women from various eras and backgrounds is considered for artistic merit and for capacity to reveal women's understandings of female health and illness and the factors that enhance or diminish the well-being of women and girls.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; spring.*

### **HUM 456**

#### **Narrative and Medicine**

This course surveys various literary works to explore the historical and cultural factors affecting both the development of narratives about and popular understandings of medicine and illness. Students consider how clinical practice is represented in narratives; how different forms of storytelling reflect attitudes toward illness; and how medical narratives can function as powerful vehicles for social critique.

*Prerequisites: LIB 112 and HUM 345 Healthcare Humanities, third- or fourth-year standing in the BS in Premedical and Health Studies program, or fifth-year standing in the Doctor of Pharmacy program; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

### **HUM 457**

#### **Modern British Writers**

Readings, discussions, and lectures focus on how two to four British writers (e.g., Virginia Woolf, D.H. Lawrence, Katherine Mansfield, E.M. Forster) reflect the modern period, roughly from World War I to World War II, in the style and subject matter of various genres used by the writers.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

### **HUM 458**

#### **Modern American Writers**

This course studies selected American literature from 1900 to 1939, the literary conventions and innovations of the time, and the forces that influenced writers, including World War I, women's suffrage, technology, race, and ethnicity.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

## Instructional Resources (INF)

### INF 101

#### Introduction to the Libraries and Library Services

This module identifies information resources available through the libraries' website, including the online catalog and electronic journals locator database. Discusses access to local and regional libraries, including the Fenway Library Consortium. Computer-based information and quiz take approximately one hour to complete.

*Credit, none; degree requirement; must be completed before a student can register for courses beyond the student's first two semesters at MCPHS.*

### INF 102

#### Research Methods and Database Searching

Students learn the basic concepts of research, including search strategy and retrieval techniques using keyword and subject searching. Includes an introduction to the libraries' research databases. Computer-based information and quiz take approximately 75 minutes.

*Prerequisite: INF 101; credit, none; degree requirement; must be completed before a student can register for courses beyond the student's first two semesters at MCPHS.*

### INF 103

#### Advanced Research Methods

Presents sophisticated searching techniques and the use of other computerized sources. Includes evaluating information found on the Internet and selection of specialty databases. Also includes overviews on copyright, plagiarism, and citation of sources. Computer-based information and quiz take approximately 90 minutes.

*Prerequisites: INF 101, 102; credit, none; degree requirement; must be completed before a student can register for courses beyond the student's first two semesters at MCPHS.*

### INF 210

#### Survey of the Literature of Chemistry

Introduces students to the methods used for finding and utilizing chemical information. Print and electronic resources are discussed, including handbooks, indexes, journal and patent literature, online databases, and information from the Internet.

*Prerequisites: CHE 231; INF 101, 102, 103; or permission of instructor; class, 1 hr.; credit, 1 s.h.; spring.*

### INF 500

#### Undergraduate Research Project

Undergraduate students may participate in research in various aspects of information retrieval, analysis, and management as it relates to their individual programs.

Consent of the student's advisor and the library director is required.

*Prerequisites: INF 101, 102, 103; credit, 1–2 s.h.; varies.*

### INF 532

#### Directed Study

Supervised study in health information literacy, scholarly communication, or informatics involving a survey of existing knowledge, self-instructed and/or faculty-assisted inquiry into previously published data or methodologies, or other faculty-approved study of a nonresearch nature.

*Prerequisites: consent of instructor and dean; credit, 1–3 s.h.; varies.*

## Certificate in Advanced Pharmacy Practice Studies (INT)

### INT 201

#### Intensive TOEFL Prep

This course provides intensive preparation for writing, speaking, listening, and reading as required for the TOEFL Internet-based Test (iBT). The course meets off campus at an ESL affiliate program specializing in preparing students for the TOEFL (iBT) examination. Students may place out of INT 201 through prior language testing.

*Prerequisite: admission to the CAPPs program; credit, 3–6 s.h.; spring.*

### INT 400

#### Seminar in Pharmacy Practice and Pharmaceutical Sciences I

Part one of a two-semester sequence providing a review of the professional pharmacy curriculum as preparation for the Foreign Pharmacy Graduate Equivalency Examination (FPGEE). Students will participate in interactive sessions and apply concepts to pharmacy practice. They will apply drug literature evaluation, practice management, and physical assessment skills. Topics include drug literature evaluation, practice management, physical assessment, biochemistry, biotechnology, infectious diseases, pharmaceuticals, and clinical pharmacokinetics.

*Prerequisite: admission to the CAPPs program; class, 4 hrs.; credit, 4 s.h.; fall.*

### INT 401

#### Seminar in Pharmacy Practice and Pharmaceutical Sciences II

Part two of a two-semester sequence providing a review of the professional pharmacy curriculum as preparation for the Foreign Pharmacy Graduate Equivalency Examination (FPGEE). Students will apply concepts to pharmacy practice and drug literature evaluation skills within journal club activities. Topics

include medicinal chemistry, pharmacology, pharmacotherapy, pharmacy law / regulatory affairs, pharmacoepidemiology, pharmacoconomics, and medication safety. An introduction to FPGE pharmacy internships is provided.

*Prerequisite: INT 400; class, 4 hrs.; credit, 4 s.h.; spring.*

**INT 500 / INT 501 / INT 502  
Pharmacy Internships I and II;  
Pharmacy Internships III and IV;  
Pharmacy Internships V and VI**

Students will be assigned to a series of six supervised pharmacy practice internships in the inpatient and outpatient pharmacy practice settings. During the pharmacy internships, students will gain pharmacy practice experience through structured learning experiences in the inpatient and outpatient settings. They will accumulate the 1,500 hours required for pharmacy licensure by the Massachusetts Board of Registration in Pharmacy.

## **Introduction to the Major (ITM)**

**ITM 101  
Introduction to the Major**

Assists students with the transition from high school to college by orienting them to University resources, career opportunities, and the academic skills needed for classroom success.

*Required of all first-year students; class, 1 hr.; credit, 1 s.h.; fall.*

## **Liberal Arts (LIB)**

**LIB 104**

Applied Linguistics for Oral Proficiency  
Introduces applied linguistics. Students learn about language acquisition, language in society, and the phonology and grammar of American English. Focuses on improving and monitoring the accuracy of their spoken English.

*Admission is determined by results of the oral proficiency exam or consent of the instructor.*

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**LIB 110  
Introduction to Academic Reading and Writing**

This course is an introduction to college-level reading and writing. It covers rhetorical analysis; summary, synthesis, and paragraphing skills; and the development of composition skills, grammar, and vocabulary.

Admission is determined by writing placement or instructor consent. Successful completion is a prerequisite for LIB 111.

*Class, 3 hrs.; credit, 3 s.h.; fall.*

**LIB 111  
Expository Writing I**

Focuses on writing clear and coherent summaries, reports, and essays, with a special focus on understanding, using, and documenting college-level nonfiction texts as evidence for effectively formulating and accurately supporting a thesis.

*Class, 3 hrs.; credit, 3 s.h.; fall.*

**LIB 112  
Expository Writing II**

Applies LIB 111 skills to writing a research paper and basic literary analysis. Students write a coherent, well-documented paper, requiring library research and the synthesis of professional and popular sources. The literary analysis incorporates knowledge of literary concepts, devices, and techniques.

*Prerequisite: LIB 111; Co-requisite: INF 102; class, 3 hrs.; credit, 3 s.h.; spring.*

**LIB 120  
Introduction to Psychology**

Designed to orient students to the scientific study of behavior through the exploration of selected principles and theories of human behavior. Topics include perception, learning and memory, personality development, abnormal behavior, and social influences on behavior.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**LIB 133  
American Culture, Identity, and Public Life**

This course covers a broad sweep of American experiences and examines ways that individuals and communities have perceived themselves as "American." Students explore how people with differing cultural, ethnic, racial, gender, and socioeconomic backgrounds experienced and contributed to American culture and public life and how they formed American identities. Narratives, ethnographies, histories, and films help develop an understanding of identity formation.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**LIB 205  
Health Professions Orientation Seminar**

This course introduces premedical and health studies majors to the key features of the degree program, including the interdisciplinary curriculum, minor options, and affiliated professional pathway opportunities. It reviews personal statement writing, professional school admissions tests, interview preparation, and career self-assessment.

*Prerequisites: BIO 150L, BIO 152, and CHE 132, or permission of instructor; restricted to premedical students; class, 1 hr.; credit, 1 s.h.; fall.*

**LIB 220****Introduction to Interpersonal Communication for Health Professionals**

Students acquire a theoretical vocabulary for understanding interpersonal communication and for critically examining their commonsense conceptualizations of it. Using case studies and problem-based learning, students learn communication techniques such as displaying empathy, managing groups, being assertive, and managing conflict. Throughout, emphasis is placed on the coordinated and cultural character of interpersonal communication, particularly in patient-centered, interprofessional healthcare contexts.

*Prerequisites: LIB 112 and OPE passing score or LIB 253; class, 3 hrs.; credit, 3 s.h.; fall, spring, summer.*

**LIB 252****Introduction to Speech**

Study and practice of public speaking in order to persuade or inform an audience. Students present several formal and informal speeches and a debate. Emphasizes building confidence and competence in public presentations.

*Class, 3 hrs.; credit, 3 s.h.; varies.*

**LIB 253****Oral Communication in Healthcare**

Students learn to improve their speaking and listening skills. They practice speaking formally on biomedical and scientific topics, as well as communicating and writing formally on a variety of topics.

*Admission is determined by results of the oral proficiency exam or consent of the instructor.*

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**LIB3300****Introduction to Communication Sciences and Disorders**

Introduction to Communication Sciences & Disorders (CSD) will provide students preparing for healthcare careers with a comprehensive overview of speech, language and hearing disorders; typical diagnostic, intervention and case management techniques; and clinical services provided by speech-language pathologists and audiologists. The roles of CSD professionals as integral members of the healthcare community will be emphasized throughout the course.

*Prerequisites LIB.112 and; LIB.220 or LIB.252; class, 3 hrs; credit, 3 s.h.*

**LIB 305****Medical College Preparation Course**

Students will focus on developing quantitative, written, and verbal reasoning skills in preparation for the MCAT exam. This includes practicing skills related to critical thinking and reading comprehension in scientific disciplines. They also will acquire proficiency in basic medical terminology, as well as learn to apply

strategies in regard to taking standardized tests and managing test anxiety. This course does not fulfill the LIB elective distribution requirement.

*Prerequisite or Co-requisite: PHY 274 or PHY 284 or consent of instructor; class, 2 hrs.; credit, 2 s.h.; varies.*

**LIB 340****Spanish for Healthcare Professionals**

This course is designed to develop Spanish communication skills in the medical field. Medically relevant vocabulary/phrases are introduced to enable students to build and practice basic language skills for their work as healthcare providers. The course emphasizes Spanish conversations (patient–healthcare provider) and understanding of written Spanish from medical documents (histories, prescriptions, laboratory results). Intermediate working knowledge of Spanish is necessary.

*Prerequisite: Intermediate proficiency in oral and written Spanish; restricted to students in their 3rd year and beyond; class, 3 hrs.; credit, 3 s.h.; varies.*

**LIB 460****Selected Topics in Liberal Arts**

In-depth study of a particular topic in writing, speech communication, foreign languages, or semiotics. Course content varies with each offering.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; varies.*

**LIB 480****Premedical and Health Studies Capstone Seminar**

A capstone seminar for Premedical and Health Studies majors focused on independent research. Students discuss research models, submit research proposals for seminar critique, and write interdisciplinary papers that are presented for seminar discussion.

*Prerequisite: fourth-year Premedical and Health Studies major or permission of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

**LIB 512/5120****Healthcare Ethics**

Students learn to identify, articulate, and analyze ethical issues in the practice of the biomedical sciences. Drawing on the tools of philosophical bioethics, this course applies established ethical theories and methods of critical thinking to both long-standing and emerging issues. Topics may include some of the following: truth telling, new reproductive technologies, distribution of scarce resources, and responsible conduct of research.

*Prerequisite: LIB 112; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**LIB 530****Undergraduate Research Project**

Research participation at the undergraduate level in various fields of behavioral sciences, social sciences,

and humanities. Consent of instructor and dean.  
*Prerequisites: LIB 112 and at least one elective in the field selected; credit, 1–3 s.h.; varies.*

### **LIB 532**

#### **Directed Study**

Supervised study in behavioral sciences, social sciences, and humanities involving a survey of existing knowledge, self-instructed and/or faculty-assisted inquiry into previously published data or methodologies, or other faculty-approved study of a nonresearch nature.

*Prerequisites: consent of instructor and dean; credit, 1–3 s.h.; varies.*

### **LIB 590**

#### **Health Psychology Field Placement I**

With the approval of the course coordinator, students identify a placement site that allows them to explore a professional pathway and to apply the knowledge and skills gained through the Health Psychology major.

*Prerequisite: 4<sup>th</sup>-year Health Psychology major or 3<sup>rd</sup>-year pre-Occupational Therapy Health Psychology major or 3<sup>rd</sup>-year pre-Physical Therapy Health Psychology major, on-site, 10 hrs.; credit, 3 s.h.; fall, spring.*

### **LIB 591**

#### **Health Psychology Field Placement II**

With the approval of the course coordinator, students either continue at the LIB 590 placement site or identify a new placement site that allows them to explore a professional pathway and to apply the knowledge and skills gained through the Health Psychology major.

*Prerequisite: Health Psychology major; LIB 590; on-site, 10 hrs.; credit, 3 s.h.; spring.*

### **LIB 592**

#### **Health Psychology Capstone Seminar**

This capstone course for Health Psychology majors focuses on refining literature search techniques and strengthening reading, summarization, and integration skills. Each student selects a topic, conducts library research, presents progress reports, and prepares an APA-style literature review.

*Prerequisites: 4<sup>th</sup>-year Health Psychology major or 3<sup>rd</sup>-year pre-Occupational Therapy Health Psychology major, BEH 456; prerequisite or Co-requisite: LIB 590; class, 3 hrs.; credit, 3 s.h.; spring.*

## **Mathematics (MAT)**

### **MAT 141\***

#### **Algebra and Trigonometry**

Covers roots, radicals, and fractional exponents; quadratic equations, linear and quadratic functions, graphing techniques, variation, exponential functions, logarithms, log-log and semilog graphs, trigonometric functions, and solving right triangles, with applications

to biology, physics, and chemistry.

*Prerequisite: admission to the BS programs in the School of Medical Imaging and Therapeutics (except for MRI); class, 3 hrs.; credit, 3 s.h.; fall, spring.*

### **MAT 142\***

#### **Mathematics for Nurses**

Students learn to utilize the mathematics required for the Nursing program. Topics include fractions, decimals, percentages, proportions, and conversions within and between metric and nonmetric systems. Emphasis is placed on problem-solving techniques for rational equations and percentage problems, especially on modeling and calculations with solutions, concentrations, drug dosage, and intravenous flow rates. Calculator use is limited. *Not for general elective credit.*

*Prerequisite: admission to the Boston BS in Nursing program; class, 3 hrs.; credit, 3 s.h.; fall.*

### **MAT 143\***

#### **Mathematics for Dental Hygienists**

Students learn to utilize the mathematics required for the Dental Hygiene program. Topics include fractions, decimals, percentages, proportions, algebra, measurement systems, conversion procedures, linear equations, graphing, variation, exponential and logarithmic functions, and basic geometry. *Not for general elective credit.*

*Prerequisite: admission to the BS in Dental Hygiene program; class, 3 hrs.; credit, 3 s.h.; fall.*

### **MAT 144**

#### **Business Mathematics and Computer Applications**

Students will apply basic mathematical concepts to common business usage, including such topics as percentages, interest, consumer credit and mortgages, stock trades, bank and cash discounts, payroll and time value of money. Students will gain hands on experience utilizing Microsoft Excel for Business math applications. *Class, 3 hrs.; credit, 3 s.h.; fall*

### **MAT 150\***

#### **Precalculus**

This course covers the real number system, and functions and their graphs, including polynomial, rational, exponential, logarithmic, and trigonometric functions, with applications to biology, physics, and chemistry. Students may not receive credit for both MAT 141 and MAT 150.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

\* Credit may be earned for only *one* of the following four courses: MAT 141, MAT 142, MAT 143, and MAT 150.

### **MAT 151**

#### **Calculus I**

Derivatives and their interpretations and applications

are covered. Topics include limits, derivative rules, implicit differentiation, curve sketching, and optimization problems. Emphasis is placed on polynomial, exponential, and logarithmic functions, with applications to biology, physics, and chemistry.

*Prerequisite: MAT 150 or math placement; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**MAT 152**  
**Calculus II**

Integration and its interpretation, techniques, and applications are covered. Topics include indefinite, definite, and improper integrals, as well as first-order differential equations, with applications to biology, physics, and chemistry.

*Prerequisite: MAT 151 or equivalent; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**MAT 171**  
**Calculus I (Advanced)**

Derivatives and their interpretations and applications are covered in depth. Topics include limits, derivative rules, implicit differentiation, curve sketching, and optimization problems. Emphasis is on applications to biology, physics, and chemistry.

*Prerequisite: by math placement; class, 3 hrs.; credit, 3 s.h.; fall.*

**MAT 172**  
**Calculus II (Advanced)**

Integration and its interpretation, techniques, and applications are covered in depth. Topics include indefinite, definite, and improper integrals, as well as first-order differential equations, partial derivatives, and repeated integrals, with applications to biology, physics, and chemistry.

*Prerequisite: MAT 171 or its equivalent; class, 3 hrs.; credit, 3 s.h.; spring.*

**MAT 197**  
**Computer Applications**

This course provides a hands-on introduction to Microsoft Office applications—word processing, spreadsheets, charting, and presentations—as well as computer concepts that are fundamental to the field of health sciences.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**MAT 261**  
**Statistics**

An introduction to descriptive and inferential statistical principles. Topics include summary statistics, regression, normal distribution, hypothesis testing, and estimation of parameters. Emphasis is placed on applications to biology, chemistry, and physics.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**MAT 461**  
**Biostatistics**

The continuation of MAT 261 covers topics including power analysis and sample size determination, ANOVA, post hoc tests, risk ratios, regression analyses, and selected nonparametric methods. Emphasis is placed on scientific reasoning: reading, writing, interpreting, and validating statistical analyses found in public health, behavioral, and health sciences journal articles. Students will utilize software to develop written and oral presentations.

*Prerequisite: MAT 261 or equivalent; class, 3 hrs.; credit, 3 s.h.; spring.*

**MAT 530**  
**Undergraduate Research Project**

Research participation at the undergraduate level is offered in the fields of computer science and mathematics. Students study a particular subject or research topic in depth.

*Prerequisites: consent of instructor and dean; credit, 1–3 s.h.; varies.*

**MAT 532**  
**Directed Study**

Supervised study in computer sciences and mathematics involving a survey of existing knowledge, self-instructed and/or faculty-assisted inquiry into previously published data or methodologies, or other faculty-approved study of a nonresearch nature.

*Prerequisites: consent of instructor and dean; credit, 1–3 s.h.; varies.*

**MAT 763**  
**Advanced Statistics**

Covers commonly practiced statistical methods and experimental designs used in research. Topics include analysis of variance, regression, and nonparametric statistics. Some coursework requires interpreting and validating statistical analyses in research papers.

*Prerequisite: MAT 261 or its equivalent, or consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall.*

**Clinical Research (MCR)**

**MCR 801**

Pharmaceutical R&D: From Discovery to Market  
Students will learn about the activities and processes involved in development of a new product from discovery through postmarketing.

*Class, 3 hrs.; credit, 3 s.h.; fall, available onsite or online.*

**MCR 802**  
**Research Methodology and the Development of Protocols and Proposals**

Students will learn the elements required to develop a scientifically sound clinical protocol or research proposal. They will evaluate the processes required to



develop a feasible and relevant research question, understand research methodology, and choose a study design.

*Class, 3 hrs.; credit, 3 s.h.; spring, available onsite or online.*

### **MCR 803**

#### **Conducting Clinical Research Studies**

Conducting clinical research according to good clinical practices is key to the success of any clinical study. Students will learn the requirements for the successful conduct of clinical research from the FDA, IRB, industry sponsor, and clinical investigator perspectives.

*Prerequisites: 802; Prerequisite or Co-requisite: MCR 801; class, 3 hrs.; credit, 3 s.h.; fall, available onsite or online.*

### **MCR 804**

#### **Graduate Project in Clinical Research**

Students will independently research and develop a clinical protocol and the accompanying study schema, data collection instruments, and informed consent document. Upon completion, they will present and defend their protocol as a Capstone Project.

*Prerequisites: MCR 803; pre-requisite or Co-requisite: MCR 802; 3 hr class credit, 3 s.h. spring, available onsite or online.*

## **Physician Assistant Studies– Manchester/Worcester (MPA)**

### **MPA 527**

#### **Healthcare Issues I**

Designed to provide students with a historical perspective of the profession, multicultural awareness, and an understanding of psychology as it influences the practice of clinical medicine and patient counseling. Addresses skills in interviewing and communication that are needed in the practice of primary care, clinician-patient interactions, and issues related to treatment adherence.

*Class, 1 hr.; credit, 1 s.h.; spring.*

### **MPA 528**

#### **Healthcare Issues II**

Designed to highlight the medical and legal responsibilities of physician assistants. Emphasis is on medical ethics, medico-legal issues, and healthcare policy.

*Prerequisite: MPA 527; class, 4 hrs.; credit, 3 s.h.; summer.*

### **MPA 555**

#### **Clinical Research Methods and Design**

This course provides instruction in the basic principles of clinical research methodology and application to evidence based medicine. Course topics: hypothesis generation, research study design and methodology,

outcome measurements, biostatistical analysis/interpretation and principles of diagnostic and clinical utility. Course topics will also include approaches to evaluating research, common medical databases to access medical literature and limitations of medical research.

*Prerequisites: All MPA spring and summer year I courses; class, 1 hr; credit, 1 s.h.; fall.*

### **MPA 530**

#### **Clinical Medicine I**

This course is an introduction to clinical medicine. The principles of clinical medicine are taught, including the pathophysiology of disease, classic presentations and examination findings, differential diagnosis, and treatments. Topics are covered by organ system, progressing from Clinical Medicine I to III. This section, Clinical Medicine I, includes conditions related to the dermatologic, EENT (eyes, ears, nose and throat), pulmonary, and endocrine systems, and infectious diseases.

*Class, 6 hrs.; credit, 6 s.h.; spring.*

### **MPA 531**

#### **Clinical Medicine II**

Students continue to build upon the knowledge and skills attained in MPA 530 and study the presentation, work-up, and treatment of multiple conditions. As with Clinical Medicine I, the topics differ across Clinical Medicine I, II, and III. This section, Clinical Medicine II, includes conditions and diseases related to the cardiovascular, peripheral vascular, gastroenterology, nutrition, genitourinary and nephrologic systems and genetics.

*Prerequisites: MPA 527, 530, 541, 546; Co-requisites: MPA 539, 543, 547; class, 7.5 hrs.; credit, 6 s.h.; summer.*

### **MPA 532**

#### **Clinical Medicine III**

Students build upon the knowledge and skills attained in MPA 530 and 531 and study the presentation, work-up, and treatment of multiple conditions. As with Clinical Medicine I and II, the topics differ across the courses. This section includes conditions and diseases related to the neurologic, orthopedic, rheumatologic, hematologic and oncologic systems and psychiatry.

*Prerequisites: MPA 530, 531, 541, 542, 546, 547; Co-requisites: MPA 543 class, 4 hrs.; credit, 4 s.h.; fall.*

### **MPA 538/538L**

#### **Patient Assessment I**

Students learn the foundational skills and techniques required to gather a complete history and perform a thorough physical examination of a simulated patient and document their findings of that examination. Students integrate knowledge obtained in MPA 530. During laboratory sessions, students learn proper use

of diagnostic equipment and technique to perform a comprehensive physical examination.  
*Co-requisite: MPA 530; class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; spring.*

#### **MPA 539/539L**

##### **Patient Assessment II**

Builds upon the foundational skills and techniques learned in MPA 538 to complete a thorough physical examination. Students integrate knowledge of the structure and function of the human body, coupled with laboratory sessions emphasizing the proper use of diagnostic equipment and technique, to perform a comprehensive physical examination.

*Prerequisite: MPA 530, 538; Co-requisites: MPA 532; class, 3 hrs.; lab, 3 hrs.; credit, 3 s.h.; summer.*

#### **MPA 540**

##### **Patient Assessment III**

This course builds upon the foundational skills and techniques learned in the Patient Assessment I and II courses to complete a thorough physical examination. Students integrate knowledge of the structure and function of the human body, coupled with laboratory sessions emphasizing the proper use of diagnostic equipment and technique, to perform a comprehensive physical examination.

*Prerequisite: MPA 538, 539, 530, 531; Co-requisite: MPA 532, 554*

*class, 2 hrs.; lab, 3 hrs.; credit, 3 s.h.; summer.*

#### **MPA 541**

##### **Pharmacology I**

Pharmacodynamic, pharmacokinetic, and pharmacotherapeutic principles are introduced to provide a foundation for the study of pharmacology and therapeutics. Combined lecture and active learning exercises are designed to develop the pharmacologic and therapeutic skills that a physician assistant needs to enhance patient care in clinical practice, focusing on pharmacokinetics, pharmacotherapeutics, the autonomic nervous system, pulmonary, endocrine, and infectious disease.

*Co-requisite: MPA 530; class, 2 hrs.; credit, 2 s.h.; spring.*

#### **MPA 542**

##### **Pharmacology II**

Students build upon the knowledge and skills obtained in MPA 541. Combined lecture and active learning exercises are designed to develop the pharmacologic and therapeutic skills that a physician assistant needs to enhance patient care in clinical practice, focusing on cardiology, peripheral vascular disease, gastroenterology, nephrology/urology and vasopressors and inotropes.

*Prerequisites: MPA 530, 541; Co-requisite: MPA 531; class, 4 hrs.; credit, 3 s.h.; summer.*

#### **MPA 543**

##### **Pharmacology III**

Students build upon the knowledge and skills obtained in MPA 541 and 542. Combined lectures and active learning exercises are designed to develop the pharmacologic and therapeutic skills that a physician assistant needs to enhance patient care in clinical practice, focusing on neurologic, analgesics, drug addiction, rheumatologic, hematologic, oncologic and psychopharmacologic agents.

*Prerequisites: MPA 531, 542; Co-requisite: MPA 532; class, 2 hrs.; credit, 2 s.h.; fall.*

#### **MPA 544/544L**

##### **Clinical Anatomy**

Examines human morphology and the fundamental relationships between the neurological, musculoskeletal, cardiovascular, gastrointestinal, respiratory, renal, and reproductive systems with conceptual presentations of every major region of the human body. Emphasis is on clinical application of this knowledge.

*Class, 2.5 hrs.; lab, 1.5 hrs.; credit, 3 s.h.; spring.*

#### **MPA 546**

##### **Physiology/Pathophysiology I**

Students learn integrative human physiology and pathophysiology involving the cardiovascular, pulmonary, endocrine, and cardiology systems with an emphasis upon homeostatic mechanisms and etiologies of disease. The interrelationships of function and dysfunction at the molecular, cellular, tissue, organ, and systemic level provide a foundation for MPA 530 Clinical Medicine I.

*Co-requisite: MPA 530; class, 2 hrs.; credit, 2 s.h.; spring.*

#### **MPA 547**

##### **Physiology/Pathophysiology II**

Students learn integrative human physiology and pathophysiology involving the continuation of cardiology, and the introduction to gastrointestinal, neurological, endocrine, and reproductive systems with an emphasis upon homeostatic mechanisms and etiologies of disease. The interrelationships of function and dysfunction at the molecular, cellular, tissue, organ, and systemic level provide a foundation for MPA 531 and 532 Clinical Medicine II and III.

*Prerequisites: MPA 530, 546; Co-requisite: MPA 531 or MPA 546; class, 4 hrs.; credit, 3 s.h.; summer.*

#### **MPA 550**

##### **Emergency Medicine**

Students learn medical disorders and traumatic injuries that commonly present to the emergency department. Utilizing a case-based format, students learn the appropriate diagnostic and therapeutic measures to treat or stabilize patients with life-threatening trauma or illness.

*Prerequisites: MPA 530, 531, 538, 539, 541, 542; class, 2 hrs.; credit, 2 s.h.; fall.*

#### **MPA 552/552L**

##### **Medical Procedures and Surgery**

Through lectures and laboratory exercises, students learn how to perform procedures such as suturing, splinting, wound care, intravenous insertions, injections, placement of nasogastric tubes, and Foley catheter placement. Students also learn the principles of surgery, including preoperative, intraoperative, and postoperative care, and minor surgical procedures.

*Prerequisites: completion of all Year I MPA courses; spring, summer MPA courses; class, 1.5 hr.; lab, 1.5 hrs.; credit, 2 s.h.; fall.*

#### **MPA 554/554L**

##### **Special Populations**

Students learn about primary care subspecialties, including women's health, pediatrics, and geriatrics. This class is taught in a modular format using a variety of learning methods, including traditional lectures and interactive techniques, such as case-based learning. Student experiences include simulated patient encounters that facilitate skills in the examination of adult male and female genitalia.

*Prerequisites: MPA 530, 531, 538, 539, 541, 542; Co-requisites: MPA XXX; class, 4 hrs.; credit, 4 s.h.; fall.*

#### **MPA 620**

##### **Professional Development**

During the clinical phase, students prepare for transition to the professional role by developing employment skills and learning about professional practice issues. Students learn a framework necessary to achieve and maintain certification.

*Prerequisite: completion of all Year I MPA courses; class, 1.5 hrs.; credit, 1 s.h.; summer.*

#### **MPA 622**

##### **Capstone for Physician Assistants**

Students synthesize the knowledge and skills obtained during the program through successful completion of a summative OSCE (objective structured clinical examination) and a clinical research project. By displaying competency in both analyzing and integrating patient data and interpreting and designing research, students demonstrate the skills necessary for competent PA practice.

*Prerequisite: completion of all Year I MPA courses; class, 1 hr.; credit, 1 s.h.; fall.*

#### **MPAC 600, 601**

##### **Medicine I, II**

These rotations provide clinical experience with common diseases and the manifestation of acute and chronic illnesses. Learning experiences include the traditional approach to direct, initial, and comprehensive care for patients of all ages in inpatient

and outpatient settings as well as continuity of care for the individual patient and the family. Students interview and examine patients, synthesize information to identify problems, and formulate and implement therapeutic plans and health promotion.

*Prerequisite: successful completion of all didactic year courses; experiential, minimum 32 hrs./wk. for 5 weeks; credit, 5 s.h./course.*

#### **MPAC 602**

##### **Primary Care**

This rotation teaches the application of medical knowledge to the evaluation of primary care problems encountered in general medicine. Understanding of these disorders is accomplished during the accurate collection of data, identification of problems, and development of differential diagnosis and management plans. Students interview and examine patients, synthesize information to identify problems, and formulate and implement therapeutic plans. Health promotion and health maintenance are an integral part of the rotation.

*Prerequisite: successful completion of all didactic year courses; experiential, minimum 32 hrs./wk. for 5 weeks; credit, 5 s.h.*

#### **MPAC 603**

##### **Pediatrics**

This rotation provides clinical experience with normal infant, child, and adolescent development as well as with common diseases of childhood. Learning experiences include but are not limited to eliciting history from the parent/patient, performing the appropriate developmental screening, and developing a rapport with the patient so that an appropriate physical examination can be performed. Diagnoses of common illnesses and patient/parent education in preventive issues also are emphasized.

*Prerequisite: successful completion of all didactic year courses; experiential, minimum 32 hrs./wk. for 5 weeks; credit, 5 s.h.*

#### **MPAC 604**

##### **Psychiatry**

This rotation provides clinical experience with patients diagnosed with common psychiatric disorders. The student gains familiarity with the use of the *DSM-V* in classifying mental illness and is exposed to a variety of treatment modalities for psychiatric disorders. This rotation may be observation only.

*Prerequisite: successful completion of all didactic year courses; experiential, minimum 32 hrs./wk. for 5 weeks; credit, 5 s.h.*

#### **MPAC 605**

##### **Surgery**

This rotation provides clinical experience with medical conditions requiring surgical treatment and exposes students to operating room and sterile techniques, and

procedures involved in the setting of the operating suite. Learning experiences include but are not limited to preoperative histories and physicals, intraoperative procedures and assisting, and postoperative management of surgical patients.

*Prerequisite: successful completion of all didactic year courses; experiential, minimum 32 hrs./wk. for 5 weeks; credit, 5 s.h.*

#### **MPAC 606**

##### **Women's Health**

This rotation provides clinical experience in normal female healthcare and may include the care of the gravid woman. It may also provide an opportunity to become familiar with the stages of labor and the delivery of a healthy, term infant, as well as common emergencies encountered during labor and delivery, and management of the high-risk pregnancy. Education of patients and preventive care from menarche to menopause and beyond are emphasized.

*Prerequisite: successful completion of all didactic year courses; experiential, minimum 32 hrs./wk. for 5 weeks; credit, 5 s.h.*

#### **MPAC 607**

##### **Emergency Medicine**

This rotation provides clinical experience with common urgent and emergent health problems. Students are exposed to minor and more serious life-threatening emergencies, as well as some trauma cases.

*Prerequisite: successful completion of all didactic year courses; experiential, minimum 32 hrs./wk. for 5 weeks; credit, 5 s.h.*

#### **MPAC 609**

##### **General Elective Rotation**

Upon completion, the student is able to use the problem-oriented approach to elicit a medical history, perform a pertinent physical examination, obtain indicated laboratory studies, assess the results, formulate a management plan, transmit information, and assist in the implementation of appropriate therapy for the common problems encountered in these rotations.

*Prerequisite: successful completion of all didactic year courses; experiential, minimum hrs./wk. for 5 weeks; credit, 5 s.h.*

#### **MPAC 609**

##### **International Rotations**

##### **General Elective Rotation**

*Prerequisite: successful completion of all didactic year courses; experiential, minimum 32 hrs./wk. for 5 weeks; credit, 5 s.h.*

## **Magnetic Resonance Imaging (MRI)**

#### **MRI 305**

##### **MRI Patient Care**

In this course, students become familiar with the basics of patient care through the use of case studies, online discussions, and up-to-date online and text materials. Topics include patient interactions, transfer and immobilization techniques, vital signs, infection control, medical emergencies, and an introduction to contrast media used in magnetic resonance imaging.

*Prerequisite: successful completion of all preprofessional courses as required for the BS MRI program, or admission to the postbaccalaureate BS MRI program; credit, 2 s.h.; 14-week spring.*

#### **MRI 401**

##### **Physical Principles of Magnetic Resonance Imaging**

Students learn the physical principles of magnetic resonance imaging based on the discussion of both classical and quantum physics. Topics include magnetic field properties, electromagnetic spectrum, system hardware, instrumentation, tissue characteristics, spatial localization, and the basics of pulse sequencing. Content delivery is both online and in the classroom.

*Prerequisite: successful completion of all preprofessional courses as required for the BS MRI program, or admission to the Fast Track MRI program, or admission to the MRI Advanced Certificate program; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **MRI 401O.O**

##### **Physical Principles of Magnetic Resonance Imaging**

MRI Certificate students learn the physical principles of magnetic resonance imaging based on the discussion of both classical and quantum physics. Topics include magnetic field properties, electromagnetic spectrum, system hardware, instrumentation, tissue characteristics, spatial localization, and the basics of pulse sequencing.

*Prerequisite: admission to the MRI Advanced Certificate program; online; credit, 3 s.h.; summer.*

#### **MRI 402**

##### **Introduction to Clinical MRI**

Students become familiar with the clinical aspects of magnetic resonance imaging. They use information provided in the didactic portion of this course along with lab and clinical experience to acquire the skills related to patient care and safety and the basic flow of a magnetic resonance facility.

*Co-requisites: MRI 305, LIB 220; Co-requisites: MRI 401, 405; RSC 310; class, 2 hrs.; credit, 2 s.h.; 11 weeks plus 40 clinical hrs./wk. for 1 week; spring.*

**MRI 405**  
**Magnetic Resonance Imaging Safety and Applications**

Students learn to understand MRI from the standpoint of safety and clinical application. Personal safety, safety of co-workers, and patient safety and comfort are discussed as primary responsibilities of the technologist. Students learn about special patient care issues unique to MRI through a case study approach. *Prerequisite: admission to the MRI professional phase; credit, 3 s.h.; spring.*

**MRI 405O**  
**Magnetic Resonance Imaging Safety and Applications**

Students learn to understand MRI from the standpoint of safety and clinical application. Personal safety, safety of co-workers, and patient safety and comfort are discussed as primary responsibilities of the technologist. Students learn about special patient care issues unique to MRI through a case study approach. *Prerequisite: admission to the Advanced Certificate program; credit, 3 s.h.*

**MRI 410**  
**Magnetic Resonance Imaging Procedures**

Students utilize knowledge obtained in MRI Principles to understand and build standard MRI protocols used for imaging procedures. Protocol parameters, coil selection, and imaging options for all anatomic regions are presented. In addition, students learn advanced imaging procedures, indications for contrast-enhanced imaging, and application of postprocessing procedures. *Prerequisites: MRI 305, 401, 405; RSC 310; or admission to the MRI Advanced Certificate program; Co-requisites: MRI 415, 419; PSB 320; RSC 325; class, 3 hrs.; credit, 3 s.h.; fall.*

**MRI 410O.O**  
**Magnetic Resonance Imaging Procedures**

Students utilize knowledge obtained in MRI Principles to understand and build standard MRI protocols used for imaging procedures. Protocol parameters, coil selection, and imaging options for all anatomic regions are presented. In addition, students learn advanced imaging procedures, indications for contrast-enhanced imaging, and application of postprocessing procedures. *Prerequisites: 401, 405; RSC 310; or admission to the MRI Advanced Certificate program; Co-requisite: MRI 415; online; credit, 3 s.h.; fall.*

**MRI 415**  
**Magnetic Resonance Image Production and Quality**

Students utilize knowledge obtained in MRI Principles to build and apply proper pulse sequence parameters for optimization of MR images. Artifact reduction based on appropriate imaging option selection is discussed. Students learn to maximize image quality while ensuring both the safety and comfort of the patient.

*Prerequisites: MRI 401, 402, 405; RSC 310; Co-requisite: MRI 410; online; 3 hrs.; 3 s.h.; fall*

**MRI 415O.O**  
**Magnetic Resonance Image Production and Quality**

Students utilize knowledge obtained in MRI Principles to build and apply proper pulse sequence parameters for optimization of MR images. Artifact reduction based on appropriate imaging option selection is discussed. Students learn to maximize image quality while ensuring both the safety and comfort of the patient. *Prerequisites: MRI 401, 402, 405; RSC 310; or admission to the MRI Advanced Certificate program and MRI 401O.O and 410O.O; Co-requisite: MRI 430.O online; 3 hrs.; credit, 3 s.h.; spring.*

**MRI 420C**  
**Clinical Internship I**

Students practice patient care and safety, and become familiar with coil and protocol selection and basic scanning parameters. They use information provided during the lab to practice patient care and imaging skills at an assigned clinical facility under the direct supervision of a registered MRI technologist. Students have access to the facilities, personnel, examinations, and materials to meet the course objectives. *Prerequisites: MRI 401, 405; Co-requisites: MRI 410, 415; RSC 325; 16 clinical hrs./wk. for 14 weeks; credit, 5 s.h.; summer.*

**MRI 421C**  
**Clinical Internship II**

Students continue to practice patient care and safety, and perform coil and protocol selection and basic scanning parameters. They build on the knowledge learned during lab to practice patient care and imaging skills at an assigned clinical facility under the direct supervision of a registered MRI technologist. Students will begin to work on the required ARRT competencies and will have access to the facilities, personnel, examinations, and materials to meet the course objectives. *Prerequisites: MRI 401, 402, 405, 410, 415; MRI 420; RSC 310, 325; LIB 220; Co-requisite: MRI 430; 32 clinical hrs./wk. for 14 weeks; credit, 10 s.h.; fall.*

**MRI 422C**  
**Clinical Internship III**

Students achieve competency in obtaining high-quality MR images while maintaining the safety and comfort of patients. This progressive competency-based course takes place at a clinical education facility and uses performance objectives based on the ARRT requirements as a measure of achievement. *Prerequisites: MRI 415, 420C, MRI 421C, 430; 40 clinical hrs./wk. for 11 weeks; credit, 10 s.h.; summer.*

**MRI 425C****Advanced Certificate Clinical Internship**

The student will become familiar with the clinical aspects of magnetic resonance imaging and will use the clinical experience to acquire the necessary skills to complete the required performance competencies in order to be eligible to apply for the ARRT MRI registry exam.  
*24 clinical hrs./wk.; credit, 8 s.h.; fall.*

**MRI 427****MRI Pathology for Certificate Technologists**

The student will recognize common pathology visualized on MR images utilizing the content and case studies provided online and in text. The student will prepare pathology research assignments by applying the knowledge gained throughout the course to demonstrate the ability to select appropriate scanning sequences which demonstrate various types of injury and disease.

*Prerequisites: Admission to MRI Advanced Certificate Program and RSC 310, MRI 401, 410; Co-requisite: MRI 415; online; credit, 3 s.h.; spring.*

**MRI 430****Magnetic Resonance Pathology**

Students recognize common pathology seen on MR images utilizing information and case studies provided online and in text. Applying knowledge gained through the course, students prepare their own case studies, demonstrating their ability to select and apply appropriate pathology sequences.

*Prerequisites: MRI 401, 402, 410; RSC 310, 325; LIB 220; or admission to the MRI Advanced Certificate program and MRI 401 and 410; class, 3 hrs.; credit, 4 s.h.; spring.*

**MRI 435****MRI Registry Review**

The student will participate in program review instruction and assessments. This course will both reinforce essential material as well as identify specific areas of learning which are not fully mastered. The student will establish a plan to become proficient in all content areas required to pass the national registry for MRI technologists and to function in a medical imaging department.

*Credit, 1 s.h.; spring*

**Medication Safety (MSM)****MSM 701****Introduction to Quality Healthcare**

This course will familiarize students with the definition, evolution, and implications of quality in healthcare. Students will utilize various methods to assess quality in healthcare, formulate quality criteria and standards, and apply models for quality improvement. Students will learn how to construct a monitoring system and

measure outcomes to successfully implement a quality improvement plan.

*Credit, 2 s.h.*

**MSM 702****Introduction to Medication Safety**

This course will expose students to medication safety concepts utilized in a variety of settings. Students will critically assess various adverse drug events and recommend corresponding prevention strategies that incorporate both human and system factors. Students will have a bachelor's degree and currently be practicing in a healthcare setting.

*Credit, 2 s.h.*

**MSM 703****Communication and the Team Approach**

In this course students will learn principles of effective verbal and nonverbal communication and the impact on patient safety. Students will learn elements of an effective team and utilize team-based methods to increase patient safety. Students will utilize various techniques to improve interprofessional and personal communication to enhance patient safety.

*Prerequisites MSM 702; credit, 2 s.h.*

**MSM 704****Medication Safety Tools, Analysis, and Application**

This course will expand upon the medication safety and quality concepts discussed in the introductory courses. Students will be given the opportunity to apply and develop medication safety tools for use within their own work environments. Safety assessment techniques and a framework for a medication safety strategic plan will also be discussed.

*Prerequisites: MSM 701, 702; credit, 3 s.h.*

**MSM 705****Longitudinal Application Project**

Through a longitudinal project, students will demonstrate their ability to integrate and apply the medication safety knowledge and tools acquired from the Certificate program. Students will be required to develop, implement, evaluate, and present a medication safety improvement related project in a self-selected area of interest.

*Prerequisites: MSM 701, 702, and 704; credit, 3 s.h.*

**MSM 830****Measurement, Error, and Improvement**

Students explore the linkage between data measures, human error, and organizational improvement in patient safety and quality management. The science of human factors engineering will be explored from the intersection of error and systems thinking. Hindsight bias, human error, environmental conditions, contributing factors, and culture will be discussed.

*Prerequisites: MSM 704; credit, 3 s.h.*

**MSM 850****Patient Safety Capstone**

Students to integrate their experience and training in identifying, analyzing and solving relevant patient safety issues facing healthcare organizations. With faculty guidance, students develop recommendations for sustainable actions, managing change, and assessing progress. Students will utilize prior learning, professional experience, and existing evidence to develop, support, and disseminate their strategic recommendations to professional audiences.

*Prerequisites: MSM 704, MSM 830; credit, 4 s.h.*

**Nuclear Medicine Technology (NMT)****NMT 215/215L****Nuclear Medicine Procedures I**

This is the first in a sequence of courses covering the basic theory and techniques of nuclear medicine technology imaging. Scans are discussed in detail to cover the anatomy and physiology, radiopharmaceutical of choice, and imaging techniques, as well as the disease processes.

*Prerequisite: BIO 210; Co-requisite: NMT 271; class, 3 hrs.; credit, 3 s.h.; fall.*

**NMT 216****Nuclear Medicine Procedures II**

Continues discussion of the basic theory and techniques of nuclear medicine technology imaging. Scans are discussed in detail to cover the anatomy and physiology, radiopharmaceutical of choice, and imaging techniques, as well as the disease processes.

*Prerequisite: NMT 215; class, 3 hrs.; credit, 3 s.h.; spring.*

**NMT 250****Foundations of Nuclear Medicine Technology Clinical Practice**

Provides students with the fundamentals of a nuclear medicine operation: equipment, computers, radiation safety, pharmaceuticals, and processes. Students spend time in the nuclear medicine laboratory learning through a competency workbook. This gives them hands-on experience in a safe laboratory environment.

*Prerequisite: BIO 210; Co-requisites: NMT 216, 272; class, 1 hr./wk. for 5 weeks; experiential, 4 hrs./wk. for 10 weeks; credit, 1 s.h.; spring.*

**NMT 260****Informatics in Nuclear Medicine**

Introduces students to the basics of computer hardware, principles, and terminology, as well as uses of the computer in nuclear medicine. Provides in-depth knowledge of word processing, spreadsheet, charting, presentation, and database management software applications. Uses of the Internet and intranet are studied with emphasis on information searches for academic and professional purposes. Software and

hardware interfaces with scintillation cameras are covered.

*Class, 3 hrs.; credit, 3 s.h.; fall.*

**NMT 265****Nuclear Cardiology**

Discusses nuclear cardiology procedures and related information regarding cardiology, such as ECG interpretation, cardiac medications, cardiovascular disease, and the ischemic cascade. Pharmacologic stress agents also will be discussed.

*Prerequisite: NMT 215; class, 3 hrs.; credit, 3 s.h.; spring.*

**NMT 270****Radiopharmaceuticals**

Study of major radiopharmaceuticals used in nuclear medicine. Topics include method of preparation, mechanism of action, quality control, toxicity, cost, and practical considerations regarding their use in nuclear medicine.

*Prerequisite: NMT 271 or equivalent; class, 3 hours; credit, 3 s.h.; spring.*

**NMT 271/271L, 272/272L****Radiation Physics and Instrumentation I and II**

The basic principles of radiation, atomic and nuclear physics, and instrumentation. Topics include quantum mechanics of atoms and nuclei, properties of radionuclides, interaction of radiation with matter, exposure, dose, health physics, and instrumentation used in the practice of nuclear medicine.

*Prerequisite for NMT 271: PHY 181 or equivalent; prerequisites for NMT 272: NMT 215, 271; Co-requisites: NMT 216, 250, 270; class, 2 hrs.; lab, 4 hrs.; credit, 3 s.h./course; fall, spring.*

**NMT 275****Positron Emission Tomography**

Positron emission tomography (PET) physics, instrumentation, and procedures are discussed along with radiopharmaceutical and radioisotope of choice. Image manipulation and standard unit values (SUV) calculations are discussed in detail.

*Prerequisite: NMT 215; &: NMT 216; class, 2 hrs.; credit, 2 s.h.; summer*

**NMT 330C****Nuclear Medicine Internship I**

Each rotation provides supervised practical internship education in nuclear medicine technology at hospital or radiopharmacy affiliates. Progression is contingent upon successful completion of previous rotation.

*Prerequisite: NMT 216; clinical, 36 hrs./wk.; credit, 12 s.h.; fall.*

**NMT 332C****Nuclear Medicine Internship II**

Each rotation provides supervised, practical internship

training in nuclear medicine technology at hospital affiliates. Progression is contingent upon successful completion of previous rotation.

*Prerequisites: NMT 330C, RSC 305; Co-requisite: NMT 390; clinical, 36 hrs./wk. for 15 weeks; credit, 12 s.h.; spring.*

### **NMT 390 Problem Solving in Nuclear Medicine**

The purpose of this class is to provide a review of material that may be on the ARRT & NMTCB certification examinations, and to practice study methods and strategies to successfully pass the exam. The course will be held on line with weekly modules, exams and virtual discussions through Blackboard, *Prerequisites: NMT 215, 216, 330C; lab, 4 hrs.; credit, 2 s.h.; spring.*

## **Nursing (NUR)**

### **NUR 206 (Formerly NUR 205) Nursing History, Knowledge, and Narrative**

Students learn the vision, mission, core values, and philosophy of MCPHS and the School of Nursing, as well as the history of nursing as it has relevance for contemporary nursing practice. They explore knowledge and values, including the theoretical underpinnings of nursing knowledge, emerging nursing science, and the professional behaviors expected of nursing students. Students gain a broad perspective about contemporary nursing practice through the use of narrative.

*Class, 2 hours; credit, 2 s.h. Worcester—spring, fall; Manchester—spring, fall.*

### **NUR 207 Fundamentals of Nursing**

This course provides for development of the knowledge, skills, attitudes, and behaviors foundational to the art and science of professional nursing practice. The concepts of critical thinking, communication, collaboration, are emphasized as key components of the nursing process. Application of the cognitive, affective, and psychomotor skills required for safe and culturally congruent patient care delivery is emphasized with a focus on the older adult.

*Pre-requisites: All General Education Courses, Entry into CORE nursing; Co-requisites: NUR 245, NUR 330 Cr. 9, 6 hrs. class/wk., 1 hr/wk online; 42 hrs, skills, 48 hrs. Clinical weeks 9-14. Boston, Spring 2018*

### **NUR 208 Essential Concepts of Nursing**

Students gain foundational knowledge about the essential concepts of nursing for the beginning nursing student. Students link the history and knowledge of nursing to the student's own emerging practice. Students examine the essential concepts of nursing

practice and nursing science, and relate them to existing beliefs and attitudes. Students examine the MCPHS University School of Nursing core competencies of critical thinking, communication, assessment, and technical skills, and begin to apply systematic thinking and problem solving to the practice of nursing.

*Prerequisite: NUR 205; class, 3 hrs.; credit, 3 s.h.; Co-requisite 200 level courses; Worcester—fall, spring; Manchester—spring, fall.*

### **NUR 216/216L (formerly NUR 215) Nursing Skills and Technologies**

Students gain foundational knowledge and skills and recognize skill acquisition as an ongoing component of safe and effective nursing practice. Students begin to utilize skills and technologies required for delivery of safe and competent nursing care. Students learn to approach skill acquisition as a theoretical and analytical process that involves understanding the relevant scientific principles underlying development of skill mastery. Students actively participate in clinical simulation labs and engage in cooperative learning with guidance from faculty.

*Co-requisite: Worcester—fall, spring; Manchester—fall, spring*

### **NUR 226 Pathophysiologic and Pharmacologic Approach to Nursing Practice**

Students build on prerequisite biological sciences courses and gain foundational knowledge regarding normal and abnormal pathophysiological and pharmaceutical principles. Students learn the etiology, pathogenesis, and clinical manifestations of selected health problems across the lifespan in diverse populations, and the efficacious use of pharmaceutical agents, including the nurse's role in safe medication administration. Students learn the pharmacodynamics and pharmacokinetics of pharmaceutical agents and their use in health promotion, treatment, and symptom management across the lifespan in diverse populations.

*Prerequisites (Boston): BIO 255 Co-requisite: NUR 326. class, 6 hrs (Boston Only.); credit, 6 s.h.; Boston-summer ; Worcester—fall, spring; Manchester—fall, spring*

### **NUR 245/245L Health Assessment and Promotion**

Students acquire foundational knowledge of health assessment and health promotion, and their relationship to comprehensive nursing care. Students learn to perform a comprehensive and holistic assessment of the patient across the lifespan, including systematic collection, analysis, and synthesis of health data from patients and secondary sources. Students develop the organizational and critical thinking skills necessary for the planning and delivery of nursing care, and integrate the essential nursing



core competencies and concepts of health promotion, risk reduction, and disease prevention in the clinical laboratory setting.

*Worcester/Manchester Prerequisites: NUR 208, 216; BIO 255; LIB 220; Co-requisites (Boston only): NUR 207, NUR 330; class 3 hrs/wk, skills lab 3hrs/wk. Boston; Class Spring 2018; Bridge program—fall; Worcester—spring, fall; Manchester—spring, fall*

### **NUR 250**

#### **Chemistry of Nutrition**

Students will analyze the basic chemical principles of the science of nutrition and discuss their influence on the promotion of good health and disease prevention. Topics will include a study of the chemical components of food (natural and synthetic), the biochemical breakdown of food, and how nutrients and vitamins function in human metabolism.

*Class, 3 hrs.; credit, 3 s.h.*

### **NUR 300**

#### **Service Learning within the Profession of Nursing**

Students acquire foundational knowledge about the characteristics of the nursing professional and the roles and responsibilities of the baccalaureate-prepared nurse through a variety of service learning venues. This experiential learning will allow the student to develop a sense of caring, social responsibility, civic engagement, and cultural competence. The student will participate in community service and meet in seminars to facilitate integration of learning and service. Boston only.

*Prerequisite: All 200 level courses; Co-requisite: NUR 325, 330; class, periodic during summer semester; service learning, 1 hr./wk.; credit, 1 s.h.; summer.*

### **NUR 325/325L**

#### **Provider of Care I: Adult and Elder Health**

Students apply the concepts and principles acquired in all prior Nursing courses to the provision of holistic nursing care for adults and elders with health problems in diverse clinical settings. Students actively participate in the clinical setting and engage in cooperative learning with guidance from faculty and clinical partners. Students begin to apply foundational knowledge of nursing to the development of the essential nursing competencies in the clinical setting. Through immersion in the clinical practice environment, students begin to examine and enact the professional nursing role, as well as beginning to develop professional relationships with patients, clinical partners, and members of the interdisciplinary healthcare team.

*Prerequisites: all 200-level courses; class, 4 hrs.; lab/clinical, 12 hrs.; credit, 8 s.h.; Worcester—spring, summer; Manchester—spring, summer*

*NOTE: The majority of provider courses are front-loaded with 2 weeks of intense didactic components, followed by clinical immersion (30–36 hrs./wk. for 5*

*weeks).*

### **NUR 326**

#### **Introduction to Med-Surg Nursing**

Students apply concepts and principles acquired in all prior nursing courses to the provision of holistic nursing care for clients through the adult lifespan in this introduction to Medical-Surgical Nursing Course. Students actively participate in the clinical setting and engage in cooperative learning with guidance from faculty and clinical partners.

*Cr. 9; 5 hours/wk. class; 12 hours per week of clinical/skills. Offered : Boston : Spring 2018, Summer 2018.*

### **NUR 330**

#### **Nursing Informatics and Health Care Technologies**

Students acquire foundational knowledge of nursing and healthcare informatics, gaining an understanding of the theories and social and economic forces influencing the development and application of information and healthcare technologies. Students begin to use these technologies in the delivery of nursing care and learn to adapt emerging technologies to clinical nursing practice. Students explore the legal and ethical ramifications of using information and healthcare technologies to improve patient safety and the quality of healthcare and to protect patient privacy.

*Boston co-requisites NUR 207, NUR 245 credit, 3 s.h.; Boston—Spring 2018; Bridge program—spring; Worcester—summer; Manchester—summer.*

### **NUR 335**

#### **Provider of Care II: Child-Bearing and Child-Rearing Family Health**

Students apply the concepts and principles acquired in all prerequisite and concurrent nursing courses to the provision of care for child-bearing and child-rearing families in diverse populations and clinical settings. Students develop and apply a holistic approach to the assessment, care, and management of women of child-bearing age, children of all ages, and families. Students also learn the use of anticipatory guidance as a therapeutic tool to optimize health and wellness.

*Prerequisites: all 200-level courses; NUR 325/325L; 326/326L (Boston) and 330; class, 3 hrs.; lab/clinical, 9 hrs.; credit, 6 s.h.; Boston—fall; Worcester—fall, summer; Manchester—fall, summer.*

*NOTE: The majority of provider courses are front-loaded with 2 weeks of intense didactic components, followed by clinical immersion (30–36 hrs./wk. for 5 weeks in Manchester and Worcester).*

### **NUR 345**

#### **Provider of Care III: Mental and Social Health**

Students apply the concepts and principles acquired in all prerequisite and concurrent nursing courses to the provision of care for patients with psychosocial needs and psychiatric disorders in diverse clinical settings,

within the context of family and societal forces. Students develop their use of self as a therapeutic tool, and focus on a holistic approach to assessment, care, and management of persons with psychosocial issues and selected psychiatric disorders and conditions. Students learn to incorporate contemporary and emerging social issues as they relate to the mental and social health of patients and their families. Students have opportunities to develop professional relationships with patients, families, clinical partners, and members of the interdisciplinary healthcare team.

*Prerequisites:* All 200 level courses; NUR 325/325L; NUR 326/326L (Boston) and NUR 330; credit, 6 s.h.; Boston—fall; Worcester—fall, summer; Manchester—fall, summer.

*NOTE: The majority of provider courses are front-loaded with 2 weeks of intense didactic components, followed by clinical immersion (30–36 hrs./wk. for 5 weeks in Manchester and Worcester).*

### **NUR 350 Scholarly Inquiry**

Students acquire an understanding of the historical development of nursing as a scholarly discipline and appraise its contemporary standing in the scientific community. Students learn the research process, methods of qualitative and quantitative research, and the legal and ethical considerations of engaging in nursing research. Students learn to apply critical thinking to evaluation of professional and popular literature and other sources of information, apply research-based knowledge from nursing and the sciences as the evidence base for nursing practice and participate in the research process.

*Prerequisite:* all NUR 200-level courses; class, 3 hrs.; credit, 3 s.h.; Boston—fall, Summer 2018; Bridge program—spring; Worcester—fall, spring; Manchester—fall, spring.

### **NUR 400 Comprehensive Nursing Review**

Students will continue to develop and expand their professional roles and relationships while integrating core concepts and specific principles of nursing care from across the curriculum. Students will focus on mastery of specific course content via case studies and NCLEX-style questions to enhance critical thinking skills. Students may have the opportunity to provide care to patients in a designated clinical setting specific to their learning needs with the primary focus being the medical/surgical patient population.

*Prerequisite:* GPA below 2.7 at completion of SON program. Not open to other students; class, 8 hrs.; experiential, 24 hrs.; credit, 8 s.h.; spring and summer.

### **NUR 410 Professional Role Development**

Students will examine the historical, philosophical, ethical, and legal aspects of nursing practice; the

contemporary issues facing nursing; and the influence of societal trends on nursing practice and on today's healthcare delivery system.

*Prerequisite:* RN licensure; class, 3 hrs.; credit, 3 s.h.; summer.

### **NUR 425 Provider of Care IV: Community and Public Health Nursing**

Students synthesize and apply the concepts and principles acquired in all prerequisite and concurrent Nursing courses to the provision of care for patients, groups, and populations in community and home-care settings across the lifespan. Students learn the community assessment processes and identification of resources to optimize health and wellness in selected populations. Students gain an understanding of population health and the epidemiology of disease, and examine the process by which health policy is created. Students trace the evolution of the public health system, including public health nursing. Students develop and expand their professional roles and relationships to provide care to individuals and families in their homes and to the community in a variety of settings.

*Prerequisite:* all NUR 300-level courses; class, 4 hrs.; lab/clinical, 12 hrs.; credit, 7 s.h.; Boston—spring; Worcester—spring, fall; Manchester—spring, fall.

*NOTE: The majority of provider courses are front-loaded with 2 weeks of intense didactic components, followed by clinical immersion (30–36 hrs./wk. for 5 weeks Manchester and Worcester only).*

### **NUR 426 Community Health Nursing**

This Bridge course for registered nurses provides a theoretical background for the study of community health nursing, emphasizing the assessment of interrelationships between individuals, families, aggregates, and communities in determining the health status of each. Students gain an understanding of health promotion, health maintenance, and disease prevention among populations. The sociopolitical, economic, environmental, and cultural impact on population health is examined.

*Prerequisite:* associate degree in nursing; class, 3 hrs.; experiential, 3 hrs.; credit, 4 s.h.; fall

### **NUR 445 Provider of Care V: Coordinator of Care**

Students integrate the concepts and principles acquired in all prerequisite and concurrent Nursing courses. Students expand their knowledge and skills to care for patients with complex health problems, including cancer, infectious disease, trauma, and end-of-life care. Students have opportunities to demonstrate principles of coordination of care in acute and chronic settings.

*NOTE: The majority of provider courses are front-*

loaded with 2 weeks of intense didactic components, followed by clinical immersion (30–36 hrs./wk. for 5 weeks Worcester and Manchester only).

#### **NUR 450**

##### **Member of a Profession and Capstone Leadership Project**

The nursing student begins to transition into the role of graduate nurse. Students explore issues relevant to contemporary and emerging nursing practice, including the regulation and ethics of practice. Students gain a foundation for understanding local, state, national, and international initiatives and policies, and their impact on health across populations. Students prepare to become responsible and integral members of the local, national, and global nursing community. Students develop beginning leadership skills through the creation and implementation of an approved capstone leadership project, which is undertaken with the guidance of faculty and clinical partners, and which reflects and integrates the synthesis of knowledge, skills, and values gained across the curriculum.

*Prerequisite: all 300-level courses; class, 2 hrs.; seminar / leadership project / fieldwork, 1 hr.; credit, 3 s.h.; Boston—spring; Worcester—spring, fall; Manchester—spring, fall.*

#### **NUR 451**

##### **Nursing Integration**

This course integrates the knowledge base from each of the different Nursing specialties by reviewing material in a case study format for NCLEX preparation. Threaded throughout the course are the concepts of leadership, advocacy, and issues that affect contemporary nursing practice as students' transition to the role of professional novice nurse cognizant of the sociopolitical influences on the profession of nursing.

*Prerequisite: all 300 level courses; credit, 3 s.h.; Boston, Spring 2018, Fall 2018.*

#### **NUR 505**

##### **Policy, Organizational Management and Leadership in Health Care**

Students will develop a comprehensive knowledge of health policy and how it impacts clinical practice. The student will develop an understanding of the ways that healthcare is organized. The student will also understand the importance of developing a leadership role in the system.

*Class, 3hrs; credit, 3 s.h.; summer.*

#### **NUR 509**

##### **Educational Theories and Teaching Methods**

Students will explore educational theories and develop strategies for teaching nursing in the classroom, laboratory, online, and clinical settings. Students will explore adult learning and students' role as adult learners and educators. Students will look at the traditional and innovative instructional methods and

roles of learners and instructors of adults as well as the use of technology.

*Class, 3hrs; credit, 3 s.h.; summer.*

#### **NUR 510**

##### **Curriculum Design, Outcomes Assessment, and Evaluation**

Student will learn curriculum design, outcomes assessment, and evaluation as it pertains to collegiate nursing programs. Content in nursing science and related disciplines is considered in the context of a philosophical base. This course includes identifying, measuring, and achieving outcomes. Program evaluation, test development, and clinical evaluation strategies are discussed. Synthesis of knowledge and application are attained through a curriculum development project.

*Class, 3hrs; credit, 3 s.h.; fall.*

#### **NUR 511**

##### **Teaching and Learning for Nurse Educators, Practicum**

This practicum offers the student the opportunity to enact the role of the academic nurse educator and begin to synthesize leadership concepts into the academic environment. Emphasis is placed on learner-centered education and instructional methods. The students will be guided by experienced educators to practice evidence-based teaching, distance education, and other teaching approaches.

*Class, 3hrs; credit, 4 s.h.; 90 clinical hours; spring.*

#### **NUR 532**

##### **Directed Study**

Supervised study in professional nursing involving a survey of existing knowledge, self-instructed or faculty-assisted inquiry into previously published data or methodologies, or other faculty-approved study of a nonresearch nature.

*Prerequisite: consent of instructor or dean; credit varies, 1–3 s.h.; varies.*

#### **NUR 701**

##### **Professional Role Development for Advanced Practice Nursing**

In this course, students will compare and analyze the theories and conceptual models relevant to advanced roles in the nursing profession. Students will examine historical and contemporary professional issues related to various advanced roles in nursing. Role differentiation, role transition, and role development will be analyzed in the context of social and healthcare environments. Students will integrate knowledge of role transition and development into advanced nursing practice as clinicians, practitioners, leaders, and/or educators.

*Class, 3 hrs.; credit, 3 s.h.; summer.*

**NUR 702****Human Diversity, Social, and Policy Issues**

Students will learn to examine the social, ethnocultural, and demographic barriers in seeking and receiving healthcare in the United States and will recommend interventions for assuring the delivery of appropriate and individualized healthcare to diverse populations. Students also will learn about healthcare systems and strategies in order to assume a leadership role in the management of clinical practice.

*Class, 3 hrs.; credit, 3 s.h.; spring.*

**NUR 703****Advanced Health Assessment Across the Lifespan**

Students will learn to conduct an advanced comprehensive history and a physical and psychological assessment of signs and symptoms, pathophysiologic changes, and psychosocial variations of the client across the lifespan. Students will apply diagnostic reasoning in physical diagnosis and develop a differential diagnosis based on the health history and identified signs and symptoms.

*Class, 2.5 hrs.; 0.5 lab, 1 hr.; 90 clinical hrs.; credit, 4 s.h.; spring.*

**NUR 706****Advanced Pathophysiology**

Students will critically examine the advanced physiologic and pathologic mechanisms of diseases. The focus of the course is to provide students with advanced concepts and theories related to pathophysiological processes that occur across the lifespan. Knowledge gained from this course provides a firm foundation for the advanced practice nurse to interpret changes in normal and abnormal function and to assess individuals' responses to the pharmacologic management of disease processes.

*Class, 3 hrs.; credit, 3 s.h.; summer.*

**NUR 707****Advanced Pharmacology**

Students will primarily learn the knowledge needed for safe medication prescription and monitoring to clients across the lifespan. The course is designed to meet requirements for prescription writing by advanced practice nurses. It builds upon basic knowledge of pharmacology, commonly used drugs, and drug interactions used in the treatment of selected health conditions. Students will explore pharmacodynamics, pharmacokinetics, and pharmacotherapeutics in relation to common body system illnesses and diseases.

*Class, 3 hrs.; credit, 3 s.h.; fall.*

**NUR 708****Scholarship for Advance Nursing: Building an Evidence-Based Practice**

Students will learn to utilize new knowledge to provide

high-quality healthcare, initiate change, and improve nursing practice. They will learn the advanced nursing research concepts and skills necessary to utilize, analyze, and design basic research within the clinical practice setting. Students will learn key concepts in statistics and the practical use of statistical methods and software necessary for data storage, retrieval, and analysis.

*Class, 4 hrs.; credit, 4 s.h.; fall.*

**NUR 809****Family Primary Care I (OB/Pedi)**

Students will focus on advanced practice nursing and the healthcare management of pregnant women and children. They will provide primary healthcare services to pregnant women or primary care to women with needs related to the reproductive system. During the pediatric section, the student will focus on performing comprehensive health assessments of children and their families. Health promotion and disease/injury prevention will be an integral component of the course. Students also will learn the diagnosis and treatment of common pediatric illnesses and injuries.

*Prerequisites: NUR all 700 level courses, class, 3hrs.; 180 clinical hrs.; credit, 6 s.h.; fall*

**NUR 810****Family Primary Care II (Adult)**

Students will focus on advanced practice nursing and the healthcare management of adults. They will provide comprehensive primary healthcare services that are evidence based, personalized, and cost-effective to adults with acute and chronic health conditions. Students will learn course content that includes developmental, physiological, and psychosocial changes relative to health maintenance and disease prevention.

*Prerequisite: all NUR 700 courses; class, 3 hrs.; 180 clinical hrs.; credit, 6 s.h.; summer*

**NUR 811****Family Primary Care III (Geri)**

Students will focus on advanced practice nursing and the healthcare management of older adults. They will provide comprehensive primary healthcare services that are evidence based, personalized, and cost-effective to older adults with acute and chronic health conditions. Students will learn course content that includes developmental, physiological, and psychosocial changes relative to health maintenance and disease prevention.

*Prerequisites: all 700 level courses, class, 3 hrs.; 180 clinical hrs.; credit, 6 s.h.; spring*

**NUR 715****Psychopharmacology for the Psychiatric Mental Health Nurse Practitioner**

Students will acquire knowledge for the safe and effective use of medications for psychiatric mental

disorders in populations across the life span. Emphasis is on the selection and use of psychoactive medications in the treatment of clients experiencing psychiatric disorders and in the restoration of wellness. *Prerequisite: NUR all 700 level courses; Class, 3 hrs.; credit, 3 s.h.; summer; online.*

**NUR 815  
Psychiatric Mental Health Nursing I (Child and Adolescent)**

Students review the major childhood mental health disorders looking at epidemiology, health and mental health promotion and prevention, risk factors, cultural factors, assessment issues specific to children and adolescents, use of selected diagnostic/screening tools and rating scales, as well as evidence-based child and adolescent specific treatment and therapeutics. This course also reviews medical comorbidities in this population and family based therapies and interventions.

*Prerequisites: NUR all 700 level courses, class, 3hrs.; 180 clinical hrs.; credit, 6 s.h.; summer; online.*

**NUR 825  
Psychiatric Mental Health Nursing II (Young and Middle Aged Adult)**

Students review the major young and middle age mental health disorders looking at epidemiology, health and mental health promotion and prevention, risk factors, cultural factors, assessment issues specific to young and middle age adults. The use of select diagnostic/screening tools, as well as evidenced-based specific treatments and therapeutics are applied. Common medical comorbidities in this population are also reviewed.

*Prerequisites: NUR all 700 level courses; class, 3hrs.; 180 clinical hrs.; credit, 6 s.h.; fall; online.*

**NUR 835  
Psychiatric Mental Health Nursing III (Older Adult)**

Students review the major older adult mental health disorders looking at epidemiology, health and mental health promotion and prevention, risk factors, cultural factors, and assessment issues. Select diagnostic/screening tools, as well as evidenced-based specific treatments and therapeutics are applied. Common medical comorbidities in this population are also reviewed with the impact of mental health disorders on the client's family.

*Prerequisites: NUR all 700 level courses; class, 3hrs.; 180 clinical hrs.; credit, 6 s.h.; spring; online.*

**NUR 820  
Translating and Integrating Scholarship Practicum**

Students will integrate the knowledge acquired in this program to complete a scholarly project that synthesizes advanced practice knowledge and skills to address substantive nursing practice issues. Each student has the option of selecting a project related to

an area of practice or education

*Prerequisite: NUR 708; class, 4 hrs.; credit, 4 s.h.: 2 s.h. offered in the fall and 2 s.h. offered in the spring.*

**School of Occupational Therapy (OTH)**

**OTH 500  
Contemporary Theory in Occupational Therapy Practice**

Theoretical foundations of occupational therapy have evolved into models of practice and frames of reference. This course introduces students to the historical perspectives of the profession from which current theory, models, and frames of practice have evolved, including the discipline of occupational science. Students gain an understanding of how theory guides clinical reasoning throughout the occupational therapy process.

*Prerequisite: admission to MSOT program: class, 3 hrs. credit 3 s.h.; fall.*

**OTH 505  
Clinical Reasoning in Occupational Therapy**

Students integrate the Occupational Therapy Practice Framework (OTPF) into key practice areas such as client care, documentation and describing client outcomes. The OTPF is explored in detail allowing students to understand its purpose in defining the domain and scope of occupational therapy practice. Students will gain knowledge and practice skills in activity analysis to develop clinical reasoning skills.

*Prerequisite: admission to MSOT program: class, 3 hrs. credit 3 s.h.; fall.*

**OTH 510  
Practice Engagement: Mental Health**

This course, the first in a series of three practice-skill competency courses, focuses on occupational therapy mental health practice across the lifespan. Prevalent mental health conditions are explored with a focus on occupational therapy interventions. The occupational therapy process is applied in acute in-patient hospital, outpatient, day programs and community mental health settings.

*Prerequisite: admission to MSOT program: class, 3 hrs. credit 3 s.h.; fall.*

**OTH 511  
Practice Engagement: Therapeutic Groups**

This is a skills-acquisition course in which students learn the theoretical foundations and evidence-based support for occupational therapy group interventions. Students acquire skills to develop and lead occupational therapy group intervention concomitant with developing an in-depth understanding of group dynamics, group-member roles, and how to integrate this knowledge into group therapy.

*Prerequisite: admission to MSOT program: class, 3 hrs. credit 3 s.h.; fall.*

#### **OTH 520**

##### **Scholarship in Practice: Evidence-Based Practice**

Evidence-based practice (EBP), research utilization (RU), and knowledge translation (KT) are important elements of contemporary occupational therapy practice. In this course students learn about this practice element and develop skills related to practice application. Students gain an understanding of the importance of creating, exchanging and using research findings for guiding clinical practice.

*Prerequisite: admission to MSOT program: class, 3 hrs. credit 3 s.h.; fall.*

#### **OTH 685**

##### **Directed Study in Occupational Therapy**

The purpose of this guided learning course is remediation of occupational therapy coursework in which a student has not met academic standards. To enroll in this course, a student must meet the criteria delineated in the Student handbook.

*Credit 1-3 s.h., fall.*

#### **OTH 525**

##### **Practice Engagement: Environments and Technologies (w/lab)**

This course examines importance of environment in occupational therapy clinical reasoning. Key environmental factors include cultural/social determinants of health and access; built and natural environments; and assistive technology. Home, school and playground assessment are emphasized. Intervention skills include application of technology, environmental modifications, and creation of therapeutic environments. Aspects of healthcare policy that contribute to environmental barriers are explored.

*Prerequisite: OTH 500, OTH 505, OTH 510, OTH 511, OTH 520: class, 4 hrs. credit 4 s.h.; spring.*

#### **OTH 530**

##### **Motor Performance Across the Lifespan (w/lab)**

This course explores human movement from both developmental and recovery perspectives. Motor learning theories are applied to occupational therapy clinical reasoning using activity analysis for practice application. Developmental milestones and motor control are emphasized. Treatment approaches (mirror therapy, motor-imagery, virtual reality, action-observation) are explored. Students understand common occupational therapy conditions associated with the shoulder complex, postural stability, and the hand.

*Prerequisite: OTH 500, OTH 505, OTH 510, OTH 511, OTH 520: class, 4 hrs. credit 4 s.h.; spring.*

#### **OTH 535**

##### **Scholarship in Practice: Methodologies**

This course will build on OTH 520 Evidence-Based Practice by enhancing the students' knowledge of the research process, styles of inquiry including quantitative and qualitative methods, quantitative measurement, statistical analysis and professional responsibilities. Students will also be introduced to and apply software for quantitative and qualitative data analysis.

*Prerequisite: OTH 500, OTH 505, OTH 510, OTH 511, OTH 520: class, 3 hrs. credit 3 s.h.; spring.*

#### **OTH 540**

##### **Practice Engagement: Assessment Fundamentals Across the Lifespan**

This course builds on the occupational therapy process, assessment tools use, and how the evaluation process is linked to OT intervention, program development, outcomes, and evidence-based practice. This course emphasizes the need for valid and reliable occupational therapy assessment for intervention. Emphasis on ICD-10, occupational performance diagnosis coding and documentation for effective intervention outcomes will be covered.

*Prerequisite: OTH 500, OTH 505, OTH 510, OTH 511, OTH 520: class, 3 hrs. credit 3 s.h.; spring.*

#### **OTH 565**

##### **Apprenticeship: Community Mental Health (Level I)**

In this semester-long, Level I fieldwork, students design, implement, and evaluate the therapeutic groups developed in OTH 511. Occupational therapy practitioner-mentors support students' application of learning and skills from didactic coursework. Students use BlackBoard to write and submit occupational therapy documentation of services provided.

*Prerequisite: OTH 500, OTH 505, OTH 510, OTH 511, OTH 520: class, 3 hrs. credit 3 s.h.; spring.*

#### **OTH 685**

##### **Directed Study in Occupational Therapy**

The purpose of this guided learning course is remediation of occupational therapy coursework in which a student has not met academic standards. To enroll in this course, a student must meet the criteria delineated in the Student handbook.

*Credit 1-3 s.h., spring.*

#### **OTH 545**

##### **Neuroscience Foundations for Practice**

This course explores neuroscience as related to the clinical reasoning and decision making of the occupational therapist. The nervous system, central and peripheral, is explored. Students integrate information into intervention planning for common neurological diagnosis seen by the occupational therapist. Students articulate both verbally and through written documentation the influence of neurological

function and dysfunction on human occupational performance.

*Prerequisite: OTH 525, OTH 530, OTH 535, OTH 540, OTH 565: class, 3 hrs. credit 3 s.h.; summer.*

#### **OTH 550**

##### **Practice Engagement: Adult Rehabilitation (w/lab)**

This course introduces students to common conditions prevalent in occupational therapy physical disability practice including orthopedic, cardiac, pulmonary, burn, medically complex, and oncologic conditions. This class continues to build on the student knowledge of conditions involving the shoulder complex, elbow, wrist and hand such as arthritis, carpal tunnel syndrome, and hand deformity. Students apply occupation-based intervention aligned with these conditions.

*Prerequisite: OTH 525, OTH 530, OTH 535, OTH 540, OTH 565: class, 4 hrs. credit 4 s.h.; summer.*

#### **OTH 555**

##### **Scholarship of Practice: Applied Designs and Methods**

This course builds on evidence-based practice and research methods, focusing on integrating research findings into practice. Translational research will be explored and applied to practice, allowing students to consider the steps needed to apply research findings in community-based partnerships. Single case study design is emphasized to demonstrate practice research possibilities to students. Grant writing methods for practice-based research are introduced.

*Prerequisite: OTH 525, OTH 530, OTH 535, OTH 540, OTH 565: class, 3 hrs. credit 3 s.h.; summer.*

#### **OTH 560**

##### **Systems of Practice: Managing the Practice of Occupational Therapy**

This course introduces the basics of management in the healthcare and community health arenas. Students will integrate knowledge of occupational therapy models of practice, the occupational therapy process and evidence based practice into the management of service provision. Students explore and develop effective skills for business success, healthcare reimbursement. Students use key AOTA documents that guide occupational therapy practice.

*Prerequisite: OTH 525, OTH 530, OTH 535, OTH 540, OTH 565: class, 3 hrs. credit 3 s.h.; summer.*

#### **OTH 600**

##### **Practice Engagement: Children and Adolescents (w/lab)**

This course introduces students to prevalent conditions in the occupational therapy pediatric practice arena. These include development delays; musculoskeletal, neuro-motor, and traumatic conditions; sensory processing disorder; and emotional and behavioral disorders. Context of care will include Neonatal

Intensive Care Unit, acute and outpatient hospital, early intervention, school systems, and community mental health.

*Prerequisite: OTH 545, OTH 550, OTH 555, OTH 560, OTH 570: class, 4 hrs. credit 4 s.h.; fall.*

#### **OTH 605**

##### **Scholarship in Practice: Capstone**

This is the culminating course of the 4-course research sequence. Students aggregate, analyze and interpret data from their single-subject research projects (OTH 555) and disseminate findings by presenting research posters at a school symposium. The goal of this course is for students to demonstrate their competence with research methods and the professionalism required for proficient dissemination of findings.

*Prerequisite: OTH 545, OTH 550, OTH 555, OTH 560, OTH 570: class, 3 hrs. credit 3 s.h.; fall.*

#### **OTH 610**

##### **Practice Engagement: Cognitive and Visual Challenges Across the Lifespan**

This course examines occupational therapy theory and treatment techniques associated with children/adults with cognitive-perceptual deficits. Deficits including dyspraxia, visuospatial, visuo-constructive disorders, sensory defensiveness, vestibular problems, bilateral integration and sequencing problems will be discussed. Theories of brain function, hemispheric specialization, and cognitive-perceptual-motor treatment will be explored. Assessments and remediation strategies will be addressed.

*Prerequisite: OTH 545, OTH 550, OTH 555, OTH 560, OTH 570: class, 3 hrs. credit 3 s.h.; fall.*

#### **OTH 615**

##### **Systems of Practice: Public Health and Advanced Management**

Advanced topics in the management of occupational therapy practice including occupational justice, advocacy, reimbursement, and nontraditional practice settings are explored. Students examine the potential opportunities and barriers of current and projected changes in legislative and social movements on occupational therapy practice including accountable care organizations, primary care, aging in place, and value driven service delivery/rehabilitation.

*Prerequisite: OTH 545, OTH 550, OTH 555, OTH 560, OTH 570: class, 3 hrs. credit 3 s.h.; fall.*

#### **OTH 630**

##### **Apprenticeship: Children and Adolescents (Level I)**

In this two-week, full-time Level I Fieldwork students participate with practicing occupational therapists to experience first-hand the occupational performance effects of prevalent conditions in occupational therapy practice with children and adolescents. Students integrate knowledge and practice skills as they work along-side practitioners in inter-professional practice

settings.

*Prerequisite:* OTH 545, OTH 550, OTH 555, OTH 560, OTH 570: class, 4 hrs. credit 4 s.h.; fall.

### **OTH 620**

#### **Preparing for Professional Life I**

This online course explores role changes that accompany leaving academics and entering professional practice. Research on professional development indicates this transition is easier when students are prepared in both personal and institutional domains. Students analyze factors that contribute to successful professional development and ethical practice, using the results of their analyses to map the transition to fieldwork and entry-level practice. *Prerequisite:* OTH 600, OTH 605, OTH 610, OTH 615, OTH 630: online, 2 hrs. credit 2 s.h.; spring.

### **OTH 640**

#### **Level II Fieldwork**

Level II fieldwork is integral to entry-level education of occupational therapists, providing students opportunities to apply and deepen their skills for entry-level practice in settings similar to the one experienced on this fieldwork. Students complete the twelve-week fieldwork experience after successful completion of the previous four semesters of academic work and level I fieldwork experiences. *Prerequisite:* OTH 600, OTH 605, OTH 610, OTH 615, OTH 630: class, 9 hrs. credit 9 s.h.; spring.

### **OTH 625**

#### **Preparing for Professional Life II**

This is the second in a two-course sequence exploring role changes that accompany leaving the academics and entering the larger realm of professional practice. Research on professional development indicates this transition is easier when students are prepared in both personal and institutional domains. The goal of this course is for students to create a success-plan for entering occupational therapy. *Prerequisite:* OTH 620, OTH 640: class, 2 hrs. credit 2 s.h.; summer.

### **OTH 645**

#### **Level II Fieldwork**

Level II fieldwork is integral to entry-level education of occupational therapists, providing students opportunities to apply and deepen their skills for entry-level practice in settings similar to the one experienced on this fieldwork. Students complete the twelve-week fieldwork experience after successful completion of the previous four semesters of academic work and level I fieldwork experiences. *Prerequisite:* OTH 620, OTH 640: class, 9 hrs. credit 9 s.h.; summer.

## **School of Optometry (OPT)**

### **OPT 610**

#### **Clinical Anatomy**

This course provides foundational knowledge of human anatomy from the optometric perspective. Accordingly, the course emphasizes the anatomy of the eye and body. Students will be able to develop an appropriate, detailed knowledge of anatomy of the human and to develop a multidimensional understanding of the anatomical relationships of the structures in the body.

*Prerequisite:* admission to OD program; class, 3 hrs.; lab, 1 hrs., credit, 4 s.h.; fall.

### **OPT 612**

#### **Ocular Biochemistry and Physiology**

Students will gain a foundational knowledge of the biochemical and physiological processes of the human eye appropriate for an optometrist.

*Prerequisite:* OPT 610; class, 2 hrs.; credit, 2 s.h.; spring.

### **OPT 613**

#### **Neuroanatomy and Physiology**

The mission of this course is to provide foundational knowledge of human neuroanatomy appropriate for an optometrist. Students will learn about the head and neck, and undertake a detailed survey of cranial nerves.

*Prerequisites:* OPT 610, 721; class, 3 hrs.; credit, 3 s.h.; spring.

### **OPT 622**

#### **Visual Perception**

Students will gain foundational knowledge about vision science in perception and color vision appropriate for an optometrist. The course emphasizes these topics from a clinical perspective.

*Prerequisite:* OPT 630; *Co-requisite:* OPT 631; class, 3 hrs.; credit, 3 s.h.; spring.

### **OPT 630**

#### **Geometric and Physical Optics**

Students will learn geometrical optics appropriate for an optometrist.

*Prerequisite:* admission to OD program; class, 4 hrs., credit, 4; lab, 1 hrs., credit, 5 s.h.; fall.

### **OPT 631**

#### **Visual Optics**

Students will learn visual and physical optics appropriate for an optometrist.

*Prerequisites:* OPT 630; *Co-requisite:* OPT 622; class, 3 hrs., lab, 1 hrs.; credit, 4 s.h.; spring.



**OPT 632****Ophthalmic Optics I**

Students will learn ophthalmic optics appropriate for an optometrist.

*Prerequisites:* OPT 630, 631, 622; class, 3 hrs., lab, 1 hrs.; credit, 4 s.h.; summer.

**OPT 650****Optometry Theory and Methods I (with lab)**

This course provides clinical education on basic examination elements, including ocular terminology, clinical hygiene and equipment care, case history, visual acuity, utilization of pretesting equipment, sphygmomanometry, stereoacuity, color vision, and documentation utilizing electronic health records. Students must demonstrate competency for individual basic skills used in a primary care examination, communicate appropriate principles of professionalism, and identify normal findings.

*Prerequisite:* admission to OD program; class, 2 hr., credit, 2 s.h.; lab, 2 hrs., credit, 1 s.h.; fall.

**OPT 651****Optometry and Healthcare**

Students will learn about varied aspects of optometric practice and perspectives.

*Prerequisite:* admission to OD program; class, 1 hr.; credit, 1 s.h.; fall.

**OPT 652****Optometry Theory and Methods II (with lab)**

This course provides clinical education on examination elements, including refractive and binocular vision assessment, while incorporating relevant basic science components. Students must demonstrate competency for individual basic skills used in a primary care examination, communicate appropriate principles of professionalism, and identify normal findings.

*Prerequisites:* OPT 650, class, 2 hrs., credit, 2 s.h.; lab, 2 hrs., credit, 1 s.h.; spring.

**OPT 653****Optometry Theory and Methods III (with lab)**

This course provides clinical education on examination elements, including advanced anterior segment and posterior segment assessment, while incorporating relevant basic science components. Students must demonstrate competency for individual basic skills used in a primary care examination, communicate appropriate principles of professionalism, and identify normal findings.

*Prerequisites:* OPT 650, 652; class, 2 hrs., credit, 2 s.h.; lab, 2 hrs., credit, 1 s.h.; summer.

**OPT 656****Histology and Embryology**

Students will understand the basic concepts related to embryology and histology, especially as they relate to

clinical optometry.

*Prerequisites:* admission to OD program ; Co-requisites OPT 610; Credit, 3 s.h.; fall.

**OPT 691****Optometry and Public Health**

Students will gain an appreciation for the history and contemporary role of public health practice. Students will learn basic public health concepts and applications, particularly as they relate to optometric practice and advocacy, with a special emphasis on the epidemiology of major eye diseases. This course is intended for optometry students.

*Prerequisite:* admission to OD program; class, 1 hr.; credit, 1 s.h.; spring.

**OPT 640****Systems Based Physiology**

This Systems Based Physiology Course provides an understanding how cells, tissues, organs, and organ systems function together to create one organism. Furthermore, the course lays the basis for understanding diagnosis and treatment of diseases.

*Prerequisite:* OPT 610, 613, 656; class, 3 hrs.; credits, 3 s.h.; summer.

**OPT 699****Independent Study**

The course goals are to provide students with a better understanding of optometric research, research design, and research methodology. Students will analyze, develop, and reflect upon a research study chosen by the faculty with student input.

*Prerequisites:* admission to OD program; class, 1 hr.; credit, 1 s.h.; varies.

**OPT 710****Systemic Pharmacology**

Students will develop a firm understanding of pharmacokinetics and pharmacodynamics. They will understand the application of systemic pharmacology with an optometric perspective. Students will understand drug-drug interactions, drug mechanisms, and side effects.

*Prerequisites:* OPT 610, 612, 681, 682; class, 4 hrs.; credit, 4 s.h.; summer.

**OPT 711****Immunology and Microbiology**

Students will understand the basic concepts related to immunology and microbiology as well as the concepts of altered health states.

*Prerequisites:* OPT 610, 611, 612, 681, 682; Co-requisites: OPT 682; class, 2 hr.; credit, 2 s.h.; summer.

**OPT 712****Ocular Pharmacology**

Students will demonstrate knowledge of ocular

pharmacological principles, including preparations, bioavailability, routes of administration, mechanisms of action, contraindications and side effects, and treatment and management.

*Prerequisite: OPT 710; class, 3 hrs.; credit, 3 s.h.; fall.*

#### **OPT 721**

##### **Ocular Embryology and Visual Development**

This course presents ocular embryology and vision science related to vision development in the infant and child. It also addresses changes in vision with aging. The course covers the effects of early environmental restrictions, changes in vision with aging, visual perceptual skills, and anomalies of child development.

*Prerequisite: admission to OD program; class, 3 hrs., credit, 3 s.h.; fall.*

#### **OPT 722**

##### **Oculomotor Functions**

This course presents the oculomotor system. Eye movements are described in detail, including the basic types and their purpose and mechanisms. The course also looks at clinical manifestations of anomalies of these eye movements.

*Prerequisite: OPT 622, 683; class, 2 hrs; credit, 2 s.h.; summer.*

#### **OPT 732**

##### **Ophthalmic Optics II**

As a continuation of Ophthalmic Optics (OPT 632), this course enhances the student understanding of the clinical aspects of ophthalmic lenses and optical dispensing. The refractive, prismatic, and magnification effects of ophthalmic lenses will be covered with additional detail.

*Prerequisites: OPT 630, 631, 632; class, 2 hrs., 2 s.h lab, 1 hrs.; credit, 1 s.h.; fall.*

#### **OPT 741**

##### **Practice and Business Management**

Students will be introduced to the functional business and management areas necessary to operate an eye care practice. They will review the principles of strategy, finance and accounting, marketing, human resources, operations management, and information technology as applied to eye care practice. Students will become familiar with business process analysis and problem solving.

*Prerequisite: OPT 651; class, 2 hr.; credit, 2 s.h.; spring.*

#### **OPT 750**

##### **Anterior Segment Ocular Disease I**

Students will understand the etiology, signs and symptoms, and treatment and management of various anterior segment ocular diseases and disorders.

*Prerequisite: OPT 610, 611, 612; class, 4 hrs.; credit, 4 s.h.; fall.*

#### **OPT 751**

##### **Clinical Optometry IV (with lab)**

This course provides clinical education on examination elements, including advanced anterior segment and posterior segment assessment, while incorporating relevant basic science components. Students must demonstrate competency in individual basic skills used in a primary care examination, communicate appropriate principles of professionalism, and identify normal findings.

*Prerequisites: OPT 650, 652, 653; class, 2 hrs., credit, 2 s.h.; lab, 2 hrs., credit, 1 s.h.; fall.*

#### **OPT 752**

##### **Contact Lenses I (with lab)**

Students will be introduced to all aspects of contact lens care. Students will learn about contact lens materials and design, fitting techniques, and patient management.

*Prerequisites: OPT 630, 631, 632, 750; class, 3 hrs., credit, 3 s.h.; lab, 2 hrs., credit, 1 s.h.; summer.*

#### **OPT 753**

##### **Posterior Segment Ocular Disease I**

This course provides instruction regarding the classification, epidemiology, anatomy, physiology, and pathology of posterior segment ocular diseases and the critical understandings necessary for diagnosis, treatment, and management of the various conditions. Elements including definitions, classifications, clinical techniques, utilization of equipment, and proper documentation utilizing electronic health records will be emphasized.

*Prerequisites: OPT 750; class, 4 hrs.; credit, 4 s.h.; spring.*

#### **OPT 754**

##### **Low Vision and Geriatrics (with lab)**

Students will learn fundamental low-vision principles, principles of magnification, utilization and selection of low-vision devices, and therapeutic treatment and management.

*Prerequisites: OPT 630, 631, 632, 753; class, 2 hrs., credit, 2 s.h.; lab, 2 hrs., credit, 1 s.h.; fall.*

#### **OPT 755**

##### **Pediatrics (with lab)**

Students will learn about the needs of the pediatric population and about pediatric vision testing, treatment, and management. Students also will understand the social and academic demands on the pediatric population.

*Prerequisites: OPT 650, 652, 721, 756, 757; class, 2 hrs., lab, 1 hrs., credit, 3 s.h.; fall.*

#### **OPT 756**

##### **Foundations of Binocular Vision**

Students will learn the theory behind binocular visual perception.

*Prerequisites: OPT 650, 652; class, 2 hrs., credit, 2 s.h.; fall.*

#### **OPT 757**

##### **Clinical Binocular Vision**

Students will learn binocular vision testing, treatment, and management, with emphasis on adult treatment and management.

*Prerequisites: OPT 650, 652, 756; class, 4 hrs., credit, 4 s.h.; spring.*

#### **OPT 758**

##### **Neuro-Optometry**

This course is a convergence of general neuroanatomy/neurology and clinical manifestations of neurological disorders, especially as these relate to oculomotor and visual function. Students will be able to recognize the presentation of, and describe diagnosis and management of neurological disorders impacting oculomotor and visual function.

*Prerequisites: OPT 611, 613; class, 2 hrs., credit, 2 s.h.; summer.*

#### **OPT 759**

##### **Anterior Segment Ocular Disease II**

Students will understand the etiology, signs and symptoms, and treatment and management of various anterior segment ocular diseases and disorders. The focus will be on case discussion, treatment and management of anterior segment ocular disease.

*Prerequisite: OPT 750; class, 1 hrs.; credit, 1 s.h.; summer.*

#### **OPT 765**

##### **Introduction to Practice Management**

Students gain knowledge, develop analytical skills, and the background required to manage an ophthalmic business. Topics include goal setting, patient capture via marketing, office and sales floor design, accounting and finance in an optometric practice, fee computation, practice purchase valuation, human resources, relevant business law, professional liability and risk management. The development of a formal business plan is required.

*Prerequisites: OPT 651; class, 2 hr.; credit, 2 s.h.; spring.*

#### **OPT 766**

##### **Pathophysiology**

Students will learn integrative human physiology and pathophysiology of the neurological, neuromuscular, cardiovascular, endocrine, hematological, integumentary, pulmonary, hepatic, renal, musculoskeletal and gastrointestinal systems, with an emphasis on systemic conditions pertinent to optometrists.

*Prerequisites: OPT 610, 611, 612, 613; Class, 3 hrs.; credit, 3 s.h.; fall.*

#### **OPT 770C**

##### **Primary Care Clinic I**

Students will gain experience in clinical settings and in conducting vision screenings utilizing skills learned in the Optometric Theory and Methods course sequence. Students will gain the ability to differentiate between normal and abnormal clinical findings. Students will develop an understanding of clinical protocols.

Students will develop communication skills, including taking a medical history, patient education, and public speaking.

*Prerequisite: OPT 650, 652, 653; experiential, 4 hrs.; credit, 1 s.h.; fall.*

#### **OPT 771C**

##### **Primary Care Clinic II**

Students will gain experience in primary care and pediatric clinical settings utilizing skills learned in the Optometric Theory and Methods course sequence. Students will begin exposure to community health center based Optometry. Students will gain the ability to differentiate between normal and abnormal clinical findings. Students will learn to develop and articulate initial patient management strategies. Students will develop an understanding of clinical protocols, billing and coding, and compliance. Students will develop case presentation skills.

*Prerequisites: OPT 650, 652, 653, 770C; experiential, 4 hrs., credit, 1 s.h.; spring;*

#### **OPT 772C**

##### **Primary Care Clinic III**

Students will gain experience in primary care clinical settings; particularly community health center based Optometry. Students will use skills acquired in the Optometric Theory and Methods course sequence. Students will gain the ability to differentiate between normal and abnormal clinical findings. Students will learn to develop and articulate initial patient management strategies.

*Prerequisites: OPT 650, 652, 653, 751, 770C, 771C; experiential, 8 hrs.; credit, 2 s.h.; summer.*

#### **OPT 799**

##### **Independent Study**

The course goals are to provide students with a better understanding of optometric research, research design, and research methodology. Students will analyze, develop, and reflect upon a research study chosen by the faculty with student input.

*Prerequisite: admission to OD program; class, 1 hr.; credit, 1 s.h.; fall, spring, summer.*

#### **OPT 830**

##### **Professional Ethics**

The purpose of this course is to provide a practical overview of ethical principles and challenges that are part of health care and professional education. The course will review ethical theories and their

application to clinical practice. Ethical problems that challenge students and practitioners in a changing health care environment will be discussed using case studies and current events.

*Prerequisites: OPT 651; class, 1 hr.; credit, 1 s.h.; spring.*

#### **OPT 840**

##### **Special Populations and Topics**

This course focuses on the specialties of Optometry including; Pediatrics, Low Vision, Advanced Contact Lenses, Vision Therapy, and individuals with developmental disabilities. Through weekly meetings, and participation in the already existent Primary and Specialty Care Optometry Clinic, the student will gain a stronger and more integrated experience in these areas of specialty.

*Prerequisites: OPT 755, 754, 852, 752; Co-requisites: OPT 879C; class, 2 hr.; credit, 2 s.h.; spring.*

#### **OPT 845**

##### **Applied Optometric Theory**

This course provides a practical overview of various aspects of Optometric practice, including the application of basic optics equations, prescription of contact lenses and low vision devices, and infectious disease management. Students also interpret patient symptoms and their relevance to ocular disease to prepare for independent practice.

*Prerequisites: OPT 631, 632, 759, 753, 758; class, 2 hr.; credit, 2 s.h.; spring.*

#### **OPT 851**

##### **Glaucoma I**

This course provides fundamental instruction regarding the classification, epidemiology, anatomy, physiology, and pathology of glaucoma and the critical understandings necessary for diagnosis, treatment, and management of the disease. Definitions, classifications, clinical techniques, utilization of specialized equipment, and proper documentation utilizing electronic health records will be emphasized.

*Prerequisite: OPT 610, 611, 753, 766; class, 2 hrs.; credit, 2 s.h.; summer.*

#### **OPT 852**

##### **Vision Therapy (with lab)**

Students will review binocular vision disorders and be introduced to vision therapy methods. Students will utilize laboratory time to demonstrate competency and understanding of vision therapy and specialized binocular vision techniques.

*Prerequisites: OPT 756, 757; class, 2 hrs., lab, 1 hrs., credit, 3 s.h.; summer.*

#### **OPT 853**

##### **Optometric Theory and Methods V (with lab)**

Students will understand advanced treatment options including surgical management and the importance of

co-management.

*Prerequisite: OPT 650,652,653,751 ; class, 2 hrs., credit 2 s.h; lab, 2 hr.; credit, 1 s.h.; spring.*

#### **OPT 854**

##### **Ocular Manifestations of Systemic Disease**

This course provides instruction regarding the classification, epidemiology, anatomy, physiology, and pathology of eye-relevant systemic diseases as well as the critical understandings necessary for effective and proper diagnosis, treatment, and management of the various ocular conditions resulting from systemic disorders.

*Prerequisites: OPT 610, 611,712; class, 2 hrs.; credit, 2 s.h.; spring.*

#### **OPT 855**

##### **Contact Lenses II**

Students will be introduced to advanced contact lens care. Students will learn about advanced designs of contact lenses as well as how to manage patients with irregular corneas using contact lenses.

*Prerequisites: OPT 752; class, 1 hrs., credit, 1 s.h.; fall.*

#### **OPT 857**

##### **Posterior Segment Ocular Disease II**

This course provides instruction regarding the classification, epidemiology, anatomy, physiology, and pathology of posterior segment ocular diseases and the critical understandings necessary for diagnosis, treatment, and management of the various conditions. The focus will be on case studies with special focus on the treatment and management of posterior segment ocular disease

*Prerequisites: OPT 750, 753; class, 1 hrs.; credit, 1 s.h.; fall.*

#### **OPT 859**

##### **Glaucoma II**

This course provides instruction regarding the classification, epidemiology, anatomy, physiology, and pathology of advanced and secondary glaucomas. It includes the critical understandings necessary for diagnosis, treatment, and management of the advanced glaucomatous disease.

*Prerequisite: OPT 610, 611, 753, 766, 851; class, 1 hrs.; credit, 1 s.h.; fall.*

#### **OPT 860**

##### **Research and Statistical Methods**

The course goals are to provide students with a better understanding of optometric research, research design, statistical analysis and research methodology. Students will analyze, develop, and reflect upon a research study chosen by the faculty with student input. The class will focus on sources for research and proper documentation.

*Prerequisites: admission to OD program; class, 1 hr.;*

credit, 1 s.h.; spring.

#### **OPT 870C**

##### **Primary and Specialty Care Optometry I**

Students will gain experience in primary care clinical settings, utilizing skills learned in the Clinical Optometry course sequence. Students will gain the ability to develop differential diagnoses and clinical assessments. Students will learn to develop and articulate initial patient management strategies. Students will participate in glaucoma, vision therapy, contact lens, low vision, and community health clinics. Students will develop an understanding of clinical protocols, billing and coding, and compliance. *Prerequisites: OPT 751/751L, 772C; experiential, 12 hrs.; credit, 3s.h.; fall.*

#### **OPT 879C**

##### **Primary & Specialty Care Optometry II**

Students will gain experience in multidisciplinary community healthcare clinical settings, utilizing skills learned in the Clinical Optometry course sequence. Students will gain the ability to develop differential diagnoses and patient management strategies. Students will participate in glaucoma, vision therapy, contact lens, low vision, and community health clinics. Students will develop the ability to coordinate care with members of a multidisciplinary health and human services team. *Prerequisite: OPT 870C; experiential, 12 hrs.; credit, 3s.h.; spring.*

#### **OPT 899**

##### **Research / Independent Study**

The course goals are to provide students with a better understanding of optometric research, research design, and research methodology. Students will analyze, develop, and reflect upon a research study chosen by the faculty with student input. *Prerequisite: OPT admission to OD program; class, 1 hr.; credit, 1 s.h.; fall, spring, summer.*

#### **OPT 951**

##### **Online Clinical Seminar**

Students will perform and post case reviews in an online forum to be evaluated, shared and discussed. Students participate in OPT 951 during each of the three required externships. *Prerequisites: OPT 751, 890C, 897C; class, 1 hr.; credit, 3; s.h.; spring.*

#### **OPTC 971, 972, 973**

##### **Externship Rotation I, II, III**

Externship rotations represent a full academic year of clinical rotations offered primarily at off-campus sites. All rotations are 16 weeks in duration. Students will gain experience in patient care in a variety of settings, including hospitals, community health centers, private practices, specialty clinics, and multidisciplinary

settings.

*Prerequisites: OPT 751, 890C, 897C; experiential, 40 hrs./wk. for 16 weeks each; credit, 16 s.h./rotation; summer, fall and spring.*

#### **OPT 999**

##### **Independent Study**

The course goals are to provide students with a better understanding of optometric research, research design, and research methodology. Students will analyze, develop, and reflect upon a research study chosen by the faculty with student input. *Prerequisites: admission to OD program; class, 1 hr.; credit, 1 s.h.; summer, fall and spring.*

## **Physician Assistant Studies–Boston (PAS)**

#### **PAS 514**

##### **Principles of Professional Practice**

The course is designed to introduce the first year physician assistant (PA) students to the PA profession. The focus is on such topics as the history of the profession, professionalism, PA competencies and the physician assistant's role within the healthcare delivery system. The students will be introduced to healthcare policy including the Affordable Care Act. Ethical issues will also be discussed including elder abuse, vaccines, death and dying, palliative care, and providing care across different cultures and religions. *Prerequisite: enrollment in the MPAS program. credit, 2 s.h.; fall.*

#### **PAS 515**

##### **Genetics**

PA students will learn the basic principles and concepts in genetics at the level of cells, chromosomes, and nuclei acids. Students will also acquire knowledge about protein synthesis, human genome organization, gene expression and its regulation, epigenetics, principles of genetic variation, DNA repair mechanisms, patterns of inheritance, types of mutations, ethical considerations related to genetic testing and fundamental principles of gene therapy. Class discussion will include the genetic, epigenetic and environmental factors that play a role in the most common genetic diseases the students will encounter when practicing as a PA. *Prerequisite: enrollment in the MPAS program; credit, 2 s.h.; fall.*

#### **PAS 516**

##### **Primary Care Psychiatry**

Students examine psychiatric disorders seen in primary care medicine, including their epidemiology, pathophysiology, clinical presentation, differential diagnosis, natural history, and treatment. By evaluating medico-legal issues, such as referral, voluntary and

involuntary commitment, and competency, students further develop critical thinking skills.  
*Prerequisite: enrollment in the MPAS program; credit, 2 s.h.; fall.*

**PAS 517**  
**Human Physiology and Pathophysiology I**

In this course, students will learn the physiology and pathophysiology of diseases affecting the cardiovascular, renal, lymphatic, hematologic, endocrine and the respiratory systems. Patient case studies will be utilized to develop critical thinking skills.  
*Prerequisites: enrollment in the MPAS program; credit, 3 s.h.; fall.*

**PAS 518**  
**Clinical Pharmacology I**

Emphasizes the basic principles of pharmacology, pharmacokinetics, pharmacodynamics, and dose-response relationships along with an in-depth consideration of drugs affecting the autonomic, cardiovascular, renal, hematological, endocrine, and central nervous systems.  
*Prerequisite: enrollment in the MPAS program; credit, 3 s.h.; fall.*

**PAS 520**  
**Clinical Pharmacology II**

A continuation of PAS 518 that provides an in-depth study of agents used to treat neurological, psychological, musculoskeletal, neoplastic, and respiratory disorders as well as agents used for the treatment of bacterial, fungal, and viral infectious diseases.  
*Prerequisites: enrollment in the MPAS program; credit, 3 s.h.; spring.*

**PAS 524/524L**  
**Gross Anatomy**

Students examine human anatomy and embryology through lectures and cadaver dissection. Relating this knowledge to future clinical applications, students present their findings to their classmates, improving communication skills. Radiographic images are examined to compare two-dimensional images with three-dimensional anatomical structures. This course provides a foundation for the study of clinical medicine in Year II of the program.  
*Prerequisites: enrollment in the MPAS program; class, 4 hrs.; lab, 4 hrs.; credit, 5 s.h.; spring.*

**PAS 525**  
**Diagnostic Methods**

Physician Assistant students will be introduced to the principles, appropriate use, and interpretation of various diagnostic methods, including radiologic examinations and laboratory medicine. There will be a focus on commonly utilized studies and techniques that aid in the diagnosis and management of illness,

disease, and injury.  
*Prerequisite: enrollment in the MPAS program; credit 2 s.h. spring*

**PAS 527**  
**Human Physiology and Pathophysiology II**

In this course, students will learn the physiology and pathophysiology of diseases affecting the skeletal muscles, nervous, reproductive, gastrointestinal, and integumentary systems. Patient case studies will be utilized to develop critical thinking skills.  
*Prerequisites: enrollment in the MPAS program and Human Physiology and Pathophysiology I (PAS 517); credit, 3 s.h.; spring.*

**PAS 529**  
**Research Methods I for Physician Assistants**

This course will develop the PA student's understanding of the purpose and significance of health research as clinicians. Students will examine different types of study approaches and be able to select the most appropriate study type in any given clinical scenario. They will explore reading, interpreting, critically analyzing, and communicating medical literature in the form of journal clubs. Ultimately students will develop an appreciation of Evidence-Based-Practice and its significance & application in their everyday clinical career.  
*Prerequisites: enrollment in the MPAS program; credit, 1 s.h.; fall.*

**PAS 534**  
**Introduction to Public Health**

The students will receive an introduction to public health concepts and practice. They will receive an overview of the US health care delivery system, epidemiological methods and attendant application to the control of disease conditions, principles of environmental health, and social determinants of health.  
*Prerequisites: enrollment in the MPAS program; credit, 1 s.h.; spring.*

**PAS 535**  
**Electrocardiography**

Students analyze and interpret electrocardiogram (ECG) studies to aid in diagnosing multiple abnormalities, including myocardial infarction, arrhythmias, ischemia, conduction blocks, and chamber hypertrophy.  
*Prerequisites: enrollment in the MPAS program; credit, 2 s.h.; spring.*

**PAS 536**  
**Patient Assessment I**

In this course, students will develop skills in the art of patient interviewing, history taking, documentation of the history and physical examination, and various types of medical note writing. Students will take

medical histories on volunteers who are either simulated or actual patients.

*Prerequisites: enrollment in the MPAS program; credit, 2 s.h.; fall.*

#### **PAS 537**

##### **Clinical Therapeutics I**

Clinical Therapeutics course is designed to integrate and expand the student's knowledge of pathophysiology, physical exam skills, and pharmacology pertaining to specific disease manifestations in patient scenario and case-based formats. Predicated on the student's knowledge, he/she will learn the complexities and integrative dimensions of medicine and clinical judgment. Attention is focused on the clinical application of clinical medicine, by using signs and symptoms, physical exam findings, laboratory and diagnostic data to apply both a pharmacological and non-pharmacological clinical therapeutic management to the assigned disease process discussed.

*Prerequisites: enrollment in the PA program. credit; 2 s.h.; fall.*

#### **PAS 538**

##### **Physical Examination I**

The course provides experiences designed to develop patient physical examination skills. Instructional techniques include lectures, demonstrations, media presentations, and small group exercises. NOTE: This course requires an associated weekly clinical laboratory (PAS 538L).

*Prerequisite: enrollment in the MPAS program. credit, 2 s.h.; fall.*

#### **PAS 538L**

##### **Physical Examination I Lab**

Students develop system-focused and comprehensive physical examination skills. Clinical laboratory and small group meetings involve practice and testing sessions with physician assistant faculty and preceptors, who critique and grade physical examination skills.

*Prerequisites: enrollment in the MPAS program. credit, 2 s.h.; fall.*

#### **PAS 539**

##### **Research Methods II for Physician Assistants**

Students will learn a practical, step-by-step guide to health research process, such as identifying a focused research question, collecting reliable and pertinent data, analyzing the data, and disseminating their findings. An understanding that health research requires meticulous attention to details and perseverance will be demonstrated by conceptualizing and presenting a poster project.

*Prerequisites: enrollment in the MPAS program and Research Methods I for Physician Assistants (PAS 529); credit 1 s.h. spring.*

#### **PAS 540**

##### **Physical Exam II: Skills and Procedures**

This course is a continuation of PAS 538 with an emphasis on learning to perform specialized physical examination skills as well as receiving exposure to common clinical/technical procedures that are requisite for practicing physician assistants.

*Prerequisites: enrollment in the MPAS program and Physical Examination I (PAS 538); credit, 2 s.h.; spring.*

#### **PAS 540L**

##### **Physical Exam II: Skills and Procedures Lab**

Students observe and perform technical skills and procedures that are requisite for practicing physician assistants. Utilizing clinical skills acquired in PAS 538 Physical Examination I, students also continue to demonstrate and refine their physical examination techniques.

*Prerequisites: enrollment in the MPAS program and Physical Examination I Lab (PAS 538L); credit, 2 s.h.; spring.*

#### **PAS 546**

##### **Patient Assessment II**

In this course, students will continue to develop and begin to solidify their diagnostic and critical thinking skills by collecting medical histories and performing physical examinations on patients in a clinical setting. In addition, the students will be assigned to a clinician-led small group where patient cases will be discussed including the clinical history, physical exam findings and interpretation of diagnostic tests. Then the students will be expected to create an assessment and formulate a treatment plan. Students continue to hone their skills in medical documentation. They practice oral presentations to the group and clinician. The students will rotate through one simulated patient case scenario to further enhance their clinical skills.

*Prerequisites: enrollment in the MPAS program and Patient Assessment I (PAS 536); credit, 2 s.h.; spring.*

#### **PAS 547**

##### **Clinical Therapeutics II**

This course is a continuation of Clinical Therapeutics I with emphasis on different disease states. Clinical Therapeutics course is designed to integrate and expand the student's knowledge of pathophysiology, physical exam skills, and pharmacology pertaining to specific disease manifestations in patient scenario and case-based formats. Predicated on the student's knowledge, he/she will learn the complexities and integrative dimensions of medicine and clinical judgment. Attention is focused on the clinical application of clinical medicine, by using signs and symptoms, physical exam findings, laboratory and diagnostic data to apply both a pharmacological and non-pharmacological clinical therapeutic management to the assigned disease process discussed.

*Prerequisites: enrollment in the MPAS program and Clinical Therapeutics I (PAS 537); credit, 2 s.h.; spring.*

**PAS 551**

**Clinical Medicine I**

This course fosters understanding of the epidemiology, etiology, history, signs, symptoms, differential diagnoses, diagnostic studies, treatment modalities, preventative medicine and patient education associated with dermatology, infectious disease, ophthalmology, otolaryngology, oral health and endocrinology. Students synthesize information to develop diagnostic skills and treatment plans.

*Prerequisites: enrollment in the MPAS program; credit 5 s.h.; fall.*

**PAS 552**

**Clinical Medicine II**

This course fosters understanding of the epidemiology, etiology, history, signs, symptoms, differential diagnoses, diagnostic studies, treatment modalities, preventative medicine and patient education associated with cardiology, vascular disorders, pulmonology, hematology and oncology. Students synthesize information to develop diagnostic skills and treatment plans.

*Prerequisites: enrollment in the MPAS program and Electrocardiology PAS 535; credit, 5 s.h.; fall.*

**PAS 553**

**Clinical Medicine III**

This course fosters understanding of the epidemiology, etiology, history, signs, symptoms, differential diagnoses, diagnostic studies, treatment modalities, preventative medicine and patient education associated with gastroenterology including surgical considerations, genitourinary, nephrology and obstetrics and gynecology. Students synthesize information to develop diagnostic skills and treatment plans.

*Prerequisites: enrollment in the MPAS program; credit, 5s.h.; spring*

**PAS 554**

**Clinical Medicine IV**

This course fosters understanding of the epidemiology, etiology, history, signs, symptoms, differential diagnoses, diagnostic studies, treatment modalities, preventative medicine and patient education associated with orthopedics, rheumatology, neurology and pediatrics. Additionally students learn about special considerations in the elderly population. Students synthesize information to develop diagnostic skills and treatment plans.

*Prerequisites: enrollment in the MPAS program; credit, 5 s.h.; spring.*

**PAS 590**

**Directed Study**

Individual didactic study directed by faculty in an area of expertise.

*Prerequisite: permission of instructor; credit, 1–3 s.h.; spring, summer, fall.*

**PAS 590L**

**Directed Study Laboratory**

Individual clinical study directed by faculty in an area of expertise.

*Prerequisite: permission of instructor; credit, 1–3 s.h.; spring, summer, fall.*

**PASC 600, 607**

**Medicine I and II Clerkships**

These clerkships provide clinical experience with common diseases and the manifestation of acute and chronic illnesses. Learning experiences include the traditional approach to direct, initial, and comprehensive care for patients of all ages in inpatient and outpatient settings as well as continuity of care for the individual patient and the family. Students interview and examine patients, synthesize information to identify problems, and formulate and implement therapeutic plans.

*Prerequisite: all didactic phase courses; clinical, approx. 225 hrs. (Medicine I); clinical, approx. 225 hrs. (Medicine II); credit, 5 s.h. each.*

**PASC 601**

**Pediatrics Clerkship**

This clerkship focuses on the recognition and management of common childhood illnesses; the assessment of growth and development; and the counseling of parents regarding preventive healthcare, development, nutrition, and common psychosocial problems.

*Prerequisite: all didactic phase courses; clinical, approx. 225 hrs.; credit, 5 s.h.*

**PASC 602**

**Psychiatry Clerkship**

This clerkship exposes students to patients with a variety of emotional illnesses and disabilities in order to develop informed history taking and mental status examination skills. The ability to recognize and categorize psychiatric problems, and the techniques of early intervention and psychiatric referral are stressed.

*Prerequisite: all didactic phase courses; clinical, approx. 225 hrs.; credit, 5 s.h.*

**PASC 603**

**Surgery Clerkship**

This clerkship provides an orientation to patients of various ages with surgically disease. The learning experiences emphasize the preoperative evaluation and preparation of patients for surgery, assistance during the intraoperative period, and the management of



postoperative complications.

*Prerequisite: all didactic phase courses; clinical, approx. 225hrs.; credit, 5 s.h.*

#### **PASC 604**

##### **Emergency Medicine Clerkship**

This clerkship provides an in-depth exposure to illnesses and injuries sustained by children and adults that necessitate emergency care. Emphasis is on examination skills and the performance of procedures essential to the management of acute problems.

*Prerequisite: all didactic phase courses; clinical, approx. 225 hrs.; credit, 5 s.h.*

#### **PASC 605**

##### **Women's Health Clerkship**

This clerkship provides an exposure to the spectrum of women's health problems and issues. Emphasis is on family planning and birth control, recognition of sexually transmitted diseases, cancer detection, prenatal care and delivery, and the evaluation of gynecological problems.

*Prerequisite: all didactic phase courses; clinical, approx. 225 hrs.; credit, 5 s.h.*

#### **PASC 606, 608**

##### **Elective Clerkship**

This clerkship is designed to provide the student with an elective opportunity in a variety of medical specialties of interest to the student or to extend experience in any of the required rotations. The student will be able to recognize conditions in these specialties so that he or she can refer patients appropriately and/or work within the medical discipline.

*Prerequisite: all didactic phase courses; clinical, approx. 225 hrs.; credit, 5 s.h.*

## **Public Health (PBH)**

#### **PBH 206**

##### **Public Health Seminar**

This course provides exposure to the BSPH degree and discipline of public health from a career planning perspective. Various paths will be explored, including global health, civil service, law, and industry. Strategies for graduate admissions preparation, including GRE, LSAT, GMAT, and MCAT exams will be introduced.

Content includes pre-professional portfolio development. Speakers from public health-related fields will share their experiences.

*Class, 1 hr.; credit, 1 s.h.; fall*

#### **PBH 250**

##### **Introduction to Public Health**

This course introduces and provides exposure to the five core areas of public health, including biostatistics, environmental health sciences, epidemiology,

healthcare organization and policy, and social and behavioral sciences. Students will gain knowledge of key terminology, common analytic measures, and the three core functions of public health: assessment, assurance, and policy development.

*Class, 3 hrs.; credit, 3 s.h.; fall.*

#### **PBH 330**

##### **Epidemiology**

This course is designed to provide a foundation of epidemiologic terminology, concepts, and measures. Students will identify key sources of data, calculate basic epidemiology measures, and evaluate the strengths and limitations of epidemiologic reports. Additionally, students will gain exposure to the concepts of epidemiologic study design, association, and causality, as well as the epidemiologic approach to disease intervention.

*Prerequisites: MAT 261 and either PBH250 or BIO346; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **PBH 335**

##### **Human Sexuality**

This course provides exposure to the study of human sexuality, and encourages critical evaluation of societally constructed views of attractiveness, sex appeal, security, sexually normative behavior, and the psychological impact of love on human relationships. Lecture topics include anatomy, gender roles, communication in intimate relationships, contraception, abortion, pregnancy and childbirth, STIs, the CDC's HP2020, and use of sexuality in product advertisement.

*Prerequisite: third-year class standing or above; class, 3 hrs.; credit, 3 s.h.; fall.*

#### **PBH 340**

##### **The Environment and Public Health**

This course explores the key areas of environmental public health and covers topics in the development and prevention of environmental health problems. Using the perspectives of population and community, students will gain an understanding of individual and community interactions with the environment, the impact on health of environmental agents, and specific applications of environmental public health concepts.

*Prerequisite: BIO 255, PBH 250; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **PBH 350**

##### **Global Health**

This interdisciplinary course examines social determinants of health in global context. Students examine public health infrastructure, global health delivery and health systems changes, equity, social justice, and opportunities for prevention and health promotion initiatives within and across borders. Such subjects as emerging and re-emerging infectious

diseases, challenges of chronic illness, maternal health, water access, sanitation, and emergency preparedness are studied.

*Prerequisites: SSC 295 or PBH 250; Class, 3 hrs.; credit, 3 s.h.; fall.*

### **PBH 360**

#### **Health Data Collection and Management**

This course introduces the collection, maintenance, compilation, cleaning, analysis and presentation of human healthcare data (including surveillance data from programs overseen by the Centers for Disease Control and Prevention). Students are introduced to data collection tools, data entry using EXCEL, variable management, data verification and descriptive statistics using a widely used statistical software package (STATA).

*Prerequisite: MAT 261 and either PBH250 or BIO346; class, 3 hrs.; credit, 3 s.h.; spring.*

### **PBH 370**

#### **Epidemiology of Infectious and Chronic Diseases**

This course will first focus on the epidemiologic methods used to assess the most significant infectious diseases the world has ever faced, including cholera, tuberculosis, AIDS and others. Secondly, the course will address the most important groups of chronic diseases, including heart disease, cancer, and diabetes, among others. Public health interventions, response and surveillance will be evaluated for each. *Prerequisite: PBH250 or BIO346; class, 3 hrs.; credit, 3 s.h.; spring.*

### **PBH 450A**

#### **Peer Health Education**

Students will learn evidence-based strategies for empowering and engaging peers in healthy decision-making. Students will develop peer support, leadership, and health navigation skills, and receive training on a wide variety of health promotion and prevention topics. After completing this course, students will be eligible to take the Certified Peer Educator (CPE) exam and earn their CPE credential from BACCHUS Network.

*Prerequisites: Second year class standing; Corequisite: LIB 220; class, 3 hrs.; credit, 3 s.h.; spring.*

### **PBH 450D**

#### **Public Health Perspectives on Trauma**

Students explore various types of trauma and traumatogenic exposures including violence and poverty. Students will learn about the impact of trauma and toxic stress on development and among individuals, families, communities, and societies from diverse interdisciplinary and public health perspectives. Students will develop knowledge and understanding of trauma as a determinant of health and pathway to increased risk of disease. *Prerequisites: Second year of class standing; class, 3*

*hrs.; credit, 3 s.h.; varies.*

### **PBH 420**

#### **Community Health**

This course introduces and applies public health perspectives and tools to community health issues. Students engage in problem-based learning using case studies; assess community health needs; identify public health resources; and develop health prevention, education, and promotion strategies. Students apply community health principles and acquire in-depth knowledge of specific health topic areas through group and individual projects.

*Prerequisite: PBH 250 Introduction to Public Health and PBH 330 Epidemiology; class, 3 hrs.; credit, 3 s.h.; fall.*

### **PBH 435**

#### **Public Policy and Public Health**

Students will evaluate U.S. public health infrastructure, policymaking processes, and decision making. Within cultural, environmental, political, and economic contexts, they will investigate historical and contemporary public health problems, initiatives, controversies, and intervention strategies. Students will perform analysis of both U.S. domestic and global public health performance and the consequences for human health and well-being.

*Prerequisite: fourth-year Public Health major; class, 3 hrs.; credit, 3 s.h.; spring.*

### **PBH 460**

#### **Field Placement**

This course provides exposure to real-world public health. Students will be assigned to outside public health-related agencies and, under the direction of the University faculty advisor, will design a mutually beneficial project that can be undertaken with the selected agency. At the conclusion of the semester, students will present a poster detailing their assigned agency and the specific project undertaken.

*Prerequisite: fourth-year Public Health major, PBH 250 and PBH 330; class, intermittent; on-site, 3 hrs.; credit, 3 s.h.; spring.*

### **PBH 480**

#### **Public Health Capstone Seminar**

The public health capstone seminar is a culminating experience designed to synthesize the knowledge, skills, and abilities students have acquired during the entire course of the Public Health program. The seminar will include instructions for writing the capstone paper, strategies for professional presentations, creation of an academic curriculum vitae, preparation of IRB documents, and discussions about professional practices and ethics.

*Prerequisite: fourth-year Public Health major; class, 3 hrs.; credit, 3 s.h.; spring.*

**PBH 532****Public Health Directed Study**

This course provides faculty-directed, individualized study to a student wishing to explore a particular aspect of public health in greater detail. The student will work with a public health faculty member to design an appropriate course of study for the semester.

*Prerequisites: permission of instructor and approval by dean; credit, 1–3 s.h.; fall, spring.*

*NOTE: PBH courses at the 700 level and above are all online.*

**PBH 701****Survey of Public Health**

Addresses new and emerging issues in the field of public health. Provides an overview and historical context for the discipline. Students will learn about the 10 essential services of public health. Examples will be provided of how public health may be structured and delivered at the local, county, state, and federal levels.

*Credit, 3 s.h.*

**PBH 705****Introduction to Environmental Health Sciences**

Provides an overview of the major issues in environmental health. Students will learn basic techniques to assess, control, and prevent environmental health hazards.

*Credit, 3 s.h.*

**PBH 710****Introduction to Health Policy and Management**

Introduces healthcare policy and services, to include organization, delivery, payment for, and finance of healthcare. Students will discuss historical and current government interventions to ensure access, cost containment, and quality of healthcare.

*Credit, 3 s.h.*

**PBH 715****Introduction to Social and Behavioral Sciences**

This course is based upon the premise that understanding the basic principles, theories, research, and techniques of the social and behavioral sciences creates a more effective public health practice.

Students will discuss social and behavioral science that can and should be used to assess and resolve public health problems, and will apply this knowledge to current public health issues.

*Credit, 3 s.h.*

**PBH 750****Community Health Science and Practice**

Examines the theoretical and practical foundations of community-oriented public health. Introduces systems-thinking concepts as an orientation to community health practice. Explores community engagement and

ethical considerations. Reviews the fundamentals of community health assessment and improvement approaches, including health promotion program selection and evaluation.

*Credit, 3 s.h.*

**PBH 755****Health Promotion and Education**

This course outlines the history, evolution, and status of the practice of health education among groups of people who define themselves as a community. There is a focus on health behaviors, environmental influences, health policy, and economic and healthcare system issues in health promotion and disease prevention.

*Credit, 3 s.h.*

**PBH 760****Program Design and Evaluation**

This course allows students to develop skills and knowledge in the design and evaluation of health promotion programs. In particular, students will learn to clearly identify a public health problem, develop goals and objectives to address the problem, develop key activities/strategies to reach the desired improvements in health status, and establish a method to measure the success of the program.

*Prerequisites: PBH 701, PBH 750; credit, 3 s.h.*

**PBH 765****Community Health Assessments**

Reviews the theory and practice of community assessment in public health. Community assessment focuses on measuring a community's health status and its determinants. It also focuses on assessing a community's capacity to improve health. Qualitative and quantitative methods will be introduced.

*Prerequisites: PBH 701, PBH 750; credit, 3 s.h.*

**PBH 801****Community Organizing**

Introduces concepts of community engagement, organization, and development for empowering communities to address the social determinants of health. Examines the role of public health practitioners, grassroots activists, and other community members in stimulating social, political, and economic approaches to promote community health. Provides skills for the creation of partnerships through coalition building and reviews strategies for public policy advocacy.

*Credit, 3 s.h.*

**PBH 805****Maternal and Child Health**

Introduces the principles and practices of public health and maternal and child health. Students will examine the social determinants of health and development of women, infants, children, and adolescents.

*Credit, 3 s.h.*

**PBH 810**  
**Principles of Public Health**  
**Emergency Preparedness**

Introduces the concepts of public health emergency preparedness. Students will discuss complex public health responses at the local, state, and federal level. An emphasis will be placed on how public health fits into the National Response Framework and the National Preparedness System to prevent, respond to, recover from, and mitigate against natural disasters, acts of terrorism, and other man-made disasters.  
*Credit, 3 s.h.*

**PBH 815**  
**Mass Communication and Health**

Students will apply health marketing and communication principles to design a health communication campaign on a topic of their choosing. Students will use surveys or other techniques to develop health messages that inspire audiences to change behavior or take a desired action. An emphasis will be placed on critical thinking and “hands-on” learning of Web 2.0 technologies.  
*Credit, 3 s.h.*

**PBH 820**  
**Genetics and Public Health**

This course will discuss the relationship between advances in genetics and genomics in the post–Human Genome Project era and public health. Basic principles of human inheritance and advances in genetic and genomic technology will be explored. The ethical, legal, and societal implications of these technological advances, and their influence on health promotion and disease prevention, will be examined.  
*Credit, 3 s.h.*

**PBH 825**  
**Public Health Law**

Students will understand how and when the law can be used to implement public health policies and programs. Students will construct written arguments while analyzing how American law balances the rights of individuals with the interests of government and, where appropriate, analyze the ethics of policy choices. Prior experience or education in law is not required.  
*Credit, 3 s.h.*

**PBH830**  
**Health Informatics**

Students will examine technology’s application in healthcare, with a focus on public health, explore the role of health professionals and better understand how to think like and interact with an informaticist. Students will learn how to develop and analyze business requirements to support design, development and implementation of systems that meet public health

program needs and provide data to inform decision making. Prior experience or education in health informatics is not required.  
*Credit, 3 s.h.; spring*

**PBH 890**  
**Public Health Practice Experience**

Provides field experience for all MPH candidates. Students will select a public health agency, healthcare facility, nonprofit organization, or other health-related site. Students must submit a proposal to their faculty advisor before registering. Students also will be evaluated by an on-site supervisor. A minimum of 120 clock hours is required.  
*Prerequisites: PBH 701, PBH 750; experiential, 8 hrs.; credit, 2 s.h.*

**PBH 895**  
**Preparatory Seminar, Culminating Experience**

Provides an opportunity for collaboration with students and faculty. The intent is to introduce students to the culminating experience requirement. The duration of the seminar is five days, and students must have completed 12 semester hours in the program prior to registering.  
*Prerequisites: completed at least 12 s.h. of coursework toward the MPH; credit, 1 s.h.*

**PBH 898**  
**Culminating Experience**

The culminating experience requires students to synthesize and integrate knowledge acquired in coursework and apply theories and principles of public health. The product of the culminating experience demonstrates the student’s application and integration of knowledge and skills in the investigation, analysis, synthesis, and evaluation of real-world public health practice issues.  
*Prerequisites: completed at least 30 s.h. of coursework toward the MPH; credit, 3 s.h.*

**Pharmaceutical Economics and Policy (PEP)**

**PEP 801**  
**Quantitative Methods in Pharmaceutical Economics and Policy**

Students will cover the basic statistical techniques in analyzing data pertinent to epidemiology, biomedical, and other public-health related research. Topics include descriptive statistics, sampling, inferential statistics including hypothesis testing, parametric statistics, non-parametric statistics, and elements of study design.  
*Class, 3 hrs.; credit, 3 s.h.; fall.*

**PEP 802**  
**Introduction to Pharmaceutical Economics and Policy**

This course provides students with an overview of the

economic and policy issues of the pharmaceutical and medical device markets. The course also describes the roles of the different agents participating in the pharmaceutical and medical device markets.

*Class, 3 hrs.; credit, 3 s.h.; fall.*

**PEP 804**  
**Regression Analysis in Pharmaceutical Economics and Policy**

This course provides students with an overview of regression methods. The course also provides a working knowledge of the application of the array of regression models to research in the areas of pharmacoeconomics, comparative effectiveness, health economics, pharmacoepidemiology, and outcomes research.

*Prerequisites: PEP 801, DRA 809; class, 3 hrs.; credit, 3 s.h.; spring.*

**PEP 806**  
**Pharmacoepidemiology Applications**

This course introduces epidemiology as the scientific method of public health and explores how it is applied to measuring drug use and identifying drug-use problems. Many lifesaving discoveries have been made through the study of drug epidemiology, now called pharmacoepidemiology, including major adverse drug reactions, new beneficial effects of drugs, the causes and spread of drug epidemics, and predicting the drug supply needs for an entire country.

*Prerequisites: PEP 801, 809; class, 3 hrs.; credit, 3 s.h.; varies.*

**PEP 810**  
**Global Pharmaceutical Policy**

This course provides students with an overview of the effect of globalization on the research and development, production, distribution, and utilization of drugs and medical devices. The course also will provide an analysis of globalization effects on access to healthcare, pharmaceuticals, and medical devices.

*Prerequisites: PEP 802; class, 3 hrs.; credit, 3 s.h.; varies.*

**PEP 811**  
**Pharmaceutical Marketing Applications**

This is an introduction to the marketing of pharmaceuticals and medical devices. The course discusses the concepts, issues, and practices associated with the marketing of pharmaceuticals and medical devices in the United States and in the international arena. Case analysis is used to demonstrate the relationship between pharmacoeconomics and outcome research and the marketing of healthcare products.

*Prerequisites: PEP 802; class, 3 hrs.; credit, 3 s.h.; varies.*

**PEP 812**  
**Healthcare Management Applications**

This course covers the key concepts and functions of management, including strategy, operations, finance, and information systems. It introduces students to leadership issues in performance improvement, team management, and organizational change. This course also presents the application of management theory and practice to the management of healthcare organizations.

*Prerequisites: PEP 802; class, 3 hrs.; credit, 3 s.h.; varies.*

**PEP 813**  
**Pharmacoeconomic Applications**

This course provides students with a review of the advanced quantitative analysis methodologies applied to pharmacoeconomics and outcomes research. The course also explores current debates related to the evaluation of outcomes and cost, and the economic assessment of pharmaceuticals and medical devices.

*Prerequisite: PEP 801, PEP 814 & PEP 856B; class, 3 hrs.; credit, 3 s.h.; varies.*

**PEP 814**  
**Healthcare Decision Analysis**

This is an advanced course in the methodologies and applications of decision analysis in healthcare. The course focuses on the use of decision analysis in pharmaceutical economics and policy research. It provides the student with the knowledge to conduct decision analysis studies in the economic evaluation of healthcare technologies and services.

*Prerequisites: PEP 801, PEP856B; class, 3 hrs.; credit, 3 s.h.; varies.*

**PEP 820**  
**Market Access, Pricing and Reimbursement of Drugs and Medical Devices**

The purpose of this course is to provide students with an overview of the economic, regulatory and policy issues of market access, pricing and reimbursement of pharmaceuticals and medical devices in the US and the global market.

*Prerequisites: PEP 802; class, 3 hrs.; credit, 3 s.h.*

**PEP 830**  
**Practicum Pharmaceutical Business and Administrative Sciences**

Students will obtain direct field experience from an internship at an off-campus site. This investigation/field study will be conducted in the areas of the student's major or minor field of study and is open to all departmental graduate students who have completed at least one semester of study.

*Prerequisite: completion of first semester of MS or PhD program; class, 1 hr.; credit, 1-3 s.h.; fall, spring.*

**PEP 840****Data Analysis and Presentation Capabilities in Pharmaceutical Economics and Policy**

Students will learn the scientific writing process for different peer-reviewed article types; will present an article related to their research interests; and will conduct a research project pertinent to their interests. The capstone project entails creating an abstract, a paper, and a poster which will be presented to MCPHS Faculty and peers. The top 3 posters will get a non-monetary award.

*Prerequisites: Completion of 2 semesters of the PEP program or permission of the instructor. Class, 3 hrs.; credit, 3 s.h., varies.*

**PEP 850****Advanced Methods in Epidemiology and Statistics**

Students will learn the use of regression methods for analyses of epidemiologic data, primarily case-control and cohort studies. The methods will include linear, logistic, Poisson, and Cox regression models in addition to propensity score analysis. Students will be provided practical experience applying these methods, using SAS software. Issues to be dealt with include dose-response, confounding, influence, and interaction.

*Prerequisites PEP 804, PEP 856A; class, 3 hrs; credit, 3 s.h.; spring.*

**PEP 856.A****Statistical Programming Using SAS**

This class is designed to give students the necessary tools to manipulate and/or restructure a certain dataset before it can be analyzed using one of the statistical procedures. This course is essential for database management. Students can use SAS to analyze data for their poster presentations, thesis projects, and peer-reviewed journal articles.

*Prerequisites PEP 801 or DRA 807; 3 hrs.; credit, 3 s.h.; spring.*

**PEP 856.B****Introduction to Health Economics and Outcomes Research**

Students will be introduced to Economic Evaluation (its relevance, the importance of timing of costs and effects, ways of eliciting patient treatment preferences and measuring Health-Related Quality of Life, varying approaches to modeling outcomes, etc.). Students will learn the reasons for and methods of using such techniques in various health care environments, including, but not limited to, pharmaceuticals.

*Class, 3 hrs; credit, 3 s.h. varies*

**PEP 856.C****Systematic Review and Meta Analysis**

Students learn the theory behind research synthesis, the methods and their applications. Students learn the principles and methods for conducting a systematic

review and a meta-analysis using case studies of public health issues. Course consists of lectures, computer exercises using STATA and CMA, and a meta-analysis project resulting in a draft paper. Students are encouraged to publish their paper

*Prerequisites for graduate students: DRA 809 (PEP 801 or DRA 807); Prerequisites for PharmD students: PSB 424A. Class, 3 hrs.; credit, 3 s.h.; fall*

**PEP 856.D****Health Services Outcomes Research**

Students will be introduced to Health Service and Outcome Research (basic and advanced design of studies), compare health outcome measurements used in clinical trials and real-world situations. Students will examine the inter-relationship of epidemiologic study designs and their associated statistical analyses.

Students will be able to critique health service studies and identify research areas in relation to drug life cycle and patient-reported outcomes (PROs)

*Prerequisites: DRA 809, PEP 801; Class, 3 hrs.; credit, 3 s.h.; varies*

**PEP 870****Graduate Seminar in Pharmaceutical Economics and Policy**

This course is a weekly seminar involving graduate students, department faculty, and invited speakers.

*Prerequisite: completion of first year of MS or PhD program; class, 1 hr.; credit, 1 s.h.; fall, spring.*

**PEP 880****MS Thesis Research in Pharmaceutical Economics and Policy**

The MS thesis research involves research under the supervision of a faculty advisor(s). It requires approval of the proposal by the Advisory Committee.

*Prerequisite: completion of the first year of the MS program; credit, 1–3 s.h.; fall, spring.*

**PEP 890****PhD Dissertation Research in Pharmaceutical Economics and Policy**

The PhD dissertation research involves 2–5 semester hours of research under the supervision of a faculty advisor(s). It requires approval of the proposal by the Advisory Committee.

*Prerequisite: completion of the first two years of the PhD program; credit, 1–9 s.h.; fall, spring.*

**Physics and Radiopharmacy (PHY)****PHY 181****General Physics**

This course is a noncalculus presentation of classical physics for students in allied health programs. Topics include Newton's laws of motion, work and energy,

simple harmonic motion, and waves. The course also covers electricity, magnetism, and atomic physics.  
*Prerequisite: MAT 141 or equivalent; class, 4 hrs.; credit, 4 s.h.; spring.*

**PHY 270**  
**Foundations of Physics I**

In this introductory calculus-based course, students make an in-depth study of concepts, principles, and applications of physics drawn from classical mechanics. PHY 272L provides the associated laboratory for degree programs requiring it.  
*Prerequisite: MAT 152 or equivalent; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**PHY 272L**  
**Foundations of Physics I Laboratory**

This introductory calculus-based laboratory is taken concurrently with PHY 270 by students whose degree programs require physics with a laboratory component. Laboratory experiments include explorations of collisions in one dimension, constant acceleration, forces and torques in static equilibrium, vibrations and waves, and laminar fluid flow.  
*Co-requisite: PHY 270; lab, 3 hrs.; credit, 1 s.h.; fall, spring.*

**PHY 274/274L**  
**Foundations of Physics II**

In this introductory calculus-based course, students make an in-depth study of concepts, principles, and applications of physics drawn from electricity and magnetism (including electric circuits), ray and wave optics, and areas of classical mechanics more advanced than those covered in PHY 270.  
*Prerequisites: PHY 270 and PHY 272L or equivalent; class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; spring.*

**PHY 275**  
**Physics for Medical Imaging**

Students undertake an in-depth study of the physics required for careers in medical imaging. Topics studied include the essentials of kinematics and Newton's laws followed by a detailed study of electromagnetism (focused on sources of magnetic fields, magnetic forces and torques, electromagnetic induction, and magnetic properties of matter).  
*Prerequisite: MAT 152 or equivalent; class and lab, 4 hrs.; credit, 4 s.h.; fall.*

**PHY 280/PHY 280L**  
**Physics I**

In this in-depth calculus-based course/laboratory, students study the concepts, principles, and applications of rigid body mechanics, mechanical vibrations and waves, sound, and mechanical properties of fluids and solids. Emphasis is placed on critical analysis, problem solving, pathways to solutions, and assessing mathematical results.

Recommended as preparation for professional school admission tests (MCAT, OAT, and DAT).  
*Prerequisite: MAT 152 or equivalent; class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; fall.*

**PHY 284/284L**  
**Physics II**

In this in-depth calculus-based course/laboratory, students study the concepts, principles, and applications of electricity and magnetism, DC and AC circuits, ray and wave optics, and atomic and nuclear physics. Emphasis is placed on critical analysis, problem solving, pathways to solutions, and assessing mathematical results. Recommended as preparation for professional school admission tests (MCAT, OAT, and DAT).  
*Prerequisite: PHY 280 or equivalent; class, 3 hrs.; lab, 3 hrs.; credit, 4 s.h.; spring.*

**PHY 371**  
**Applied Radiopharmacy**

This clerkship affords students exposure to and participation in the practice of radiopharmacy. It includes the purchasing, compounding, storage, dispensing, and quality control of radioactive pharmaceuticals. The student also observes clinical diagnostic procedures in nuclear medicine and attends conferences.  
*Prerequisite: PHY 385 or equivalent; admission by consent of instructor; clinical clerkship, 4 hrs.; credit, 2 s.h.; fall, spring.*

## **Pharmacy Practice–Boston (PPB)**

**PPB 325/325L**

Introduction to Practice Management I  
Students are introduced to the concepts of pharmaceutical care, professionalism, and the role of the pharmacist in a variety of practice settings. Students also will gain knowledge in preparation for their Introductory Pharmacy Practice Experience (IPPE) rotations as well as their integration into the Advanced Practice Management (APM) laboratory. Students will attend weekly lectures and one lab.  
*Prerequisite: third-year standing in PharmD program; class, 2 hrs.; lab, 2hrs; credit, 2 s.h.; fall.*

**PPB 335/335L**

Introduction to Practice Management II  
Students are introduced to the concepts of pharmaceutical care, professionalism, and the role of the pharmacist in a variety of practice settings. Students also will gain knowledge in preparation for their Introductory Pharmacy Practice Experience (IPPE) rotations as well as their integration into the Advanced Practice Management (APM) laboratory. Students will attend weekly lectures.  
*Prerequisite: PPB 325; class, 1 hr.; lab, 2 hrs.; credit, 2 s.h.; spring.*

**PPB 414****Virology and Anti-infectives**

Students will learn about the commonly used antibiotic, antiviral, and antifungal agents through an integration of the medicinal chemistry, pharmacology, and therapeutics of these agents. The therapeutic management, recognition, and prevention of important infectious diseases, antibiotic allergies and resistance, as well as immunization, will be discussed using a variety of problem-based and active-learning techniques.

*Prerequisites: fourth-year standing, BIO 255, PSB 441, 451; class, 4 hrs.; credit, 4 s.h.; spring.*

**PPB 419****Introductory Pharmacy Practice Experience I (IPPE I)**

The IPPE I course provides fourth-year students with an introductory community rotation. This course will provide students with pharmacy practice experience with active learning in a community practice setting with an opportunity to begin the development of basic practice skills and to interface with patients and healthcare providers. Rotations are assigned through the Office of Experiential Education and are available in the summer preceding the fourth year with limited availability during the fall or spring semester of the fourth year. This rotation will consist of a 160-hour rotation to be completed in the time assigned.

*Prerequisite: all third-year required courses and good academic standing; experiential hrs., 160 total; credit, 2 s.h.; fall.*

**PPB 445****Therapeutics I**

Students become familiar with the rational application of drugs to ensure optimal therapeutic outcomes in common disease states through discussion and selection of appropriate drug regimens, correct application of laboratory and other monitoring parameters to determine efficacy and adverse reactions, identification of drug interactions, dosing and individualization of therapy, and determination of therapeutic endpoints and goals. Sequence of topics is closely adapted to those concurrently taught in PSB 441 and 451. Integrated patient cases bridge science and practice.

*Prerequisites: PSB 328, 329; Co-requisites: PSB 441, 450, 451, and PPB 485; class, 3 hrs.; credit, 3 s.h.; fall.*

**PPB 446****Therapeutics II**

This course is a continuation of a sequence of courses that addresses the principles of pharmacotherapeutics and the functional consequences of major diseases (see PPB 445 description). The sequence of topics is closely adapted to those concurrently taught in PSB 442 and 454. Integrated patient cases bridge science

and practice.

*Prerequisites: PPB 445, 485; PSB 441, 450, 451; Co-requisites: PPB 414 and PSB 430, 442, 454; class, 3 hrs.; credit, 3 s.h.; spring.*

**PPB 485****Drug Literature Evaluation**

Students retrieve, evaluate, and apply medical and pharmacy literature. Assignments develop the student's skills in applying literature to clinical problem solving.

*Prerequisites: fourth-year standing, PSB 424; class, 3 hrs.; credit, 3 s.h.; fall.*

**PPB 502****Over-the-Counter Drugs / Self-Care**

Students learn about nonprescription medications, herbs, vitamins, homeopathic products, and medical and parapharmaceutical devices used by patients for self-treatment and disease-state monitoring in such common illnesses as cough and cold, dermatological and gastrointestinal disorders, pregnancy, and analgesia.

*Co-requisites: PSB 441, 451; class, 3 hrs.; credit, 3 s.h.; fall.*

**PPB 519****Introductory Pharmacy Practice Experience II (IPPE II)**

The IPPE II course provides fifth-year students with an introductory institutional rotation. This course will provide students with pharmacy practice experience and active learning in hospital practice or other institutional practice settings, including an opportunity to begin the development of basic practice skills and interface with patients and healthcare providers. Rotations are assigned through the Office of Experiential Education and are available in the summer preceding the fifth year with limited availability during the fall or spring semester of the fifth year. This rotation will consist of a 160-hour rotation to be completed in the time assigned.

*Prerequisite: all fourth-year required courses and good academic standing; experiential hrs., 160 total; credit, 1 s.h.; fall.*

**PPB 525A****Cardiovascular Pharmacotherapy**

The prevention and management of cardiovascular disease is among the first therapeutic areas that embrace evidence based on medical practice. The students will utilize a case-based approach to discuss the pharmacotherapies and public health efforts in the management and prevention of different cardiovascular diseases. It is intended for students who are interested in further developing their knowledge base in cardiovascular pharmacotherapy.

*Prerequisites: PPB 555, class 3 hrs.; credit 3 s.h.; spring.*



**PPB 526****Common Threads: Pain and Addiction**

Students will be introduced to principles related to pain management and addiction medicine with emphasis on how these areas of healthcare may overlap in clinical practice. Students will learn practical approaches to the management of pain and addiction as well as behavioral interventions including motivational interviewing techniques. Legal and regulatory issues related to pain and addiction will also be emphasized.

*Prerequisites: PPB 555; Co-requisite: PPB 556; class, 3 hrs.; credit, 3 s.h.; spring.*

**PPB 527****Interpretation of Lab Data**

The student will delineate and identify commonly used laboratory tests and interpret their results in diagnosing and monitoring diseases. By relating tests to the patient's overall condition, the student will employ the principles of monitoring and determining drug effectiveness and toxicity in assessing patient outcomes.

*Prerequisites: PPB 414; PSB 454, PSB 442; class, 3 hrs.; credit, 3 s.h.; spring.*

**PPB 528****Medication Safety**

This course is designed to expose pharmacy students to pertinent topics in the area of patient and medication safety. The course provides a specific focus on topics relating to issues surrounding the provision of safe, high-quality patient care in inpatient and outpatient settings. A culture of medication safety also will be examined as a way to improve and increase the quality of care provided by interdisciplinary teams of healthcare professionals. Students will apply medication safety concepts during small-group discussions and group presentations. Supplemental online learning activities and assignments also will be included in the required coursework.

*Prerequisites: PPB 414; PSB 454, PSB 442; class, 3 hrs.; credit, 3 s.h.; fall.*

**PPB 529****Ambulatory Care Pharmacy Practice**

This course will introduce pharmacy students to the various roles and disease states pharmacists encounter in ambulatory care. Students will develop patient-specific pharmaceutical care plans and be required to present patient cases using primary literature and current guidelines to support their clinical pharmacotherapeutic plans. In addition, they will create a patient education tool applicable to their patient case.

*Prerequisites: PPB 445, 446, and 555, class, 3 hrs.; credit, 3 s.h.; spring.*

**PPB 530****Undergraduate Research Project**

Research participation at the undergraduate level is offered, with emphasis on developing the methods and techniques to conduct research.

*Prerequisites: permission of instructor and approval by department chair; lab, 3–9 hrs.; credit, 1–3 s.h.*

**PPB 532****Directed Study**

This course provides faculty-directed study to an individual student wishing to explore a particular aspect of a pharmacy practice–related topic in greater detail. Emphasis is placed on analysis of the pharmacy and medical literature.

*Prerequisites: permission of instructor and approval by department chair; lab, 3–9 hrs.; credit, 1–3 s.h.*

**PPB 533****Pharmacotherapeutics of Women's Health**

This interdisciplinary women's health professional elective is designed to expose students to the health and social issues faced by women throughout their lifespan. Through lecture, in-class case discussions, outside class reading assignments, and poster presentation, students will evaluate and apply evidence-based medicine to discuss and develop comprehensive treatment plans for female patients throughout the lifespan.

*Prerequisites: PPB 555; Co-requisite: PPB 556; class, 3 hrs.; credit, 3 s.h.*

**PPB 534****Clinical Care for the Aging Patient**

Students will be exposed to the health and social issues faced by the geriatric population in this blended-format professional elective. Through classroom and online activities, students will evaluate and apply evidence-based medicine to discuss and develop comprehensive treatment plans for patients. This 3-credit professional elective includes three hours of class time divided between online and campus-based lectures/activities.

*Prerequisites: PPB 446, 485; Co-requisite: PPB 556; class, 3 hrs.; credit, 3 s.h.; spring.*

**PPB 535****Herbal Supplements**

This course reviews the trends, epidemiology, manufacturing practices, regulations, and pharmaceuticals, as well as resources, in the contemporary use of herbal supplements. An evidence-based approach is used to discuss clinical and therapeutic uses of herbal supplements and their roles in the treatment of diverse conditions. Adverse reactions, contraindications, and precautions of specific herbal supplements are addressed.

*Prerequisites: PSB 442, permission of instructor; Co-requisite: PSB 454; class, 3 hrs.; credit, 3 s.h.; spring*

every other year.

### **PPB 536**

#### **Oncology Elective**

Students will discuss oncology topics, including the different cancers and medications used in their treatment as well as the role of the pharmacist in the care of patients with cancer. They will debate ethical and financial considerations as well as international concerns in the field of oncology. Students will apply literature assessment skills to formulate rational, evidence-based treatment decisions.

*Co-requisite: PPB 556; class, 3 hrs.; credit, 3 s.h.; spring.*

### **PPB 537**

#### **Veterinary Pharmacy**

This course introduces veterinary pharmaceuticals and their use in veterinary medicine. The application of drug therapy to large, small, and exotic animals to obtain optimum therapeutic outcomes and the opportunity to provide veterinary pharmacy services in a community or hospital setting are emphasized. Additional emphasis is placed on the selection of appropriate drugs and drug regimens for selected species for common disease states. Both over-the-counter and prescription medications are studied.

*Prerequisites: PPB 414; PSB 430 454; class, 3 hrs.; credit, 3 s.h.; spring.*

### **PPB 538**

#### **Global Infectious Diseases**

An interdisciplinary course designed to expose students to a broad range of topics in global infectious diseases, this course provides a specific focus on topics in travel medicine in the context of global infectious disease. In addition to pharmacotherapeutics, the public health, cultural, sociopolitical, psychosocial, and pharmaco-economic aspects of global infectious diseases also are addressed. Students apply interdisciplinary concepts through participation in service learning as well as small group discussions and presentations. The service learning component is designed to provide students with a structured learning experience that combines community service with explicit learning objectives, preparation, and reflection.

*Prerequisites: PPB 414, PSB 454; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

### **PPB 539**

#### **Advanced Topics in Neurology and Psychiatry**

Students will learn more in-depth knowledge regarding the major neurologic and psychiatric diseases and the medications utilized in their treatment. Information on medication management of these illnesses will be discussed and relevant journal articles evaluated within each class. Students will apply evidence-based medicine principles to the conditions reviewed and the

methods by which they are treated.

*Prerequisites: PPB 446 and 485; Co-requisite: PPB 556; class, 3 hrs.; credit, 3 s.h.; spring.*

### **PPB 540E**

#### **Complementary and Alternative Medicine**

Provides an overview of various alternative healing practices such as homeopathy and Chinese, chiropractic, Ayurvedic, and Shamanic medicine. Concepts of the health-belief system, administration and monitoring of therapy, and socioeconomic issues are explored for each discipline through lectures and experiential presentations from practitioners.

*Prerequisite: BIO 151; class, 3 hrs.; credit, 3 s.h.; every other year.*

### **PPB 540I**

#### **Creative Chaos: Critical Thinking**

The current healthcare model emphasizes collaborative and inter-professional engagement among the clinical team. To integrate into this model, students must be trained in the process of critical thinking and creative problem-solving. Through classroom team exercises and online activities, students will develop skills to evaluate and apply principles of evidence-based medicine to assess patients and develop a treatment plan.

*(Students must have access to a personal laptop or desktop computer for the online activities. This course will be part of a research study which the student agrees to unless he/she "opts-out") Prerequisites PPB 446; 3 s.h. fall*

### **PPB 545/545L**

#### **Advanced Practice Management I**

This first part of the overall Advanced Practice Management course emphasizes the pharmacist as the primary provider of pharmaceutical care. Didactic and laboratory experiences focus on advanced aspects of pharmacy practice, including patient counseling, physical exams, managerial applications, compliance with legal requirements, exploring complex patient care issues, and self-directed learning.

*Prerequisites: PPB 335, PPB 414, PPB 419; PSB 442, PSB 454; prerequisites/co-requisites: PPB 502, PPB 551, PPB 555; PSB 432; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; fall.*

### **PPB 546/546L**

#### **Advanced Practice Management II**

The second part of the advanced practice management course builds on the knowledge and skills acquired in part one of this course. Emphasis is on the pharmacist as the primary provider of pharmaceutical care. Didactic and laboratory experiences focus on the advanced aspects of pharmacy practice, including patient counseling, physical exams, managerial applications, compliance with legal requirements, exploring complex patient care

issues, and self-directed learning.

*Prerequisite: PPB 545; prerequisites/co-requisites: PPB 552, 556; PSB 411; class, 3 hrs., lab, 3 hrs.; credit, 4 s.h.; spring.*

#### **PPB 548**

##### **Critical Care Pharmacotherapy**

The course will expose students to pharmacotherapeutic challenges in critically ill patients and expand their knowledge of the pharmacist's role in caring for patients with these issues. Short online presentations and in class patient cases will be used to discuss drugs and landmark clinical trials related to commonly encountered ICU disease states. An ICU field trip will also be scheduled.

*Prerequisites: PPB 551; 3s.h. spring*

#### **PPB 549**

##### **Pharmacy Practice Managed Care**

This course provides a general overview of managed-care principles with emphasis on selected topics to illustrate the role of pharmacy practice, including real-life examples and challenges. The student is introduced to managed-care pharmacy, from the review of cost-containment strategies and evidence-based medicine in formulary management to the examination of cutting-edge developments.

*Prerequisite: PPB 446; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **PPB 551, 552**

##### **Advanced Pharmacotherapeutics Seminar I, II**

This series involves case presentations followed by discussion of the presented material using the problem-based learning approach. Cases, journal clubs, and consults provide the opportunity for in-depth exploration of pharmacotherapeutic topics. Elements of clinical practice are incorporated into the small-group discussion to duplicate a real-life clinical environment.

*Prerequisite: All 4<sup>th</sup> year courses. Co-requisite for PPB 551: PPB 555; Co-requisite for PPB 552: PPB 556; seminar, 3 hrs.; credit, 1 s.h.; fall, spring.*

#### **PPB 555**

##### **Advanced Therapeutics I**

This is the third of four courses that are sequenced over four semesters. Students will integrate and apply pharmacological and biopharmaceutical principles on an advanced level. Using evidence-based medicine, the student will focus on individualizing drug therapy and solving complex medication-related problems in the treatment of selected disease states in oncology, nephrology, cardiology, and gastroenterology.

*Prerequisites: PSB 430, 442, 454; PPB 414; Co-requisites: PSB 432, 502, 545, 551; class, 4 hrs.; credit, 4 s.h.; fall.*

#### **PPB 556**

##### **Advanced Therapeutics II**

Continuation of Advanced Therapeutics I. This is the last of four courses that are sequenced over four semesters. Students will integrate and apply pharmacological and biopharmaceutical principles on an advanced level. Using evidence-based medicine, the student will focus on individualizing drug therapy and solving complex medication-related problems in the treatment of selected disease states in pediatrics, pulmonary medicine, geriatrics, neurology, psychiatry, endocrinology, and dermatology.

*Prerequisites: PPB 432, 502, 545, 555, 551; Co-requisites: PPB 546, 552; class, 3 hrs.; credit, 4 s.h.; spring.*

#### **PPB 600**

##### **Principles of Pharmaceutical Care**

Introduces students to the concept of pharmaceutical care and the pharmacist's responsibility for ensuring optimal healthcare outcomes for the patients he or she serves. This course is designed to prepare students for future pharmacotherapeutic courses. Clinical skills focused on include collection, organization, and evaluation of the patient and drug information needed to render optimal pharmaceutical care recommendations; physical assessment skills; oral and written healthcare communications; and clinical problem solving.

*Prerequisite: Postbaccalaureate Doctor of Pharmacy Pathway student; class, 3-day intensive campus-based orientation; online coursework; credit, 3 s.h.; fall.*

#### **PPBC 601–606**

##### **Advanced Pharmacy Experience Programs**

These courses offer students experiences in which they communicate with patients, professionals, and peers; identify clinical problems; and formulate solutions. Clinical clerkship represents a full academic year (1,440 hours) of clinically oriented rotations offered primarily at off-campus sites. All rotations are six weeks in length. Required rotations: internal medicine, institutional pharmacy practice, ambulatory care, and community pharmacy practice. Elective rotations: chosen from such areas as medication therapy management, medication reconciliation, administration, cardiology, critical care medicine, drug information, emergency medicine, gastroenterology, home healthcare, infectious disease, neonatology, nephrology, neurology, oncology/hematology, obstetrics/gynecology, pediatrics, poison information, and psychiatry.

*Prerequisite for all rotations: all required courses; no elective or required course may be taken with rotations; experiential, 40 hrs./wk., 240 hrs. total; credit, 6 s.h. for each rotation.*

**PPB 623, 625, 633****Pharmacotherapeutics I, II, and III—  
Postbaccalaureate Doctor of Pharmacy Pathway**

This sequence of courses addresses the principles of pharmacotherapeutics and functional consequences of major diseases. Discussion focuses on therapeutic problem solving and the evaluation of treatment strategies commonly used in clinical practice. Emphasis includes selection of appropriate treatment regimens and monitoring parameters; assessment of adverse drug reactions, drug interactions, and drug-induced diseases; determination of therapeutic endpoints and goals; and individualization of therapy based on pharmacokinetic and pharmacodynamic principles as well as pharmacoeconomic considerations. This series of courses builds on concepts and knowledge in a stepwise approach. In the advanced course sequences, discussion focuses on more complex therapeutic problem solving and utilizes knowledge gained previously.

*PPB 623 prerequisites: PPB 600, 672, 681, PSB 421; Co-requisite: PPB 623A; class, 1 campus meeting per semester; online coursework; credit, 5 s.h.*

*PPB 625 prerequisites: PPB 623, PPB 623A,; Co-requisite: PPB 625A; class, 1 campus meeting per semester; online coursework; credit, 6 s.h.*

*PPB 633 prerequisite: PPB 623, PPB 623A, PPB 625, PPB 625A,; Co-requisite: PPB 633A; class, 1 campus meeting per semester; online coursework; credit, 6 s.h.*

**PPB 623A, 625A, 633A****Pharmacotherapeutics I, II, and III Practice**

This series of courses engages students in the provision of pharmaceutical care. It involves small-group case discussions and experiential coursework. Students will present and discuss patient care activities from their practice sites that correspond to topics and concepts learned in the pharmacotherapeutic course series. Cases, journal clubs, and pharmacy consults are discussed using audio and/or textual online discussion boards. One oral patient case presentation is made by students each semester on campus. Students are expected to spend a minimum of five hours each week conducting patient care activities at the practice sites. These activities are reviewed by a faculty preceptor.

*PPB 623A Co-requisite: PPB 623; PPB 625A Co-requisite: PPB 625; PPB 633A Co-requisite: PPB 633; class, 1 campus meeting per semester; online coursework; experiential, 5 hrs./wk.; credit, 1 s.h. each course.*

**PPB 668****Advanced Pharmacy Practice Experience**

The Advanced Pharmacy Practice Experience consists of a four-week, full time, clinical rotation under the supervision of an MCPHS University preceptor. Clinical rotation may begin after the successful completion of PPB633 and PPB633A. Clinical rotation must be scheduled and completed within 1 year of completion

of PPB633 and PPB633A.

*Prerequisites: Postbaccalaureate Doctor of Pharmacy Pathway student; PPB 623, 625, 633; PPB 623A, 625A, 633A; experiential, 160 hrs./semester; credit, 3 s.h.; summer, fall and spring.*

**PPB 668A****Pharmacotherapeutics IV Practice**

This course is a continuation of Pharmacotherapeutics I, II, and III Practice and Seminar. This course further engages students in the provision of pharmaceutical care at their practice sites. More complex and extensive patient care activities are expected and evaluated by faculty preceptors. Students will present patient care activities utilizing medication therapy management and small group online discussion. Students are expected to spend a minimum of 10 hours each week conducting patient care activities at the practice sites. Students are required to make one formal presentation on campus.

*Prerequisites: PPB 623A, 625A, 633A; class, 1 campus meeting; online coursework; experiential, 10 hrs./wk.; credit, 4 s.h.*

**PPB 672****Drug Literature Resources and Evaluation**

This course focuses on three specific aspects relative to the medical literature: retrieval methods, evaluation techniques, and clinical application. The types of medical literature are presented, compared, and contrasted with regard to their applicability to clinical problem solving. Clinical situations and drug-related problems are presented throughout the course to illustrate the application of the literature as a primary component of the clinical problem-solving process.

*Prerequisite: PPB 600, PSB 421, and Postbaccalaureate Doctor of Pharmacy Pathway student; class; online coursework; credit, 3 s.h.*

**PPB 681****Clinical Pharmacokinetics**

This course involves clinical applications of pharmacokinetic principles. Emphasis is placed on the identification of actual and theoretical factors that contribute to variabilities in pharmacokinetic parameters and associated pharmacological responses. Several dosing methods are critically explored, contrasted, and applied using a case history approach.

*Prerequisite: PPB 600 and Postbaccalaureate Doctor of Pharmacy student; class, 1 campus-based meeting; online coursework; credit, 2 s.h.*

## Pharmacy Practice– Worcester/Manchester (PPW)

### PPW 310W

#### Safety Aspects of the Drug Development Process

This course is a blend of online and face-to-face meetings to provide an overview of the drug development process with an emphasis on safety in investigational trials. Students will develop skills necessary to assess drug product development safety issues.

*Prerequisites: Successful completion of all preceding required courses; Corequisites: Concurrent enrollment in all required courses; class, 2 hrs.; credit, 2 s.h.; spring.*

### PPW 330

#### Introduction to Patient Care I

A course designed to introduce pharmacy practice principles of patient care. Topics for discussion include an introduction to: prescription and medical terminology, basic pharmaceutical calculations, interprofessional education, pharmacy references, patient counseling, major drug categories, basic concepts of patient care and the patient care process, communication and professionalism.

*Co-requisites: Concurrent enrollment in all required courses; class, 3 hrs.; credit, 3 s.h.; fall.*

### PPW 331

#### Introduction to Patient Care II

A course designed to introduce pharmacy practice principles of patient care. Topics for discussion include an introduction to: prescription and medical terminology, basic pharmaceutical calculations, interprofessional education, pharmacy references, patient counseling, major drug categories, basic concepts of patient care and the patient care process, communication and professionalism.

*Prerequisites: Successful completion of all preceding required courses; Corequisites: Concurrent enrollment in all required courses; class, 2 hrs; credit, 2 s.h.; spring.*

### PPW 333/333L

#### Introduction to Patient Care III

This is the third course in a sequence designed to provide students with a continuum of pharmacy practice experiences, engage students in the various practice aspects, discuss opportunities in pharmacy and enhance communication skills.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 1 hr.; lab, 3 hrs.; credit, 2 s.h.; summer.*

### PPW 348

#### Self-Care Therapeutics/Pharmacotherapeutics I

This course examines the principles and application of nonprescription and prescription drug therapy for common disease states. Utilizing a case-based approach, students learn how to select appropriate pharmacotherapy that is patient specific and based on pharmacokinetic and pharmacodynamic data. Emphasis will be placed on the role of the pharmacist in determining the appropriate use of nonprescription medications.

*Prerequisites: Successful completion of all preceding required courses; Corequisites: Concurrent enrollment in all required courses; class, 4.5 hrs.; credit, 3 s.h.; summer.*

### PPW 340

#### U.S. Healthcare and Public Health Systems

An overview of the complex issues, policies, controversies, and proposed solutions that surround the systems of healthcare and public health in the United States.

*Co-requisites: Concurrent enrollment in all required courses; class, 3hrs.; credit, 3 s.h.; fall.*

### PPW 343

#### Postgraduate Education Preparation

This course prepares students for postgraduate education and provides opportunities to practice and develop core skills required of pharmacy practice residents and fellows. Students will learn the differences between residency and fellowships and develop professional portfolios to correspond with their postgraduate training.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: concurrent enrollment in all required P2 courses and GPA  $\geq$  2.7; class, 2 hrs.; credit, 2 s.h.; varies.*

### PPW 346

#### Topics in Community Pharmacy

This course will provide second-year pharmacy students with an introduction to specific topics in the rapidly developing area of community pharmacy practice. The course will introduce and emphasize the role of the community pharmacist in both daily community pharmacy operations and extended cognitive roles and responsibilities.

*Prerequisites: Successful completion of all preceding required courses; Corequisites: Concurrent enrollment in all required courses; class, 2 hrs.; credit, 2 s.h.; spring.*

### PPW 352

#### Emergency Preparedness / Bioterrorism

Provides an overview of emergency management concepts and functions as well as an understanding of the various microorganisms used as agents of mass destruction. Students examine agent characteristics,

vaccines, and therapeutic and prophylactic treatments.  
*Prerequisites: Successful completion of all preceding required courses; Corequisites: Concurrent enrollment in all required courses; Class, 2 hrs.; credit, 2 s.h.; varies.*

**PPW 354**  
**Emergency Medicine**

Examines the pharmacotherapy of selected surgical, medical, psychiatric, and toxicologic emergencies. Students gain in-depth exposure to illnesses and injuries sustained by children and adults that necessitate emergency room care. Emphasizes optimizing medication-related outcomes in terms of appropriate therapy selection, patient education, safety and efficacy evaluation, and the determination of individual therapeutic endpoints.

*Prerequisites: Successful completion of all preceding required courses; Corequisites: Concurrent enrollment in all required courses; Class, 2 hrs.; credit, 2 s.h.; varies.*

**PPW 355**  
**Drug Interactions**

This drug interactions elective will provide a general overview of the various types of drug interactions that commonly occur in clinical practice, outlining the major mechanisms of interaction and the major classifications of drugs. Discussions will focus on pharmacokinetic and pharmacodynamic drug interactions as well as interactions involving the biotransformation pathways. Patient case studies are used to help the student apply learned information in practice and to illustrate clinical evidence, mechanism, importance, and management of drug interactions.

*Prerequisites: Successful completion of all preceding required courses; Corequisites: Concurrent enrollment in all required courses; credit, 2 s.h.; varies.*

**PPW 360**  
**Pharmacy Law**

This course introduces the student to the state and federal regulations that govern the practice of pharmacy. Topics include but are not limited to the Food, Drug, and Cosmetic Act; the Controlled Substances Act; the Omnibus Budget Reconciliation Act; the Poison Prevention Act; and the Health Insurance Portability and Accountability Act, as well as specific state rules and regulations.

*Co-requisites: Concurrent enrollment in all required courses; Class, 2 hrs.; credit, 2 s.h.; fall.*

**PPW 362**  
**Critical Care Medicine**

Topics include a specific focus on diagnosis, treatment choices, monitoring parameters, and therapeutic outcomes in the critically ill adult patient. Students also will gain an in-depth understanding of the pharmacist's role in the care of the critically ill patient.

*Prerequisites: Successful completion of all preceding*

*required courses; Corequisites: Concurrent enrollment in all required courses; class, 2 hrs.; credit, 2 s.h.; spring.*

**PPW 363**  
**Drugs of Abuse**

This course will examine the pathophysiology, pharmacology, and pharmacotherapy of selected drugs or substances of abuse and the effect of those agents on the human body. Students will learn the physiological effects associated with short- and long-term use of these agents as well as elements of addiction, treatment strategies, principles for prevention, and legal issues regarding substance abuse.

*Prerequisites: Successful completion of all preceding required courses; Corequisites: Concurrent enrollment in all required courses; class, 3 hrs.; credit, 2 s.h.; summer.*

**PPW 364/PSW 364**  
**Infectious Disease: Bugs and Drugs**

This course is designed to provide an overview of infectious diseases and the concepts that are fundamental to designing antibacterial pharmacotherapeutic plans. Emphasis is placed on infectious disease pathophysiology, epidemiology, bacterial susceptibility profiles, culture specimen collection techniques, antibacterial susceptibility testing, and bacterial resistance.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 2 hrs.; credit, 2 s.h.; spring.*

**PPW 370**  
**Directed Study**

Individual study directed by a faculty member in an area of her or his expertise. Faculty-assisted instruction using existing or previously known data and information. Eligible students must have earned a cumulative minimum 2.7 grade point average and completed or be enrolled in all required courses consistent with their current academic standing.

*Prerequisites: permission of instructor or school dean; credit varies.*

*NOTE: Students are limited to 4 credits of Directed Study electives in the PharmD program.*

**PPW 371**  
**Introduction to the Biopharmaceutical and Pharmaceutical Industry**

An introduction to the industry with a focus on biopharmaceuticals. Students learn about clinical trial development, drug approval processes, pharmacovigilance, regulation, and patient safety, along with novel therapeutics including gene-based and stem cell-based therapies. Scientific, regulatory, policy, and ethical issues in the industry are explored.

*Prerequisites: Successful completion of all preceding required courses; Corequisites: Concurrent enrollment in all required courses; class, 3 hrs.; credit, 2 s.h.; summer.*

#### **PPW 371AA**

##### **Introduction to Leadership**

This is an elective course for students to read, reflect, and discuss the seven habits from Steven Covey's book "The seven habits of highly effective people." Students will assess and reflect on their qualities that could enhance or limit professional growth and leadership.

*Prerequisites: Successful completion of all preceding required courses; Corequisites: Concurrent enrollment in all required courses; class, 3 hrs.; credit, 2 s.h.; summer.*

#### **PPW 371H**

##### **Pharmacotherapy of HIV and Viral Hepatitis**

This course will introduce students to basic principles in the pharmacotherapy of HIV and viral hepatitis infections, including drug-specific issues (adverse effects, proper dosing and regimen selection) as well as patient adherence and medication safety.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; Class, 2 hrs.; credit, 2 s.h.; spring*

#### **PPW 371I**

##### **Advocacy and Leadership in Pharmacy**

This elective course is designed to develop advocacy and leadership skills in P1 students. Effective leadership skills will be reviewed and discussed. Students will be introduced to the legislative process and be responsible for staying current on pharmacy- and healthcare-related issues.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 3 hrs.; credit, 2 s.h.; summer.*

#### **PPW 371K**

##### **Fundamentals of Aging**

This course will introduce general concepts regarding the biomedical principles of aging, social/behavioral issues, ethical considerations, approaches to geriatric assessment, adverse drug events, and polypharmacy. Students will identify common problems and controversies encountered when treating elderly patients as well as implement strategies to minimize their occurrence through a combination of face-to-face and online activities.

*Prerequisites: Successful completion of all preceding required courses; Corequisites: Concurrent enrollment in all required courses; class, 3 hrs.; credit, 2 s.h.; summer.*

#### **PPW 371M**

##### **The Patient behind the Pills: Lessons in Effective Patient Care**

This course provides students with tools to become effective practitioners through motivational interviewing and cultural competency training. Students will be introduced to motivational interviewing techniques as well as learn how culture-specific healthcare beliefs can affect healthcare outcomes.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 2 hrs.; credit, 2 s.h.; spring.*

#### **PPW 371O**

##### **Best Practices for Safe Medication Use**

This course will expose students to medication safety topics using a flipped classroom approach. Faculty will utilize audio/video technology to introduce content to students prior to the class session. Class time will be used for interactive activities with faculty and students. Students will learn best practices that promote safety and optimize patient outcomes.

*Co-requisites: Concurrent enrollment in all required courses. Pre-requisites: Successful completion of all preceding required courses. Class, 2 hrs.; credit, 2 s.h.; spring.*

#### **PPW 371Q**

##### **Medication Safety**

This course will expose students to medication safety concepts utilized in a variety of health care settings. Students will learn how to critically assess various adverse drug events and recommend corresponding prevention strategies that incorporate both human and system factors.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 3 hrs.; credit, 2 s.h.; summer.*

#### **PPW 371V**

##### **Maternal and Child Health**

Topics will include a specific focus on diagnosis, treatment choices, monitoring parameters, and therapeutic outcomes associated with issues in women's health and pediatrics. Students will also gain an in-depth understanding of the pharmacist's role in the care of women and pediatric patients.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 2 hrs.; credit, 2 s.h.; spring.*

#### **PPW 371W**

##### **Ambulatory Care Pharmacy**

This hybrid course focuses on the core chronic disease states in ambulatory care. The online portion will be

didactic in nature and focus on pharmacotherapy and disease state management. The hands-on component will build on pharmacist patient care skills

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 3 hrs.; credit, 2 s.h.; summer.*

#### **PPW 371Z**

##### **The Patient's Perspective on Chronic Illness**

Chronic illness affects not only health, but relationships and work as well. Additionally, external factors can impede treatment. After completing this course, students will achieve a more holistic understanding of chronic illness so they can successfully and empathically assist patients.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required P2 courses; class, 2 hrs.; credit, 2 s.h.; spring, every odd year.*

#### **PPW 371DD**

##### **Leveraging Technology for Modern Pharmacy Practice**

This course will introduce students to the growing use of technology in healthcare, including the use of social media, genomic medicine, mobile devices, the role of the Internet, and its implication on patient care.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 3 hrs.; credit, 2 s.h.; summer.*

#### **PPW 372**

##### **Medicine in the News**

Literature evaluation is essential to patient-specific pharmacotherapy. Pharmacists are the most accessible health professionals and require the background to put medical news into context by answering patient questions about current issues and their health. This course examines current medical topics from peer-reviewed literature and the news. The course challenges students to interpret and apply the findings in various scenarios. Reviews of current medical literature are emphasized to augment the core curriculum and reinforce the idea of journal reading as an important form of postgraduate continuing education.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 2 hrs.; credit, 2 s.h.; varies.*

#### **PPW 373**

##### **Oncology Pharmacy**

Introduces second-year PharmD students to oncology medications and selected therapeutic situations that may confront a practicing pharmacist. Topics include processing chemotherapy orders, management of

chemotherapy side effects, management of febrile neutropenia, management of tumor lysis syndrome, stem cell transplants, herbals in oncology, drug interactions in oncology, cancer screening, targeted therapies, and development of anticancer drugs.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 3 hrs.; credit, 2 s.h.; varies.*

#### **PPW 376**

##### **Advanced Applications in Self Care**

This course will examine the principles and application of over-the-counter (OTC) drug therapy in the treatment of common disease states. Emphasis will be placed on the role of the pharmacist in determining the appropriate use of OTC medications. Utilizing a case-based approach, students will learn how to select appropriate OTC drug regimens, monitor for the safe and efficacious use of drugs, determine therapeutic endpoints, and individualize OTC drug therapy.

*Prerequisites: Successful completion of all preceding required courses; Corequisites: Concurrent enrollment in all required courses; class, 2 hrs.; credit, 2 s.h.; spring.*

#### **PPW 378**

##### **Pharmacy Administration and Pharmacoeconomics**

An overview of the complexities of pharmacy administration, pharmacoeconomics and patient health outcomes assessment in various pharmacy practice settings.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **PPW 379**

##### **Drug Literature Evaluation and Informatics in Healthcare I**

This course introduces retrieval methods, evaluative techniques, and application of the various forms of primary, secondary, and tertiary medical and pharmacy literature. In small and large group settings, utilizing a student-centered approach, students actively develop the skills needed to apply the literature to patient care issues.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 2 hrs.; credit, 2 s.h.; spring.*

#### **PPW 380**

##### **Dean's Seminar**

The Dean's Seminar is designed to acclimate students to the culture of the program as well as to prepare them for their professional responsibilities as a



pharmacy student and ultimately as a pharmacist. Self-awareness, leadership, communication, and professionalism will be discussed, applied and reflected on via various activities

*Co-requisites: Concurrent enrollment in all required courses; Class, 1 hr.; credit, 0 s.h.; fall*

#### **PPW 384**

##### **Drug Literature Evaluation II**

This course provides application of concepts introduced in Drug Literature Evaluation and Informatics I, including retrieval, appraisal, and summary of biomedical literature. Students will apply these skills to patient cases in small and large group settings using a student-centered approach.

Additionally, informatics will be introduced.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; Class, 1.5 hrs.; credit, 1 s.h.; summer*

#### **PPW 401**

##### **Introductory Pharmacy Practice Experience (IPPE)—Community**

The Introductory Pharmacy Practice Experience (IPPE)-Community Pharmacy rotation is designed for the pharmacy student to actively participate in a supervised program of pharmacy practice in a community pharmacy. Students will gain experience and confidence by applying their classroom and laboratory training to solve practice related problems using a patient centered approach to care that incorporates the Pharmacists' Patient Care Process.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; experiential, 40 hrs./wk.; credit, 4 s.h.; 4-week rotation; fall.*

#### **PPW 402**

##### **Introductory Pharmacy Practice Experience (IPPE)—Institutional**

*The Introductory Pharmacy Practice Experience (IPPE)-Institutional Pharmacy rotation is designed for the pharmacy student to actively participate in a supervised program of pharmacy practice in an institutional pharmacy. Students will gain experience and confidence by applying their classroom and laboratory training to solve practice related problems using a patient centered approach to care that incorporates the Pharmacists' Patient Care Process.*

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; experiential, 40 hrs./wk.; credit, 4 s.h.; 4-week rotation; fall.*

#### **PPW 440**

##### **Patient Care Seminar I**

Students will apply knowledge and skills acquired during the first professional year Drug Literature

Evaluation courses, to answer patient case based questions and synthesize recommendations from primary literature. Utilizing a case-based approach and steps from the Pharmacists' Patient Care Process, students will be taught and assessed on general patient assessment skills/techniques that will align with the Pharmacotherapeutics series

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 2.3 hrs.; credit, 1 s.h.; fall*

#### **PPW 445**

##### **Patient Care Seminar II (with lab)**

This course is the second in a three part series applying knowledge and skills acquired during the first professional year (Drug Literature and Informatics I and II) to answer case based questions and synthesize recommendations from primary literature using the steps from the Pharmacists' Patient Care Process. General patient assessment skills/techniques will be discussed and align with the Pharmacotherapeutics series.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 1 hrs.; Lab, 3 hrs; credit, 2 s.h.; spring*

#### **PPW 448**

##### **Patient Care Seminar III**

This course is the 3rd in a three part series applying knowledge and skills acquired during the first and second professional year to answer case based questions and synthesize recommendations from primary literature using the steps from the Pharmacists' Patient Care Process. Students will be involved in activities to complete a Diabetes Certificate Program and the Pharmacy Curriculum Outcomes Assessment.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; Class, 2 hrs., lab, 3 hrs; credit, 2 s.h.; summer.*

#### **PPW 450, 453, 457**

##### **Pharmacotherapeutics II, III, and IV**

This sequence of courses examines the principles and application of rational drug therapy in the treatment of the common disease states. Utilizing a case-based approach, students learn how to select appropriate drug regimens based on patient-specific data and pharmacokinetic principles of specific drugs and disease states, monitor for the safe and efficacious use of drugs, determine therapeutic endpoints, and individualize drug therapy.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 8 hrs, 5 hrs, 6 hrs, respectively; credit, 4 s.h., 6 s.h., 5 s.h., respectively; fall, spring, summer, respectively.*

**PPW 460****Ethics, Professionalism and Leadership**

This course reviews the principles of ethics and professionalism and their application to pharmacy practice. Students will engage in case-study discussions to understand and apply the pharmacy code of ethics to pharmacy practice. Students will explore leadership via online lectures and apply leadership concepts through decision-making via case-study discussions.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses; class, 2 hrs.; credit, 2 s.h.; fall*

**PPWC 500****Advanced Pharmacy Practice Experience I: Internal Medicine I**

The student participates in a six-week advanced clinical rotation in internal medicine. During this experience, the student identifies and solves actual drug-related problems of patients by applying and reinforcing the knowledge learned in the previous didactic and experiential phases of the curriculum. The student develops the ability to assimilate pertinent data using a variety of sources and methods used in the provision of pharmaceutical care. The student also enhances communication skills by interacting with healthcare professionals, patients, and other students.

*Prerequisites: successful completion of Years I and II; experiential; credit, 6 s.h.; varies.*

**PPWC 501****Advanced Pharmacy Practice Experience II: Ambulatory Care**

The student participates in a six-week advanced clinical rotation in ambulatory care. During this experience, the student identifies and solves actual drug-related problems of patients by applying and reinforcing the knowledge learned in the previous didactic and experiential phases of the curriculum. The student develops the ability to assimilate pertinent data using a variety of sources and methods used in the provision of pharmaceutical care. The student also enhances communication skills by interacting with healthcare professionals, patients, and other students.

*Prerequisites: successful completion of Years I and II; experiential; credit, 6 s.h.; varies.*

**PPWC 502****Advanced Pharmacy Practice Experience III: Institutional Pharmacy**

The student participates in a six-week advanced clinical rotation in advanced institutional pharmacy practice. During this experience, the student identifies and solves actual drug-related problems of patients by applying and reinforcing the knowledge learned in the previous didactic and experiential phases of the curriculum. The student develops the ability to assimilate pertinent data using a variety of sources and

methods used in the provision of pharmaceutical care. The student also enhances communication skills by interacting with healthcare professionals, patients, and other students. The student also is required to provide two hours of pharmacy operations experience to the institutional site. This includes activities related to pharmaceutical distribution and dispensing, and other appropriate assignments.

*Prerequisites: successful completion of Years I and II; experiential; credit, 6 s.h.; varies.*

**PPWC 503****Advanced Pharmacy Practice Experience IV: Community Pharmacy**

The student participates in a six-week advanced clinical rotation in advanced community pharmacy practice. During this experience, the student identifies and solves actual drug-related problems of patients by applying and reinforcing the knowledge learned in the previous didactic and experiential phases of the curriculum. The student develops the ability to assimilate pertinent data using a variety of sources and methods used in the provision of pharmaceutical care. The student also enhances communication skills by interacting with healthcare professionals, patients, and other students. The student also is required to provide two hours of pharmacy operations experience to the community site. This includes activities related to pharmaceutical distribution and dispensing, and other appropriate assignments.

*Prerequisites: successful completion of Years I and II; experiential; credit, 6 s.h.; varies.*

**PPWC 504, 505****Advanced Pharmacy Practice Experience V, VI: Elective Rotations**

An advanced pharmacy practice elective that provides students with experience in any one of the related fields of pharmacy. These may include a pharmaceutical company, specialty areas such as psychiatry or oncology, clinical research, drug information, or pharmacy management.

*Prerequisites: successful completion of Years I and II; experiential; credit, 6 s.h.; varies.*

**PPW 550****Graduate Project**

Graduation Poster Presentation is a required, 1-credit course offered during the senior year of pharmacy school while students are involved in the Advanced Pharmacy Practice Experience (APPE). Students identify relevant topics or therapeutic matters related to pharmacy. Each student creates a poster discussing that pharmacotherapeutic matter with the support and approval of a faculty preceptor. The culmination of the course is students' presenting their posters at the Poster Forum to faculty, staff, and peers. Exemplary posters will be considered for an award to be given during the awards ceremony held prior to graduation.

*Prerequisites: Successful completion of all preceding required courses; Co-requisites: Concurrent enrollment in all required courses.*

## **Pharmaceutical Sciences–Boston (PSB)**

*NOTE 1: In the Doctor of Pharmacy program, the minimum acceptable grade in any required course with a PSB prefix is C-. D grades may be awarded, but students must repeat the course.*

*NOTE 2: A number of PSB courses are being developed; updated descriptions will be on the website ([www.mcphs.edu](http://www.mcphs.edu)) when available.*

### **PSB 210**

#### **Macroeconomics**

This macroeconomics course provides a foundation for understanding fiscal and monetary policies in a free market. Major course topics include supply-and-demand analysis, inflation, unemployment, and gross national product.

*Class, 3 hrs. credit, 3 s.h.; fall, spring.*

### **PSB 215**

#### **Microeconomics**

The student will be introduced to the principles of microeconomics, which focus primarily on the basic theories of supply and demand as they relate to individuals and to individual businesses. Also, the student will examine how the forces of supply and demand affect decisions regarding the production and marketing of goods and services.

*Class, 3 hrs.; credit, 3 s.h.; spring.*

### **PSB 235**

#### **Introduction to Business**

This course introduces students to the fundamentals of business on a cross-functional and comprehensive level. It explores all major business disciplines and is designed for those students who have little or no business background.

*Class, 3 hrs.; credit, 3 s.h.; varies.*

### **PSB 301**

#### **Pharmacology for Allied Health Professionals**

This introductory course is designed to familiarize students with commonly used drugs, their mechanisms of action, indications, and major adverse effects. The course follows a disease-based format and includes pharmacotherapy of cardiovascular, nervous, gastrointestinal, respiratory, endocrine, immune systems as well as infectious and malignant conditions. Principles of drug administration and pharmacokinetics also are presented.

*Prerequisites: BIO 210 and CHE 210 or PSB 340; class, 3 hrs.; credit, 3 s.h.; spring.*

### **PSB 320/3200**

#### **Introduction to Healthcare Delivery**

This course introduces the complex areas of healthcare delivery from public policy perspectives. Lecture and classroom discussions provide interdisciplinary approaches to difficult political, social, and economic issues that confront healthcare practitioners and the public.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

### **PSB 328**

#### **Physiology/Pathophysiology I**

This comprehensive course deals with the principles of mammalian physiology and a basic understanding of human anatomy. It emphasizes the maintenance of normal functions and various abnormalities or stresses within the systems.

*Prerequisites: BIO 151, 152, CHE 232, or their equivalents; class, 4 hrs.; credit, 4 s.h.; fall.*

### **PSB 329**

#### **Physiology/Pathophysiology II**

This is a continuation of the principles of mammalian physiology, human anatomy, and elements of pathology presented in PSB 328. It includes discussions of the following systems: cardiovascular, respiratory, gastrointestinal, renal, metabolic, and reproductive.

*Prerequisite: PSB 328 or its equivalent; class, 4 hrs.; credit, 4 s.h.; spring.*

### **PSB 331**

#### **Biochemistry I**

The physical-chemical properties of the major classes of biomolecules are studied with particular emphasis on the relationship between these properties and the structure and function of biomolecules.

*Prerequisites: third-year standing; MAT 152, BIO 152, and CHE 232 or their equivalents; class, 3 hrs.; credit, 3 s.h.; fall.*

### **PSB 332**

#### **Biochemistry II**

The metabolic processes of the expression of genetic material, energy production and storage, and synthesis of biomolecules are studied. Proper nutrition is examined utilizing the processes that integrate and regulate metabolism.

*Prerequisite: PSB 331 or its equivalent; class, 3 hrs.; credit, 3 s.h.; spring.*

### **PSB 335**

#### **Pharmaceutical Technology**

Describes the different stages of drug formulation and explores different pharmaceutical excipients, preformulation testing, and different pharmaceutical unit operations, with an emphasis on quality assurance and GMP. The course provides an overview of animal testing and manufacturing scale-up. Applications of

theories are emphasized through group projects, research, and active participation in discussions.  
*Prerequisite: PSB 340; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 338**  
**Medical Biochemistry II**

The metabolic processes of the expression of genetic material, energy production and storage, and synthesis of biomolecules are studied. Proper nutrition is examined utilizing the processes that integrate and regulate metabolism.  
*Prerequisite: PSB 331 or its equivalent; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 340**  
**Pharmaceutics I**

A study of the mathematical, physico-chemical, and biological principles concerned with the formulation, preparation, manufacture, and effectiveness of pharmaceutical dosage forms.  
*Prerequisites: third-year standing, CHE 232, MAT 152, PHY 270; class, 4 hrs.; credit, 4 s.h.; fall.*

**PSB 341**  
**Pharmaceutics II**

This course is a continuation of Pharmaceutics I, PSB 340.  
*Prerequisite: PSB 340; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 343L**  
**Pharmaceutics Laboratory I**

Designed for the student to apply pharmaceutical principles and to develop proficiency when compounding oral and topical formulations.  
*Co-requisite: PSB 340; recitation, 1 hr.; lab, 3 hrs. every other week; credit, 1 s.h.; fall.*

**PSB 344L**  
**Pharmaceutics Laboratory II**

Continuation of PSB 343. The laboratory is designed for the student to apply pharmaceutical principles and to develop proficiency when compounding selected formulations and employing aseptic techniques.  
*Prerequisites: PSB 340, PSB 343; Co-requisite: PSB 341; recitation, 1 hr.; lab, 3 hrs. Every other week; credit, 1 s.h.; spring.*

**PSB 346**  
**Physico-chemical Properties of Drug Molecules**

This course reviews the basic physico-chemical principles as applied to small-molecule drug development, the pharmacological activities of such drugs, and their mechanisms of action in various disease states. Focuses on an understanding of organic functional groups and absorption, metabolism, distribution, and excretion of drugs. Drug-receptor interactions will be explored using selected examples.

*Prerequisite: PSB 332; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 350L**  
**Industrial Pharmacy Laboratory**

Students develop pharmaceutical-industry hands-on skills, including optimizing formula and formulation processes, testing the quality of final dosage forms, and communicating the experimental results using proper scientific terminology.  
*Prerequisite: PSB 343L; lab, 3 hrs.; credit, 1 s.h.; spring.*

**PSB 351**  
**Dosage Forms II**

This course is a continuation of Pharmaceutics I, PSB 340.  
*Prerequisite: PSB 340; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 354L**  
**Dosage Forms II Laboratory**

Continuation of PSB 343. The laboratory is designed for the student to apply pharmaceutical principles and to develop proficiency when compounding selected formulations and employing aseptic techniques.  
*Prerequisites: PSB 340, PSB 343; Co-requisite: PSB 351; recitation, 1 hr.; lab, 3 hrs. Every other week; credit, 1 s.h.; spring.*

**PSB 370**  
**Analytical Methods in Pharmacology and Toxicology I**

In this laboratory-based course, students will be introduced to and given the opportunity to perform standard molecular biology and animal-handling techniques commonly used in drug discovery and developmental research.  
*Prerequisite: third-year student in BS in Pharmacology/Toxicology program; class, 2 hrs.; lab, 3 hrs.; credit, 3 s.h.; fall.*

**PSB 371**  
**Analytical Methods in Pharmacology and Toxicology II**

This course is a continuation of PSB 370, focusing on students' performance of standard molecular, biochemical, and analytical techniques used in drug discovery and developmental research.  
*Prerequisite: PSB 370; class, 2 hrs.; lab, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 372**  
**Analytical Methods in Pharmacology and Toxicology III**

This course is a continuation of PSB 371, focusing on students' performance of more advanced molecular, biochemical, and analytical techniques used in drug discovery and developmental research.

*Prerequisite: PSB 371; class, 2 hrs.; lab, 3 hrs.; credit, 3 s.h.; fall.*

**PSB 375**  
**Fundamentals of Drug Development**

The student will become familiar with physical, chemical, and biological principles underlying the discovery of drug molecules and the design, manufacture, and testing of pharmaceutical products.  
*Prerequisites: BIO 210, CHE 210; class, 4 hrs.; credit, 4 s.h.; fall.*

**PSB 376**  
**Healthcare Marketing**

Students will be introduced to commercial and healthcare/pharmaceutical marketing as a functional area of the business enterprise. Students will explore the analytical and managerial approaches to problem solving in market research, marketing, pricing and distribution with products, services and ideas in the domestic and international marketplace. Students will develop a marketing toolkit for designing pathways to various marketing opportunities.  
*Prerequisites; class, 4hrs.; credit, 4 s.h.; fall.*

**PSB 377**  
**Healthcare Management**

Students will be introduced to the principles and practices of management in a variety of healthcare settings, including hospitals, outpatient settings, integrated systems and managed care organizations. Also, students will focus on the current strategic and operational management techniques used by professionals in the provision of healthcare services. Student learning will be facilitated through lectures, case studies and contemporary articles.  
*Class, 4 hrs.; credit, 4 s.h.; fall.*

**PSB 380**  
**Applied Business Techniques**

This course covers statistical techniques in a business setting featuring case studies and conceptual exercises. Statistical topics include effective use of numerical and graphical summaries, estimation, hypotheses testing, confidence intervals and regression. The course will integrate the use of Excel and PowerPoint in the homework problems, student presentations and exams. Professional literature and computer software are integrated into the course.  
*Prerequisites: MAT261 or consent of instructor; class, 4hrs; credit, 4 s.h.; spring.*

**PSB 401**  
**Pharmacology and Toxicology Seminar I**

In this seminar-based course, students will be introduced to the reading, evaluation, analysis, interpretation, and presentation of scientific literature as it relates to pharmacology and toxicology. This course is intended to be taken concurrently with Analytical

Methods of Pharmacology and Toxicology I (PSB 370) to integrate conceptual knowledge with practical experience.

*Prerequisite: BIO 260; Co-requisite: PSB 370; class, 1 hr.; credit, 1 s.h.; fall.*

**PSB 402**  
**Pharmacology and Toxicology Seminar II**

This course is a continuation of PSB 401 in which students will read, evaluate, analyze, interpret, and present scientific literature as it relates to pharmacology and toxicology. This course is intended to be taken concurrently with Analytical Methods of Pharmacology and Toxicology II (PSB 371) to integrate conceptual knowledge with practical experience.  
*Prerequisite: PSB 401; Co-requisite: PSB 371; class, 1 hr.; credit, 1 s.h.; spring.*

**PSB 403**  
**Pharmacology and Toxicology Seminar III**

This course is a continuation of PSB 402 in which students will read, evaluate, analyze, interpret, and present scientific literature as it relates to pharmacology and toxicology. This course is intended to be taken concurrently with Analytical Methods of Pharmacology and Toxicology III (PSB 372) to integrate conceptual knowledge with practical experience.  
*Prerequisite: PSB 402; Co-requisite: PSB 372; class, 1 hr.; credit, 1 s.h.; fall.*

**PSB 404**  
**Pharmacology and Toxicology Seminar IV**

This course is a continuation of PSB 403 in which students will read, evaluate, analyze, interpret, and present scientific literature as it relates to pharmacology and toxicology.  
*Prerequisite: PSB 403; class, 1 hr.; credit, 1 s.h.; spring.*

**PSB 410**  
**FDA and Regulatory Affairs**

This course introduces the regulatory, legal, and strategic aspects of pharmaceutical regulation and law through readings, lectures, and discussion. It explores the U.S. Food and Drug Administration and its authority over the Federal Food, Drug, and Cosmetic Act. Topics include prescription drugs, over-the-counter drugs, biologic, device, and cosmetics approval and regulation.  
*Prerequisite: PSB 320 (All majors except BSPS)/PSB 420 (BSPS majors) or by instructor approval; class, 3 hrs.; credit, 3 s.h.; fall.*

**PSB 411**  
**Pharmacy Law**

This course examines the state and federal legal requirements associated with pharmacy practice and operations, including regulation of pharmacy

personnel, pharmacies, pharmacy departments, controlled substances, dispensing functions, and prospective drug review and counseling.

*Prerequisite: fourth-year standing; PPB 325, 335; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **PSB 412**

##### **Patients' Rights and Professionals' Liabilities**

This course facilitates the identification and analysis of patients' legal rights from the beginning to the end of life, and healthcare providers' corresponding legal responsibilities.

*Class, 3 hrs.; credit, 3 s.h.; fall, spring.*

#### **PSB 415**

##### **Accounting**

This course introduces the principles and practices of modern accounting. Lectures and classroom discussion provide a basic understanding of how business transactions are recognized and how this information is used in making business decisions. Accounting rules, measures, formulas, ratios, and techniques are covered in this overview course.

*Class, 3 hrs.; credit, 3 s.h.; fall.*

#### **PSB 416**

##### **Managerial Accounting**

With financial accounting as a foundation, the student will become familiar with the accounting principles, concepts, and techniques that are used by healthcare providers to guide them in decision making. In this context, the student will focus on topics such as cost-revenue relationships, cost systems, and the preparation and analysis of budgets.

*Prerequisite: PSB 415 or consent of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **PSB 418**

##### **Pharmacoeconomics**

This course introduces students to economics in healthcare delivery with an emphasis on the selection of drug therapy and formulary management. Covers various pharmacoeconomic quantitative methods, including decision analysis and quality-of-life assessment.

*Prerequisites: MAT 261, PSB 210; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

#### **PSB 420/420L**

##### **Pharmaceutical Analysis/Laboratory**

This course introduces the hypothesis and practice of drug analysis. It covers the preparation of drug samples for analysis, developing and validating different analytical methods, and detection and analysis of drug metabolites and degradation products. Lab experiments are planned to help students apply the techniques learned in class and build their hands-on skills.

*Prerequisite: CHE 232; class, 2 hrs.; lab, 3 hrs.; credit,*

*3 s.h.; fall.*

#### **PSB 421**

##### **Pharmacoepidemiology**

Pharmacoepidemiology is introduced through concepts and methods used to measure the source, diffusion, and use of drugs in populations. Emphasis is placed on determining pharmaceutical care outcomes and identifying potential or real drug-use problems.

*Prerequisite: Postbaccalaureate Doctor of Pharmacy Pathway student; online coursework; credit, 2 s.h.; fall.*

#### **PSB 422**

##### **Drug Education**

Principles and methods of drug education, for both medical and nonmedical drug use, are presented and discussed, with an emphasis on the actual development and implementation of specific informational materials and educational programs.

*Prerequisite: PSB 329 or equivalent, or consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall.*

#### **PSB 423**

##### **Pharmaceutical/Healthcare Marketing**

This course introduces students to the concepts, issues, and practices associated with marketing of healthcare in the United States. Particular attention is paid to servicing, product development, and sales to a variety of healthcare customers, including hospitals and other providers, as well as managed care organizations and other consumers. The marketing of healthcare on a more general level also is explored. Case analysis is used to demonstrate various marketing concepts.

*Prerequisite: PSB 359; class, 3 hrs.; credit, 3 s.h.; fall.*

#### **PSB 424**

##### **Research Methods in Pharmacoepidemiology**

Pharmacoepidemiology is introduced through concepts and methods developed in epidemiology to measure the source, diffusion, and use of drugs in populations. Emphasis is placed on determining pharmaceutical care outcomes and identifying potential or real drug-use problems.

*Prerequisite: third-year standing (PharmD program only); class, 2 hrs.; credit, 2 s.h.; spring.*

#### **PSB 429**

##### **Operations Management**

The student will become familiar with the role that operations management plays in the efficient delivery of goods and services both in the domestic and global environments. Also, the student will learn how to use comprehensive approaches to address operational and supply chain issues. These approaches will include tools and methods that include Six Sigma, EOQ, and Value Stream Mapping.

*Prerequisite: PSB 315 or consent of the instructor; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**PSB 430****Pharmacokinetics I**

This course is a study of absorption, distribution, metabolism, and elimination (ADME) processes using mathematical models. Emphasis is placed upon determination of pharmacokinetic parameters from blood/urine data following administration of single or multiple doses of drugs by various routes. Additionally, the course includes topics on the influence of physiological, physiochemical and formulation factors on the bioavailability of drugs.

*Prerequisite: PSB 340; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 432****Pharmacokinetics II**

This course is a continuation of Pharmacokinetics I with discussion of the influence of the physiochemical factors on the bioavailability of drugs and their in vivo performance. It includes the kinetics of drug disposition following administration by intravenous infusion, intravenous bolus, and oral multiple dosing; discusses the pharmacokinetics of drugs that follow a two-compartment model and the principles of nonlinear kinetics; and involves clinical applications of pharmacokinetic principles and factors that contribute to the variability in the pharmacokinetics of selected drugs.

*Prerequisite: PSB 430; class, 3 hrs.; credit, 3 s.h.; fall.*

**PSB 434****Managed Health Care, Management and Administration,**

In this course the student will become familiar with the evolution of managed health care and the forces that have driven this phenomenon. In addition, the student will focus on various types of managed care organizations and the issues (public policy and market performance) that continue to shape this delivery of health care.

*Prerequisite: PSB 320 or by the consent of the instructor; class, 3 hrs; credit 3 s. h.; fall.*

**PSB 438****Ethics and Research Integrity**

This course examines the principal ethical, legal, and regulatory concepts that formally govern clinical research, including informed consent and evaluations of risk. It focuses on the implication of the preclinical data and good laboratory practices for clinical trials, and discusses conflicts of interest and the assurances necessary for research integrity and reliability.

*Prerequisite: PSB 410; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 440****Molecular Biotechnology**

This course reviews molecular and cellular biology and

emphasizes the application of recombinant DNA technology to present-day biotechnology. The course reviews both the theoretical and practical aspects of recombinant protein expression, vaccine design, and gene therapy.

*Prerequisite: PSB 332 (or BIO 260, BIO 322), or consent of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 441****Medicinal Chemistry I**

This course is a study of the effect of chemical functional groups on the physiochemical properties, biological activity, and kinetics of medicinal agents. Agents affecting the autonomic nervous system are considered in detail. Drugs acting on the central nervous system are introduced. Integrated with PSB 451.

*Prerequisites: fourth-year standing, PSB 332 or its equivalent; Co-requisite: PSB 451 or consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall.*

**PSB 442****Medicinal Chemistry II**

This course is a continuation of CHE 441. The discussion of central nervous system agents is concluded. The topics of cardiovascular agents, diuretics, endocrine hormones, antidiabetic agents, and anticancer drugs are discussed in detail. Integrated with PSB 454.

*Prerequisite: PSB 441 or its equivalent; Co-requisite: PSB 454 or consent of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 444****Organizational Development**

A thorough review of organizational development and improvement practices is the basis for this course, including the roles and values of such corporate attributes as training and resource development, culture, planning, and strategy implementation. The focus of lectures and materials is on the identification of organizational strengths and weaknesses as well as the remedy of the latter.

*Class, 3 hrs.; credit, 3 s.h.; varies.*

**PSB 445****Sales of Pharmaceuticals and Medical Products**

This course explores sales and selling strategies for medical products in a regulated environment, including selling/negotiation techniques and sales agreements, emphasizing the special concerns of the FDA regarding promotional material, advertising, and sales collateral in a regulated environment, including off-label uses.

*Prerequisite: PSB 423; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 446****Healthcare Finance**

A thorough understanding of the principles and

concepts of finance as they apply to the healthcare industry is provided. The course utilizes financial tools and strategies to understand the business of the healthcare environment.

*Prerequisite: PSB 320 and PSB 415 or consent of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **PSB 447**

##### **Fundamentals of Business Law**

Introduces students to the study of law as it relates to business organizations. Explores all aspects of the court system and judicial process, including torts, contracts, and employment. Emphasis is placed on the relationship between the law and ethics.

*Class, 3 hrs.; credit, 3 s.h.; spring.*

#### **PSB 450**

##### **Pharmaceutical Biotechnology**

Students learn the fundamental principles and concepts in recombinant DNA technology and its application to pharmaceuticals. Students apply these principles to the design and use of therapeutic proteins, vaccines, and nucleic acids, including small interfering RNA (siRNA), antisense molecules, and gene therapy in various disease states. Students learn about federal regulatory issues relating to these biotechnological products.

*Prerequisite: PSB 332; Co-requisites: PSB 451, 441; class, 3 hrs.; credit, 3 s.h.; fall.*

#### **PSB 451**

##### **Pharmacology I**

This course introduces the student to the science of pharmacology, with emphasis on the basic principles of pharmacology, genetic factors modifying drug responses, dose-response relationships, and in-depth consideration of the effects of drugs on the autonomic nervous system; the cardiovascular system and eicosanoids. Integrated with PSB 441.

*Prerequisites: fourth-year standing, PSB 329 or its equivalent; Co-requisite: PSB 441 or consent of instructor; class, 4 hrs.; credit, 4 s.h.; fall.*

#### **PSB 453**

##### **Experimental Pharmacology**

This elective hands-on laboratory is designed to give the interested student an opportunity to engage in pharmacological research, with emphasis on cardiovascular pharmacology. The use of the rat as an in vivo model for the investigation and evaluation of antihypertensive agents, and the use of in vitro isolated heart and atrial preparations are examples of the types of experimentation that are performed by students. Laboratory reports and an oral presentation are required. Enrollment is limited to six fourth-year students.

*Prerequisites: PSB 451 and consent of instructor; lab, 6 hrs.; credit, 2 s.h.*

#### **PSB 454**

##### **Pharmacology II**

This course is a continuation of PSB 451, and the discussion of central nervous system drugs is concluded. Cardiovascular, renal, and endocrine pharmacology is presented. In addition, cancer chemotherapy and antiasthmatics will be presented. Integrated with PSB 442.

*Prerequisite: PSB 451 or its equivalent; Co-requisite: PSB 442 or consent of instructor; class, 4 hrs.; credit, 4 s.h.; spring.*

#### **PSB 456**

##### **Entrepreneurship**

This course introduces students to the process of developing, financing, growing, and exiting a business venture. The course includes how to protect intellectual capital; how to raise capital, both in the private and public markets; and how to value a company for a sale or merger. The role of venture capitalists, investment bankers, and angels as a source of capital is discussed.

*Class, 3 hrs.; credit, 3 s.h.; varies.*

#### **PSB 457**

##### **Pharmacognosy**

The student will understand and discuss natural products from plants and their manufacture, assay, and use in humans. The themes to be emphasized include the procedures of chemical characterization (extraction, isolation, and analysis of plant constituents) and the pharmacological methods to study the medicinal properties of plants (pharmacodynamics and pharmacokinetics of plant constituents).

*Prerequisites: PSB 442, PSB 454, or consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall.*

#### **PSB 458**

##### **Pharmaceutics Seminar**

Students develop the abilities to search, evaluate literature, and deliver presentations. The course includes presentations from visiting scientists from local pharmaceutical and biotechnology companies on the latest developments in the pharmaceutical field.

*Co-requisite: PSB 335; class, 1 hr.; credit, 1 s.h.; spring.*

#### **PSB 460**

##### **Principles of Toxicology I**

This lecture-based course is designed to introduce the student to the discipline of toxicology with an emphasis on its application to basic science research. The principles of toxicology, including non-organ-targeted and organ system-targeted toxicity, will be discussed, as well as the mechanisms of toxicity; toxicokinetics; chemical carcinogenesis; and genetic, liver, and kidney toxicity.

*Prerequisite: PSB 329; Co-requisite: PSB 462; class, 3 hrs.; credit, 3 s.h.; fall.*



**PSB 461****Principles of Toxicology II**

This course is a continuation of PSB 460.

Cardiovascular, hematological, and respiratory toxicology are presented. Applications in the field of toxicology are presented and discussed.

*Prerequisite: PSB 460; Co-requisite: PSB 464; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 462****Basic Pharmacology I**

This lecture course is designed to introduce the student to the science of pharmacology, with emphasis on its application to basic science research. Principles of pharmacology, including pharmacokinetic and pharmacodynamic relationships, will be discussed, as well as the effects of drugs on the autonomic nervous system, cardiovascular system, renal system, and eicosanoids.

*Prerequisite: fourth-year BS in Pharmacology/Toxicology program; class, 3 hrs.; credit, 3 s.h.; fall.*

**PSB 464****Basic Pharmacology II**

This course is a continuation of PSB 462, presenting the effects of drugs on the central nervous, respiratory, and endocrine systems. Additionally, antibiotics, antivirals, and antifungals, as well as cancer chemotherapy and antiasthmatics, will be presented.

*Prerequisite: fourth-year BS in Pharmacology/Toxicology program; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 530****Undergraduate Research Project**

Research participation is provided at the undergraduate level for superior students, with emphasis on the methods and techniques of research. Offered at the discretion of the division.

*Prerequisites: permission of instructor and approval by division director; lab, 3–6 hrs.; credit, 1–3 s.h.; varies.*

**PSB 532****Directed Study**

Faculty-directed study is provided to an individual student wishing to examine a particular topic in pharmacology in greater detail. Emphasis is placed on the student's analysis of the scientific literature. Faculty-assisted instruction in all areas of pharmacology is available.

*Prerequisites: consent of instructor and department chair; credit, 1–3 s.h. (6 s.h. maximum); varies.*

**PSB 535****Senior Research Project or Industrial Internship**

Research participation is provided at the undergraduate level for superior students, with

emphasis on the methods and techniques of research. Offered at the discretion of the division.

*Prerequisites: permission of instructor and approval by division director; lab, 3–6 hrs.; credit, 1–3 s.h.*

**PSB 540****Principles of Clinical Research**

Students will examine the principles and practices necessary for the ethical conduct of human clinical research. Regulations, methodology, procedures, documentation, and reporting essential for compliance with good clinical practice (GCP) guidelines will be discussed. Students will apply these principles to a project and classroom exercises. Roles of multidisciplinary healthcare professionals and opportunities in the clinical setting and biopharmaceutical industry will be identified.

*Prerequisites: PSB 454; class, 3 hrs.; credit, s.h.; spring.*

**PSB 541****Principles of Pharmacoeconomics and Outcomes Research**

This course provides an overview of pharmacoeconomics (PE) and outcomes research (OR) concepts and methodologies, and aims to provide future practitioners with the knowledge and skills needed to understand and utilize information from PE and OR studies in the decision-making process.

*Prerequisite: fifth-year standing in the PharmD program; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 542****Fundamentals of the Biopharmaceutical Industry**

Students will develop an understanding of the biopharmaceutical industry to enable them to contrast the impact of various positions that support the drug development pathway. Students will be provided with a realistic overview of industry operations through experts including pharmacists, healthcare executives, and scientists, who will highlight the diversity of potential roles.

*Prerequisite: PSB 331 or consent of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 560****PHCB Internship**

Students will have the opportunity to do an unpaid internship in the healthcare industry, which will expose them to real-world business situations in their area of study. Students will apply knowledge and techniques learned in the classroom to areas such as marketing, accounting, finance, operations and general business in a hands-on environment.

*Prerequisite: Completion of required coursework in the Pharmaceutical and Health Care Business program through the end of the third year and prior approval by the program director; class, minimum 10 hours per week; credit, 3 s.h.; summer, fall, spring.*

**PSB 710****Principles of Pharmaceutical Sciences**

Students will learn and receive an overview of the fundamental principles and concepts in pharmaceutical sciences and their applications in the areas of pharmacology, medicinal chemistry, and pharmaceuticals.

*Prerequisites: graduate admission or consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall.*

**PSB 720****Good Manufacturing Practices Compliance**

This course explores in depth the promulgated regulations through which the federal government controls drugs, cosmetics, and diagnostics. Major emphasis is placed on understanding the need for and the intent of regulations and developing mechanisms for implementation and compliance.

*Class, 3 hrs.; credit, 3 s.h.; varies.*

**PSB 802****Chemistry of Macromolecules**

This course covers the structure, stability, properties, isolation, purification, identification, and synthesis of proteins. Bases of theoretical and experimental approaches to conducting protein-binding studies are considered in detail.

*Prerequisite: PSB 332 or consent of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 807/807L****Unit Operations**

This course imparts a firm understanding of various industrial operations used in the manufacturing of pharmaceutical dosage forms in order to lay a foundation for other courses dealing with the specific aspects of dosage form development and manufacture.

*Class, 2 hrs.; lab, 3 hrs.; credit, 3 s.h.; varies.*

**PSB 809****Advanced Physical Pharmacy**

This course provides analysis of the theory of physical chemical properties, such as solubility, diffusion, dissolution, interfacial phenomena, and rheology, and their application in the development of dosage forms.

*Prerequisite: PSB 340 or consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall.*

**PSB 815****Drug Metabolism**

The metabolism of drugs and other foreign compounds is considered. Emphasis is placed on those substances that are of therapeutic importance. Phase I and Phase II metabolism, hepatic, and intestinal drug metabolism; pharmacogenetic variability; active metabolites and toxicity; drug-drug and herbal-drug interactions; in vitro systems; in vivo methods; and inducers of CYP450 isozymes are all considered in

depth.

*Prerequisite: PSB 332 or consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**PSB 818/818L****Laboratory Rotations**

These rotations provide new graduate students with opportunities to gain preliminary hands-on experience in laboratory techniques and to identify an area of research that is of potential interest.

*Lab, 3 hrs.; credit, 1 s.h.*

**PSB 819****Graduate Seminar**

This interdisciplinary seminar is required for all graduate students in the pharmaceutical sciences and offered each semester.

*Class, 1 hr./wk.; credit, 1 s.h. with a cumulative maximum of 3 s.h. for MS and 6 s.h. for PhD.*

**PSB 820****Advanced Medicinal Chemistry I**

The rational utilization of drug structure-activity relationships in the design of new drugs is considered. Specific topics include enzyme inhibition as a tool to develop new therapeutic agents and the AIDS virus as a potential target for drug design.

*Prerequisite: PSB 442 or consent of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

**PSB 822****Enzyme Kinetics**

This course is an introduction to the steady-state and rapid-equilibrium kinetics of enzyme-catalyzed reactions. Velocity equations for unireactant and multireactant enzyme reactions are studied through the computer modeling of kinetic data. The kinetics of various enzyme inhibitors also are examined.

*Prerequisite: PSB 802 or consent of instructor; class, 2 hrs.; credit, 2 s.h.; spring.*

**PSB 825****Controlled Drug Delivery**

This course is a study of the principles involved in the formulation of various controlled-release drug dosage forms and mechanisms responsible for drug release. The emphasis is placed on the orally administered dosage forms and transdermal delivery systems.

*Prerequisites: PSB 808; class, 3 hrs.; credit, 3 s.h.; varies.*

**PSB 826****Targeted Drug Delivery**

The study of the principles involved in the formulation of various controlled-release drug dosage forms and mechanisms of drug release from such dosage forms. The emphasis is placed on transdermal and peptide/protein drug delivery systems.

*Prerequisites: PSB 808; class, 3 hrs.; credit, 3 s.h.;*

varies.

#### **PSB 835**

##### **Advanced Pharmacokinetics**

This course is an advanced study of pharmacokinetic principles pertaining to ADME processes as they apply to mammillary and other complex pharmacokinetic models. It emphasizes the utility of multicompartment concepts in the analysis of blood/urine data following the administration of the drug by intra- and extravascular routes.

*Class, 3 hrs.; credit, 3 s.h.; spring.*

#### **PSB 840**

##### **Advanced Biopharmaceutics**

This course is a study of the physico-chemical properties and formulation factors that affect biological availability and the processes of drug absorption, distribution, metabolism, and excretion.

Pharmacokinetic aspects of drug therapy, graphical representation, and interpretation of blood and urine data are emphasized.

*Class, 3 hrs.; credit, 3 s.h.; fall.*

#### **PSB 841**

##### **Advanced Pharmacology: Receptor Pharmacology**

The pharmacological response is examined as the interactions between the physico-chemical properties of a drug and the body tissues. Explores the interactions of drugs with whole tissues and individual receptors. Emphasis is placed on the analysis of ligand-binding data.

*Class, 3 hrs.; credit, 3 s.h.; fall.*

#### **PSB 850**

##### **Pharmacogenomics**

Pharmacogenomics is the study of the entire spectrum of human genes that determine drug response and is the impetus for the development of personalized medicine. This course examines known interrelationships between drug efficacy or toxicity and the causal genetic variants. Fundamental principles of genetics and gene expression are discussed, as well as the analytical techniques specific to genomics. Recent publications related to pharmacogenomics and its clinical consequences are analyzed.

*Prerequisite: graduate status or permission of instructor; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **PSB 851**

##### **Bio-organic Chemistry**

This course reviews the organic chemistry of biological catalysts, including the essentials of enzymatic reactions. Emphasis is placed on enzyme and coenzyme structure and functions, mechanisms of action, and modes of inhibition.

*Prerequisite: PSB 332 or consent of instructor; class, 2 hrs.; credit, 2 s.h.; spring.*

#### **PSB 855**

##### **Care and Use of Laboratory Animals**

This course provides information for the graduate student on the various animal welfare agencies and the proper care and use of laboratory animals involved in scientific experimentation.

*Class, 1 hr.; credit, 1 s.h.; fall.*

#### **PSB 856B**

##### **Advanced Pharmacology: Neuropharmacology**

A course designed to present basic and applied neuropharmacology in a functional context, emphasizing the anatomical and biochemical basis of treatment or neurological disorders.

*Prerequisites: graduate admission or consent of instructor; class, 3hrs; credit, 3 s.h.; spring.*

#### **PSB 856E**

##### **Advanced Pharmacology: Anticancer Drugs**

Students will evaluate the pharmacology of conventional and novel targeted antineoplastic agents. The focus of learning is on the use of in vitro and in vivo models in antineoplastic drug discovery and in understanding the underlying mechanisms of cytotoxicity and resistance through journal club discussions, assigned readings, and peer presentations.

*Prerequisites: graduate admission or consent of instructor; class, 3 hrs.; credit, 3 s.h., fall.*

#### **PSB 856F**

##### **Graduate Biochemistry**

A course designed to present basic and advanced topics in molecular biology and biochemistry.

*Prerequisites: graduate admission or consent of instructor; class, 3 hrs.; credit, 3 s.h.; fall.*

#### **PSB 856H**

##### **Advanced Pharmacokinetics and Dynamics**

This course introduces principles of pharmacokinetic (PK) and pharmacodynamic (PD) knowledge from a qualitative and quantitative perspective, as well as principles of pharmacology related to drug development, application, and analysis of data and modeling. Through literature, presentations, and class participation, students will gain an understanding of the evolution of PK/PD concepts and be able to apply principles to test current hypotheses.

*Prerequisites: graduate admission or consent of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **PSB 860**

##### **Chromatography**

This course discusses the practical application of chromatography, with emphasis on liquid chromatography, reviewing the theory and basic principles of chromatography as a separation tool and the techniques of method development and validation.

*Prerequisites: graduate admission and CHE 717 or*

equivalent, or consent of instructor; class, 2 hrs.; credit, 2 s.h.; spring.

**PSB 861  
Chromatography Laboratory**

This lab provides experience in the development and validation of the HPLC method for the analysis of pharmaceuticals by evaluating the effects of molecular structures and the selection of columns and mobile phases in the practical development of the HPLC method.

*Co-requisite: PSB 860 for graduate students without previous instrumentation experience; lab, 6 hrs.; credit, 1 s.h.; spring.*

**PSB 872  
Special Problems in Pharmaceutical Sciences**

A student may be permitted by the Graduate Dean to undertake a less extensive investigation than that of the PhD dissertation or to participate in a field study program at an off-campus site. This investigation / field study program is conducted in the areas of the student's major or minor field of study and is open to all doctoral graduate students having completed at least two years of doctoral study and two semesters of research credits. Students are expected to prepare a proposal including the nature of the fieldwork, the study objective, the field study site, the fieldwork supervisor, and other topics related to the student's major/minor field of study. The proposal is to be approved by the student's Graduate Advisory Committee several months prior to beginning the program. At the conclusion of the field study program, the student and field supervisor submit a report to the Graduate Advisory Committee and the Dean of Graduate Studies. A cumulative maximum of 2 semester hours may be applied toward the graduate degree. The amount of credit awarded for a special problem is subject to review by the Graduate Advisory Committee and the Dean of Graduate Studies. This course is not subject to tuition remission.

*Credit, 1–2 s.h.; varies.*

**PSB 875/875L  
Pharmaceutical Dosage Forms Design**

This course studies the application of pharmaceuticals, physical pharmacy, and pharmacokinetics in a systematic approach to the design and development of pharmaceutical dosage forms. It includes preformulation, selection of dosage form and its excipients, selection of processes, application of quantitative techniques of optimization, and process of drug registration.

*Class, 2 hrs.; lab, 9 hrs.; credit, 4 s.h.; fall.*

**PSB 880  
Research**

Four (4) semester hours required for the master's degree and 7 or 8 semester hours required for the

doctorate, including 1 seminar hour. In no case shall more than 3 research credits be taken until after the proposal has been approved by the Graduate Advisory Committee and the Dean of Graduate Studies.

*Time and credit to be approved by the major professor.*

**PSB 895  
Graduate Study Extension**

All degree students are expected to remain continuously enrolled each semester, excluding summer semesters, until all requirements for the degree have been completed. Students maintain continuing registration by indicating PSB 895 Graduate Study Extension on the registration form and paying a fee. This course is not subject to tuition remission.

*Credit, none.*

**Pharmaceutical Sciences–  
Worcester/Manchester (PSW)**

**PSW 300  
Pharmaceutical Biochemistry I**

A study of the structure, physical/chemical properties, function, and interactions of molecules found in biological systems: amino acids, peptides, and proteins; nucleotides and nucleic acids; carbohydrates; lipids; and hybrid molecules.

*Co-requisites: Concurrent enrollment in all required courses, class, 2 hrs.; credit, 2 s.h.; fall.*

**PSW 301  
Pharmaceutical Biochemistry II / Nutrition**

The course covers the metabolism of molecules found in biological systems, energy storage and utilization, and molecular biosynthesis and its regulation; the storage, use, and replication of genetic information; and an overview of human nutrition, including standards and guidelines, weight control, and food-drug interactions.

*Prerequisites: Successful completion of all preceding required courses, Co-requisites: Concurrent enrollment in all required courses, class, 3 hrs.; credit, 3 s.h.; spring.*

**PSW 311  
Pharmaceutics**

Introduction to drug delivery systems and the physical and chemical properties of drugs that can be applied to pharmacy practice.

*Co-requisites: Concurrent enrollment in all required courses, class, 3 hrs.; credit, 3 s.h.; fall.*

**PSW 312/312L  
Pharmaceutics II**

Calculations required to determine the correct dosage of medication based on individual patient needs and characteristics as well as quantities of ingredients

necessary to prepare extemporaneously compounded prescriptions are taught in this course. Students will learn to use pharmaceutical equipment and supplies to prepare a variety of solid and liquid dosage forms and injectable medications in the weekly laboratory exercise.

*Prerequisites: Successful completion of all preceding required courses, Co-requisites: Concurrent enrollment in all required courses; class, 1.5 hrs.; lab, 3 hrs.; credit, 2 s.h.; spring.*

### **PSW 313**

#### **Pharmacokinetics/Biopharmaceutics**

Students will be introduced to the principles of biopharmaceutics and pharmacokinetics, and how they affect dosage regimen design and therapeutic efficacy evaluations. The impact of the physical and chemical nature of drugs and dosage forms will be studied as they relate to drug absorption, distribution, metabolism, and elimination.

*Prerequisites: Successful completion of all preceding required courses, Co-requisites: Concurrent enrollment in all required courses, class, 3 hrs.; credit, 3 s.h.; spring.*

### **PSW 323**

#### **Immunology**

The course is designed to prepare students to meet the daily requirements of a practicing pharmacist in understanding the immunological consequences of the drugs they will administer. At the end of this course, the student will understand how the immune system functions and how it responds to regulate physiological homeostasis in the presence of infectious disease, autoimmune disease, allergies, transplantation, and cancer. The student will be able to apply this knowledge to pharmaceuticals that target immune system dysfunction.

*Co-requisites: Concurrent enrollment in all required courses, class, 2 hrs.; credit, 2 s.h.; fall.*

### **PSW 325**

#### **Introduction to Human Physiology and Pathophysiology**

This course is the first in a series focused on comparative study of organ system functions and their relationship to the etiology, pathogenesis, and clinical manifestation of human diseases. Students will learn pathophysiological fundamentals, cell communication and dysfunction, peripheral and central nervous system function and dysfunction, muscle and motor function and dysfunction, and hematopoietic system function and dysfunction.

*Prerequisites: Successful completion of all preceding required courses, Co-requisites: Concurrent enrollment in all required courses, class, 2 hrs.; credit, 2 s.h.; spring*

### **PSW 335**

#### **Human Physiology and Pathophysiology I**

This course is the second in a series focused on comparative study of organ system functions and their relationship to the etiology, pathogenesis, and clinical manifestation of human diseases. Students will learn reproductive, gastrointestinal, hepatobiliary, and renal systems function and dysfunction. Students will learn fluid and acid-base balance in the human body.

*Prerequisites: Successful completion of all preceding required courses, Co-requisites: Concurrent enrollment in all required courses, class, 3 hrs.; credit, 2 s.h.; summer.*

### **PSW 341**

#### **Neglected Tropical Diseases**

This course focuses on the pathophysiology and treatment of the neglected diseases endemic in tropical regions of the world and protection strategies that may be employed to prevent these diseases.

*Class, 3 hrs., credit 2 s.h.; summer*

### **PSW 346**

#### **Introductory Transdermal Product Development**

This course will introduce the principles of transdermal delivery, the technologies for enhancing drug penetration across the skin, and the process and regulations to the development of successful transdermal products. The course will also offer hands on experience in the preparation of transdermal patches and the evaluation of the penetration of the patch product across the skin.

*Class, 2 hrs, lab 0.6 hr, credit, 2 s.h.; spring*

### **PSW 350**

#### **Service and Care in the Community**

An introduction to the concepts and practice of service, care, and responsibility. Students perform community service and meet in seminars to discuss the work they are doing, thus combining and integrating service and learning.

*Class, 1 hr.; fieldwork, 2 hrs.; credit, 1 s.h.; fall.*

### **PSW 355**

#### **Directed Study**

Individual study directed by a faculty member in an area of her or his expertise. Faculty-assisted instruction using existing or previously known data and information. Eligible students must have earned a cumulative minimum 2.7 grade point average and have completed or be enrolled in all required courses consistent with their current academic standing.

*Prerequisite: consent of instructor; credit, 2 s.h.; spring, summer. NOTE: Students are limited to 4 credits of Directed Study electives in the PharmD program.*

### **PSW 364/PPW 364**

#### **Infectious Disease: Bugs and Drugs**

This course is designed to provide an overview of

infectious diseases and the concepts that are fundamental to designing antibacterial pharmacotherapeutic plans. Emphasis is placed on infectious disease pathophysiology, epidemiology, bacterial susceptibility profiles, culture specimen collection techniques, antibacterial susceptibility testing, and bacterial resistance.  
*Class, 2 hrs.; credit, 2 s.h.; spring.*

#### **PSW 365**

##### **Medical Myth Busters: Evidence-Based Approach**

When interacting with patients and customers, pharmacists are often asked their opinions about nontraditional, nonprescription remedies and treatments. This course is designed to provide information about some of these commonly asked questions and about these remedies. Students will learn how to examine the scientific evidence for and against the efficacy, safety, and mechanism(s) of action (if any) of various purported therapies and how to present this information to their customers and patients.

*Class, 3 hrs.; credit, 2 s.h.; summer.*

#### **PSW 365I**

##### **Drug Discovery and Translational Medicine**

This course considers issues that impact drug discovery and translational medicine. Translational medicine is the laboratory and clinical research needed to advance a chemical or biological entity "from bench to bedside." Students are required to participate in classroom and online discussions of readings that complement the lectures and textbook assignments and to complete in-class presentations and written review assignments.

*Class 3 hrs.; credit, 2 s.h.; summer.*

#### **PSW 365N**

##### **Medical Cannabis**

This course will introduce doctor of pharmacy students to the medical uses of cannabis, commonly known as "medical marijuana", from a scientific perspective. Students will explore cannabis, cannabinoid and endocannabinoid: pharmacology and fundamental science concepts, differences between cannabis and cannabinoids, therapeutics, and ethical, social, and legal complexities.

*Class 2 hrs.; credit, 2 s.h.*

#### **PSW 368**

##### **Experimental Cancer Research**

Major differences between normal and tumor tissues will be discussed. The lecture content will establish the intellectual framework necessary for understanding cancer research and treatment. Students will be assigned literature-based topics that they will develop and critically evaluate in stages.

*Class, 1 hr.; lab 3 hrs.; credit, 2 s.h.; summer.*

#### **PSW 369W**

##### **Pharmaceutical Nanotechnology**

The goal of this course is to introduce students to the science of pharmaceutical nanotechnology with an added emphasis on its clinical application. The course has three integrated aspects; in-class course experience in the (1) scientific basis (2) clinical application of nanotechnology/nanomedicine; and (3) project-based theoretical approach to nanoparticle design/formulation.

*Class 3 hrs.; credit, 2 s.h.; summer.*

#### **PSW 365M.W**

##### **Virtual Experimental Pharmacology**

Students will use computer software simulations to perform virtual classical in vivo (anesthetized dog) and in vitro (isolated guinea-pig ileum) pharmacology experiments. Students will observe first-hand the action of representative drugs at the organ system- or intact animal-level. Students will learn and perform graphical analysis of data to gain an in-depth appreciation of the dose-response relationship, drug-antagonist interactions, and receptor subtypes.

*Prerequisites: PSW 320, PSW 322, PSW 380, PSW 481; lab, 4 hrs.; credit, 2 s.h.*

#### **PSW 371**

##### **Research Project**

Independent research directed by a faculty member in an area of her or his expertise. The student's work will generate new data or knowledge or apply significantly new methodologies to analyze previously published data. Eligible students must have earned a cumulative minimum 2.7 grade point average and have completed or be enrolled in all required courses consistent with their current academic standing.

*Prerequisite: consent of instructor; credit, 1–2 s.h.*

#### **PSW 385**

##### **Pharmacology, Toxicology and Medicinal Chemistry I**

A review of organic functional groups, stereochemistry, acid/base chemistry and reaction mechanism, introduction to pharmacodynamics, drug discovery, the drug approval process, mechanism of drug action, drug receptor/enzyme interactions, drug metabolism, drug toxicity, and drug safety evaluation and risk assessment.

*Prerequisites: Successful completion of all preceding required courses, Co-requisites: Concurrent enrollment in all required courses, class, 4.5 hrs.; credit, 3 s.h.; summer.*

#### **PSW 435**

##### **Human Physiology and Pathophysiology II**

This course is the third in a series focused on comparative study of organ system functions and their relationship to the etiology, pathogenesis, and clinical manifestation of human diseases. Students will learn

endocrine system function and dysfunction; and control of vascular tone and associated pathophysiology.

*Prerequisites: Successful completion of all preceding required courses, Co-requisites: Concurrent enrollment in all required courses, class, 2.5 hrs.; credit, 1 s.h.; fall.*

#### **PSW 445**

##### **Pharmacology, Toxicology, and Medicinal Chemistry II**

This course is the second in the series of Pharmacology, Toxicology, and Medicinal Chemistry, and involves a coordinated approach for learning structure-activity relationships, mechanism of drug action, and toxicity profiles, for selected classes of drugs for common disease states. Emphasis is on drugs affecting the cholinergic system, some endocrine disorders and the renal system.

*Prerequisites: Successful completion of all preceding required courses, Co-requisites: Concurrent enrollment in all required courses; class, 5 hrs.; credit, 2 s.h.; fall.*

#### **PSW 473**

##### **Pharmacogenomics: An Introduction to Personalized Medicine**

This study of Pharmacogenomics builds on concepts introduced in courses encountered during earlier semesters, such as Pharmacology and Pharmacotherapeutics. Students will examine the factors responsible for differing responses of individuals to specific drug therapy. This includes analyses of genomic polymorphisms and their implications for pharmacotherapy. Students will be equipped to integrate these factors into the Pharmacists' Patient Care Process.

*Prerequisites: Successful completion of all preceding required courses, Co-requisites: Concurrent enrollment in all required courses, class, 3 hrs.; credit, 2 s.h.; summer.*

#### **PSW 475**

##### **Pharmacology, Toxicology, and Medicinal Chemistry III**

This course involves a coordinated approach for learning structure activity relationships, mechanisms of drug action, and toxicity profiles for common disease states. Emphasis is on drugs used in the treatment of diseases of the cardiovascular and pulmonary systems, antimicrobial therapies, and pain.

*Prerequisites: Successful completion of all preceding required courses, Co-requisites: Concurrent enrollment in all required courses, class, 7 hrs.; credit, 7 s.h.; spring.*

#### **PSW 485**

##### **Pharmacology, Toxicology, and Medicinal Chemistry IV**

This course is the fourth in the series of Pharmacology,

Toxicology, and Medicinal Chemistry, and involves a coordinated approach for learning structure-activity relationships, mechanism of drug action, and toxicity profiles, for selected classes of drugs for common disease states. Emphasis is on drugs affecting the central nervous system, some neuro/psychiatric disorders and oncology.

*Prerequisites: Successful completion of all preceding required courses, Co-requisites: Concurrent enrollment in all required courses, class, 4.5 hrs.; credit, 3 s.h.; summer.*

#### **PSW 470**

##### **Human Physiology and Pathophysiology III**

This course is the fourth in a series focused on comparative study of organ system functions and their relationship to the etiology, pathogenesis, and clinical manifestation of human diseases. Students will learn functions and associated pathophysiology in the following systems: A) cardiovascular: control of coronary circulation, cardiac contractility; B) respiratory; C) muscle and D) somatosensory.

*Pre-requisites: Successful completion of all preceding required courses, Co-requisites: Concurrent enrollment in all required courses, class 2 hrs; credit 2 s.h.; spring.*

## **Doctor of Physical Therapy Program (PTH)**

#### **PTH 501**

##### **PT as a Profession**

Students learn the history of the profession, scope of practice, and how to apply the core values of the APTA to professional practice expectations. They will attain an understanding of the role of the physical therapist in primary, secondary, and tertiary care and prevention. This course will include ethics and professionalism, communication, cultural competence, and the role of the physical therapist as an educator.

*Prerequisite: DPT student; class, 2 hrs.; credit, 2 s.h.; fall.*

#### **PTH 510**

##### **Foundations of PT Management I**

This course is designed to provide a basic practical understanding of patient management skills used in physical therapy practice, including infection control, the use of a medical record and documentation, oral and written communication, vital signs, body mechanics, transfer techniques, range-of-motion exercises, guarding techniques for patient ambulation, and the measurement of assistive devices.

*Prerequisite: DPT student; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; fall.*

**PTH 515****Foundations of PT Management II**

Topics include the anatomical and physiological responses to applied physical agent modalities, including the appropriate selection and application of these modalities to meet specific patient needs. Students will have the opportunity to become competent in the selection, application, and proper documentation of commonly used electrotherapeutic modalities, thermal agents, and hydrotherapy applications. Theories underlying these patient interventions are explored in detail.

*Prerequisite: successful completion of DPT Year I fall semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; spring.*

**PTH 520****Clinical Medicine and Pathology I**

Students will acquire foundational knowledge of the pathological processes of major body systems, including immune, hematological, hemodynamic, cardiovascular, cardiopulmonary, integumentary, gastrointestinal, genitourinary, hepatobiliary, renal, genitourinary, endocrine, and lymphatic. General medicine, laboratory medicine, and pathophysiology as related to patient conditions that impact physical therapy management will be addressed.

*Prerequisite: DPT student; class, 3hrs.; credit, 3 s.h.; fall.*

**PTH 525****Clinical Medicine and Pathology II**

Students will learn foundational knowledge of pathological processes of major body systems. General medicine, laboratory medicine and pathophysiology as related to patient conditions that impact physical therapy management will be addressed. This second course will focus on Musculoskeletal and Neurological diagnoses.

*Prerequisite: successful completion of DPT Year I fall semester; class, 3 hrs.; credit, 3 s.h.; spring.*

**PTH 530****Clinical Human Anatomy I**

Students will learn normal anatomy, function, and pathology with emphasis on the skeletal, articular, and muscular systems. In this first course, students will focus on lower body anatomy. Students will use a regional approach to study surface anatomy, range of motion, and clinical palpation. In the laboratory experience, students will study human anatomy preparations and anatomy models.

*Prerequisite: DPT student; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; fall.*

**PTH 535****Clinical Human Anatomy II**

Students will learn normal anatomy, function, and pathology with emphasis on the skeletal, articular, and muscular systems. In this second course, students will

focus on upper body anatomy. Students will use a regional approach to study surface anatomy, joint range of motion, and clinical palpation. In the laboratory experience, students will study human anatomy preparations and anatomy models.

*Prerequisite: successful completion of DPT Year I fall semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; spring.*

**PTH 540****Evidence for PT Practice I**

Students are introduced to the foundation of scientific inquiry in physical therapy, including library search methods, establishment of research questions, research methods, research ethics, and AMA format.

*Prerequisite: DPT student; class, 2 hrs.; credit, 2 s.h.; fall.*

**PTH 545****Evidence for PT Practice II**

Students are introduced to the concepts of scientific inquiry as related to clinical practice and clinical outcomes. Students use current PT literature to explore the use of best research evidence and outcomes measurement, applying critical appraisal techniques.

*Prerequisite: successful completion of DPT Year I fall semester; class, 1 hr.; credit, 1 s.h.; spring.*

**PTH 550****Pharmacology**

Students are introduced to the basic principles of pharmacology, including pharmacokinetics and pharmacodynamics. The pharmacology of drug classes used in the management of disorders of the nervous, musculoskeletal, cardiovascular, respiratory, pain, integumentary, and endocrine systems, as well as infectious and neoplastic diseases, will be addressed. Emphasis will be placed on how pharmacology interacts with physical rehabilitation.

*Prerequisite: successful completion of DPT Year I fall semester; class, 3 hrs.; credit, 3 s.h.; spring.*

**PTH 552****PT in the Acute Care Environment**

This course is designed to prepare physical therapy students to safely manage patients in acute and critical care settings. The course will focus on integrative analysis of multiple disease processes (spanning all practice patterns: musculoskeletal, neuromuscular, cardiovascular, pulmonary, and integumentary) and their respective medical and surgical management that is relevant to physical therapy management.

*Prerequisite: DPT student; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; fall.*

**PTH 554****Lifespan Motor Control**

The course will examine neural, behavioral, and physical mechanisms that contribute to the control of



movement in humans (motor control) over the lifespan. The focus will be on motor control in healthy persons across the lifespan. The course also will examine factors that influence the learning of new motor skills (motor learning) as a result of practice and/or experience.

*Prerequisite: successful completion of DPT Year I spring semester; class, 3 hrs.; credit, 3 s.h.; summer.*

**PTH 556  
Human Gait**

This course will cover the examination, evaluation, and beginning treatment interventions for human gait and balance. The focus will be on gait analysis and will include standardized measures. Students will explore control mechanisms, including pattern generators, motor and sensory mechanisms, cognitive systems, and nonneural contributions to locomotion. Task-oriented mobility interventions such as body weight support treadmill training will be introduced. In the lab portion of this course, students learn the skills of gait analysis using visual, mechanical, and technology assisted methodologies.

*Prerequisite: successful completion of DPT Year I spring semester; class, 1.5 hrs., lab 1 hr; credit, 2 s.h.; summer.*

**PTH 558  
Clinical Kinesiology**

This course is designed to study normal movement through the analysis of muscle and joint function. Emphasis will be placed on the analysis of major joints and regions of the body. The laboratory portion of this course is designed to provide the student with the clinical skills of goniometry and manual muscle testing to assess joint mobility and muscle performance.

*Prerequisite: successful completion of DPT Year I spring semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; summer.*

**PTH 560  
Standardized Measurement in PT Practice**

Students will learn information about measurement in physical therapy. Topics to be covered include measurement levels, reliability, validity, sensitivity and specificity of standardized measurements in physical therapy. Specific measurement tools at different levels of the International Classification of Functioning, Disability and Health (ICF) will be covered.

*Prerequisite: successful completion of DPT Year I fall semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; spring.*

**PTH 565  
PT Cardiopulmonary Patient Management**

This course covers physical therapy management of patients needing cardiovascular and pulmonary care. The laboratory component presents examination skills and clinical applications of physical therapy intervention. The lecture part of the course includes the

etiology, pathology, and prognosis of common cardiopulmonary conditions. Medical, surgical, and physical therapy management for these conditions will be addressed in both lecture and laboratory sessions.

*Prerequisite: successful completion of DPT Year I spring semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; summer.*

**PTH 570  
Integrated Clinical Education I**

This first course provides students with opportunities to synthesize and integrate content from concurrent courses to patient encounters in clinical settings. The focus of this course will be professional communication and behavior, and the application of clinical skills learned in concurrent courses. This is accomplished through seminars, reflection, service learning, learning activities, case studies, and observation.

*Prerequisite: DPT student; class, 2 hrs.; credit, 2 s.h.; fall.*

**PTH 575  
Integrated Clinical Education II**

This second course provides students with opportunities to synthesize and integrate content from concurrent and previous courses to patient encounters in clinical settings. The focus of this course will be professional communication and behavior, and the application of clinical skills learned in concurrent and previous courses. This is accomplished through seminars, reflection, service learning, learning activities, case studies, and observation.

*Prerequisite: successful completion of DPT Year I fall semester; class, 2 hrs.; credit, 2 s.h.; spring.*

**PTH 580  
Professional Issues in PT Practice I**

Students will learn about the roles and responsibilities of a physical therapist within the healthcare system. Methods of healthcare delivery and issues of access, availability, and financial coverage will be examined.

*Prerequisite: successful completion of DPT Year I spring semester; class, 1 hr.; credit, 1 s.h.; summer.*

**PTH 601  
Clinical Imaging**

This course will introduce students to diagnostic imaging principles and techniques as applied to physical therapy assessment and management. The course will emphasize radiographic anatomy, common normal variants, and pathological and traumatic conditions. In addition to standard radiographic techniques, other imaging techniques, such as CT scan, nuclear medicine, angiography, magnetic resonance imaging, and ultrasound imaging, will be addressed.

*Prerequisite: successful completion of DPT Year I summer semester; class, 2 hrs.; credit, 2 s.h.; fall.*

**PTH 610****Musculoskeletal Patient Management I**

Students learn the etiology and pathology of common orthopedic disorders of the lower extremities. Medical, surgical, and physical therapy management will be discussed. Students learn the theoretical basis and clinical application of examination, assessment, diagnosis, prognosis, and intervention for conditions that are commonly encountered by physical therapists. In the lab portion of this course, students learn examination skills, differential diagnosis, and clinical application of intervention approaches for selected musculoskeletal conditions.

*Prerequisite: successful completion of DPT Year I summer semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; fall.*

**PTH 615****Musculoskeletal Patient Management II**

Students learn the etiology and pathology of common orthopedic disorders of the upper extremities. Medical, surgical, and physical therapy management will be discussed. Students learn the theoretical basis and clinical application of examination, assessment, diagnosis, prognosis, and intervention for conditions that are commonly encountered by physical therapists. In the lab portion of this course, students learn examination skills, differential diagnosis, and clinical application of intervention approaches for selected musculoskeletal conditions.

*Prerequisite: successful completion of DPT Year II fall semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; spring.*

**PTH 620****Musculoskeletal Patient Management III**

Students will learn and apply different theories of patient examination and physical therapy intervention for all regions of the spine, pelvis, and temporomandibular joint. Patient management using Cyriax, Maitland, Mulligan, and McKenzie will be discussed and demonstrated. Neural mobilization techniques will also be included with an emphasis on individual nerve testing, self-mobilization practices, and functional exercise interventions.

*Prerequisite: successful completion of DPT Year II spring semester; class, 2 hr.; lab, 2 hrs.; credit, 3 s.h.; summer.*

**PTH 630****Neuromuscular Patient Management I**

This course covers the foundations of the physical therapy examination and evaluation, and an introduction to interventions with patients with neurological deficits. The laboratory component presents examination skills and clinical applications of integrated intervention approaches. The lecture part of the course includes the etiology, pathology, and physical therapy management of adult nonprogressive disorders that affect the central nervous system.

*Prerequisite: successful completion of DPT Year II fall semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; spring.*

**PTH 635****Neuromuscular Patient Management II**

This course builds upon skills learned in Neuromuscular Patient Management I and focuses on the application and critical analysis of evidenced-based treatment approaches. The lecture part of the course includes the etiology, pathology, and physical therapy management of adult progressive disorders that affect the central nervous system as well as nonprogressive disorders of the spinal cord and peripheral nervous system.

*Prerequisite: successful completion of DPT Year II spring semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; summer.*

**PTH 640****Evidence for PT Practice III**

In small groups, students develop and work on a concentrated project of community interest and/or relevance related to the field of physical therapy. Ongoing work includes detailed literature searching and continued critical appraisal of related literature, with the development of a research proposal related to the concentrated project. In-class, independent group work and off-campus work may be necessary.

**PTH 645****Evidence for PT Practice IV**

In small groups, students utilize a patient case to create a comprehensive case report that is presented at the close of the semester. Additionally, students continue utilizing evidence based practice skills in relation to didactic content, as well as continued work on the project started in PTH 640. In-class, independent group work and off-campus work may be necessary.

*Prerequisite: successful completion of DPT Year II fall semester; class, 2 hrs.; credit, 2 s.h.; spring.*

**PTH 650****Therapeutic Exercise**

*Students will focus on the role of therapeutic exercise as an intervention utilized by physical therapists. Students will become skilled in exercise prescription and execution of exercise to address impairments, functional limitations and participation restrictions seen across the lifespan. The role of exercise as a tool in prevention programs is explored as well.*

*Prerequisite: successful completion of DPT Year I summer semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; fall.*

**PTH 652****Neuroscience**

Students learn basic neuroanatomy and neurophysiology with an emphasis on issues that have

clinical relevance to physical therapy rehabilitation. Emphasis will be placed on developing an understanding of human performance and motor control.

*Prerequisite: successful completion of DPT Year I summer semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; fall.*

#### **PTH 654**

##### **Orthotics and Prosthetics**

This course includes the theory and current clinical practices related to upper and lower extremity prostheses along with the ability to evaluate and recommend the use of orthotic devices for upper and lower extremities as well as the spine. Examination and implementation of physical therapy interventions in the management of this patient population will also be covered.

*Prerequisite: successful completion of DPT Year I summer semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; fall.*

#### **PTH 656**

##### **PT Management for the Geriatric Patient**

This course provides a survey of geriatric concerns relating to each of the body systems. The changes normally expected with aging are contrasted with pathological changes. Emphasis of this course will be on screening, examination, evaluation, and intervention when working with the older adult. Nutrition, pharmacology, and health promotion and wellness also will be addressed.

*Prerequisite: successful completion of DPT Year II fall semester; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **PTH 658**

##### **PT Management for the Pediatric Patient**

This course provides a survey of pediatric concerns relating to each of the body systems and the corresponding physical therapy management of the child, from the newborn period through adolescence. Emphasis is on development, including motor patterns, sensory integration, and oral-motor skills; setting-specific considerations; health promotion and wellness for children with and without disabilities; and family-therapist collaboration and communication.

*Prerequisite: successful completion of DPT Year II fall semester; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **PTH 630**

##### **Neuromuscular Patient Management I**

This course covers the foundations of the physical therapy examination and evaluation, and an introduction to interventions with patients with neurological deficits. The laboratory component presents examination skills and clinical applications of integrated intervention approaches. The lecture part of the course includes the etiology, pathology, and physical therapy management of adult nonprogressive

disorders that affect the central nervous system.

*Prerequisite: successful completion of DPT Year II fall semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; spring.*

#### **PTH 635**

##### **Neuromuscular Patient Management II**

This course builds upon skills learned in Neuromuscular Patient Management I and focuses on the application and critical analysis of evidenced-based treatment approaches. The lecture part of the course includes the etiology, pathology, and physical therapy management of adult progressive disorders that affect the central nervous system as well as nonprogressive disorders of the spinal cord and peripheral nervous system.

*Prerequisite: successful completion of DPT Year II spring semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; summer.*

#### **PTH 640**

##### **Evidence for PT Practice III**

In a small group, students develop a proposal for a supervised investigation and begin supervised work with a faculty research advisor. Ongoing work includes critical appraisal of related literature. This course is constructed as an independent study in which students are required to arrange meetings, mini lectures, and/or one-on-one tutoring sessions with the assigned research advisor.

*Prerequisite: successful completion of DPT Year I summer semester; class, 2 hrs.; credit, 2 s.h.; fall.*

#### **PTH 645**

##### **Evidence for PT Practice IV**

In a small group, students continue a supervised investigation and supervised work with a faculty advisor on a predetermined topic from the prior semester's work. This course is constructed as an independent study in which students are required to arrange meetings, mini lectures, and/or one-on-one tutoring sessions with the assigned research advisor.

*Prerequisite: successful completion of DPT Year II fall semester; class, 2 hrs.; credit, 2 s.h.; spring.*

#### **PTH 650**

##### **Therapeutic Exercise**

Students will focus on the role of therapeutic exercise as an intervention utilized by physical therapists. Students will become skilled in exercise prescription and execution of exercise to address impairments, functional limitations, and disabilities seen across the lifespan. The role of exercise as a tool in prevention programs is explored.

*Prerequisite: successful completion of DPT Year I summer semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; fall.*

**PTH 652****Neuroscience**

Students learn basic neuroanatomy and neurophysiology with an emphasis on issues that have clinical relevance to physical therapy rehabilitation. Emphasis will be placed on developing an understanding of human performance and motor control.

*Prerequisite: successful completion of DPT Year I summer semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; fall.*

**PTH 654****Orthotics and Prosthetics**

This course includes theory, current clinical practices, and an opportunity for practicing management techniques related to environmental adaptations and assistive technology, including prosthetics, orthotics, seating, and mobility. Examination and implementation of physical therapy interventions in the management of patients requiring assistive technology is explored through lectures and a lab.

*Prerequisite: successful completion of DPT Year I summer semester; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; fall.*

**PTH 656****PT Management for the Geriatric Patient**

This course provides a survey of geriatric concerns relating to each of the body systems. The changes normally expected with aging are contrasted with pathological changes. Emphasis of this course will be on screening, examination, evaluation, and intervention when working with the older adult. Nutrition, pharmacology, and health promotion and wellness also will be addressed.

*Prerequisite: successful completion of DPT Year II fall semester; class, 3 hrs.; credit, 3 s.h.; spring.*

**PTH 658****PT Management for the Pediatric Patient**

This course provides a survey of pediatric concerns relating to each of the body systems and the corresponding physical therapy management of the child, from the newborn period through adolescence. Emphasis is on development, including motor patterns, sensory integration, and oral-motor skills; setting-specific considerations; health promotion and wellness for children with and without disabilities; and family-therapist collaboration and communication.

*Prerequisite: successful completion of DPT Year II fall semester; class, 3 hrs.; credit, 3 s.h.; spring.*

**PTH 660****Professional Issues in PT Practice II**

Physical therapy students continue to examine issues related to the role and responsibilities of the physical therapist in professional practice. Effective communication, cultural competency, ethical and moral

decision making, leadership, delegation, supervision, and other professionalism issues are covered. The guiding documents of the APTA are used as tools for this course.

*Prerequisite: successful completion of DPT Year II fall semester; seminar, 2 hrs.; credit, 1 s.h.; spring.*

**PTH 665****Professional Issues in PT Practice III**

Students will learn the basic concepts and principles of management as they apply to the administration and direction of physical therapy services. Included are development planning and design, fiscal management, principles of supervision, legal issues, and quality assurance.

*Prerequisite: successful completion of DPT Year II spring semester; class, 3 hrs.; credit, 3 s.h.; summer.*

**PTH 670****Integrated Clinical Education III**

This third course provides students with opportunities to synthesize and integrate content from concurrent and previous courses and apply it to patient encounters in clinical settings. The focus of this course will be professional communication and behavior as well as the application of clinical skills learned in concurrent and previous courses. This is accomplished through seminars, reflection, learning activities, case studies, and observation.

*Prerequisite: successful completion of DPT Year I summer semester; class, 2 hrs.; credit, 2 s.h.; fall.*

**PTH 675****Integrated Clinical Education IV**

This fourth course provides students with opportunities to synthesize and integrate content from concurrent and previous courses and apply it to patient encounters in clinical settings. The focus of this course will be professional communication and behavior as well as the application of clinical skills learned in concurrent and previous courses. This is accomplished through seminars, reflection, learning activities, case studies, and observation.

*Prerequisite: successful completion of DPT Year II fall semester; class, 2 hrs.; credit, 2 s.h.; spring.*

**PTH 680****Integrated Clinical Education V**

This fifth course provides students with opportunities to synthesize and integrate content from concurrent and previous courses and apply it to patient encounters in clinical settings. The focus of this course will be professional communication and behavior as well as the application of clinical skills learned in concurrent and previous courses. This is accomplished through seminars, reflection, learning activities, case studies, and observation.

*Prerequisite: successful completion of DPT Year II spring semester; class, 2 hrs.; credit, 2 s.h.; summer.*

**PTH 685****Directed Study for Physical Therapy**

This course is organized as an individual study and directed by a faculty member from the School of Physical Therapy. Student learning involves self-instruction and/or faculty-assisted instruction using existing or previously known knowledge.

*Prerequisite: approval of PT faculty member and school dean; variable credit of 1–3 s.h.; varies.*

**PTH 750****Advanced Manual Topics for Physical Therapists**

Students will have an introduction to a variety of manual therapy topics and an opportunity to expand their knowledge and hands-on techniques of soft tissue mobilization. Emphasis is placed on advanced manual techniques that are currently used in physical therapy practice.

*Prerequisite: successful completion of DPT Year III fall semester and PTHC 700, 710, 720; credit, 1 s.h.; varies.*

**PTH 770****Advanced Manual and Manipulative Techniques of the Spine and Periphery**

This course is focused on different advanced manual and manipulative techniques for the spine and the periphery. Additionally, principles of assessment and treatment of the nervous system will be incorporated as well. The course will be organized according to body region and will utilize concepts of Mulligan, Maitland, and Cyriax, as well as other selected manual techniques.

*Prerequisite: successful completion of DPT Year III fall semester and PTHC 700, 710, 720; credit, 1 s.h.; varies.*

**PTH 810****Evidence for PT Practice V**

In a small group, students conduct a supervised investigation of a selected problem related to the field of physical therapy. Student groups develop a formal research proposal and organize, analyze, and present data and findings from the investigation. Presentation of the findings is done in written form, poster presentation, and podium presentation to faculty, peers, and clinicians.

*Prerequisite: successful completion of DPT Year III fall semester and PTHC 700, 710, 720; class, 1 hr.; credit, 1 s.h.; spring.*

**PTH 820****Current Topics in PT Practice**

Students will explore current topics in physical therapy related to contemporary practice in the continually evolving field of physical therapy. As a part of this seminar, students will be exposed to areas of practice

and patient management that have evolved recently and are necessary to know for entry-level practice.

*Prerequisite: successful completion of DPT Year III fall semester; class, 2 hrs.; credit, 2 s.h.; spring.*

**PTH 830****Professional Issues in PT Practice IV**

Students will prepare for entry to professional work in physical therapy by developing job search strategies and identification of post-graduation career opportunities including clinical education instruction. Students will develop two key plans for success: a study plan for licensure preparation and a career plan for lifelong learning.

*Prerequisite: successful completion of DPT Year III fall semester; class, 1 hr.; credit, 1 s.h.; spring.*

**PTHC 700****Clinical Education Experience I**

This course is the first 10-week full-time clinical education experience, conducted in a variety of clinical settings. Students will be provided with opportunities to apply skills previously learned in the DPT curriculum. Students will work under the supervision and guidance of a licensed physical therapist to develop competency in the management of patients with a variety of diagnoses.

*Prerequisite: successful completion of DPT Year II summer semester; experiential, 40 hrs. per week; credit, 8 s.h.; fall.*

**PTHC 710****Clinical Education Experience II**

This course is the second 10-week full-time clinical education experience, conducted in a variety of clinical settings. Students will be provided with opportunities to apply skills previously learned in the DPT curriculum. Students will work under the supervision and guidance of a licensed physical therapist to develop competency in the management of patients with a variety of diagnoses.

*Prerequisite: PTHC 700; experiential, 40 hrs. per week; credit, 8 s.h.; fall.*

**PTHC 720****Clinical Education Experience III**

This course is the third 10-week full-time clinical education experience, conducted in a variety of clinical settings. Students will be provided with opportunities to apply skills previously learned in the DPT curriculum. Students will work under the supervision and guidance of a licensed physical therapist to develop competency in the management of patients with a variety of diagnoses.

*Prerequisite: PTHC 710; experiential, 40 hrs. per week; credit, 8 s.h.; spring.*

## Radiography (RAD)

### **RAD 201C, RAD 202C**

#### **Radiography Internship I, II**

The Clinical Internship rotation is designed to allow the student hands on training in their desired field of radiography. The student will work one on one with the clinical instructor or, technologist with direct or indirect instruction in the affiliate hospital performing diagnostic images. RAD 201C 15 week rotation. RAD 202C 10 week rotation. Progression contingent upon successful completion of previous rotation. (Locations pending approval.)

*Prerequisites for RAD 201C: RAD 210, 220, 240, and RSC 305; prerequisite for RAD 202C: RAD 201C; experiential, 16 hrs./wk. spring, 32 hrs./wk. summer; credit, 4 s.h. (201C), 5 s.h. (202C).*

### **RAD 205**

#### **Radiography Foundations**

This course introduces radiography students to the use of ionizing radiation in healthcare. Topics include the principles of radiation safety, radiologic credentialing and professional organizations, customer service, and an overview of the history of radiology in medicine. *Prerequisite: accepted into the Radiography program; class, 1 hr.; experiential, 70 hrs./semester; credit, 3 s.h.; summer.*

### **RAD 210/210L**

#### **Radiographic Procedures I**

This course includes instruction in positioning terminology, anatomy, and image evaluation utilized during radiographic procedures. Simulated exams are performed within the laboratory.

*Prerequisites: BIO 110, 210; RAD 205; class, 3 hrs.; lab, 2 hrs.; credit, 4 s.h.; fall.*

### **RAD 211/211L**

#### **Radiographic Procedures II**

This course includes instruction in operating room procedures, portable radiographic procedures, skull and facial bone radiography, and procedures requiring contrast media. The indications and contraindications of contrast media are discussed, and laboratory simulation is utilized. Special considerations relating to trauma and pediatric patients are discussed.

*Prerequisite: RAD 210; class, 3 hrs.; lab, 1.5 hrs.; credit, 4 s.h.; spring.*

### **RAD 212**

#### **Radiographic Procedures III**

This course is a continuation of Radiographic Procedures II. Students will be able to evaluate and perform advanced imaging procedures that involve the delivery of contrast material in the clinical setting.

*Prerequisites: BIO 110, 111; RAD 210, 211, 221; class; 2 hrs; credit, 2 s.h.; summer.*

### **RAD 220/220L**

#### **Radiographic Exposure Principles I**

This course explains and discusses X-ray production and emission, X-ray-matter interactions, image receptors, exposure factors, processing, and other factors related to image production as well as principles of radiation protection.

*Prerequisites: MAT 141 or 151; RAD 205 and 240; class, 3 hrs.; lab, 1.5 hrs.; credit, 4 s.h.; fall.*

### **RAD 221**

#### **Radiographic Exposure Principles II**

This course is a continuation of Radiographic Exposure Principles I, with a focus on digital image quality, evaluation and PACS system. The design and utilization of a quality assurance program to achieve optimal image quality with minimal radiation dose are discussed.

*Prerequisites: RAD 220, 240; class, 3 hrs.; lab, 1.5 hrs.; credit, 3 s.h.; spring.*

### **RAD 240**

#### **X-ray Radiation Physics**

The fundamental processes governing the production, transmission, and interactions of x-rays for the purpose of medical radiography will be presented. Topics will include not only the basic physical principles of ionizing radiation but also the technologies that have been developed to use x-rays for producing diagnostically useful radiographs (high-voltage x-ray circuitry, rectification, thermionic diodes and filtration materials.

*Prerequisites: MAT 141, 150, or 151; PHY 181 or equivalent; class, 2 hrs.; credit, 2 s.h.; summer.*

### **RAD 250**

#### **Image Critique in Radiography**

Students will enhance critical thinking and problem solving skills in the radiologic sciences through group focused assessment and evaluation of diagnostically acceptable radiographic images. Facilitators will guide students through reflective image analysis of selected case studies using an interactive seminar format that reinforces imaging science principles and theories introduced throughout the curriculum. The synthesis approach to analytical critique of image quality integrates concepts previously explored in didactic courses and clinical rotations.

*Prerequisites: RAD 211, 221, 240; class, 2.5 hrs. (10 weeks); credit, 2 s.h.; summer.*

### **RAD 270**

#### **Intro to Problem Solving in Radiography**

This course is designed to assist the student in learning to integrate and synthesize material presented over the program's curriculum in order to prepare for the certification exam in Radiography. Content will be reviewed through peer tutoring sessions, case studies, online testing and presentations.

*Prerequisite: RAD 211 & RAD 221; class, 2 hrs.; credit, 2.*

**RAD 303C****Radiography Internship III**

Clinical internship in radiography. The student observes and performs diagnostic imaging procedures under direct and indirect supervision while completing required competency evaluations.

*Prerequisite: RAD 202C; RAD 250 experiential, 24 hrs./wk.; credit, 6 s.h.; fall.*

**RAD 304C****Radiography Internship IV**

This is a continuation of the internship sequence. Students perform radiographic procedures under direct and indirect supervision of a qualified radiographer and successfully complete the required competency evaluations. Progression is contingent upon successful completion of previous rotations.

*Prerequisite: RAD 303C; experiential, 24 hrs./wk.; credit, 6 s.h.; spring.*

**RAD 370****Problem Solving in Radiography**

This course is offered during the final semester of the radiography program. A hybrid of on-line activities and classroom discussions will integrate and synthesize the material learned throughout the curriculum and prepare students to provide patient care and function effectively within a radiology department.

*Prerequisites: RAD 211, 221, 240, 250, 270; RSC 305, 310; class, 3 hrs.; credit, 3 s.h.; spring.*

**Radiologic Science (RSC)****RSC 250****Patient Care and Medical Terminology**

This course provides the basic concepts of patient care as they relate to radiography, radiation therapy, and nuclear medicine departments. Topics include emergency procedures, sterile and aseptic techniques, phlebotomy, body mechanics, infection control and standard precautions, patient assessment, cultural competence, contrast media, and basic pharmacology in imaging. Concepts are applied through completion of a service learning project in the community.

*Prerequisites: BIO 210; CHE 210; MAT 141, 150, or 151; PHY 181; class, 3 hrs.; credit, 3 s.h.; summer, fall.*

**RSC 287****Radiation: Protection and Biology**

This course presents the basic principles, concepts, and procedures of radiation protection and radiobiology. Topics include radiation units; principles of radiation protection; absorbed dose calculations; health physics procedures; radiation exposure regulations; and reduction of radiation exposure to patients, personnel, and the environment.

*Prerequisite: NMT 271, RAD 240, 221; class, 3 hrs.; credit, 3 s.h.; spring.*

**RSC 310/3100****Cross-sectional Anatomy**

The course will focus on anatomy of the human body as it is viewed in the various axial, coronal, and sagittal planes. Radiologic anatomy will be viewed in the context of illustrations and pictures of gross anatomical sections.

*Prerequisites: BIO 210 or equivalent; CHE 220; MAT 141, 150, or 151; PHY 181 or 270; class, online plus 10 hrs. total classroom; credit, 3 s.h.; summer, fall.*

**RSC 315****CT Imaging**

This course is designed to provide students with an overview of CT instrumentation, imaging applications, physics, data acquisition, and history. Students will learn to apply theory to different types of CT equipment and data acquisition systems.

*Prerequisite: RTT 260 or NMT 271 or RAD 240; class, 3 hrs.; credit, 3 s.h.; spring.*

**RSC 325****Clinical Pathophysiology**

Students build on prerequisite biological sciences courses and gain foundational knowledge regarding normal and abnormal pathophysiological principles. Students learn the etiology, pathogenesis, and clinical manifestations of selected health problems across the lifespan in diverse populations. Students analyze data for actual and potential pathophysiological processes. Emphasis is given to the analysis of pathophysiological manifestations and related complications of common health problems.

*Prerequisites: BIO 210; CHE 220; MAT 141, 150, or 151; PHY 181 or 270; class, 4 hrs.; credit, 4 s.h.; fall.*

**RSC 420****Computed Tomography Pathology and Procedures**

This course is designed to provide the foundations of computed tomography (CT) procedures and common diseases diagnosed via CT. Each pathologic procedure indication is examined from its description, etiology, associated symptoms, and diagnosis with appearance on CT. Students will match pathologic processes with the appropriate procedures; choose scan parameters; perform patient history assessments, preparation, filming, and archiving; and review CT images for anatomy, quality, and pathology.

*Prerequisites: RSC 310, 315; admission to the CT Certificate program; class, 2 hrs.; credit, 3 s.h.; summer.*

**RSC 425C****CT Clinical Practicum I**

This course is designed to allow the students hands-on

experience documenting and performing CT exams within the clinical setting under the direct supervision of a registered technologist. This course is competency based, and students will be assessed through competency exams to document the achievement of clinical objectives.

*Prerequisites:* RSC 310, 315, 325; BIO 110, 210; admission to the CT Certificate program; clinical, 32 hrs./wk. for 12 weeks; credit, 9 s.h.; summer.

### **RSC 435C CT Clinical Practicum II**

This course is designed to allow the student to gain hands-on experience at documenting and performing advanced CT procedures within the clinical setting under direct and indirect supervision by a registered technologist. This is a competency-based course, and students will be assessed through competency exams and clinical objectives.

*Prerequisites:* RSC 425C, admission to the CT Certificate program; clinical, 32 hrs./wk. for 12 weeks; credit, 9 s.h.; fall.

## **Radiation Therapy (RTT)**

### **RTT 110**

#### **Introduction to Radiation Therapy**

Students will explore the radiation therapy profession and its role within the healthcare delivery system, interrelationships with other healthcare providers. Cancer management and principles of radiation therapy will be introduced. The student will be exposed to the infusion of clinical applications as it pertains to an introductory-level course. The second half of the course will allow the student to integrate class content within a clinical environment.

*Prerequisites:* BIO 210, PHY 181, MAT 141; credit, 3 s.h.; summer.

### **RTT 201C**

#### **Radiation Therapy Internship I**

This course is part one of a radiation therapy clinical internship sequence that provides supervised participation in the practice of radiation therapy. Clinical competency requirements are based on the content specifications of the American Registry of Radiologic Technologists, as well as program curriculum requirements. Progression in the clinical internship sequence is contingent upon successful completion of this rotation. A laboratory component is included in the course to aid the student in mastering of techniques taught in the clinical setting.

*Prerequisites:* RTT 110, RSC 250, 325; Co-requisites: RTT 260, 280; clinic, 10 hrs./wk.; credit, 3 s.h.; fall.

### **RTT 202C**

#### **Radiation Therapy Internship II**

This course is part two of a radiation therapy clinical

internship sequence that provides supervised participation in the practice of radiation therapy. Clinical competency requirements are based on the content specifications of the American Registry of Radiologic Technologists, as well as program curriculum requirements. Progression in the clinical internship sequence is contingent upon successful completion of this rotation. A laboratory component is included in the course to aid the student in mastering of techniques taught in the clinical setting.

*Prerequisites:* RTT 201C, 260, Co-requisites: RTT 262, 281; clinic, 16 hrs./wk.; credit, 4 s.h.; spring.

### **RTT 203C**

#### **Radiation Therapy Internship III**

This 10-week course is part three of a radiation therapy clinical internship sequence that provides supervised participation in the practice of radiation therapy. Clinical competency requirements are based on the content specifications of the American Registry of Radiologic Technologists, as well as program curriculum requirements. Progression in the clinical internship sequence is contingent upon successful completion of this rotation.

*Prerequisites:* RTT 202C, 262; clinic, 32 hrs./wk.; credit, 6 s.h.; summer.

### **RTT 235**

#### **Clinical Oncology**

This 14-week course covers the clinical principles of radiation oncology. The major site-specific oncologic diseases will be emphasized. Case-based discussions and student-centered presentations will facilitate integration of theory with clinical practice.

*Prerequisites:* RTT 201C, 260, RSC 250; Co-requisites: RTT 202C, 262; class, 2 hrs.; credit, 2 s.h.; spring.

### **RTT 260**

#### **Foundations of Radiation Therapy I**

This course is part one of a two-part foundations course. Basic principles of the radiation therapy profession are highlighted. Discussions based on agencies and professional societies will address professionalism. Key radiation therapy concepts are examined. The needs of the cancer patient are probed to include side effects and nutritional status as they relate to treatment. Radiation and its properties are examined. Radiation therapy equipment and procedures are introduced. Diagnostic radiography and simulation principles are overviewed.

*Prerequisites:* RTT 110, RSC 250, 325; class, 2 hrs.; credit, 3 s.h.; fall.

### **RTT 262**

#### **Foundations of Radiation Therapy II**

This course is part two of a two-part foundations course. It highlights several important aspects of radiation therapy; psychosocial issues of the cancer



patient, ethical dilemmas, and the role of ultrasound in cancer management. Researching and writing on radiation oncology topics will be a major component in order to strengthen lifelong learning. Incorporation of assessment-based testing will reinforce concepts already learned.

*Prerequisites: RTT 201C, 260, 280; class, 2 hrs.; credit, 3 s.h.; spring.*

### **RTT 280**

#### **Medical Radiation Physics I**

This course is a noncalculus examination of the basic concepts and principles in radiation and nuclear physics, including math / classical physics review; radioactive decay, radionuclide production; and x-ray circuitry, particle generators, production, and properties.

*Prerequisite: PHY 181, RSC 325; Co-requisites: RTT 260, RTT 201C; class, 3 hrs.; credit, 3 s.h.; fall.*

### **RTT 281**

#### **Medical Radiation Physics II**

This course is a continuation of RTT 280. Topics include radioactive decay, high-energy treatment machines, particulate/photon interactions, quality of radiation, x-ray intensity and exposure, measurement of radiation, and radiation protection. It emphasizes the concepts applicable to radiation therapy.

*Prerequisites: RTT 280, 201C; class, 3 hrs.; credit, 3 s.h.; spring.*

### **RTT 283**

#### **Physics for Treatment Planning**

This course is a detailed presentation of the principles, aims, and techniques of applying radiation to the human body. It covers dose calculation methods and comparison of isodose curves for various radiation energies and beam arrangements, with emphasis on performing calculations.

*Prerequisites: RTT 201C, 280; class, 2 hrs.; credit, 2 s.h.; spring.*

### **RTT 304C**

#### **Radiation Therapy Internship IV**

This course is part four of a radiation therapy clinical internship sequence that provides supervised participation in the practice of radiation therapy. Clinical competency requirements are based on the content specifications of the American Registry of Radiologic Technologists, as well as program curriculum requirements. Progression in the clinical internship sequence is contingent upon successful completion of this rotation.

*Prerequisites: RTT 203C; clinic, 24 hrs./wk.; credit, 6 s.h.; fall.*

### **RTT 305C**

#### **Radiation Therapy Internship V**

This course is part five of a radiation therapy clinical

internship sequence that provides supervised participation in the practice of radiation therapy. Clinical competency requirements are based on the content specifications of the American Registry of Radiologic Technologists, as well as program curriculum requirements. Progression in the clinical internship sequence is contingent upon successful completion of this rotation.

*Prerequisites: RTT 304C, 361; clinic, 24 hrs./wk.; credit, 6 s.h.; fall.*

### **RTT 340**

#### **Radiation Therapy Quality Assurance and Laboratory**

Topics include the purposes and principles of a quality assurance program in radiation therapy, quality control procedures, effects of beam geometry on imaging and treatment technique, methods of radiation measurement, and machine calibration.

*Prerequisites: RTT 281, 304C; class, 1 hr.; credit, 1 s.h.; spring.*

### **RTT 345**

#### **Brachytherapy**

This course is designed to give students knowledge of the physical properties, uses, dose calculation methods, and care of radionuclides used in therapeutic applications. Surface applicators and interstitial and intracavity implants are discussed. Radiation protection as related to radionuclide use will be presented.

*Prerequisites: RTT 281, 283, 304C; class, 2 hrs.; credit, 2 s.h.; spring.*

### **RTT 361**

#### **Radiation Therapy Treatment Methods**

An in-depth presentation of the use of radiation therapy in the treatment of cancers covering specific pathologies; skin cancers; sarcomas; and cancers of the digestive tract, female reproductive organs, breast, and urinary systems. Topics discussed are anatomy, epidemiology and etiology, presenting symptoms, pathology, treatment methods, and outcomes.

*Prerequisites: RSC 325, 262, 203C; class, 2 hrs.; lab, 2 hrs.; credit, 3 s.h.; fall.*

### **RTT 370**

#### **Radiation Therapy Registry Review**

The purpose of this class is to provide a review of material that may be on the ARRT examination, and to practice study methods and strategies to successfully pass the exam. The course will include the use of Blackboard, and an online mock exam software package. The student will be responsible for the cost of the mock exam registration, which in May of 2017 was \$60.00.

*Prerequisites: RTT 110, 201C, 260, 280, 202C, 235, 262, 281, 283, 203C, 304C, 361, 305C, 340, 345; credit, 2 s.h.*

## Acupuncture and Oriental Medicine

### SABUS 121

#### Practice Management: Marketing

Students will learn the importance of advertising, branding, networking, and use of websites and social media. This course helps students build businesses that successfully attract and retain patients.

*Prerequisite: SACAS 190 Clinical Skills Of TCM; Credit, 1 s.h.; fall.*

### SABUS 122

#### Practice Management: Business Skills

Students will learn issues of running a small business, including accounting, finance, banking, budgeting, financial statements, insurance, and debt management. Participants will develop a vision and business plan for a private practice.

*Prerequisite: SACAS 172 TCM Etiology & Pathology of Disease II; Credit, 1.s.h.; fall.*

### SABUS 123

#### Practice Management: AOM Professional Issues

Students will learn business issues specific to the acupuncture profession, including usage of acupuncture in the US, credentialing, competition, insurance coding, and billing. Guest speakers will describe their successful practices.

*Prerequisite: SACAS 231 Clinical Case Management; Credit, 1.s.h.; spring.*

### SACAS 101

#### Traditional Chinese Medical Theory I

An essential foundation for understanding Chinese medical theory and its use in the diagnosis and treatment of disease, this course covers basic concepts of Chinese medicine such as tao, qi, yin, yang, and Five Element correspondences as they relate to human health. Other content includes eight principles, fundamental substances, syndrome differentiation, the four diagnostic methods, and functional categories of points.

*Credit, 4 s.h.; fall.*

### SACAS 102

#### Traditional Chinese Medical Theory II

An essential foundation for understanding Chinese medical theory and its use in the diagnosis and treatment of disease, this course covers basic concepts of Chinese medicine such as tao, qi, yin, yang, and Five Element correspondences as they relate to human health. Other content includes eight principles, fundamental substances, syndrome differentiation, the four diagnostic methods, and functional categories of points.

*Prerequisite: SACAS 101; credit, 4 s.h.; spring.*

### SACAS 111

#### Point Location I

Through a combination of lectures, demonstrations and supervised practice in small groups, students learn the precise location of all acupuncture points on the twelve main channels, as well as the conception (ren) and governing (du) channels. A number of extra points not located on the major channels also are identified. Also covered are cautions and contraindications.

*Co-requisites: SACAS 131, SACAS 121; credit, 2.5 s.h.; fall.*

### SACAS 112

#### Point Location II

Through a combination of lectures, demonstrations and supervised practice in small groups, students learn the precise location of all acupuncture points on the twelve main channels, as well as the conception (ren) and governing (du) channels. A number of extra points not located on the major channels also are identified. Also covered are cautions and contraindications.

*Prerequisite: SACAS 111; Co-requisites: SACAS 132, SACAS 122; credit, 2.5 s.h., spring.*

### SACAS 121

#### Materials and Methods of Traditional Chinese Medicine I

Through lecture, demonstration and supervised practice in small groups, students learn foundational skills of needle insertion, removal and manipulation for tonification and dispersion; direct and indirect moxibustion; cupping; gua sha; plum blossom; electroacupuncture; and bloodletting. Special emphasis is placed on cautions and contraindications, sensitivity to patient response, management of adverse treatment reactions, Clean Needle Technique (CNT), and universal precautions.

*Prerequisites: SASCI 101, SASCI 102; Co-requisites: SACAS 111, SACAS 131; credit, 2 s.h., fall.*

### SACAS 122

#### Materials and Methods of Traditional Chinese Medicine II

Through lecture, demonstration and supervised practice in small groups, students learn foundational skills of needle insertion, removal and manipulation for tonification and dispersion; direct and indirect moxibustion; cupping; gua sha; plum blossom; electroacupuncture; and bloodletting. Special emphasis is placed on cautions and contraindications, sensitivity to patient response, management of adverse treatment reactions, Clean Needle Technique (CNT), and universal precautions.

*Prerequisite: SACAS 121; Co-requisites: SACAS 112, SACAS 132; credit, 2 s.h.; spring.*

**SACAS 131****Living Anatomy I**

Students learn the location, origin, insertion and action of all the major muscles, as well as the bony landmarks, and ligaments through lecture and extensive hands-on practice. Basic structural analysis is introduced, so students can begin to see the postural patterns that often precede and underlie musculoskeletal imbalances and pain syndromes. Course content is aligned with Point Location.  
*Prerequisites:* SASCI 101, SACS I 102; *Co-requisites:* SACAS 111, SACAS 121; *credit, 2 s.h.; fall.*

**SACAS 132****Living Anatomy II**

Students learn the location, origin, insertion and action of all the major muscles, as well as the bony landmarks, and ligaments through lecture and extensive hands-on practice. Basic structural analysis is introduced, so students can begin to see the postural patterns that often precede and underlie musculoskeletal imbalances and pain syndromes. Course content is aligned with Point Location.  
*Prerequisite:* SACAS 131; *Co-requisites:* SACAS 122; *credit, 2 s.h., spring.*

**SACAS 140****History of Chinese Medicine**

By studying the cultural and theoretical foundations of Chinese medicine, students explore how the culture in which this medical system evolved has shaped theory and practice. Additionally, students are introduced to some major classic texts of Traditional Chinese Medicine, their effects on the evolution of medical theory, and their value today. Modern international evolution of Chinese medicine is also discussed.  
*Credit, 1 s.h.; spring.*

**SACAS 161****Actions and Effects of Points and Channels**

Acupuncture points are presented individually, and with other points sharing similar functions, focusing on the properties and functions of the points and meridians. Special groupings and categorizations of points and their uses are discussed, and the general therapeutic domains of the channels are reviewed. Finally, methods of combining points into effective treatment prescriptions are discussed in depth.  
*Prerequisite:* SACAS 112; *Co-requisite:* SACAS 190; *credit, 3 s.h.; summer.*

**SACAS 171****Traditional Chinese Medicine Etiology and Pathology of Disease I**

In this two-course sequence, students learn to diagnose and treat a number of common illnesses from the perspective of TCM. Differentiation of syndromes is emphasized as students learn to identify signs and symptoms. Treatment strategies and point

prescriptions are covered for all the conditions. Clinical research findings are included for many conditions, establishing a foundation for evidence-informed practice.

*Prerequisites:* SACAS 102, SACAS 161, and SACAS 190; *Co-requisite:* SACAS 201; *credit, 3 s.h.; fall*

**SACAS 172****Traditional Chinese Medicine Etiology and Pathology of Disease II**

In this two-course sequence, students learn to diagnose and treat a number of common illnesses from the perspective of TCM. Differentiation of syndromes is emphasized as students learn to identify signs and symptoms. Treatment strategies and point prescriptions are covered for all the conditions. Clinical research findings are included for many conditions, establishing a foundation for evidence-informed practice.

*Co-requisite:* SACAS 202; *credit, 3 s.h.; spring.*

**SACAS 180****Microsystems of Acupuncture Treatment**

This course provides an overview of auricular acupuncture, with a focus on the therapeutic potential of these systems within an overall acupuncture treatment or when each modality is used alone, including a map of point locations. Students practice locating and needling microsystem acupuncture points under faculty supervision.

*Prerequisite:* SACAS 122; *credit, 1 s.h.; summer.*

**SACAS 190****Clinical Skills of Traditional Chinese Medicine**

This course is designed for students to refine and expand their clinical skills. Practicing on each other in small groups under faculty supervision, students locate and needle acupuncture points, perform patient evaluation and diagnosis using The Four Examinations, begin to analyze and organize signs and symptoms, and are introduced to the actions and effects of frequently used points.

*Prerequisites:* SACAS 122, SAMTP 100; *Co-requisites:* SACAS 161, SAEXM CAS1 First Year Comprehensive Examination; *credit, 2 s.h.; summer.*

**SACAS 201****Introduction to Chinese Acupuncture Clinical Internship I**

Students refine their diagnostic skills by practicing differential diagnosis, researching cases, and presenting case analyses. After establishing diagnoses, students articulate the treatment principles, and identify appropriate treatment plans, including specific point prescriptions and other potential treatments. Under close faculty supervision, students practice needling, point location, and pulse and tongue diagnosis on each other in small groups.

*Prerequisites: SACAS 190, SAEXM CAS1 First Year Comprehensive Examination; Co-requisite: SACAS 171; credit, 2.5 s.h., fall.*

### **SACAS 202**

#### **Introduction to Chinese Acupuncture Clinical Internship II**

Students refine their diagnostic skills by practicing differential diagnosis, researching cases, and presenting case analyses. After establishing diagnoses, students articulate the treatment principles, and identify appropriate treatment plans, including specific point prescriptions and other potential treatments. Under close faculty supervision, students practice needling, point location, and pulse and tongue diagnosis on each other in small groups.  
*Prerequisite: SACAS 201; credit, 2.5 s.h.; spring.*

### **SACAS 211**

#### **Western Pathophysiology and Pharmacology I**

This course sequence provides a biomedical overview of common disorders for each major body system. Provided for each disease are the physiological process, key symptoms, diagnostic testing, and treatment. Pharmaceuticals are covered according to their category, effect on physiological functions, and possible interactions and side effects. Emphasis is placed on identifying emergency conditions that require immediate referral to a biomedical provider.  
*Credit, 3 s.h.; summer.*

### **SACAS 212**

#### **Western Pathophysiology and Pharmacology II**

This course sequence provides a biomedical overview of common disorders for each major body system. Provided for each disease are the physiological process, key symptoms, diagnostic testing, and treatment. Pharmaceuticals are covered according to their category, effect on physiological functions, and possible interactions and side effects. Emphasis is placed on identifying emergency conditions that require immediate referral to a biomedical provider.  
*Prerequisite: SACAS 211; credit, 3 s.h.; fall.*

### **SACAS 213**

#### **Western Pathophysiology and Pharmacology III**

This course sequence provides a biomedical overview of common disorders for each major body system. Provided for each disease are the physiological process, key symptoms, diagnostic testing, and treatment. Pharmaceuticals are covered according to their category, effect on physiological functions, and possible interactions and side effects. Emphasis is placed on identifying emergency conditions that require immediate referral to a biomedical provider.  
*Prerequisite: SACAS 212; credit, 3 s.h.; spring.*

### **SACAS 220**

#### **Patient-Provider Relationships**

Students learn basic psychological health assessment, and when referral for further assessment is indicated. Topics covered include suicide risk, substance abuse, and survivors of trauma or abuse. Students learn skills for building rapport and trust, for communicating effectively, and for coaching patients in compliance with healthy behaviors. Fundamental self-awareness tools are identified, fostering self-care of the healer.

*Prerequisites: SASCI 130, SACAS 202; credit, 3 s.h.; summer.*

### **SACAS 231**

#### **Clinical Case Management**

Designed to address issues and experiences that arise during Clinical Internship, this course explores cases presented by students and faculty. Discussions focus on diagnosis, treatment plan, point selection, the patient-provider relationship, case management and referral. Students review methods and systems for planning, carrying out and evaluating treatments and prognoses.

*Pre/Co-requisite: SACL CAS; credit, 1 s.h.; fall.*

### **SACAS 240**

#### **Survey of Classic Chinese Medical Texts**

Through selected readings in classic Chinese medical texts, students develop familiarity with the origins and conceptual basis of Chinese medicine as the basis of modern clinical practice.

*Prerequisite: SACAS 140; credit, 1 s.h.; spring.*

### **SACAS 250**

#### **Chinese Nutrition**

This introductory course gives students a basic understanding, from a Chinese medical perspective, of the role that food and nutrition play in the healing process. Course topics include the influence of diet on the organ/meridian systems, the five flavors, the thermal nature of foods, the effects of different cooking and preparation methods, and how these can enhance clinical treatment.

*Prerequisite: SACAS 102; credit, 1 s.h.; fall.*

### **SACAS 260**

#### **Western Nutrition**

In this introductory course, students receive an overview of the healing properties of foods, nutrients such as vitamins and minerals, and specific diets. The functions of various nutrients, in what foods they are found, and how they impact health are discussed. Students gain an understanding of the clinical uses of specific diets and nutritional supplements used by many holistic practitioners.

*Credit, 1 s.h.; spring.*

**SACAS 270****Clinical Theater**

Students consider and integrate the diagnostic methods of TCM and the clinical application of acupuncture techniques by observing patient intakes and treatments performed by NESA faculty. Discussion follows, incorporating analysis of interview techniques, diagnostic data gathering, diagnosis and treatment strategy development, prognosis, treatment planning, patient communication, patient education, charting, and ethics.

*Co-requisites: SACAS 202, SAEXM.CAS2 Second Year Comprehensive Examination; credit, 1 s.h.; spring.*

**SACAS 300****Directed Study with Thesis in Chinese Medicine**

Faculty-directed study is provided to an individual student wishing to examine a specific topic in Chinese Medicine, investigating existing knowledge, data, or methodologies. Emphasis is placed on the student's analysis of the scientific literature and preparation of a manuscript suitable for publication.

*Prerequisites: consent of instructor and dean; credit varies, 1–3 s.h.*

**SACAS 325****Directed Study in Chinese Medicine**

Faculty-directed study is provided to an individual student wishing to examine a specific topic in Chinese Medicine, investigating existing knowledge, data, or methodologies, or other faculty-approved study of a nonresearch nature. Faculty-assisted instruction in all areas of acupuncture and Chinese Herbal Medicine is available.

*Prerequisites: consent of instructor and dean; credit varies, 1–3 s.h.*

**SACLC AA30****Clinical Assistantship I-V**

The clinical assistantship program provides students the opportunity to observe the practice of acupuncture and Oriental Medicine within various clinical settings. Students observe practitioners diagnose and treat patients. During the first two years of the program, MAc students complete 150 hours and MAOM students complete 180 hours observing and assisting licensed acupuncturists, Chinese Herbal Medicine practitioners and NESA interns.

*Pre/Co-requisite: SACAS 121; credit, 1 s.h.; fall, spring, summer.*

**SACLC CAS1-9, JAS1-5, OM1-5, CHM1-2**

Having extensively practiced clinical assessment and treatment skills, student interns begin to work directly with patients in clinical settings. Under close faculty supervision, interns assume responsibility for patient care, including intake evaluations, diagnoses, structuring treatment plans, carrying out treatments,

and assessing progress. Interns also advise patients on healthy lifestyle practices, arrange follow-up care, and make referrals. Students focus on Chinese acupuncture style interventions in CAS clinics and use predominantly Japanese style acupuncture in JAS clinics. For students who study Chinese Herbal Medicine (CHM), OM clinics provide opportunities to dispense patent herbal medicines as well as acupuncture, while herbal formulas exclusively are used in CHM clinics.

*Prerequisites for CAS Clinical Internship: SACAS 202 Introduction to Chinese Acupuncture Clinical Internship II, SAWS20CPR and Basic First Aid, SACAS 211 Western Medical Pathophysiology and Pharmacology I and one additional term of SACAS 212/213/214 Western Medical Pathophysiology and Pharmacology, Completed Clinical Assistantship Hours, SAEXM CAS2 Second Year Comprehensive Examination, attendance at Clinic Orientation, and Clean Needle Technique Certification.*

*Pre/Corequisite: SACAS 220 Patient-Provider Relationship.*

*Prerequisites for Japanese Acupuncture Clinical Internship: SAJAS 100 Introduction to Japanese Acupuncture Clinical Internship, SAEXM JAS JAS Comprehensive Examination, all prerequisites for CAS Clinical Internship.*

*Prerequisites for Oriental Medicine Clinical Internship: CHM: SACHM 121 Formulas II, all prerequisites for CAS Clinical Internship.*

*Prerequisites for CHM Clinical Internship: SACHM 141CHM Internal Medicine I, SAEXM CHM CHM Comprehensive Examination, all prerequisites for CAS Clinical Internship.*

*All Internships: 60 hrs; 2 s.h. each. For MAc: total 9 clinics; 540 hrs; 18 s.h.*

*For MAOM: total 12 clinics; 720 hrs; 24 s.h.*

**SAMTP 100****Internal Exercise**

Internal exercise techniques strengthen the body and build qi. Students are able to choose courses in Tai Chi or Qigong to complete the one or two-credit Internal Exercise requirement. These courses help students establish a regimen of health and cultivate a deeper awareness of the subtle qi within their own bodies.

*Credit. 1-2 s.h.; fall.*

**SAMTP 130****Oriental Bodywork Therapy**

Through lecture, demonstration and practice, students learn to apply techniques of the Chinese medical bodywork system, Tui Na. Such techniques extend the range of treatment options for the therapeutic benefit

of the patient, and further develop the palpations skills of the practitioner. Channel palpation, body mechanics, and clinical indications and contraindications for Tui Na are covered.

*Prerequisite: SACAS 112; credit 1 s.h.; fall.*

### **SARES 100**

#### **Research Design and Evaluation**

This course provides a foundation in information literacy on acupuncture by examining qualitative and quantitative research, and providing an understanding of the special problems and requirements of modern acupuncture research. Students learn important research vocabulary design, and methodology, focusing on how to evaluate research findings.

*Credit, 3 s.h.; fall.*

### **SARES 150**

#### **Research Seminar**

This advanced course introduces career scientists to acupuncture research findings and methodology. Students review and discuss important publications in acupuncture research. Students will be expected to read key publications and present their directed-question, annotated bibliography. Successful completion of the online CITI training program in ethical research with human subjects is required.

*Prerequisites: Permission of Instructor; credit 1 s.h.*

### **SARES 151**

#### **Research II: Mentored Practicum**

This advanced course introduces students with a prior research background to acupuncture research findings and methodology through participation in an approved research project. Students may work in small groups or individually with an assigned faculty mentor. The primary assessment tools include a written paper of publication standard and the presentation of a seminar.

*Prerequisites: Permission of Instructor; credit 3 s.h.*

### **SARES 145**

#### **Introduction to Epidemiology/Biostatistics**

Through lecture, discussion and group projects, students will be able to conduct epidemiological investigations including the scientific concept of cause and measures of disease frequency. Students will be able to formulate an appropriate study question and design a research strategy to address it. Students will gain skill in applying basic descriptive and probability statistics to evaluate current literature on acupuncture research and the special problems and requirements of modern research applied to acupuncture. Working in small groups, students will use their new skills to create and present a health plan solution to a problem in an area of their interest.

*Prerequisite: SACAS 211; credit 2 s.h.*

### **SASCI 101**

#### **Anatomy and Physiology I**

Using a systematic approach to human anatomy and physiology, this course focuses on the normal functioning of the human body. Students study the skeletal, muscular, endocrine, respiratory, cardiovascular, digestive, reproductive, urinary, and nervous systems.

*Credit, 3 s.h.; fall.*

### **SASCI 102**

#### **Anatomy and Physiology II**

Using a systematic approach to human anatomy and physiology, this course focuses on the normal functioning of the human body. Students study the skeletal, muscular, endocrine, respiratory, cardiovascular, digestive, reproductive, urinary, and nervous systems.

*Prerequisite: SASCI 101; credit, 3 s.h., spring*

### **SASCI 110**

#### **Anatomy and Physiology Lab**

This lab provides a hands-on experience of human anatomy, focusing on the skeleton, muscles, brain, nervous system, heart, and organs of the digestive system. This lab supplements the learning experiences of Anatomy & Physiology I & II, and meets the Massachusetts acupuncture licensure requirement of a lab in Biology or Anatomy.

*Credit, 1 s.h.; fall.*

### **SASCI 120**

#### **General Biology**

This survey of life systems lays the foundation for the study of human anatomy, physiology and health. The course begins with the study of cellular structure, metabolism and reproduction, and proceeds to the study of tissues and more complex organisms, such as plants and vertebrates. Also covered are genetics, evolution, ecology and the interrelationships between organisms and their environments.

*Credit, 3 s.h.; summer.*

### **SASCI 130**

#### **General Psychology**

This course surveys historical and contemporary approaches to the scientific study of human behavior. It provides an introduction to sensation, perception, and emotion; human development and learning; and personal and social influences on behavior, personality and psychopathology.

*Credit, 3 s.h.; spring.*

### **SASCI 170**

#### **Microbiology**

This practical course for health care practitioners focuses on the microorganisms relevant to clinical practice, the body's defense responses, methods of preventing disease transmission, and the

characteristics, activities, distribution, and effects of specific pathogenic organisms on the human body.  
*Credit, 3 s.h.; summer.*

#### **SAWS 220**

##### **CPR and Basic First Aid**

Certification must be current throughout all Clinical Internships. This course teaches basic emergency procedures used in first aid situations. Among topics covered are basic cardiopulmonary resuscitation (CPR), trauma, heat and cold injuries, burns, soft tissue injuries, bandaging and splinting techniques, and emergency childbirth. Upon successful completion of the course, students receive certification in CPR and Basic First Aid.

*Prerequisite: none; Class 7.5 hrs; credit, 0 s.h.; varies.*

### **Chinese Herbal Medicine (CHM Track)**

#### **SACHM 100**

##### **Introduction to Chinese Herbal Medicine**

This course introduces the history, development, and application of Chinese Herbal Medicine. Covered are important traditional and contemporary Chinese herbal texts, and the basic concepts underlying the properties and functions of herbs: the four qi's, five tastes, channel entry, functional tendencies, and combination theory. Combining Chinese herbal and acupuncture treatments, toxicity, side effects, and preparation methods are also covered.

*Pre/Co-requisite: SACAS 102; credit, 2 s.h.; spring.*

#### **SACHM 111**

##### **Chinese Herbal Medicine: Pharmacopoeia I**

As a basic foundation for the study of Chinese Herbal Medicine, students study more than 300 individual herbs. To gain a comprehensive understanding of each herb, students learn its name in Pin Yin and English, as well as its botanical name, character, taste, channels, main functions, precautions, and methods of preparation. Recent research pertaining to individual herbs is also covered.

*Prerequisite: SACHM 100; credit, 4 s.h.; summer.*

#### **SACHM 112**

##### **Chinese Herbal Medicine: Pharmacopoeia II**

As a basic foundation for the study of Chinese Herbal Medicine, students study more than 300 individual herbs. To gain a comprehensive understanding of each herb, students learn its name in Pin Yin and English, as well as its botanical name, character, taste, channels, main functions, precautions, and methods of preparation. Recent research pertaining to individual herbs is also covered.

*Prerequisite: SACHM 111; credit, 4 s.h.; fall.*

#### **SACHM 121**

##### **Chinese Herbal Medicine: Formulas I**

Students learn more than 150 Chinese Herbal Medicine formulas by their Pin Yin and English names, constituent ingredients, how those ingredients relate and interact, the primary and secondary functions of each formula, possible modifications, dosage, clinical applications, and contraindications. Formulas readily available as patent medicines are also covered.

*Prerequisite: SACHM 112; credit, 4 s.h.; spring.*

#### **SACHM 122**

##### **Chinese Herbal Medicine: Formulas II**

Students learn more than 150 Chinese Herbal Medicine formulas by their Pin Yin and English names, constituent ingredients, how those ingredients relate and interact, the primary and secondary functions of each formula, possible modifications, dosage, clinical applications, and contraindications. Formulas readily available as patent medicines are also covered.

*Prerequisite: SACHM 121; Co-requisite: SACHM 130; credit, 4 s.h.; summer.*

#### **SACHM 130**

##### **Chinese Herbal Medicine: Patent Herbal Medicine**

This course covers patent formulas, produced by various companies, which are most commonly used in the United States today, including modern adaptations of classic formulas.

Discussed are the composition of the patents, functions of the classic formula bases, and comparison of modifications used in various brands. Students learn to select the most appropriate products to achieve optimum treatment results.

*Prerequisite: SACHM 121; Co-requisite: SACHM 122; credit, 2 s.h.; summer.*

#### **SACHM 141**

##### **Chinese Herbal Medicine: Internal Medicine I**

This course explores the theoretical basis of Chinese herbal treatments for various internal medicine conditions such as cough, asthma, diarrhea, constipation, jaundice, hypertension, diabetes, edema and others. Special emphasis is placed on understanding the theoretical basis of diagnosis, and selecting and modifying formulas.

*Prerequisite: SACHM 122; Co-requisite: SACHM 150; credit, 4 s.h.; fall.*

#### **SACHM 142**

##### **Chinese Herbal Medicine: Internal Medicine II**

This course explores the theoretical basis of Chinese herbal treatments for various internal medicine conditions such as cough, asthma, diarrhea, constipation, jaundice, hypertension, diabetes, edema and others. Special emphasis is placed on understanding the theoretical basis of diagnosis, and selecting and modifying formulas.

*Prerequisite: SACHM 141; credit, 4 s.h.; spring.*

### **SACHM 150**

#### **Chinese Herbal Medicine: Formula Writing**

This course introduces students to writing individual Chinese Herbal Medicine formulas. Students begin by working with simple formulas and progress to more complex formulas throughout the course. Building on the base formulas learned in CHM: Formulas I and II, students learn the elements of formula modification, including dosage, specifically as it relates to chronicity and severity of patient pathology, etc.

*Prerequisite: SACHM 122; Co-requisite: SACHM 14; credit, 2 s.h.; fall.*

### **SACHM 160**

#### **Chinese Herbal Medicine: Clinical Pharmacology**

This course introduces some basic principles of pharmacology in major Chinese herbs and traditional formulas. Students gain a general understanding of pharmacotherapy as it relates to clinical application. Toxicology in Chinese Herbal Medicine is discussed, and herb-drug interaction issues are presented. The course highlights major herbal classifications with emphasis on the mechanisms of action, pharmacokinetic concepts and pharmacodynamic principles.

*Prerequisite: SACHM 142 CHM; credit, 2 s.h.; summer.*

## **Japanese Acupuncture Styles (JAS Track)**

### **SAJAS 100**

#### **Introduction to Japanese Acupuncture Styles**

This course presents an overview of the historical and theoretical roots of Japanese acupuncture styles, along with their diagnostic and treatment techniques. Students also learn Japanese techniques for palpating the abdomen, identifying diagnostic patterns, and assessing pulse qualities. Students work in small, supervised groups to practice these clinical skills and develop a basic understanding of the application of Japanese acupuncture.

*Pre/corequisite: SACAS 112; 15 hrs; 1 s.h.; spring.*

### **SAJAS 111**

#### **JAS: Root Treatment I**

This course provides students with the theoretical foundations and application of two predominant therapeutic styles of Japanese acupuncture: Meridian Five Phase and the Extraordinary Vessels. Through lecture and practice, students learn to diagnose using pulse and abdominal palpation, in combination with visual and verbal signs and symptoms, and practice needling and moxibustion techniques. Students refine diagnostic skills and increase sensitivity.

*Prerequisite: SAJAS 100; 30 hrs; 2 s.h.; summer.*

### **SAJAS 112**

#### **JAS: Root Treatment II**

This course provides students with an expanded and continued outlook of root treatment strategies, and incorporates an in-depth study of detailed clinical applications through case review. The hands-on portion of the course will promote the ability to diagnose JAS Meridian Five Phase, Extraordinary Vessels and Extra Channel Polarizations.

*Prerequisite: SAJAS 111; 37.5 hrs; 2.5 s.h.; fall.*

### **SAJAS 120**

#### **JAS: Local Treatment**

Based on classical theories of Oriental Medicine and modern information about disease and healing, this course focuses on the application of techniques used to resolve symptoms. Through the practice of careful palpation and the consideration of diagnostic and treatment points, students learn the most appropriate techniques for achieving symptomatic change

*Prerequisite: SAJAS 112; 37.5 hrs; 2.5 s.h.; spring.*

### **SAJAS 130**

#### **JAS: Introduction to Clinic**

This course prepares students for Japanese acupuncture clinical internship. Students practice Meridian Five Phase and Manaka ion pumping cord style diagnosis and treatment. Students practice intakes, diagnosis, and treatment skills on each other in small, faculty-supervised groups, which simulate the clinical setting. This intensive practice allows students to refine their Japanese acupuncture and treatment planning skills.

*Prerequisites: SACAS 202, SAJAS 120; 30 hrs; 2 s.h.; summer.*

### **SAJAS 140**

#### **Shakuju**

Based on the lifelong work of Shoji Kobayashi, Shakuju encompasses the palpation of both the radial pulse and abdomen as derived from the classic text, the Nan Jing. Treatment strategy focuses on the back shu points, specific sequences, and needle techniques. This course has both didactic and practical components.

*Prerequisite: SAJAS 11; 30 hrs; 2 s.h.; fall.*

## **Electives**

Elective Requirements by Track:

Chinese Acupuncture Studies Track (CAS): 6 credits

Japanese Acupuncture Styles Track (JAS): 6 credits

Chinese Herbal Medicine Track (CHM): 4-6 credits\*

Dual Track: none

Pain Management Track: none

Elective offerings vary from year to year.

\*If transfer credit is awarded for Microbiology in the MAOM, an additional 2-s.h. elective is required in the final term, for a total of 6 s.h.



**SAEL 520****Advanced Needle Techniques**

This course explores advanced Chinese needle techniques, with didactic presentations as well as needling practice. Special needling techniques presented and practiced include those used for tonification and dispersion, complicated needling technique, and electroacupuncture. The course also covers point combinations, and ancient acupuncture cases from the classic, *The Great Compendium of Acupuncture and Moxibustion*.

*Prerequisite: Actions & Effects of the Points and Channels II; Class 30 hrs; credit, 2 s.h.; varies.*

**SAEL 330****Chinese Herbal Medicine: Herbal Case Studies**

This course includes discussion of differential diagnosis and Chinese herbal treatment strategy, utilizing written cases presented by the instructor. Cases will illustrate complex conditions commonly seen in practice.

*Prerequisite: SACHM 142 CHM: Internal Medicine II; Class 30 hrs; credit, 2 s.h.; varies.*

**SAEL 290****Chronic Pain: A Multidisciplinary Approach To A Complex Problem**

This course introduces the complex phenomenon of persistent pain. After exploring the neuroanatomic, neurophysiologic, pharmacologic, psychologic and sociologic aspects of pain, students may judge when an allopathic approach serves patients well and why it often seems to come up short. Taught primarily by guest lecturers from the Tufts University School of Medicine's Master of Science in Pain Research, Education and Policy (PREP) program.

*Prerequisite: SACAS 173 TCM Etiology & Pathology of Disease III; Class 15 hrs; credit, 1 s.h.; varies.*

**SAEL 215****JAS: Clinical Application of Adjunctive Techniques**

With both didactic and practical components, this course enhances local treatment strategies for difficult clinical pathologies. Topics include Adrenal Exhaustion, Thyroid Disorder, Oketsu, and musculoskeletal pain/problems. Modalities explored include the Hibiki-7 (outside of Divergent Channel treatment), Magnets, Manaka Hammer and Needle (dashin), Pachi-Pachi and Low Level Laser. Students need to purchase 800 gauss magnets and Manaka Hammer and Needle.

*Prerequisite: SAJAS 112 JAS: Local Treatment; Class 30 hrs; credit, 2 s.h.; varies.*

**SAEL 301****JAS: Divergent Channels**

Divergent Channels are introduced in Chapter 11 of the *Ling Shu*. They are deep, internal channels, which complete the network of yin/yang relationships and strengthen the exterior-interior relationship of the twelve main channels. This class will incorporate Meridian Five Phase therapy, Extra Channel Polarization therapy (including the 8 Extraordinary Vessels) and the Divergent Channels.

*Prerequisite: SAJAS112 JAS: Root treatment Strategies II; Class 30 hrs; credit, 2 s.h.; varies.*

**SAEL OA111****Integrative Orthopedic Acupuncture I**

In this course, students learn to identify and treat musculoskeletal pathology based on a detailed history and orthopedic physical assessment, from both allopathic and TCM perspectives. Through lecture, demonstration, and hands-on practice, the course will address pathology identification, tissue healing states, integrative point prescriptions, treatment strategy development, advanced palpation and needling skills, and outcome measures.

*Prerequisite: SACAS 132 Living Anatomy II; previous or concurrent enrollment: SACAS 202 Introduction to Chinese Acupuncture Clinical Internship I; Class 30 hrs; credit, 2 s.h.; varies.*

**SAEL OA112****Integrative Orthopedic Acupuncture II**

In this course, students learn to identify and treat musculoskeletal pathology based on a detailed history and orthopedic physical assessment, from both allopathic and TCM perspectives. Through lecture, demonstration, and hands-on practice, the course will address pathology identification, tissue healing states, integrative point prescriptions, treatment strategy development, advanced palpation and needling skills, and outcome measures.

*Prerequisite: SACAS 132 Living Anatomy II; previous or concurrent enrollment: SACAS 202 Introduction to Chinese Acupuncture Clinical Internship II; Class 30 hrs; credit, 2 s.h.; varies.*

**SAEL 340****Shiatsu**

This course introduces the principles of Shiatsu: moving from one's center, applying appropriate pressure, and sensing an energetic change. In this hands-on course, students develop palpation skills, and an awareness of the sensitivity of the hands in feeling qi. Students begin to become familiar with both discerning imbalances in the meridians and in promoting energetic flow in the meridians.

*Prerequisite: none; Class 30 hrs; credit, 2 s.h.; varies.*

**SACHM 100****Introduction to Chinese Medicine**

Intended for non-matriculated students, this course examines key concepts in Chinese Medicine and considers its relevance in modern healthcare for treatment of pain and other conditions. Students will apply diagnostic categories to a series of sample patients and be able to anticipate outcomes for acupuncture and Chinese Herbal Medicine. Students will learn about professional issues that impact education and employment.

*Prerequisite: none; Class 15 hrs; credit, 1 s.h.; varies.*

**Social Sciences (SSC)****SSC 230****Cultural Anthropology**

An introduction to the concepts, principles, and major areas of anthropology. The course focuses on the similarities and differences among the world's peoples. A variety of topics are studied, including symbolic anthropology, religion, kinship, social organization, ecology, and economics.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**SSC 240****Social Science Problems**

Introduces the concepts and methods of the social sciences through analysis of selected contemporary social problems caused by major socioeconomic, political, and technological trends in modern society.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

**SSC 340/340O****Survey of Modern American History**

An introductory survey of U.S. history from 1860 to the present. Selected historical themes and problems are studied in depth.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

**SSC 341/341O****History of Western Civilization I**

A study of Western civilization from its origins in the Near East through the development of the Greek, Roman, and medieval worlds. The rise of European nation-states from the Middle Ages to the Reformation is examined.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

**SSC 342/342O****History of Western Civilization II**

A study of Western European social, political, cultural, and intellectual traditions and economic development from the Reformation to 1890. Western Civilization I is not a prerequisite.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

**SSC 345****Immigrant Experience**

This course explores the history of immigration to the United States from 1790 to the present. Goals include developing an understanding of the continual role migration has played in the peopling of the United States and of the ways in which newcomers have experienced life in America. Topics include family, community, ethnic identity, work, assimilation, nativism, and immigration reform.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

**SSC 349****Introduction to Women's and Gender Studies**

In this course students will use multiple perspectives and theories to explore intersections of gender with race, ethnicity, sexuality, and class in the context of key issues, questions and debates in contemporary American society. These include gender as a social category, sexuality, gendered divisions of labor, representations of the body in art and popular culture, health, and politics.

**SSC 354****The Family in Society**

Examines the sociocultural context and the social psychology of contemporary family life, focusing upon the experiences of family members and upon the impact of the wider social and economic world upon family life.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

**SSC 356****Politics of Food**

Students will examine the historical manifestations, sociological and cultural implications, and environmental consequences of food politics in the United States. Topics include identity and food choice; gender and food production and consumption; factory farming; fast food; obesity; cultural homogenization and corporatization; genetically-modified organisms; hunger and malnutrition; food-centered campaigns for social justice; and the environmental consequences of our increasingly globalized food system.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

**SSC 420****20th-Century Popular Music and Culture**

Students will develop an understanding of 20th-century popular music's evolution in American history. The course's focus is the relationship between popular music and race, class, gender, politics, generations, identity, sexuality, technology, consumption, and globalization. Students will develop critical listening

skills and the ability to communicate different approaches to the study of popular music.  
*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **SSC 430**

##### **The Fifties: An Introduction to American Studies**

Studies the cultural patterns, social tensions, and historical tendencies in the 1950s. Readings and media survey the cold war, atomic culture, McCarthyism, civil rights, gender and family, affluence and material culture, literature, the arts, and popular culture.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **SSC 431**

##### **The Sixties: An Introduction to American Studies**

An application of American studies methodology, this course examines the cultural, social, and political patterns and tensions in the historical context of the 1960s. Readings and media survey the Kennedy, Johnson, and Nixon presidential administrations; changes in everyday life; social protest movements; journalism; and popular culture and the arts.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **SSC 432**

##### **Medical Anthropology**

The course is comparative and holistic, focusing on culture and its influence on disease and healthcare. The significance of sociocultural factors, type/frequency of disease in a population, explanatory models, and the social construction of illness are explored.

*Prerequisites: LIB 133,; 3<sup>rd</sup> year standing or permission of instructor; class, 3 hrs.; credit, 3 s.h.; spring.*

#### **SSC 440**

##### **Women in History**

This course focuses on the historical context of economic, political, social, and cultural issues that have affected women. Such themes as gender roles, status, class, position, myths, stereotypes, and images of women in culture are explored.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **SSC 443**

##### **Europe in the 20th Century**

A study of Europe as a cultural entity. The European national relationships and divergences in political, social, economic, and cultural development from 1890 to the present are examined in the light of common experiences, conditions, and events.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **SSC 444**

##### **Cigarettes in American Culture**

This course analyzes the cultural meaning of the cigarette in the 20th-century United States by considering the rise and fall in cigarette consumption, scientific study of tobacco harms, production and marketing, policymaking, and litigation concerning the tobacco industry.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **SSC 445**

##### **The Irish in America**

Students study significant moments in Irish-American history and learn to interpret Irish-American identity. Students will discover, analyze, and critically assess historical, social, and cultural issues involving an enduring Irish immigration, diaspora, and negotiation of Irish-American ethnic identity. They will learn to assess social struggle, social tension, and cultural expressions of Irish and/or Irish-American identity, learning about Irish contributions to America.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **SSC 452**

##### **Urban History**

This course explores the evolution of American cities. We will examine many factors that shape urban development and lifestyles, including immigration, interactions between peoples of different cultures and classes, and how urban dwellers have experienced and responded to a variety of issues (health, poverty, local politics, housing, conflict) and natural and man-made disasters.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **SSC 475**

##### **Selected Topics in Social Sciences**

Designed to accommodate a small group of students who are interested in studying in depth a particular topic in anthropology, history, or political science. Course content changes each year offered.

*Prerequisite: LIB 133 and one history elective, or consent of instructor; class, 3 hrs.; credit, 3 s.h.; varies.*

#### **SSC 495**

##### **Evolution of the Health Professions**

Introduces the history and politics of healthcare in America. Medicine, nursing, pharmacy, and public health are examined in the context of healthcare organizations, popular conceptions of health and illness, and consumer movement challenges.

*Prerequisite: LIB 133; class, 3 hrs.; credit, 3 s.h.; fall, spring.*

**SSC 464****Social Justice Movements in the U.S.**

This course examines social justice movements in the post-World War II U.S. Students will study a variety of major and grassroots movements including those focused on race and ethnicity, gender, sexuality, anti-war, the environment, and developing contemporary issues. Students will examine movements' common components, including leadership characteristics, and the roles of religion, music, mainstream and social media, and political agendas.

*Prerequisite: LIB133; class 3 hrs.; credit, 3 s.h.; fall.*

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## Index

- Absence (Documented Student Absence Request Policy and Procedure) ..... 90
- academic advisement (CASE Boston) .... 36
- academic complaint policy  
     (SOP-B) ..... 226  
     (SOP-W/M) ..... 309
- academic dismissal ..... 93
- academic honesty ..... 87
- academic policies and procedures ..... 87
- academic probation ..... 93
- academic progress ..... 92
- academic standing ..... 99
- academic warning ..... 93
- accreditation ..... 15
- Acupuncture, School of ..... 273
- add/drop ..... 79, 98
- address changes ..... 79
- administration, University  
     Academic Affairs ..... 457  
     Finance and Administration ..... 458  
     Office of the President ..... 457
- admission ..... 53, 56, 61, 64, 72
- advanced placement ..... 73
- Americans with Disabilities Act ..... 38, 97
- appeals  
     dismissal ..... 94  
     financial aid ..... 85  
     grade ..... 100
- application ..... 53  
     freshman (Boston) ..... 56  
     graduate, fast track,  
         postbaccalaureate ..... 64  
     transfer admission ..... 58  
     Worcester/Manchester ..... 64
- Arts and Sciences, core curriculum ..... 116
- Arts and Sciences, School of ..... 127
- athletics, *see* recreation and wellness
- attendance ..... 95
- auditing courses ..... 94
- BS Completion Policy ..... 109
- campuses  
     Boston ..... 9  
     Manchester ..... 10  
     Newton ..... 10  
     Worcester ..... 10
- Center for Online Learning and Academic Innovation ..... 11, 333
- Center for Academic Success and Enrichment (CASE) ..... 36
- Center for International Studies ..... 52
- Center for Professional Career Development ..... 37
- certificate programs  
     Certificate in Advanced Pharmacy Practice Studies (CAPPS) ..... 226  
     Computed Tomography ..... 200  
     Health Policy ..... 242  
     Healthcare Management ..... 335  
     Medication Safety ..... 314  
     Magnetic Resonance Imaging (MRI) ..... 200  
     Oral Health Professions Education ... 173  
     Regulatory Affairs ..... 242
- change of program (Boston) ..... 94
- chemistry degree programs  
     BS/MS ..... 128, 152  
     MS, PhD (Medicinal Chemistry) ..... 241
- classroom discipline  
     (student conduct) ..... 96
- conduct of classes ..... 95
- Consortia  
     Colleges of the Fenway (COF) ..... 24, 98  
     Higher Education Consortium of Central Massachusetts (HECCMA) .. 24  
     Manchester Area Colleges Consortium (MACC) ..... 24  
     New Hampshire College and University Council (NHCUC) ..... 24
- core curriculum, Arts and Sciences ..... 116
- corporation ..... 456  
     officers ..... 456  
     trustees, trustees emeriti ..... 456
- counseling services ..... 37
- course descriptions ..... 345  
     acupuncture and oriental medicine:  
         Chinese Acupuncture Studies (CAS Track) ..... 445  
         Chinese Herbal Medicine (CHM Track) ..... 450  
         Japanese Acupuncture Styles (JAS Track) ..... 451
- applied natural products (ANP) ..... 345  
     behavioral sciences (BEH) ..... 345  
     biology (BIO) ..... 347  
     biomedical informatics (BMI) ..... 350  
     Certificate in Advanced Pharmacy Practice Studies (INT) ..... 375  
     chemistry (CHE, CHEM) ..... 351  
     clinical research (MCR) ..... 379  
     dental hygiene (DHY) ..... 354  
     diagnostic medical sonography (DMS) ..... 358  
     English Language Services (ELA) .... 365  
     global healthcare management (HCM) ..... 368  
     health sciences (HSC) ..... 368  
     healthcare administration (HCA) ..... 366  
     humanities (HUM) ..... 372  
     instructional resources (INF) ..... 375  
     introduction to the major (ITM) ..... 376

liberal arts (LIB) .....	376	Medicinal Chemistry (MS, PhD).....	242
magnetic resonance imaging (MRI)...	383	MRI (BS) .....	179, 195
mathematics (MAT) .....	378	Nuclear Medicine Technology	
medication safety (MSM).....	385	(BS).....	182, 197
nuclear medicine technology (NMT) ..	386	Nursing	
nursing (NUR) .....	387	BSHS /Fast Track BSN	
occupational therapy (OTH) .....	392	(Postbaccalaureate) BSN	
optometry (OPT) .....	395	Dual Degree Worcester .....	286
pharmaceutical economics and		Fast Track BSN (Accelerated	
policy (PEP) .....	407	Postbaccalaureate) Worcester .....	285
pharmaceutical sciences		BS in Nursing Completion (RN	
Boston (PSB) .....	422	to BSN) Worcester .....	290
Worcester/Manchester (PSW).....	431	(BSN) Boston.....	203
pharmacy practice		Fast Track (Postbaccalaureate BSN)	
Boston (PPB) .....	410	Manchester .....	316
Worcester/Manchester (PPW).....	416	MSN Worcester .....	292
physical therapy (PTH).....	434	MSN Manchester .....	317
physician assistant studies		Occupational Therapy (MSOT).....	321
Boston (PAS) .....	400	Optometry (OD, OD/MPH).....	294, 300
Manchester/Worcester (MPA) .....	380	Patient Safety (MPS).....	314
physics and radiopharmacy (PHY).....	409	Pharmaceutical Economics and	
public health (PBH) .....	404	Policy (MS, PhD) .....	245
radiation therapy (RTT) .....	443	Pharmaceutical and Healthcare	
radiography (RAD) .....	441	Business (BS) .....	227
radiologic science (RSC).....	442	Pharmaceutical Sciences	
regulatory affairs (DRA) .....	364	(BS, MS).....	230, 257
social sciences (SSC) .....	453	Pharmaceutics (MS, PhD) .....	251
course policies .....	96	Pharmacology (MS, PhD).....	233
credit by examination .....	97	Pharmacology and Toxicology (BS)...	233
credit hour policy.....	96	Pharmacy (PharmD)	
Criminal Offender Record Information		Boston .....	216
(CORI) .....	77	Postbaccalaureate Doctor of	
cross-registration (Boston).....	98	Pharmacy Pathway.....	224
dean's list.....	98	Worcester/Manchester.....	304, 332
deferred admission / delayed		Pharmacy / Public Health (PharmD/	
enrollment .....	58, 61	MPH).....	223, 309
degree programs .....	12	Physical Therapy (DPT) .....	261
Acupuncture (Master of Acupuncture,		Physician Assistant Studies (MPAS)	
Mac).....	273	Boston .....	208
Acupuncture (Master of Acupuncture,		Manchester.....	327
and Oriental Medicine, MAOM) .....	278	Worcester .....	301
Acupuncture (Doctor of Acupuncture		Premedical and Health Studies (BS)	141
and Integrative Health (DAIH) .....	282	Public Health (BS, MPH) ...	145, 149, 153
Biomedical Informatics (BS) .....	336	Radiation Therapy (BS) .....	184, 198
Chemistry / Pharmaceutical		Radiography (BS).....	188, 199
Chemistry (BS/MS).....	128, 152	Regulatory Affairs and Health Policy	
Clinical Research (MCR).....	254	(MS, RAHP).....	241
Dental Hygiene (BS, MS) .....	159, 169	degree standing, financial aid.....	80
Diagnostic Medical Sonography		disabilities, students with.....	38, 97
(BS).....	174, 191, 268	Disabilities Support Services .....	38
Health Psychology (BS) .....	131	dismissal (academic).....	93
Health Sciences (BS) .....	133	Doctor of Pharmacy (PharmD)	
Health Sciences (DHS) .....	341	Boston .....	216
Health Sciences (MHS).....	340	Postbaccalaureate PharmD	
Healthcare Administration (MHA) .....	335	Pathway .....	224
Medical and Molecular Biology (BS)..	138	Worcester/Manchester .....	304, 332



early action .....	56	refunds .....	85
email policy .....	99	scholarships (financial aid package) ...	84
English Language Services .....	344	statements of account .....	86
estimated expenses .....	78	withdrawal from University .....	86
examinations .....	99	Work-Study .....	86
facilities, Boston campus		Yellow Ribbon Program .....	82
bookstore .....	19	Forsyth School of Dental Hygiene .	157, 259
computer .....	19	freshman admission .....	56
dining .....	19	general education requirements .....	114
George Robert White Building .....	18	good academic standing .....	99
Henrietta DeBenedictis Library .....	18	good academic standing chart .....	100
John Richard Fennell Building .....	18	grade appeals .....	100
public transportation and parking .....	19	grade point average (GPA) .....	100
residence halls .....	19	grade reports .....	100
Richard E. Griffin Academic Center .....	19	grading policies .....	100
Ronald A. Matricaria Academic		grading system .....	105
and Student Center .....	18	graduate studies .....	236
Theodore L. Iorio Research Center .....	18	admission .....	61
facilities, Manchester campus		degree programs .....	236
computer .....	22	degree requirements .....	236
Joseph F. and Francis P. Brant		graduation policies .....	106
Academic and Student Center .....	22	health insurance .....	38
laboratory .....	23	Health Psychology program .....	131
library .....	22	Health Sciences, Division of	
parking .....	23	Boston .....	156
student activity center .....	22	Worcester .....	259
Brant student lounge .....	23	health services .....	39
Brant Hub .....	23	Higher Education Consortium of	
facilities, Worcester campus		Central Massachusetts (HECCMA) .....	24
Blais Family Library .....	21	honors, graduation with .....	107
computer .....	21	Honors Program	
Henrietta DeBenedictis Building .....	20	School of Arts and Sciences .....	150
Lincoln Square Academic and		School of Pharmacy-Boston	
Student Center .....	20	Doctor of Pharmacy .....	222
Maher Academic Center .....	21	housing	
MCPHS Online, Brant Building .....	21	Boston .....	19
19 Norwich Street Building .....	21	Worcester .....	21
parking .....	21	identification policy .....	39
residence halls .....	21	immigration services .....	52
student lounge .....	22	immunization requirements .....	39
Thomas Henry Borysek Living and		incomplete grades .....	105
Learning Center .....	20	information literacy requirement .....	115
Faculty .....	459	institutional agreements .....	25
Faculty Mentoring (CASE Boston) .....	36	Assumption College .....	28
Family Educational Rights and Privacy		A.T. Still University .....	27
Act (FERPA) .....	2	Cape Cod Community College .....	28
fees .....	76	Clark University .....	28
financial aid .....	80	College of the Holy Cross .....	28
academic progress .....	83	Colleges of the Fenway (COF) .....	24
appeal process (financial aid) .....	85	Drexel University College of Medicine	25
applying for .....	80	Higher Education Consortium of	
eligibility for .....	80	Central Massachusetts (HECCMA) .	24
enrollment status .....	82	Lake Erie College of Osteopathic	
late fees .....	78	Medicine .....	24
notification of award .....	80	Middlesex Community College .....	30
process for awarding .....	84	Mount Wachusett Community	

College.....	30	Medicinal Chemistry (MS, PhD) .....	242
New England College.....	30	minimum class size.....	96
Quinsigamond Community College .....	31	minors (Boston).....	108
Ross University .....	26	minor requirements .....	118
Saint Anselm College.....	31	American Studies .....	118
Salem State University.....	31	Biology .....	119
Simmons College.....	24	Chemistry.....	119
Springfield College .....	24	Health Psychology.....	120
Stonehill College .....	32	Healthcare Humanities .....	119
St. George's University.....	27	Nutrition.....	120
Temple University .....	28	Performing Arts (COF).....	121
University of Maine .....	32	Premedical .....	122
University of Massachusetts Boston.....	28	Public Health .....	123
University of New Hampshire at		Sustainability (COF) .....	123
Manchester .....	33	Women's Studies .....	126
William James College.....	24	mission statement .....	9
Worcester Polytechnic Institute .....	33	New England School of Acupuncture... 273	
Worcester State University.....	34	New Hampshire College and	
instructional periods.....	96	University Council (NHCUC).....	24
instructor absence .....	92	Nondiscrimination Policy .....	1
insurance, health .....	38	(see <i>also</i> Protection from Harassment	
interinstitutional cooperation .....	24	Policy, Title IX)	
international academic services .....	52	nonmatriculating students .....	108
international programs .....	52	Nuclear Medicine Technology	
international student admission.....	72	program.....	182, 197
international student services.....	52	Nursing, School of	
international student visa .....	73	Boston (BSN) .....	203
international students.....	52	Manchester (Postbaccalaureate).....	316
internships/licensure certification .....	43	Worcester (Postbaccalaureate BSN)	285
Interprofessional Education (IPE) Plexus.52		officers of the University.....	456
Introduction to the Major (ITM).....	115	online programs .....	11, 99, 333
IPE Plexus.....	52	Optometry, School of .....	294
late fees .....	78, 85	oral proficiency (Boston).....	114
learning groups.....	37	orientation .....	44
leave of absence.....	107	osteopathic medicine .....	25, 27
libraries		parking	
Blais Family (Worcester) .....	21	Boston.....	19
Henrietta DeBenedictis (Boston) .....	18	Manchester .....	23
library modules .....	115	Newton.....	23
licensure, internships, certification .....	43	Worcester.....	21
Magnetic Resonance Imaging (MRI)		payment schedule.....	78
program.....	179, 195	peer mentoring.....	37
Manchester.....	10	peer tutoring.....	37
Manchester Area Colleges		petition to graduate .....	107
Consortium (MACC).....	24	Pharmaceutical and Healthcare	
mathematics course placement .....	114	Business program .....	227
Math and Physics Center.....	37	Pharmaceutical Sciences (BS).....	230
MCPHS Center for International Studies		Pharmaceutics (MS, PhD).....	251
English Language Services.....	344	Pharmacology (MS, PhD) .....	253
MCPHS Online (see <i>also</i> Center for		Pharmacology and Toxicology (BS) .....	233
Online Learning and Academic		Pharmacy Learning Groups (Worcester	
Innovation) .....	11, 333	and Manchester .....	37
Medical Imaging and Therapeutics,		Pharmacy, School of	
School of.....	174, 268	Boston.....	215
Medical and Molecular Biology (BS) .....	138	Worcester/Manchester .....	304, 332
medical terminology requirement.....	115	PharmD, see Doctor of Pharmacy	

Physical Therapy (DPT).....	261	student organizations .....	45
Physician Assistant Studies, School of		student orientation.....	44
Boston.....	208	student rights under FERPA.....	2
Manchester .....	327	student services .....	36
Worcester.....	301	student status.....	81
postbacc. Admission (Fast Track).....	61	student success coaching (Boston).....	36
Postbacc. Doctor of Pharmacy		Temple University .....	28
Pathway .....	224	Test of English as a Foreign	
pregnancy policy (Rad. Sciences).....	201	Language (TOEFL) .....	72
Premedical and Health		Title IX (Protection from Harassment	
Studies (BS).....	141	Policy) .....	46
Premedical minor.....	122	transcripts .....	56, 62, 66, 70, 72, 109
Protection from Harassment Policy		transfer admission .....	58
(Title IX) .....	46	transfer credit .....	60, 63, 66, 67, 68, 109
Public Health (BS) .....	145, 149	trustees .....	456
Radiation Therapy (BS) .....	184, 198	trustees emeriti .....	456
Radiography (BS) .....	188, 199	tuition .....	74
recreation and wellness .....	44	tuition payment.....	78
refunds .....	85	tutoring, peer.....	37
registration for classes .....	108	University Learning Network (ULN).....	36
Regulatory Affairs and Health Policy		University Learning Outcomes.....	9
program.....	241	Veterans .....	82
reinstatement of dismissed students.....	94	veterinary medicine .....	26, 27
repeated courses .....	106	visiting students .....	108
replacement of F grades .....	106	withdrawal	
residence halls.....	19, 21	administrative .....	110
residence life		course, from .....	112
Boston.....	43	health leave of absence.....	111
Worcester.....	44	process for involuntary .....	111
residencies in pharmacy practice.....	224	refunds .....	79
residency requirement .....	108	University, from .....	113
room and board .....	74	Work-Study .....	86
Ross University.....	26	Writing Center .....	37
Simmons College.....	24	writing proficiency requirement	
Springfield College.....	24	(Boston) .....	97, 114
Stonehill College.....	32		
student account statements .....	86		
student counseling.....	37		
Student Financial Services .....	80		

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