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**Academic Catalog 2015 - 2016** / Graduate

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Programs, Policies & Courses

This online academic catalog provides the latest information on all graduate areas of study and degree programs at the University of Massachusetts Lowell and supersedes all previous versions of the catalog.

Bachelor's to Master's Programs

Earn Two Degrees in as Little as Five Years

- Eligibility
- Course Credits
- How to Apply

In order to encourage outstanding UMass Lowell undergraduate degree students to continue their studies towards an advanced degree, qualified students may apply for the Bachelors to Masters Degree Option (Bachelor’s to Master’s programs include the Fast Track to Teaching and Plus 1 programs.)

This option carries distinct benefits. Graduate Record Examination (GRE) scores are not required (except in the Graduate School of Education), GMAT is waived for applicants for the Masters in Business Administration (MBA) with a 3.2 or higher GPA and the application fee is waived. In addition, many departments offer course credit benefits. (For detailed information regarding specific course credit benefits, please see the Graduate Coordinator in the respective masters degree granting department.)

- Information on the GRE / GMAT / MAT Waivers (https://www.uml.edu/Grad/gre-mat-waivers.aspx)

Eligibility

Any UMass Lowell undergraduate junior or senior with a grade point average of 3.0 or better may apply to a Masters degree program at UMass Lowell under the Accelerated Bachelors to Masters Degree Option. However, to be accepted into this option the following minimum conditions must be met (individual departments may have more stringent requirements):

1. The student must have a cumulative grade point average of 3.0 or above at the time the baccalaureate degree is conferred in order to maintain eligibility for this option.
2. The student must apply for and receive his/her baccalaureate degree before matriculating into the graduate program.
3. Once accepted a student is expected to begin his/her graduate studies in the semester immediately following conferral of the baccalaureate degree unless the student submits a written request for deferral. A student is allowed to defer for a maximum of one year from the date of acceptance. For example, if accepted for the Spring 2015 semester, an individual can defer to either the Fall 2015 or Spring 2016 semesters. A student defers acceptance by submitting a written request to the Office of Graduate Admissions (mailto:Graduate_Admissions@uml.edu). All deferral requests must specify which semester the student wishes to enroll. Any applicant accepted to the Bachelors to Masters Degree Option who opts not to enroll in at least one course within the graduate department to which they have been accepted in the semester immediately following conferral of the bachelors degree and who does not submit a deferral request forfeits his/her rights to benefits under this program. Should the student decide to begin his/her studies at a later time he/she will be required to take the GRE, pay an application fee, and have his/her application reassessed.

Course Credits

The graduate degree granting department may allow course credit benefits; however, the following requirements apply:

1. Any graduate courses taken by a baccalaureate degree student that are credited towards the Masters degree must have been obtained with a grade of B or better.
2. Only courses of 500 level or higher may count toward the Masters degree.
3. As defined by the graduate degree granting department, a maximum of 12 graduate credits (5000 level or above) may be used for the masters degree provided these graduate credits were taken in excess of the university minimum of 120 baccalaureate degree credits, or, for programs requiring fewer than 33 credits, a maximum of up to six credits of graduate (5000 level or higher) courses may be used by a student in the Accelerated
Bachelor’s to Master’s Degree Option for both the graduate and undergraduate degrees; or, for program requiring 33-35 credits, at the discretion of the affected department, a maximum of up to nine credits of graduate (5000 level or higher) courses may be used by a student in the Accelerated Bachelor’s to Master’s Degree Option for both the graduate and undergraduate degrees; or, for programs requiring 36 or more credits, at the discretion of the affected department, a maximum of up to twelve credits of graduate (5000 level or higher) courses may be used by a student in the Accelerated Bachelor’s to Master’s Degree Option for both the graduate and undergraduate degrees.

4. Students must petition to have specific courses (5000 level or above) taken during their undergraduate career apply towards their graduate degree via an Academic Petition.

How to Apply

Applicants are requested to use the standard paper application form (https://www.uml.edu/docs/July%202014%20Bachelor's-Master%20Application_tcm18-159702.pdf) and submit requisite materials to the Office of Graduate Admissions (https://www.uml.edu/Grad/default.aspx) (Cumnock Hall - North Campus), normally in the second semester of their third year as an undergraduate (up until the last day of classes in their final semester before graduation). Application forms and details on applying may also be obtained by contacting the Graduate Admissions Office at 978-934-2390.

Master of Arts (MA)

- Community Social Psychology
- Criminal Justice
- Economic & Social Development of Regions - This program is no longer accepting students.
- Peace & Conflict Resolution
- Security Studies

Master of Business Administration (MBA)

- General Business
- Accounting
- Finance
- Information Technology
- Marketing
- International Business

Master of Education (M.Ed.)

- Curriculum & Instruction: Initial CertificationCurriculum & Instruction: Science Education, beyond initial
- Math Education, beyond initialTeaching English to Speakers of Other Languages
- Educational Administration: Higher Education
- Reading & Language

Master of Music (MM)

- Music Education: Community Music
- Sound Recording Technology

Master of Public Health (MPH)

- Public Health (https://www.uml.edu/catalog-AY16/pdf/Graduate.pdf)
- Epidemiology
- Global Environmental Sustainability & Health
- Healthcare Management
- Nutrition
- Population Health
Master of Science (MS)

- Accounting
- Autism Studies
- Biological Sciences: Applied Biotechnology, Biotechnology Biosafety (PSM), Environmental Biotechnology (PSM), Project Management for Life Sciences (PSM)
- Biomedical Engineering & Biotechnology: Biomedical & Biotechnology (PSM)
- Business Analytics
- Chemistry: Chemistry & Polymer Science (PSM), Pharmaceutical Biochemistry (PSM)
- Clinical Laboratory Sciences: Clinical Lab Science (PSM)
- Computer Science: Bio/Chemical Informatics Software Entrepreneurship, Entrepreneurship (PSM)
- Engineering Management
- Environmental Studies: Atmospheric Sciences (PSM), Environmental Engineering Sciences (PSM), Environmental Geoscience (PSM)
- Finance (http://www.uml.edu/Catalog/Graduate/Business/master/s/MSFinance.aspx)
- Health Informatics & Management: Health Informatics, Health Management
- Information Technology
- Innovation & Technological Entrepreneurship
- Marine Sciences & Technology: Coast & Ocean Admin. Science, Technology (PSM)
- Nursing
  - Adult / Gerontological Nursing
  - Adult Psychiatric & Mental Health Nursing
  - Family Health Nursing
- Pharmaceutical Science (http://www.uml.edu/Catalog/Graduate/Health-Sciences/Pharmaceutical-Sciences/Master-

Pharmaceutical-Sciences.aspx)
- Physics: Phototonics
- Public Health (http://www.uml.edu/Catalog/Graduate/Health-Sciences/Public-Health/Default.aspx)
- Radiological Science & Protection: Radiological Science and Protection (PSM), Medical Physics
  - CBRNE Security, Critical Infrastructure Protection, Cybersecurity
- Work Environment: Cleaner Production & Pollution Prevention (MS, PSM), Ergonomics & Safety (MS, PS), Epidemiology (MS, PSM), Occupational & Environmental Hygiene (MS, PSM)

Master of Science in Engineering (M.S.E.)

- Chemical Engineering: Leadership
- Civil Engineering: Leadership, Environmental Geotechnical Structural Transportation
- Computer Engineering: Leadership
- Electrical Engineering: Leadership, Optics
- Energy Engineering: Leadership, Nuclear Solar
- Mechanical Engineering: Leadership
- Plastics Engineering: Leadership, Coatings & Adhesives, Fibers & Composites, Synthetic Fibers

Education Specialist (EdS)

- Administration, Planning & Policy
- Curriculum & Instruction: Education of Diverse Populations
- Reading & Language

About Graduate Certificates

Most graduate certificate are comprised of four courses designed to provide specific knowledge and expertise vital to
today’s changing and complex needs in the work place. In most cases courses may be applied toward a degree program.

Requirements to Complete a Graduate Certificate

The courses to complete the certificate must be completed within a five year period with a minimum 3.0 grade point average, and with no more than 3 credits below B. Courses completed for one certificate may not be used for another certificate.

Certificate Application Process

Individuals must complete a simplified application and provide an official undergraduate transcript indicating that a baccalaureate degree has been awarded. GRE’s are not required. NOTE: If your bachelor’s degree is from outside of the U.S., you may be required to take the TOEFL examination.

- Graduate Certificate Application Form
  (https://www.uml.edu/docs/Post%20Bachelor%20Certificate%20Application_tcm18-229777.pdf) (pdf)

Gainful Employment Disclosure Information

Completion rates, median loan debts and program costs are outlined for each certificate program and available in PDF format.

- Graduate Programs

Doctoral Programs Offered

Listed by Degree Earned

- Doctor of Education
- Doctor of Engineering
- Doctor of Nursing Practice
- Doctor of Philosophy
- Doctor of Physical Therapy
- Doctor of Science

Doctor of Education

- Leadership in Schooling
- Language Arts & Literacy

- Mathematics & Science Education
- Doctor of Engineering (D.Eng./Ph.D.)
  - Business Management Curriculum
  - Chemical Engineering
  - Civil Engineering
  - Electrical Engineering
  - Energy Engineering
  - Mechanical Engineering Mechanical Engineering/Chemical Engineering/Mechanical Engineering/Civil &Environmental Engineering/Mechanical Engineering/Energy Engineering/Mechanical Engineering/Manufacturing/Mechanical Engineering/Manufacturing Engineering

- Plastics Engineering
  - Doctor of Nursing Practice (DNP)
    - Nursing

- Doctor of Philosophy (Ph.D.)
  - Applied Psychology and Preventative Science
    (http://www.uml.edu/Catalog/Graduate/FAHSS/Psychology/DoctoralAppliedPsychology.aspx)
  - Biomedical Engineering & Biotechnology
  - Business Administration Technology Management International Business Accounting Leadership Finance Management Information Systems
  - Chemistry Biochemistry Environmental Studies Green Chemistry
  - Computer Science Bio/Chemical Informatics Computational Mathematics
  - Global Studies
    (https://www.uml.edu/catalog-AY16/pdf/Graduate.pdf)Security &Human Rights Socio-
Economic DevelopmentComparative Cultures
- **Marine Sciences & Technology**
- **Nursing**
- **Pharmaceutical Science**
- **Physics**
  - Applied Mechanics
  - Engineering
  - Atmospheric Sciences
  - Radiological Sciences
- **Polymer Science**
  - Polymer Science/Plastics Engineering

**Doctor of Physical Therapy (DPT)**
- **Physical Therapy**

**Doctor of Science**
- **Work Environment**
  - Cleaner Production &Pollution
  - Prevention
  - Ergonomics
  - Epidemiology
  - Hygiene
  - Policy

**Graduate Certificates Offered**
- **Applied Statistics**
  ([https://www.uml.edu/Catalog/Graduate/sciences/Matematical-Sciences/Graduate-Certificates.aspx](https://www.uml.edu/Catalog/Graduate/sciences/Matematical-Sciences/Graduate-Certificates.aspx))
- **Behavioral Intervention in Autism**
  ([https://www.uml.edu/Catalog/Graduate/FAHSS/psychology/Certificate-Program.aspx](https://www.uml.edu/Catalog/Graduate/FAHSS/psychology/Certificate-Program.aspx))
- **Biomedical Engineering**
  ([https://www.uml.edu/Catalog/Graduate/Engineering/Ellectrical-Computer-Engineering/Graduate-Certificates.aspx](https://www.uml.edu/Catalog/Graduate/Engineering/Ellectrical-Computer-Engineering/Graduate-Certificates.aspx))
- **Biotechnology &Bioprocessing**
  ([https://www.uml.edu/Catalog/Graduate/sciences/Biology/Graduate-Certificate.aspx](https://www.uml.edu/Catalog/Graduate/sciences/Biology/Graduate-Certificate.aspx))
- **Chemistry**
  ([https://www.uml.edu/Catalog/Graduate/sciences/Chemistry/Graduate-Certificates-in-Chemistry.aspx](https://www.uml.edu/Catalog/Graduate/sciences/Chemistry/Graduate-Certificates-in-Chemistry.aspx))
- **Clinical Pathology**
- **Communications Engineering**
  ([https://www.uml.edu/Catalog/Graduate/Engineering/Ellectrical-Computer-Engineering/Graduate-Certificates.aspx](https://www.uml.edu/Catalog/Graduate/Engineering/Ellectrical-Computer-Engineering/Graduate-Certificates.aspx))
- **Composites and Materials**
  ([https://www.uml.edu/Catalog/Graduate/Engineering/Mechanical-Engineering/Graduate-Certificates.aspx#1](https://www.uml.edu/Catalog/Graduate/Engineering/Mechanical-Engineering/Graduate-Certificates.aspx#1))
- **Criminal Justice Leadership &Policy Development**
- **Medical Plastics Design and Manufacturing Engineering**
  ([http://www.uml.edu/Catalog/Graduate/Engineering/Mechanical-Engineering/Graduate-Certificates.aspx](http://www.uml.edu/Catalog/Graduate/Engineering/Mechanical-Engineering/Graduate-Certificates.aspx))
- **Design and Manufacturing Engineering**
  ([https://www.uml.edu/Catalog/Graduate/Engineering/Mechnical-Engineering/Graduate-Certificates.aspx](https://www.uml.edu/Catalog/Graduate/Engineering/Mechnical-Engineering/Graduate-Certificates.aspx))
- **Diversity in the Workplace**
  ([https://www.uml.edu/Catalog/Graduate/FAHSS/psychology/Certificate-Program.aspx](https://www.uml.edu/Catalog/Graduate/FAHSS/psychology/Certificate-Program.aspx))
- **Domestic Violence Prevention**
- **Energy Conversion**
  ([https://www.uml.edu/Catalog/Graduate/Engineering/Ellectrical-Computer-Engineering/Graduate-Certificates.aspx](https://www.uml.edu/Catalog/Graduate/Engineering/Ellectrical-Computer-Engineering/Graduate-Certificates.aspx))
- **Environmental Atmospheric Science**
- **Environmental Biotechnology**
  ([https://www.uml.edu/Catalog/Graduate/sciences/Biology/Graduate-Certificate.aspx](https://www.uml.edu/Catalog/Graduate/sciences/Biology/Graduate-Certificate.aspx))
- **Environmental GeoScience**
- **Family Studies**
  ([https://www.uml.edu/Catalog/Graduate/FAHSS/psychology/Certificate-Program.aspx](https://www.uml.edu/Catalog/Graduate/FAHSS/psychology/Certificate-Program.aspx))
- **Field Programming Gate Array**
- **Financial Management**
- **Forensic Criminology**
- **Foundations of Business**
• Health Informatics
  (https://www.uml.edu/Catalog/Graduate/Health-Environment/Community-Health-Sustainability/Graduate-Certificate.aspx)
• Health Management
  (https://www.uml.edu/Catalog/Graduate/Health-Environment/Community-Health-Sustainability/Graduate-Certificate.aspx)
• Integrated Engineering Systems
  (https://www.uml.edu/Catalog/Graduate/Engineering/Electrical-Computer-Engineering/Graduate-Certificates.aspx) (interdisciplinary)
• Criminal Justice: Leadership & Policy Development
• Materials Sciences & Engineering
  (https://www.uml.edu/Catalog/Graduate/Engineering/Chemical-Engineering/Graduate-Certificates-in-Chemical-Engineering.aspx)
• Mathematics for Teachers
  (https://www.uml.edu/Catalog/Graduate/sciences/Mathematical-Sciences/Graduate-Certificates.aspx)
• Medical Plastics Design & Manufacturing
  (https://www.uml.edu/Catalog/Graduate/Engineering/Plastics-Engineering/Certificate-Programs.aspx)
• Microelectromechanical Systems/Nanoelectromechanical Systems (interdisciplinary)
  (https://www.uml.edu/Catalog/Graduate/Engineering/Mechanical-Engineering/Graduate-Certificates.aspx)
• Microwave and Wireless Engineering
  (https://www.uml.edu/Catalog/Graduate/Engineering/Electrical-Computer-Engineering/Graduate-Certificates.aspx)
• Modeling, Simulation, and Control of Systems and Processes
  (https://www.uml.edu/Catalog/Graduate/Engineering/Chemical-Engineering/Graduate-Certificates-in-Chemical-Engineering.aspx)
• Molecular & Cellular Biotechnology
  (https://www.uml.edu/Catalog/Graduate/sciences/Biology/Graduate-Certificate.aspx)
• Network Security
  (https://www.uml.edu/Catalog/Graduate/sciences/Computer-Science/Graduate-Certificate.aspx)
• New Venture Creation
  (https://www.uml.edu/Catalog/Graduate/Business/Graduate-Certificate.aspx)
• Nutritional Sciences
  (https://www.uml.edu/Catalog/Graduate/Health-Environment/Clinical-Lab-Nutritional-Sci/Certificate-Program.aspx)
• Peace and Conflict Studies
  (https://www.uml.edu/Catalog/Graduate/FAHSS/PACS/Graduate-Certificate.aspx)
• Pharmaceutical Science
• Photonics & Opto-Electronic Devices
  (https://www.uml.edu/Catalog/Graduate/sciences/Physics/Graduate-Certificates-in-Physics.aspx)
• Plastics Design
  (https://www.uml.edu/Catalog/Graduate/Engineering/Plastics-Engineering/Certificate-Programs.aspx)
• Plastics Engineering Fundamentals
  (https://www.uml.edu/Catalog/Graduate/Engineering/Plastics-Engineering/Certificate-Programs.aspx)
• Plastics Materials
  (https://www.uml.edu/Catalog/Graduate/Engineering/Plastics-Engineering/Certificate-Programs.aspx)
• Plastics Processing
  (https://www.uml.edu/Catalog/Graduate/Engineering/Plastics-Engineering/Certificate-Programs.aspx)
• Professional Leadership
  (http://www.uml.edu/Catalog/Graduate/Programs/Professional-Leadership.aspx)
• Public Health Laboratory Sciences
  (https://www.uml.edu/Catalog/Graduate/Health-Environment/Clinical-Lab-Nutritional-Sci/Certificate-Program.aspx)
• Public Health Studies
  (http://www.uml.edu/Catalog/Graduate/Health-Sciences/Public-Health/graduate-certificate-phs.aspx)
• Radiological Health Physics & General Work Environment Protection
  (https://www.uml.edu/Catalog/Graduate/sciences/Physics/Graduate-Certificates-in-Physics.aspx)
• Renewable Energy Engineering (interdisciplinary)
  (https://www.uml.edu/Catalog/Graduate/Engineering/Mechanical-Engineering/Graduate-Certificates.aspx)
• Security Studies
  (https://www.uml.edu/Catalog/Graduate/FAHSS/Criminal-Justice/Certificate-Program.aspx)
• Structural Dynamics and Acoustic Modeling Techniques
  (https://www.uml.edu/Catalog/Graduate/Engineering/Mechanical-Engineering/Graduate-Certificates.aspx)
• Supply Chain and Operations Management
  (http://www.uml.edu/Catalog/Graduate/Business/Graduate-Certificate.aspx)
• System Models and Management
  (https://www.uml.edu/Catalog/Graduate/sciences/Computer-Science/Graduate-Certificate.aspx)
• Telecommunications
  (https://www.uml.edu/Catalog/Graduate/sciences/Computer-Science/Graduate-Certificate.aspx)
• VLSI & Microelectronics
  (https://www.uml.edu/Catalog/Graduate/Engineering/Electrical-Computer-Engineering/Graduate-Certificates.aspx)
• Victim Studies
  (https://www.uml.edu/Catalog/Graduate/FAHSS/Criminal-Justice/Certificate-Program.aspx)

Professional Science Master’s (PSM)

What differentiates the PSM from the core Master’s degree?

The Professional Science Master’s (PSM) is an innovative, non-thesis degree option designed for students to pursue advanced training in science, health or engineering while simultaneously developing professional leadership skills highly valued by employers. PSM programs typically consist of 8 core courses in science, health or engineering, 3 professional courses in leadership, communication and project management, a paid internship or professional development project and a reflective seminar. PSM programs have been developed in concert with industry in response to employer demands for specific skills and knowledge above and beyond the core science curriculum.

In contrast to typical Masters degrees, which require a thesis as a step toward preparation for an academic career, PSM programs are designed as terminal degrees that prepare candidates to compete in the global market. In essence, PSM programs are the MBAs of the 21st century. The National PSM Association offers networking and professional workshops to promote continued career development for PSM alumni across the country.

What PSM programs are available at UMass Lowell?

UMass Lowell offers 19 PSM programs. Graduates earn a Masters degree in Science with a PSM Option in the fields indicated below.

**Biological Sciences**
(http://www.uml.edu/Catalog/Graduate/Sciences/Biology/Default.aspx)

- Applied Biotechnology
- Environmental Biotechnology
- Biosafety
- Project Management in Life Sciences

**Biomedical Engineering and Biotechnology**
(http://www.uml.edu/Catalog/Graduate/Sciences/Biology/Masters-Programs.aspx)

**Chemistry**
(http://www.uml.edu/Catalog/Graduate/Sciences/Chemistry/Default.aspx)

- Chemistry and Polymer Science
- Pharmaceutical Biochemistry

**Clinical Laboratory Sciences**
(http://www.uml.edu/Catalog/Graduate/Health-Sciences/Clinical-Lab-Nutritional-Sci/Default.aspx)
Environmental Sciences
(http://www.uml.edu/Catalog/Graduate/Sciences/Environmental/Default.aspx)

● Atmospheric Sciences
● Geosciences

Marine Sciences
(http://www.uml.edu/Catalog/Graduate/Sciences/Marine/Default.aspx)

● Costal and Ocean Administration, Science and Technology

Mathematics
(http://www.uml.edu/Catalog/Graduate/Sciences/Mathematical-Sciences/Default.aspx)

● Industrial Mathematics

Physics
(http://www.uml.edu/Catalog/Graduate/Sciences/Physics/Default.aspx)

● Radiological Sciences

Professional Leadership
(http://www.uml.edu/Catalog/Graduate/Programs/Professional-Leadership.aspx)

Work Environment
(http://www.uml.edu/Catalog/Graduate/Health-Sciences/Work-Environment/Default.aspx)

● Cleaner Production &Pollution Prevention
(http://www.uml.edu/Catalog/Graduate/Health-Sciences/Work-Environment/Default.aspx)

● Environmental Epidemiology
● Ergonomics and Safety
● Occupational &Environmental Hygiene

For more information regarding PSM programs at UMass Lowell contact William Smith (mailto:william_smith@uml.edu).

Recommended PSM Science Courses:

Students should consult with faculty advisers to determine best course choice for their career advancement needs. All PSM students should include at least 1 course (basic or enhanced) that incorporates communication into their curriculum. Course descriptions can be found on the Recommended Courses (https://www.uml.edu/docs/PSM%20Online%20Course%20Descriptions%2007012014_tcm18-149327.pdf) (pdf).

Doctoral Degree Requirements

Doctoral Degree Requirements

Doctoral Research

Dissertation Committee

Dissertation Credits

Dissertation Preparation

Dissertation Defense

Doctoral Degree Requirements

Procedure for Opting Out with a Master’s Degree

Doctoral Research

In addition to the other requirements of the University, a candidate for a doctoral degree must complete an acceptable dissertation. The dissertation must satisfy the following criteria:

1. It should demonstrate the candidate’s intellectual competence and maturity in the field of concentration;
2. It should make an original and valid contribution to knowledge; and
3. It should be an individual achievement and the product of independent research.

Although doctoral dissertations may result from a project involving collaboration of several scholars, the individual contribution of each doctoral candidate must be substantial, clearly identifiable, and presented separately. The Committee will judge the completed dissertation in terms of the candidate’s ability to review and make critical use of the literature; to formulate a problem, develop appropriate methodology, and work systematically toward a solution; and to summarize the material or data and draw conclusions from them. The writing should be of publishable quality.

Dissertation Committee

After a student has chosen an area of research and a research supervisor, a Dissertation Committee is selected by the student and his or her research advisor in accordance with the policy of the department. The Dissertation Committee shall consist of at least three members, one of whom is the research supervisor and at least two of whom shall be from the student’s major department. An outside expert from industry or another university may be a member of the committee, but that individual must possess academic credentials which would qualify him or her to serve as a member of the University of Massachusetts Lowell faculty. The responsibilities of the Dissertation Committee shall be to:

1. Approve the research topic;
2. Supervise the progress of the dissertation;
3. Read, evaluate, and approve or disapprove of the written dissertation;
4. Hear, evaluate and approve or disapprove of the oral defense of the dissertation;
5. Report the completion of all dissertation requirements to the department and the Registrar’s Office.


Dissertation Credits

If the graduate student requires the use of University resources to continue his or her dissertation but has completed the required number of credits for doctoral research, he or she may sign up for 3, 6, or 9 credits of Continuing Graduate Research (see General Policies).

Graduate students who have completed all the requirements except the writing and defense of the dissertation and who do not need to use university resources must register for Continued Matriculation (CM.601.201) and pay a fee each semester until they graduate.

Note: International students on F-1 or J-1 visas must be registered for a minimum of nine credits each semester. Contact the International Students and Scholars Office for more information.

Dissertation Preparation

Every graduate student who completes a dissertation is required to bear the cost of binding two copies of the manuscript for the University’s files. Copywriting is optional and available for an additional fee.

Dissertation Defense

One week prior to the dissertation defense, announcements of the defense, listing the graduate student’s name, dissertation title, and place and time of the defense, must be submitted to the chairperson of the department, the college dean, the Registrar’s Office and posted and distributed throughout the University. The defense is open to the public.

Doctoral Degree Requirements

The doctoral degree is conferred upon graduate students who have met all the requirements listed below:

1. The student must successfully complete the graduate courses in the major field, including the GPA requirement, and the number of course and dissertation credits required by the particular program.
2. If indicated, the language requirement specified by the major department must be satisfactorily completed.
3. A qualifying examination, oral and/or written, conducted by the major department, must be passed before any work is begun on the dissertation. If the student fails the qualifying examination he or she may, at the discretion of the department, be permitted a second and final opportunity. At this point, having completed steps 1 through 3, the student is admitted to candidacy for the doctorate.
4. A dissertation based upon the results of original research, and which is satisfactory to the Dissertation Committee of the major department, must be completed.
5. A final oral dissertation defense conducted by the Dissertation Committee, based primarily upon, but not necessarily limited to, the contents of the candidate’s dissertation must be passed. The examination cannot be scheduled until all members of the Dissertation Committee have had seven working days in which to read the dissertation. The oral examination is to be conducted by the Dissertation Committee, whose membership may be augmented by the non-voting faculty. In order to pass the defense, the candidate may not receive more than one dissenting vote from the members of the Dissertation Committee.
6. All financial obligations (tuition, fees, and expenses) must be satisfied as evidenced by the completion and submission of a Graduate Degree Clearance form to the Registrar’s Office.

Procedure for Opting Out with a Master’s Degree

Students accepted into a doctoral program who elect to instead obtain the master’s degree and leave the university must follow the following procedure:

1. The student must file an Academic Petition requesting to be changed from the doctorate to the master’s degree program.
2. The student must complete all required courses for the master's degree, compile a minimum 3.0 grade point average, successfully defend his/her thesis, and complete the clearance process at the Registrar’s Office.

3. All graduate courses (and undergraduate course work used for graduate credit), whether taken for the original doctoral program or for the master’s degree, will be included in the grade point average and listed on the student’s graduate transcript.

Financial Information

University-related costs include tuition and mandatory fees. Please contact the Student Financial Services (https://www.uml.edu/thesolutioncenter/bill/tuition-fees/default.aspx) for more information.

- New England Regional Program
- Health Insurance
- Veterans
- Residency Classification
- Overdue Accounts
- Payment Plans
- University Charges

New England Regional Student Program

Massachusetts and the University participate in a reciprocal program in which qualified and legal residents of other New England states may attend graduate school in an approved program at the University of Massachusetts Lowell and pay 150% of the Massachusetts in-state tuition charges. (All other applicable fees apply.) Applicants are considered for unique and distinctive graduate level studies not available in their home state university system. Full details regarding eligible programs are available from the New England Board of Higher Education, 45 Temple Place, Boston, Massachusetts 02111 (617-357-9620), or at the University Graduate Admissions (https://www.uml.edu/Grad/default.aspx) office (www.uml.edu/grad). The University of Massachusetts Lowell requires that all international students enroll in the University's Student Health Insurance Plan.

Veterans

The Veterans Administration has approved the University of Massachusetts Lowell for undergraduate study. For details regarding veteran tuition benefits, refer to the Registrar’s Office (https://www.uml.edu/registrar/default.aspx) website (www.uml.edu/registrar). The complete set of rules are attached to the application for reclassification. These applications are available from the Residency Officer in Dugan Hall (978-934-2596).

RESIDENCY CLASSIFICATION

Rules for Determination of Domicile

University tuition rates are established on the basis of official state residency as determined by a student's true "domicile." "Domicile" is defined as a person’s true, fixed and permanent home and place of habitation where he or she intends to remain permanently or for an indefinite time. Massachusetts residency for tuition purposes is not acquired by mere physical presence in Massachusetts while a person is carrying on a course of study at the University. A student’s residency status is based on a determination of one’s domicile at the time of entry or re-entry to the University. A student may apply to be reclassified at any time and must provide detailed documentation to support the claim that he or she met the requirements for Massachusetts residency for tuition purposes at the time of his or her entry as a student. One notable exception is made for students who marry Massachusetts residents while enrolled in a course of studies. The complete set of rules are attached to the application for reclassification. These applications are available from the Residency Officer in Dugan Hall (978-934-2596).

Payment of Bills

Health Insurance (https://www.uml.edu/student-services/Health/default.aspx)

Mandatory on-campus (accident) insurance is charged to all graduate students. All graduate students enrolled in 9 or more credit hours will be charged for health insurance as required by state law. Graduate students may waive student health insurance charges if they maintain comparable insurance coverage and complete an insurance waiver form by the required deadline. Forms are available in the Office of Graduate Admissions and Accounts Receivable Office, Dugan Hall, UMass Lowell South. Family health insurance plans are also available with options for coverage of spouses and/or spouses and dependent children.

International Students: As authorized under the insurance laws for higher education students in Massachusetts (section 275 of Chapter 151 of the Acts of 1996), the University of Massachusetts Lowell requires that all international students enroll in the University's Student Health Insurance Plan.
Graduate students will be permitted to attend classes and to utilize University facilities only after they have cleared all their financial obligations to the University. Financial obligations include indebtedness for library and parking fines, rental payments, and repayment of emergency loans. All bills are payable in advance by check or money order and are due as specified on the student invoice. Major credit cards are also accepted. All payments of fees and tuition should be made payable directly to the University of Massachusetts Lowell. A student in debt to the University at the end of any semester or summer session is not permitted to register again at the University until his or her indebtedness has been discharged. In addition, student transcripts and diplomas will not be released unless all indebtedness has been discharged.

Overdue Accounts

Should it be necessary to utilize the services of a collection agency or attorney for an overdue student account, the student will be liable for any and all legal fees, commissions, and associated service charges.

Payment Plans

The University of Massachusetts Lowell offers a low-cost, interest-free payment option administered by Academic Management Services (AMS). This plan allows students to budget the annual cost of tuition and fees over a ten month period. Please call AMS directly at 1-800-635-0120 or contact the Financial Aid Office, Dugan Hall, UMass Lowell South (978-934-3570) for more information.

University Charges

University-related costs include tuition and mandatory fees. Please contact the Student Financial Services (https://www.uml.edu/thesolutioncenter/bill/tuition-fees/default.aspx) for more information.

Doctoral Degree Credit Requirements

<table>
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<th>COLLEGE/PROGRAM</th>
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<th>DISSERTATION CREDITS</th>
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Financial Assistance & Assistantships

FINANCIAL ASSISTANCE

- Applying for Financial Aid
- Other Types of Assistance
- Tuition and Fees

Financial Aid
Applying for Financial Aid:

The University requires students to file a Free Application for Federal Student Aid (FAFSA). Students may apply for the FAFSA online at www.FAFSA.ed.gov. It is recommended that students save time by requesting personal identification numbers called Federal Student Aid PINs before the student applies for aid. The PIN can be used to electronically sign the FAFSA, electronically sign certain loan contracts, and access online information about federal student aid the student has received. The PIN must be requested online at www.pin.ed.gov.

Copies of students and spouses federal income tax, W2 forms and other forms may be requested by the Financial Aid Office to verify information provided on the FAFSA. Many forms requested are available on the financial aid website at www.uml.edu/financialaid. All information requested by the Financial Aid Office is required to complete the application process and is held in strictest confidence.

Eligibility Requirements

To receive financial aid from the various student aid programs, a student must:

- Have demonstrated financial need to qualify for need-based aid programs. Need is defined as the cost of attendance minus the expected family contribution derived from filing the FAFSA. Students may also be eligible for non-need based aid programs, such as the Federal Direct Unsubsidized Loan program and meritorious awards.
- Be a U.S. citizen or eligible non-citizen.
- Have a valid Social Security Number.
- Make satisfactory academic progress.
- Have a high school diploma or a General Education Development (GED) certificate, pass a test approved by the U.S. Department of Education, meet other standards the state of Massachusetts establishes that are approved by the U.S. Department of Education, or complete a high school education in a home school setting that is treated as a home school or private school under state law.
- Be a matriculated student enrolled in a degree granting or approved certificate program. Students enrolled in non-degree programs are not eligible for financial aid.
- Be enrolled at least half-time each semester. (Minimum of six credits for graduate students).
- Cannot be in default or in over payment on a federal student loan.
- Register with the Selective Service, if required.

Determining Financial Need:

Demonstrated financial need is the difference between the cost of attendance and the expected family contribution. The cost of attendance (COA) includes direct expenses such as tuition and fees, and also includes indirect such as room, board, books and transportation. The expected family contribution (EFC) is determined by the federal needs analysis formula and is calculated by completing a Free Application for Federal Student Aid (FAFSA).

Types of Financial Aid:

William D. Ford Federal Direct Subsidized/Unsubsidized Loan Program: The primary source of financial aid recommended for graduate students is the William D. Ford Federal Direct Student Loan Program. This program allows the student to borrow up to $20,500 per year at a low interest rate in subsidized and/or unsubsidized loans. Eligibility for a subsidized or unsubsidized direct loan is determined from the information provided on the FAFSA. A student may receive a subsidized loan and an unsubsidized loan for the same enrollment period. A subsidized loan is awarded on the basis of financial need. A student will not be charged any interest before repayment begins or during authorized periods of deferment. An unsubsidized loan is not awarded on the basis of need. A student will be charged interest from the time the loan is disbursed until it is paid in full. If a student allows the interest to accumulate, it will be capitalized—that is, the interest will be added to the principal amount of the loan and additional interest will be based upon the higher amount. For more information about graduate student aid contact the Financial Aid Office at 978-934-4220 or visit the website at www.uml.edu/financialaid.
William D. Ford Federal Direct PLUS Loan Program:
A non-need based federal loan offers up to the cost of attendance minus financial aid per academic year to qualified graduate students and parents/stepparents of undergraduate dependent students. Interest rate is fixed and repayment begins 45-60 days after the second disbursement. Refer to the Direct Loan web site (http://www.ed.gov/offices/OSFAP/DirectLoan/index.html) for current interest rates. A FAFSA is not required to apply for the PLUS loan; however, students are encouraged to file a FAFSA so that they can receive the maximum aid available. Parents may download an application online from the financial aid webpage www.uml.edu/financialaid (https://www.uml.edu/thesolutioncenter/financial-aid/default.aspx) by clicking on forms. Applications should be returned to the financial aid for processing. This is a loan that needs to be repaid by the parent/stepparent.

Other Types of Assistance:

Federal Professional Nurse Traineeship Grant Program:
Federally funded grant available to graduate nursing students. Award amounts vary and are dependent upon funding. Please contact the School of Nursing for more information.

Federal Teach Grant: Federally funded grant available to qualifying graduate education majors enrolled in coursework or plan to complete coursework toward a career in teaching in a high need subject area. Contact the Graduate School of Education for more information.

Deans Fellowships: $2,000 awards granted to eligible, newly admitted full-time, in-state Masters candidates not receiving a teaching or research assistantship.

Provosts Fellowships: $4,000 awards granted to eligible, newly admitted full-time, out-of-state and international Masters candidates not receiving a teaching or research assistantship.

ASSISTANTSHIPS

Teaching and Research Assistantships
A limited number of teaching and research assistantships are available for matriculated, full-time (minimum of 9 credits/semester) graduate students. All assistantships are subject to the agreement between UMass Lowell and UAW/Graduate Employees Organization. Teaching assistantships are assigned by the student’s department; therefore, queries regarding teaching assistantships should be directed to the departmental graduate coordinator (https://www.uml.edu/Grad/Accepted-Students/coordinators.aspx) or chairperson (see www.uml.edu/Grad/coordinators.aspx) for a list). Research assistantships are available through special arrangements with individual research advisers. Individuals interested in research assistantships should contact departmental faculty members concerning the availability of this form of financial aid.

Qualifying for an Assistantship
To ensure that assistantships are awarded to the most qualified individuals, the University has established the following requirements:

1. No teaching/research assistantship may be awarded to a graduate student with incompletes, F’s, or U’s on his or her transcript.
2. No teaching/research assistantship may be awarded to a graduate student who fails to maintain good academic standing (a grade point average under 3.0 on the official transcript). See the Academic Standing information at www.uml.edu/catalog/graduate/policies/Academic_Stand ing.htm.
3. No University-funded teaching/research assistantship may be awarded to a master’s degree candidate if he/she has completed the total number of credits required for his/her program.
4. Level III teaching/research assistantships may only be awarded to graduate students who have reached doctoral candidacy (i.e. completed all course work, oral/written and language examinations) and are enrolled in dissertation research.

Teaching and Research Assistants are awarded either a semester or a yearly contract. The current negotiated agreement between The University of Massachusetts Lowell Board of Trustees and the Graduate Employee Organization is posted on the Human Resources website. Current stipend levels may be found there as well.

Graduate Student Assistantships
A limited number of student assistantships may be available in the departments. Students in this category are paid an hourly rate and are obligated to pay their own tuition and fees. All queries concerning assistantships should be directed to the graduate coordinator (https://www.uml.edu/Grad/Accepted-Students/coordinators.aspx) (www.uml.edu/Grad/coordinators.aspx) in the student’s department.
Tuition and Fees

Please see the Student Financial Services website at www.uml.edu/Tuition-fees/default.aspx for current tuition and fee information. Your tuition rate is determined by your residency status: in-state, out-of-state (which would include international students), New England Regional or Proximity.

Master's Degree Requirements

- Advising
- General Requirements for the Master's Degree
- Research Option for the Master's Degree
- Research Project

Students Continuing on to a Doctoral Program

Advising

An entering graduate student should meet with the departmental graduate coordinator as soon as possible after arrival on campus. The coordinator will:

1. Help design and then approve the student’s complete program leading to the master’s degree.
2. Recommend course credits from within and outside the University for transfer into the student’s degree program.
3. Monitor the student’s progress toward the degree, which must be completed within a five-year time period in most programs (See Time for Limit for Degree Completion).

General Requirements for the Master’s Degree

To be recommended for a masters degree, a candidate must satisfy all requirements of the University and the specific requirements of the department in which he or she is enrolled. The requirements of the University are listed below, and the specific requirements established by the various departments may be found in the section describing the particular programs.

A candidate for the master’s degree must complete the following within five years of matriculation in order to receive the degree: (Note: Master’s degrees which require 45 or more credits have a limit of six years.)

1. A course of study designed by the department in which he or she is enrolled and approved by the University. The course of study must have a minimum of 30 credit hours of graduate work including, where applicable, a thesis or project in the student’s chosen field.
2. A student must successfully pass an oral or written examination on his or her complete master’s program if required by the department.
3. Satisfactory grades in all subjects offered for the degree must be earned (See Academic Standing).
4. All financial obligations, including tuition, fees, and expenses, must be satisfied as evidenced by completion and submission of a signed Graduate Degree Clearance form to the Registrar’s Office.

Research Option for the Master's Degree

If required by the program, a student must complete a master's project or a thesis. The proposal must be approved by the department in which the student is enrolled and the final project or thesis must be of graduate level quality.

Project

The project must consist of a scholarly investigation, such as a review, report, synthesis, design or experiments in the student’s field resulting in a comprehensive written document. Usually, if a student chooses the project option, he or she is required to take additional course credits. Each project is awarded only three to four credits and is intended to be completed within the time limit of one semester. If the work for a project is not completed by the end of the semester, the instructor will give the student an Incomplete which is to be treated the same as an incomplete for a regular course.

Thesis

The requirements for a thesis are much more extensive, including the completion of acceptable research and its defense before a thesis committee. The completed thesis must conform to the format specified in the "Thesis Guide (https://www.uml.edu/docs/thesis_guide_tcm18-3515_tcm18-65590.pdf)" which is available in the Registrar’s Office. The time required for completion may vary; if a student has not completed the thesis by the end of the semester, but is making satisfactory progress, he or she is given the grade of "PR". If the student requires the use of university resources to continue thesis research, but has completed the required number of credits for the master’s thesis, he or she may sign up for 3, 6, or 9 credits of Continuing Graduate Research (see Course...
However, if the student is not using University resources, but is in the process of writing the thesis, he or she may register for Continued Matriculation for the semester(s) during which the work is completed. Continued Matriculation is available to international students only under special circumstances. International students should contact the International Student Office (https://www.uml.edu/ISSO/default.aspx) for more information and to make sure they comply with visa and immigration regulations.

Upon successful completion of the thesis, the grade of "S" will be awarded for the all semesters in which the student is registered for thesis research. Only the Registrar’s Office can issue this grade.

**Thesis Committee**

As soon as a student has chosen an area of research, a Thesis Committee is selected by the student and his or her research advisor in accordance with the policy of the department. The Thesis Committee shall consist of at least three members, at least two of whom shall be from the student’s major department. One member of the committee shall be the student’s thesis advisor. An outside expert, such as the supervisor of a research project conducted at an industrial setting or a faculty member from another institution, may be a member of the committee, but that individual must possess academic credentials which would qualify him or her to serve as a member of the University of Massachusetts Lowell faculty. The responsibilities of the Thesis Committee shall be to:

1. Approve the research topic.
2. Supervise the progress of the thesis.
3. Read, evaluate and approve or disapprove of the written thesis.
4. Hear, evaluate and approve or disapprove of the oral defense of the thesis.
5. Report the completion of all thesis requirements to the department and the Registrar’s Office.

**Thesis Preparation**

Every graduate student who completes a thesis is required to bear the cost of binding two copies of the manuscript for the University's files. Copy writing is optional and available for an additional fee.

**Thesis Defense**

One week prior to the thesis defense, announcements of the defense listing the candidate’s name, thesis title, and place and time of the defense, must be submitted to the chairperson of the department, the college dean, and the Registrar’s Office, and posted and distributed throughout the University. The defense is open to the public.

**For Students Continuing on to a Doctoral Program**

Students accepted into a master’s degree program who decide to continue on for the doctorate but want to first complete their master’s degree must adhere to the following procedure.

1. The student must complete all required courses, compile a 3.0 grade point average, and successfully defend his/her thesis, if required.
2. The student must complete the Registrar’s Office clearance process for the master’s degree.
3. A student is prohibited from enrolling in doctoral research until he or she has completed the clearance process for the master’s degree.
4. The student must then apply to the doctoral program by completing the standard Graduate Admissions application process.
5. Official admission into a doctoral program and receipt of a letter of acceptance are contingent upon completion of the clearance process for the master’s degree.

**Master's Degree Credit Requirements**

**College of Sciences**

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<thead>
<tr>
<th>COLLEGE/PROGRAM</th>
<th>COURSE or SEMINAR CREDITS</th>
<th>THESIS or PROJECT CREDITS</th>
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<tr>
<td>Non-Thesis</td>
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<tr>
<td>GRADUATE SCHOOL OF EDUCATION</td>
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<td>COLLEGE/PROGRAM</td>
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<td>CAGS</td>
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<td>CURRICULUM &amp; INSTRUCTION (M.ED)</td>
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<tr>
<td>Educational Administration (M.ED)</td>
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**Francis College of Engineering**

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<th>College/Program</th>
<th>Course or Seminar Credits</th>
<th>Thesis or Project Credits</th>
<th>Total Credit Requirement</th>
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<tr>
<td>Chemical (M.S.E.)</td>
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<tr>
<td></td>
<td>27</td>
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<td>30</td>
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<tr>
<td>Civil (M.S.E.)</td>
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<td></td>
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<tr>
<td>Thesis</td>
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<td>6</td>
<td>30</td>
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<tr>
<td>Non-Thesis</td>
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<td>0</td>
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</tr>
<tr>
<td>Project</td>
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<td>30</td>
</tr>
<tr>
<td>Computer (M.S.E.)</td>
<td></td>
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<tr>
<td>Thesis</td>
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<td>Project</td>
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<td>Electrical (M.S.E.)</td>
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<td>30</td>
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<tr>
<td>Non-Thesis</td>
<td>33</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>Project</td>
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<td>3</td>
<td>33</td>
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<td>Energy (M.S.E.)</td>
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<tr>
<td>Thesis</td>
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<td>6</td>
<td>30</td>
</tr>
</tbody>
</table>

**Environmental Studies (M.S.)**

| Thesis                        | 24                        | 6                         | 30                       |
| Non-Thesis                    | 30                        | 0                         | 30                       |
| Project                       | 27                        | 3                         | 30                       |

**Atmospheric Sciences (Concentration)**

| Thesis                        | 24                        | 6                         | 30                       |
| Non-Thesis                    | 30                        | 0                         | 30                       |

**Mechanical (M.S.E.)**

| Thesis                        | 21                        | 9                         | 30                       |
| Non-Thesis                    | 30                        | 0                         | 30                       |

**Plastics (M.S.E.)**

| Thesis                        | 24                        | 6                         | 30                       |
| Non-Thesis                    | 33                        | 0                         | 33                       |

**College of Health Sciences**

<table>
<thead>
<tr>
<th>College/Program</th>
<th>Course or Seminar Credits</th>
<th>Thesis or Project Credits</th>
<th>Total Credit Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Laboratory Sciences (M.S.)</td>
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</tr>
<tr>
<td>Thesis</td>
<td>24</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>Non-Thesis</td>
<td>30</td>
<td>0</td>
<td>30</td>
</tr>
</tbody>
</table>
### HEALTH MANAGEMENT and POLICY (M.S.)
- The sis/Project: 33 credits
- PSM option: 34 credits

### NURSING (M.S.) [all options]
- The sis/Project: 39 credits

### WORK ENVIRONMENT (M.S.)
- The sis/Project: 30 credits
- PSM options: 36 credits

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### MANNING SCHOOL OF BUSINESS

<table>
<thead>
<tr>
<th>COLLEGE/PROGRAM</th>
<th>COURSE or SEMINAR CREDITS</th>
<th>THESIS or PROJECT CREDITS</th>
<th>TOTAL CREDIT REQUIREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSINESS ADMINISTRATION (M.B.A.) [all options]</td>
<td>No-Thesis</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>INNOVATION AND TECHNOLOGICAL ENTREPRENEURSHIP (M.S.)</td>
<td>Non-Thesis</td>
<td>30</td>
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</tr>
</tbody>
</table>

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### UMASS INTERCAMPUS

<table>
<thead>
<tr>
<th>COLLEGE/PROGRAM</th>
<th>COURSE or SEMINAR CREDITS</th>
<th>THESIS or PROJECT CREDITS</th>
<th>TOTAL CREDIT REQUIREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOMEDICAL ENGINEERING &amp; BIOTECHNOLOGY (M.S.)</td>
<td>M.S. - included within Ph.D. track</td>
<td>28</td>
<td>31</td>
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<tr>
<td></td>
<td>M.S. - PSM</td>
<td>34</td>
<td>34</td>
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### GRADUATE CERTIFICATES

<table>
<thead>
<tr>
<th>COLLEGE/PROGRAM</th>
<th>COURSE or SEMINAR CREDITS</th>
<th>THESIS or PROJECT CREDITS</th>
<th>TOTAL CREDIT REQUIREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARINE SCIENCES &amp; TECHNOLOGY (M.S.)</td>
<td>Thesis</td>
<td>26</td>
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<td></td>
<td>Non-Thesis</td>
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<td>0</td>
</tr>
<tr>
<td></td>
<td>PSM option</td>
<td>34</td>
<td>0</td>
</tr>
</tbody>
</table>

Most Graduate Certificates are 12 Credits each.

[Note: While most graduate certificates are 12 credits, some are as many as 18 credits. Courses completed for one graduate certificate may not be used for another graduate certificate.]

---

### Graduate Admissions
- Admissions Requirements
- Departmental Requirements

Find Us
- The Office of Graduate Admissions (www.uml.edu/grad)
  (https://www.uml.edu/Grad/default.aspx)

University of Massachusetts Lowell

Cumnock Hall, Suite 110

31 University Ave.

Lowell, MA 01854

978-934-2390 or 1-800-656-GRAD

Admission Requirements
The general requirements for admission to graduate study at the University are listed below.

1. The applicant must show official evidence of having earned a baccalaureate degree or its U.S. equivalent from an accredited college or university. If an international transcript does not adequately demonstrate that an applicant has the equivalent of an American bachelor’s or master’s degree, the Office of Graduate Admissions will require such verification by an independent service such as the Center for Educational Documentation (http://www.cedevaluations.com), (www.cedevaluations.com) Boston, MA (617-338-7171).

2. The degree must have been earned with a satisfactory scholastic average to demonstrate that the applicant has had adequate preparation for the field in which graduate studies are to be undertaken.

3. The applicant must have obtained a satisfactory score on the appropriate entrance examination required for admission by the program or department to which admission is sought. The official score report must be submitted; a photocopy of the examinee’s report is unacceptable. Unless otherwise stated under a specific program description, the required examination is the Graduate Record Examination General Test.

4. The Commonwealth of Massachusetts requires that all full-time graduate students (9 or more credits) must be immunized against measles, mumps, rubella, tetanus, and diphtheria. In addition, all students in programs in the health professions, regardless of age or enrollment status, must show proof of immunization. Students will not be permitted to register for courses at the University unless proof of immunization has been sent directly to the Director of Health Services (http://www.uml.edu/student-services/health/), (www.uml.edu/student-services/health/) University of Massachusetts Lowell, Lowell, MA 01854 (978-934-4991).

Departmental Requirements

The rules, regulations, and policies delineated by the University constitute only the minimum requirements for admission, retention, and graduation. Each department may have additional requirements mandated by the unique nature of its programs. It is the responsibility of the graduate student to be aware of the minimum requirements of the University and, in addition, to fulfill the special requirements of the particular program in which he or she is enrolled.

Learning Outcomes Assessment Policy

In keeping with the University’s commitment to excellent educational experiences and high-quality programs for its students, and consistent with practices at other institutions within the state and nationally, UMass Lowell routinely engages in the assessment of student learning at the course, program, institution ans systems levels. The learning outcomes assessment process may include a variety of methods such as standardized tests, student surveys and focus groups, campus developed instruments, and a review of student will be protected. In circumstances beyond the individual course level, the identity of the student will be protected. The student’s name, grade or other identifying information will be removed before the student work is reviewed. Selected student work may be subject to review by a limited cohort of higher educational personnel, primarily faculty. Assessment of student learning is undertaken primarily for the purpose of improving student learning, curriculum development, instructional improvement, and enhancing student academic success. Assessment activities will have absolutely no effect on a student’s grade, academic standing, ability to transfer, or ability to be graduated. UMass Lowell will take all necessary steps to ensure the confidentiality of all student records and student work reviewed through this process in accordance with FERPA regulation.

Application Procedure

- Departmental Requirements
- Application Procedure for Graduate Admissions
- Conventional Application
- Application Deadline
- Types of Admission
- Status as a Graduate Certificate Candidate
- Non Degree Status
General Admissions Requirements

The general requirements for admission to graduate study at the University are listed below.

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Application Procedure for Graduate Admission

Applicants to graduate programs are encouraged to apply online. Apply now with our Online Application. (https://sa-webapp-prd.erp.umasscs.net/psc/webapp/EMPLOYEE/HRMS/c/UM_WEBAPP_MENU.UM_ADM_APP_LOGIN.GBL&institution=UMLOW&CareerGRAD&CenterGRAD%27?

Conventional Application

Application forms and materials may be obtained from:

The Office of Graduate Admissions

University of Massachusetts Lowell
Cumnock Hall, Suite 110
One University Avenue
Lowell, MA 01854
978-934-2390 or 1-800-656-GRAD

A non-waivable and non-refundable application fee must be received before the application is processed. Each applicant must file the following documents:

1. A completed application form.
2. Official transcripts of all undergraduate and graduate
records.
3. Three letters of recommendation written by individuals qualified to judge the ability of the applicant to carry on graduate work and research.

4. Official scholastic test scores specified for various degree programs at the University (see individual departmental requirements). An applicant who has earned a graduate degree from an accredited university may petition the department graduate coordinator to waive the scholastic test requirements (e.g. GRE).

5. The official score report for the “Test of English as a Foreign Language” (TOEFL) for students from countries where English is not the national language. If the TOEFL bulletin cannot be obtained locally, students should write well in advance to:

Test of English as a Foreign Language
Box 6151
Princeton, NJ 08541-6151, U.S.A.

All test scores must be official and sent directly by the testing agency.

Application Deadline

The University of Massachusetts Lowell Graduate Admissions Office has a "rolling admissions" policy. However, some programs have early, fixed application deadlines. Consequently, the applicant is strongly urged to contact the department of interest to determine the last date on which applications may be received. In general, early applications will ensure that all materials are processed on time and that a student who wishes to apply for a teaching assistantship will be given due consideration. Many programs will fill available openings several months before the beginning of the semester. A student who has been accepted into a graduate program must attend within a year of acceptance or may, at the discretion of the department, be required to submit a new application. Application files for individuals who do not matriculate will be retained for only two years from the date of application.

Types of Admission

A student may be admitted to graduate study at the University of Massachusetts Lowell under one of the two classifications listed below.

1. Matriculated status: A student who has met all requirements for admission to a degree program and who has been recommended by the department in which he or she proposes to study as a degree candidate.

2. Matriculated with conditions: A student who has not fully met the requirements stipulated by the program may be admitted as a prospective candidate for a degree with specified conditions to be met in the future. Such a student must have as an initial objective the satisfactory completion of all requirements for full matriculation.

Status as a Graduate Certificate Candidate

Graduate certificate programs are designed for students holding a baccalaureate degree in a field related to the certificate program. A student who wishes to apply to a certificate program must complete the Graduate Certificate Application (https://www.uml.edu/Grad/programs/about-certificates.aspx), submit the appropriate application fee, and submit an official transcript indicating the conferral of a Bachelor’s degree. The graduate record exam (GRE) is not required.

A student in a certificate program who wishes to enroll in a master’s or doctoral program is ineligible to receive credit towards a degree until he or she files a formal application and is then admitted as a matriculated student.

The maximum number of graduate credits a student may complete while enrolled in a graduate certificate is 12 credits.

Non-Degree Status

An individual without advanced degree objectives may take courses in certain programs with non-degree status. A student who wishes to take courses as a non-degree student must submit an official transcript indicating the conferral of a Bachelor’s degree. A student in non-degree status is ineligible to receive credit towards a degree until he or she files a formal application and is then admitted as a matriculated student.

The maximum number of graduate credits a student may complete with non-degree status is 12 credits.

NOTE: International students are not eligible for non-degree status.

Graduate Readmission/Deferral Policy

1. A matriculated student who formally withdraws in good standing from the university may request readmission within two years by completing only the cover page of the
graduate application.
2. A newly accepted student dropped from a graduate program for failure to register may be re-admitted by submitting a new application cover page and fee within two years of acceptance date.
3. A matriculated student who fails to maintain continuous enrollment and has not formally withdrawn may be readmitted by submitting a new application cover page and fee within two years of being dropped from the program.
4. A student may request a deferment of enrollment up to one year beyond the date when he or she was scheduled to begin his or her graduate program. If the one-year time period is exceeded, the student must submit a new application and fee. Deferral must be requested before the start of the semester for which the student is accepted.

Professional Leadership Certificate

About the Program

The Professional Leadership certificate is a useful credential for science, engineering and technology professionals in the private and public sectors who wish to advance to managerial and/or move to more business related positions within their organizations. This is a 12 credit (four courses, three credits per course) program.

Admission Requirements

1. Bachelors degree in science, engineering, technology or mathematics.
2. Minimum of two years post-baccalaureate work experience.

Curriculum

This program consists of four masters level courses (3 credits each), with three courses in the professional leadership area and one advanced course in the individuals field of expertise. For qualified individuals, the 12 earned graduate credits are transferable to a related Professional Science Masters graduate program with the approval of the appropriate graduate program coordinator.

Required Professional Courses: (three credits each all are online courses)

- PSM 535 Project Management for Science Professionals
- PSM 545 Professional and Scientific Communication
- PSM 555 Professional Science Leadership

Contact

Deborah White (mailto:Deborah_White@uml.edu)

UMass System Graduate Programs

UMass Lowell offers two intercampus programs drawing on the strengths of the whole UMass System.

Marine Science

- Biomedical Engineering & Biotechnology Program

Colleges & Degrees of Graduate Study

- Manning School of Business
- Graduate School of Education
- College of Engineering
- College of Fine Arts, Humanities & Social Sciences
- School of Health & Environment
- College of Sciences
- UMass System Graduate Programs

Graduate Programs

UMass Lowell offers more than three dozen master's programs, including Education Specialist (Ed.S.) post-graduate programs. Many of our programs have non-thesis options. If you're not ready to matriculate into a full program, consider our certificate programs. If you are looking for a doctoral
program, we offer more than two dozen in a wide range of disciplines.

Online Graduate & Undergraduate Degrees & Part-Time Programs

UMass Lowell offers a number of graduate degrees and certificates (http://continuinged.uml.edu/degrees/Graduate.htm) and part-time undergraduate degrees and certificates (http://continuinged.uml.edu/degrees/Undergraduate.htm) entirely online, or as a mix of online and on-campus courses through its Division of Online and Continuing Education. By making the courses available online - during the evening and on weekends - the University makes it easier for busy professionals to fit education into their lives.
General Regulations for Graduate Students

Each University student is subject to two sets of academic regulations: those of the University as a whole, which are cited in this section, and the academic rules of the college and program in which he or she is enrolled. The academic rules of colleges and programs are listed in sections devoted to college programs.

In registering for courses, each student assumes full responsibility for knowledge of and compliance with the definitions, regulations, and procedures for the University, as set forth in this publication. Moreover, in accepting admission to the University, each student assumes responsibility for knowledge of and compliance with the definitions, regulations, and procedures of the University pertaining to his or her student status as set forth in the appropriate UML publications.

Students who have questions about the interpretation or application of University academic policy should consult the dean of their college or the Vice Provost for Graduate Education.

Academic Integrity Policy

UNIVERSITY OF MASSACHUSETTS LOWELL POLICY AND PROCEDURES RELATING TO STUDENT ACADEMIC INTEGRITY AND MISCONDUCT

I. Statement of Principles: The University has a responsibility to promote academic honesty and integrity and to develop procedures to deal effectively with instances of academic dishonesty. Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others academic endeavors. Academic dishonesty is prohibited in all programs of the university.

II. Academic Misconduct Subject to Disciplinary Action:

(1) Academic misconduct is an act in which a student:

(a) Seeks to claim credit for the work or efforts of another without authorization or citation;
(b) Uses unauthorized materials or fabricated data in any academic exercise;
(c) Forges or falsifies academic documents or records;
(d) Intentionally impedes or damages the academic work of others;
(e) Engages in conduct aimed at making false representation of a students academic performance; or
(f) Assists other students in any of these acts.

(2) Examples of academic misconduct include, but are not limited to: cheating on an examination; collaborating with others in work to be presented, contrary to the stated rules of the course; submitting a paper or assignment as ones own work when a part or all of the paper or assignment is the work of another; submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas; getting unauthorized access to examinations or course materials; submitting, without the permission of the current instructor, work previously presented in another course; tampering with the laboratory experiment or computer program of another student; knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.

III. Possible Disciplinary Sanctions:

(1) The following are the disciplinary sanctions that may be imposed by an instructor for academic misconduct:

(a) An oral or written notice of misconduct;
(b) An assignment to repeat the work, to be graded on its merits;
(c) A lower or failing grade on the particular assignment or test;
(d) A lower grade in the course;
(e) A failing grade in the course;

In addition, an instructor or the Academic Dean may recommend the following sanctions:

(f) A non-deletable failing grade in the course;
(g) Suspension from the University; (h) Expulsion from the university.

Sanctions f h are imposed by the Office of the Provost.

(2) One or more of the disciplinary sanctions listed above may be imposed for an incident of academic misconduct.

IV. Definitions

As used herein:

(1) Office of the Provost means the Provost, Vice Provost or a designee.

(2) Days means academic calendar days and excludes Saturdays, Sundays, legal holidays and days upon which the university is closed.

(3) Academic Dean means the Academic Dean or designee for the college in which the subject course is taught.

(4) Instructor refers to the Instructor of Record.

(5) Minor Disciplinary Sanction means a disciplinary sanction, identified in paragraph III (1) (a)-(e) and imposed, for academic
misconduct, upon a student by an instructor.

(6) Major Disciplinary Sanction means a disciplinary sanction, identified in paragraph III (1) (f)-(h) and imposed, for academic misconduct, upon a student by the Office of the Provost or the Academic Integrity Appeals Board upon the recommendation of the instructor or the Academic Dean or imposed at the discretion of the Office of the Provost.

(7) Notice to the student, whenever required herein, shall be e-mailed to the students official student.uml.edu e-mail address or mailed to the student by regular first class United States mail at his or her current address as maintained by the university.

V. Imposition of Disciplinary Sanctions by the Instructor:

(1) Where an instructor concludes that a student enrolled in one of his or her courses has engaged in academic misconduct, the instructor may impose one or more of the following disciplinary sanctions, as listed under paragraph III, subsections (a) through (e):

(a) An oral or written notice of misconduct;
(b) An assignment to repeat the work, to be graded on its merits;
(c) A lower or failing grade on the particular assignment or test;
(d) A lower grade in the course;
(e) A failing grade in the course.

(2) When possible, prior to imposing a minor sanction, the instructor shall notify the student that the instructor believes an act of academic misconduct has occurred, that a sanction may be imposed, and that a Notification of Academic Dishonesty Form will be filed with the Office of the Provost.

(3) Upon the imposition of a minor sanction under this section, the instructor shall notify the Office of the Provost. Notification to the Office of the Provost shall occur within 10 days, using the Notification of Academic Dishonesty Form (http://www.uml.edu/docs/notificationofacademicdishonesty_tc m18-3543.pdf), and shall include identification of the student, a description of the misconduct and a specification of the sanction imposed.

(4) Within 10 days following receipt of such notice, the Office of the Provost shall provide notice of the imposed discipline to the student, the instructor and to the Academic Dean. Notification to the student shall include a statement of the misconduct, specification of the sanction imposed, a statement indicating the students right to an appeal before the Academic Dean and a link to the policy and procedures set forth herein.

(5) A student who receives notice of a disciplinary sanction imposed under this section has the right to a hearing before the Academic Dean to contest the determination that academic misconduct occurred or the disciplinary sanction imposed or both. If the student desires such a hearing, he or she must file a written request with the Office of the Provost and the Academic Dean within 10 days of receipt of notice from the Office of the Provost.

(6) In the event that the student does not file a written request for an appeal within 10 days, the Office of the Provost shall review the matter with respect to the subject student and may, at his or her discretion, uphold the recommended sanction or impose a major sanction. In any event, the Office of the Provost shall, within a reasonable time, provide notice of the outcome to the student, the instructor and to the Academic Dean.

VI. Recommendation of Major Disciplinary Sanction by the Instructor:

(1) Where an instructor concludes that a student enrolled in one of his or her courses has engaged in academic misconduct in the course, the instructor for that course may recommend one or more of the following disciplinary sanctions:

(f) A non-deletable failing grade in the course;
(g) Suspension from the University
(h) Expulsion from the university.

(2) When possible, prior to the recommendation of a major sanction, the instructor shall notify the student that the instructor believes an act of academic misconduct has occurred, that a major sanction is being recommended, and that a Notification of Academic Dishonesty Form will be filed with the Office of the Provost.

(3) Upon the recommendation of a major sanction under this section, the instructor shall notify the Office of the Provost using the Notification of Academic Dishonesty Form (http://www.uml.edu/docs/notificationofacademicdishonesty_tc m18-3543.pdf). Notification to the Office of the Provost shall occur with 10 days and shall include identification of the student, a description of the misconduct and a specification of the sanction recommended.

(4) Within 10 days following receipt of such notice, the Office of the Provost shall provide notice of the recommended discipline to the student, the instructor, and the Academic Dean. Notification to the student shall include a statement of the misconduct, specification of the sanction recommended, a statement indicating the students right to an appeal before the Academic Dean and a copy of the policy and procedures set forth herein.

(5) A student who receives notice of a disciplinary sanction recommended under this section has the right to a hearing before the Academic Dean to contest the determination that academic misconduct occurred or the disciplinary sanction recommended or both. If the student desires such a hearing, he or she must file a written request with the Office of the Provost and the Academic Dean within 10 days of receipt of notice from the Office of the Provost.

(6) In the event that the student does not file a written request for an appeal within 10 days, the Office of the Provost shall review the matter and may, at his or her discretion, impose or
modify the sanction recommended. In any event, the Office of the Provost shall, within a reasonable time, provide notice of the outcome to the student, the instructor, and to the Academic Dean.

VII. Appeal to the Academic Dean: When an appeal to the Academic Dean is commenced in accordance with the provisions set forth in Paragraphs V(5) or VI(5), the Academic Dean shall proceed in accordance with this section to consider one or more of the disciplinary sanctions listed in paragraph IV, subsections (1) (a) through (h).

(1) Conference With Student: The Academic Dean shall offer to discuss the matter with the student. The purpose of this discussion is to permit the Academic Dean to review with the student the charges levied against him or her and to afford the student an opportunity to respond.

(2) Conference With Instructor: The Academic Dean shall attempt to discuss the matter with any involved instructor. This discussion may occur either before or after the conference with the student. It should include consultation with the instructor on the facts underlying the alleged academic misconduct and on the appropriateness of the imposed or recommended sanction.

(3) Determination that No Academic Misconduct Occurred: If, as a result of discussions under subsections (1) and (2), the Academic Dean determines that academic misconduct did not in fact occur or that the disciplinary sanction is not appropriate under the circumstances, the Academic Dean shall notify the instructor and the Office of the Provost. The Office of the Provost shall promptly thereafter notify the student and take appropriate action with respect to the student records.

(4) If, as a result of discussions under subsections (1) and (2), the Academic Dean determines that academic misconduct did occur and that one or more of the disciplinary sanctions listed under paragraph III, subsections (1) (a) through (h) is appropriate, the Academic Dean shall prepare and forward to the Office of the Provost, within 10 days, a written Finding of Misconduct which shall include identification of the student, a description of the alleged misconduct, a summary of evidence, findings of fact and a specification of the disciplinary sanction imposed.

VIII. Appeal to the Office of the Provost

The decision reached by the Academic Dean may be appealed to the Provost Office of the Provost if the student believes that he or she did not receive due process.

Grounds for Appeal of Due Process

An appeal to the Office of the Provost shall be limited to a review of supporting documents and the process and outcome of the Academic Dean or designee for one or more of the following grounds:

Bias by the Instructor, Academic Dean, or designee substantially influenced the outcome of the process to the detriment of the student.

New, relevant information has come to light that was not available at the time of the hearing by the Academic Dean.

Unusual procedures were followed or the procedures outlined herein were not followed, to the detriment of the student.

If the student desires such a hearing, he or she must file a written request with the Office of the Provost and the Academic Dean within 10 days of receipt of notice from the Office of the Provost. The request must be based upon the Grounds for Appeal listed above.

(2) When an appeal to the Office of the Provost is commenced in accordance with this paragraph, the Office of the Provost shall review the matter with respect to the subject student and may, at his or her discretion, uphold, vacate or modify the discipline imposed or direct such appeal to be heard by the Academic Integrity Appeals Board. In any event, the Office of the Provost shall, within a reasonable time, provide notice of the outcome to the student, instructor, and to the Academic Dean.

(3) In the event that the student does not file a written request for an appeal within 10 days, the Office of the Provost shall review the matter with respect to the subject student and may, at his or her discretion, uphold, vacate or modify the discipline imposed. In any event, the Office of the Provost shall, within a reasonable time, provide notice of the outcome to the student, instructor and to the Academic Dean.

IX. Role of the Academic Integrity Appeals Board:

(1) The Academic Integrity Appeals Board is an ad hoc committee appointed by the Office of the Provost and consists of a minimum of three faculty members chosen by the Office of the Provost with no two members selected from the same College; the board shall not include a faculty member from within the department initiating charges of academic dishonesty. The Board is chaired by the Office of the Provost who shall vote only in the case of a tie. [Or One member shall serve as Chair at the direction of the Office of the Provost. The Chair shall vote only in the case of a tie.]

When an appeal is directed to the Academic Integrity Appeals Board by the Office of the Provost in accordance with the provisions set forth in Paragraphs VIII, the Academic Integrity Appeals Board shall schedule the hearing, within a reasonable time period, at a time that is mutually agreed upon by the student, Office of the Provost and members of the Academic Integrity Appeals Board.

(2) Reasonably in advance of the hearing, the Academic
Integrity Appeals Board shall obtain from the Academic Dean, in writing, a full explanation of the facts upon which the determination of misconduct was based and shall provide to the student a copy of the policy and procedures set forth herein.

(3) The hearing before the Academic Integrity Appeals Board shall be conducted in accordance with the following requirements:

(a) The Academic Integrity Appeals Board shall consider relevant evidence including documentary evidence and testimony of the instructor, student, Chair and/or Dean where appropriate.

(b) The student shall have the right to be heard and to present relevant evidence, including documentary evidence and the testimony of witnesses, in his or her own behalf.

(c) The Academic Integrity Appeals Board shall maintain a record of the hearing including any and all pleadings and documentary evidence presented.

(d) The Academic Integrity Appeals Board shall prepare written findings of fact and a written statement of its decision based upon the record of the hearing.

(e) The Academic Integrity Appeals Board may find academic misconduct and impose a sanction of suspension or expulsion only if the proof of such misconduct is clear and convincing. In other cases, a finding of misconduct must be based on a preponderance of the credible evidence.

(f) The Academic Integrity Appeals Board may impose a disciplinary sanction that differs from the recommendation of the Academic Dean.

(g) The instructor or Academic Dean may be witnesses at the hearing conducted by the Academic Integrity Appeals Board, but shall not have responsibility for conducting the hearing.

(4) Determination that No Academic Misconduct Occurred: If, after the hearing, the Academic Integrity Appeals Board determines that there is insufficient evidence that academic misconduct occurred or that no disciplinary sanction is appropriate under the circumstances, the Academic Integrity Appeals Board shall notify the instructor, the Academic Dean and the Office of the Provost. The Office of the Provost shall promptly thereafter notify the student and take appropriate action with respect to the student records.

(5) Process Following Determination by the Academic Integrity Appeals Board that Academic Misconduct Occurred:

(a) If, after the hearing, the Academic Integrity Appeals Board determines that academic misconduct did occur and that one or more of the disciplinary sanctions listed under paragraph III, subsections (1) (a) through (h) is appropriate, the Academic Integrity Appeals Board shall prepare and forward to the Office of the Provost, within 10 days, a written Finding of Misconduct which shall include identification of the student, a description of the misconduct and a specification of the disciplinary sanction to be imposed.

(b) Within 10 days following receipt of the written Finding of Misconduct from the Academic Integrity Appeals Board, the Office of the Provost shall provide written notice of the imposed discipline to the instructor, the Academic Dean and the student.

### Academic Standing

- Warning Notice
- Probation
- Academic Dismissal and Reinstatement
- Graduate Fresh Start

### GPA Minimum

No more than 6 course credits of grades below a B may be counted toward the master’s degree; no more than 9 credits of the same grades may be counted toward the doctorate. **No graduate degree will be awarded to any student whose overall cumulative grade point average falls below 3.0.**

### Academic Standing

Graduate academic standing is run three times per year - Fall, Spring and Summer.

The consequences of the academic standing of warning or suspension will not apply for students completing degree requirements for that semester.

### Warning Notice

Any graduate student whose semester grade point average (GPA) falls below 3.0 will automatically receive a warning notice which will also be sent to the graduate coordinator, and filed with the student’s record in the Registrar’s Office. The student will be strongly advised to meet with the graduate coordinator or his/her designee within 30 days of receipt of the warning notice and develop an academic plan to bring his or her GPA to a level above 3.0.

### Probation

Any graduate student whose semester GPA falls below 3.0 for a second time, will automatically receive a letter of probation from the Vice Provost for Graduate Education. Copies of the
letter will be sent to the graduate coordinator, chairperson, college dean, and also placed on file with the student’s record in the Registrar’s Office. Within 30 days, the department graduate committee, chaired by the graduate coordinator or his/her designee, will meet with the student and decide whether to recommend loss of degree candidacy. Such a decision or other course of action will be fully documented in writing with copies sent to the chairperson, and college dean. A recommendation of loss of degree candidacy and dismissal are subject to the approval of the college dean.

Academic Dismissal and Reinstatement

Any student whose semester GPA falls below 3.0 for a third time, and whose cumulative GPA is below 3.0, will automatically be dismissed from his or her graduate program and the University. Reinstatement will be considered if the student provides a detailed justification and academic plan concerning how he or she will correct this academic deficiency. The plan must be attached to a Graduate Academic Petition and approved by the graduate coordinator, chairperson, the college dean, and the Vice Provost for Graduate Education or his/her designee. If any of the above individuals disapproves of the reinstatement, the dismissal will remain in effect and no subsequent appeals will be considered.

Independent of the warning/probation/dismissal system, the dean of the college where the student’s degree program resides may at any time examine the performance of any student not meeting the academic standard expected of graduate students within that college and recommend to the appropriate graduate committee a course of action including dismissal.

For the procedure for formal adjudication of any academic issues (non-misconduct) which may arise, please see University Appeals Process Regarding Academic (non-misconduct) Issues of Graduate Students.

Graduate Fresh Start

Master and Doctoral degree candidates and non-degree students who have been absent from the University for four years or longer may be readmitted under the program Graduate Fresh Start. If admitted into a degree granting program, under the terms of Graduate Fresh Start, a returning graduate student will be treated as if s/he were a new student. A maximum of two courses (six credits) at the 500 level or higher completed during earlier periods of enrollment with grades of "B" or better may, with the approval of the degree granting department, be transferred into the degree program. These courses must be transferred via an academic petition and will be accepted toward graduation but not included in the cumulative grade point average (GPA). Thesis and dissertation research credits are ineligible for transfer. Courses completed during earlier periods of enrollment with grades below "B" are not eligible for transfer. A student may be readmitted under the Graduate Fresh Start program only once at the graduate level.

Students who wish to be considered for the Graduate Fresh Start Program must follow the normal procedures for admission to the University and file a Graduate Fresh Start Contract (https://www.uml.edu/docs/GraduateFreshStart16_tcm18-229433.pdf) (pdf). Academic Petitions for transfer credits must be approved by the appropriate graduate coordinator and/or department chair of the degree granting department, and must be filed with the University Registrar. In addition, the student must submit a personal statement which addresses personal and professional growth during the period of time in which the student was absent from the University which supports the students potential for academic success. If admitted, credits and GPA start at zero. Transfer courses may count towards the degree, but are not included in the GPA.

All courses taken and grades achieved during earlier periods of enrollment will appear on the transcript along with a notation that they are not included in the cumulative grade point average. Once this change is made to the academic record, the change can NOT be reversed.

Acceptance of Foreign or American Master’s Degree toward Doctoral Requirements

Students accepted into a doctoral program who hold a master’s degree in the same or a closely related discipline from a U.S. or foreign academic institution will have their transcripts and supporting documentation reviewed by the department graduate committee.

The committee may choose one of the following actions:

1. Approve all coursework and thesis for the master’s degree up to the total number of credits granted by the University of Massachusetts Lowell department for its master’s degree, and thereby require the student to complete only “beyond the master’s” course/thesis credits for the doctorate.
2. Accept the U.S. or foreign master’s degree, but because of deficiencies in the student’s master’s program, require a limited number of graduate courses to be added to the total credits required for doctoral degree completion “beyond the master’s”.
3. Require that a student with a U.S. or foreign master’s degree obtain a University of Massachusetts Lowell master’s degree before proceeding to the doctorate.

All coursework for U.S. or foreign master’s degrees considered for approval by the department must be at a grade level of B or
better. Official, documented verification of the degree awarded must also be provided.

Commencement

Commencement

Conferring of Degrees

Academic Honors

Replacement Diploma

Commencement

Graduation exercises are held once a year at the end of the spring semester. Students who have completed degree requirements during the previous summer term or fall semester are permitted to attend commencement exercises, and their names are listed in the commencement booklet. Attending commencement exercises is not compulsory. An individual who wishes to receive a diploma by mail must notify his/her college dean and file a corrected address through student self service if he or she anticipates moving from a previously reported permanent address.

Conferring of Degrees

Diplomas are awarded three times a year:
1. In June for students completing degree requirements during the spring semester.
2. In October for students completing degree requirements during the summer term.
3. In February for students completing degree requirements during the fall semester.

Individuals who wish to submit verification of degree completion to employers or to graduate schools during the period between the end of their final grading period and the awarding of diplomas may obtain a letter of completion from the Registrars Office.

Academic Honors

Due to the many fields and diversity of study at UMass Lowell, academic honors for graduate students are discipline-based and vary within respective colleges. Honors for graduate students are not listed on transcripts.

Replacement Diploma

Replacement diplomas may be ordered through University Alumni Relations for an additional fee.

Course Credit

Maximum Semester Credit Limit

Graduate Credit for Undergraduate Courses

Undergraduate Credit for Graduate Courses

Maximum Semester Credit Limit

The usual course load for full-time graduate students is 9 credits/semester. Depending upon the program requirements and abilities of the student, individuals may carry more than 9 credits each semester. However, the absolute maximum number of total credits (combined undergraduate and graduate) for which a graduate student will be allowed to register is 18 credits/semester. The maximum number of thesis or dissertation credits for which a student may enroll in any semester is nine credits.

During the summer term students are classified as full-time when they are registered for a minimum of 9 credits which may combine courses/credits from the different sessions within the summer term. Students who enroll in only one of the accelerated summer session (summer I or summer II) may be considered by the institution as the equivalent to full-time for the specific time period of that session only when registered for a minimum of 6 credits. This is for enrollment purposes only. Please note: Financial aid, veterans benefits or other types of aid define 9 credits for full-time study.

Navitas Summer Pathway Program

The University of Massachusetts Lowell (UMass Lowell) offers a 10-week summer session to its Pre Undergraduate and Pre Masters international students. These students are admitted into a Bachelor’s or Masters program with the condition of a preparatory semester(s) which could encompass the summer session. The Pre Undergraduate and Pre Masters summer session consists of intensive academics of 18-22 clock hours per week in English, Mathematics and Cultural Support.

Graduate Credit for Undergraduate Courses

UMass Lowell courses at the 400 level are designed for seniors but under certain circumstances may be taken by graduate students for graduate credit. A maximum of 6 credits of 400 level courses may be used for credit toward the graduate degree with the permission of the degree granting department. Three hundred level courses and below are never counted toward a graduate degree. If a graduate student takes certain undergraduate courses to make up for background deficiencies or to satisfy language requirements, the course credit hours are not used as part of the graduate degree program but will appear on the graduate transcript.

Undergraduate Credit for Graduate Courses

A qualified junior or senior may take a course at the 500 level for undergraduate credit in accordance with the policy and procedures of the department or college in which the course is offered. The grade received in any such course is used in
calculating the undergraduate’s cumulative grade point average. Counting of graduate credits for both the bachelors and masters degrees is subject to departmental requirements.

At no time may grades computed in an undergraduate GPA be used toward a graduate GPA.

Course Designations

- Course Numbering System
- Continuing Graduate Research
- Course Prefixes
- Audit

Maximum Semester Credit Limit

The usual course load for full-time graduate students is 9 credits/semester. Depending upon the program requirements and abilities of the student, individuals may carry more than 9 credits each semester. However, the absolute maximum number of total credits (combined undergraduate and graduate) for which a graduate student will be allowed to register is 18 credits/semester. The maximum number of thesis or dissertation credits for which a student may enroll in any given semester is nine credits.

Course Numbering System and Designation:

- 4000-4999 - Undergraduate courses usually designed for juniors or seniors; no more than six credits may be taken for graduate credit with the permission of the graduate coordinator.
- 5000-5999 - Courses for graduate credit, but which may be taken by advanced undergraduates with the advisor’s permission.
- 6000-6999 - Graduate courses which are open only to graduate students.
- 7000-7999 - Seminars, special topic courses, projects, or thesis research for advanced candidates in master’s and doctoral degree programs.

Each course offering is designated by a four letter prefix and a four-digit course number (e.g., BIOL.5290).

Continuing Graduate Research

Once a student has completed the required number of credits for master’s or doctoral thesis/dissertation research with grades of PR or S (see summary of degree credit requirements), he or she will not be allowed to sign up for additional thesis/dissertation research credits. Instead, if required for teaching/research assistantships or immigration/visa purposes, the student may enroll in 3, 6, or 9 credits of Continuing Graduate Research designated _ _763, 766, or 769_ _ _ where the first two blanks represent the departmental designation, 3, 6, and 9 indicate the respective number of credits, and the last three blanks are the standard numbers which code to a particular faculty member in the department.

The two digit college prefix identifies a college department and/or special area. The three-digit course number identifies the course level.

Course Prefixes

Each college department and/or special subject area has been assigned an identifying two digit number within the numerical ranges specified as follows:

- Education - EDUC
- Engineering - CHEN, CIVE, EECE, ETEC, ENVE &MECH, MTEC, ENGY, ENGN, PLAS
- Health - PUBH &AREO, HSCI, NURS, DPTH, NUTR, HSCI, MLSC, EXER
- Humanities/Social Sciences, Fine Arts - AMST, LGST, ENGL, HIST, CRIM, PHIL, POLI, PSYS, ASP, SOCI, ECON, WLFT, WLGE, WLIT, WLAR, WLKH, WLCH, WLPO, WLAN, WLSI, WLSP, WLLA, ARHI, FAHS &ARTS, MUTH, MUAP MUED, MUHI, MUPF, MUEN, MUBU, MUSR, AEST
- Management - ACCT, FINA, MKTG, POMS, MIST, ENTR, MGMT, BUSI
- Science and Math - BIOL, LIFE, CHEM, ATMO, ENVI, GEOL, INFO, COMP, MATH, MSIT, PHYS, POLY, RADI
- Biomedical Engineering - BMBT
- Marine Science - im

Audit

A graduate student may, upon approval of the advisor and the instructor, register for a course on an audit basis, but must pay the full amount of tuition and fees. An audit student is not required to take tests or the final examination. A change in registration from audit to credit or credit to audit must be done during the add/drop period. Under no circumstances can a
course taken for audit be given credit at a later date.

**Equal and Fair Treatment**

Under federal and state laws, all students are protected from discrimination based on race, color, religion, national origin, disability, gender, (including sexual harassment), age, sexual orientation, marital or veteran status. If you feel that you have been discriminated against based upon any one of these areas, you must contact Equal Opportunity and Outreach (EOO). These protections also include retaliation for filing complaints of discrimination. Concerns regarding course offerings, instructor and student attitudes should also be directed to EOO staff at 978-934-3565.

Students are responsible for adhering to the policies of the University regarding equal and fair treatment.

**Graduate Grading Policies**

- **Grading System**
- **Grade Exclusion**
- **Grades for Projects, Theses/Dissertations and Seminars**
- **Incompletes**
- **Course Listing on the Graduate Transcript**
- **Audited Courses**
- **Grade Appeal Process**

**Grading System**

The grading system uses grades:

- A+(4.0), A(4.0), A-(3.7)
- B+(3.3), B(3.0), B-(2.7)
- C+(2.3), C(2.0)
- F(0.0)
- FX (0.0) Failed due to Academic Misconduct (May not be replaced or deleted)

The following special grades are also used:

- INC (Incomplete)
- S (Satisfactory, B or better)
- U (Unsatisfactory) for projects, theses/dissertations, and seminars only
- AU (Audit)
- W (Withdrawal from a course or from the University)
- X (Withdrawal because of illness or personal emergency)
- Y (University withdrawal for non-academic reasons)
- Q (Never attended but did not withdraw. This grade requires a letter from the instructor to the University Registrar stating the student never attended the class.)
- PR (In Progress for theses or dissertations)
- NC (No Credit for theses or dissertations where no progress has been made).

A student registering for research will do so each semester up to the total number recommended. No graduate degree will be awarded to a student whose cumulative average for course work in his or her program is below 3.0. Some programs may require a higher grade point average for graduation. The cumulative grade point average is computed from all graduate level courses taken for a grade at the University of Massachusetts Lowell.

**Grade Exclusion**

A request may be submitted to omit a specific course (grade and credits) from the GPA for matriculated students. Such a request must be presented on an Academic Petition, provide detailed justification for the specific action, and certify that the action has been approved by a majority of the departmental graduate committee. Only one grade exclusion in total, including a grade for a repeated course, will be permitted for each degree sought by the student as recommended by the departmental graduate committee. However, the official transcript will list grades for all undergraduate and graduate courses taken at the University with the notation that the grade and credits are excluded from the GPA. Once a grade exclusion has been processed it may not be reversed. Additionally, grade substitutions are not permitted.

**Grades for Projects, Theses/Dissertations and Seminars**

- **Projects** (Enrollment Restricted to Matriculated Graduate Students):
  
  Only one of three grade designations will be allowed for projects:
  
  - S for projects completed at a satisfactory level
  - U for unsatisfactory completion of a project (no credit toward degree requirements)
  - INC Incomplete

- **Theses/Dissertations** (Enrollment Restricted to Matriculated Graduate Students):

  - PR will be given for thesis/dissertation research if the student has made satisfactory progress during the semester.
  - NC will be given if the student has made no progress during the semester on thesis/dissertation research.
  - U Unsatisfactory (no credit toward degree requirements)

After successful defense of the thesis/dissertation, a grade of "S" (Satisfactory) will be given for all semesters of the thesis/dissertation research. Only the Registrar’s Office can issue this grade.
Seminars

S - Satisfactory
U - Unsatisfactory (no credit toward degree requirements)
INC - Incomplete

Under no circumstances will letter grades (A, B+, etc.) be allowed for projects, theses/dissertations, or seminars.

Incompletes

If, because of unusual circumstances, a student is unable to meet all the requirements of the course by the end of a semester, the grade of Incomplete (INC) may be given. Responsibility for making arrangements with an instructor to complete all outstanding coursework rests entirely with the student, who must complete all outstanding coursework by the date listed on the Graduate Academic Calendar (https://www.uml.edu/Registrar/Calendars/default.aspx). Under no circumstances will a student be allowed to graduate with incomplete(s) on his or her transcript.

Prior to completion of the missing work, the incomplete will not be computed into the grade point average (GPA). If the student completes the missing work within the specified period, the instructor must evaluate the work and turn in a grade change form to the Registrar’s Office before the deadline for instructors to submit final grades for incomplete courses as specified on the Graduate Academic Calendar (https://www.uml.edu/Registrar/Calendars/default.aspx) . However, if the student does not complete the missing work by the specified date and no grade change form is submitted by the instructor, the student’s grade will automatically change to a grade of "F" and be computed into the GPA.

Course Listing on the Graduate Transcript

All graduate courses for which a student registers (including repeated courses) are listed on the transcript and are used to calculate the student’s grade point average whether or not they are taken to fulfill degree requirements. In addition, undergraduate courses which a student takes to fulfill prerequisite requirements before or during matriculation in a graduate program, or courses taken for personal enrichment, will also be listed on the transcript.

Audited Courses

A graduate student may, upon approval of the advisor and the instructor, register for a course on an audit basis, but must pay the full amount of tuition and fees. An audit student is not required to take tests or the final examination. A change in registration from audit to credit or credit to audit must be done during the add/drop period. Under no circumstances can a course taken for audit be given credit at a later date.

Graduate Clearance

To apply for Graduation, graduate students must fill out a Declaration of Intent to Graduate (DIG) form and have it approved by their Graduate Coordinator and (if applicable), Thesis/Dissertation Advisor.

The Registrar’s Office will verify number of credits, final grades, GPA requirements an if applicable submission of thesis/dissertation prior to awarding the degree.

Additional Requirements for Students Completing a Thesis or Dissertation

All students who are completing a thesis or dissertation must also submit one clean copy (NOT the original) of the signature page for the thesis or dissertation. The signature page must be signed and dated by the thesis/dissertation advisor and all committee members. Copies of the Thesis or Dissertation must be submitted to the Library for binding and microfilming by the deadline date. In addition, doctoral students are required to complete the "Survey of Earned Doctorates" online, you will be emailed the information when you submit your DIG form.

Graduate Grade Appeal Process for Students

The instructor of the class is the primary authority with respect to a students proficiency and final grade in that course. A student who believes that his or her final grade reflects an erroneous, capricious, arbitrary, or prejudiced academic evaluation may appeal the grade. The academic judgment used in determining the merits of the grade to be awarded shall not be reviewable. This process does not apply to cases of academic dishonesty, which are adjudicated through the "academic dishonesty process."

1. The student may file an appeal of his or her complaint, in writing, to the instructor within 30 days after a final grade is posted to the students record. The instructor must respond within 14 days of receiving the appeal.
2. If the student remains dissatisfied by the decision of the instructor under step (1), he or she may, within 14 days after formal receipt of the instructor’s final decision, appeal, in writing, to the chairperson of the program (or the Dean of the College if the instructor is the chairperson) in which the course or other exercise or
activity is offered. The chairperson must respond within 14 days of receiving the appeal. The decision may be: (a) that the appeal be dismissed; (b) if there is demonstrable evidence of an erroneous, arbitrary, capricious, or prejudiced academic evaluation, then the chairperson will recommend appropriate remedies that a grade be changed or the student be allowed an opportunity to retake an examination or other exercise; or (c) that another appropriate remedy be administered.

3. If no satisfactory resolution is reached in step (2) then the student or the instructor may appeal, in writing, to the Dean of the College within 14 days after formal receipt of the chairperson’s final decision.

4. The Dean, after discussion with the appropriate parties, may resolve the grievance by agreement or render a decision within 21 days of receipt of the written appeal. The decision may be: (a) that the appeal be dismissed; (b) if the student provides demonstrable evidence of an erroneous, arbitrary, capricious, or prejudiced academic evaluation, then the Dean will recommend appropriate remedies that a grade be changed or the student be allowed an opportunity to retake an examination or other exercise; or (c) that another appropriate remedy be administered.

5. The decision of the Dean is final and not subject to additional appeal by either student or instructor. The appeals process ends at this step.

6. The Department chair or his/her designee is responsible for keeping a record of the appeal on file in accordance with University Records Retention Policy.

Registration and Enrollment Policies

Continuous Registration
Dropping Classes and Refund Policy
Changes in Registration
Change of Program

Continuous Registration

In order to maintain continuity of enrollment, a matriculated student must register each fall and spring until the program of study is complete and the degree has been earned. A graduate student who plans to receive his/her graduate degree in the summer term (awarded in October) must register during the previous summer session in order to maintain continuous matriculation.

If for any reason a student is not registered for a course (because of a leave of absence or because the thesis or dissertation has been successfully defended, but the final manuscript has not been submitted to the library), the student must register for CONT.6010 (Continued Matriculation) in order to maintain continuous registration. Since students are not allowed to register if they have outstanding financial obligations to the university, it will be necessary for them to clear their financial record in order to register for Continued Matriculation.

Continued Matriculation does not entitle a student to any use of university facilities, services or resources, but only maintains an active record and provides for appropriate mailings. Students who are engaged in academic work necessary to complete their thesis or dissertation, participate in a required full time internship or curricular practical training, or otherwise engage in or make use of University facilities or other resources must register for a minimum of 1 credit. (Note: Specific internship/CPT requirements will vary by department and students may be required to register for 3, 6, or 9 credits depending upon their program of study.)

The rules regarding the Statute of Limitations for the completion of master’s and doctoral degrees still apply to students registered for Continued Matriculation.

All international students on F-1 or J-1 visas must register as full-time students (9 credits) each semester until their degree requirements are completed. Any variance from this policy must be approved by the International Student and Scholars Office.

A student who fails to maintain continuous matriculation loses the status of a degree candidate and must reapply to the Graduate Admissions Office (https://www.uml.edu/Grad/default.aspx) for readmission and for renewal of candidacy.

Dropping Classes and Refund Policy

Graduate students may drop courses during the first ten days of classes and receive a refund. No refund will be given after these time periods. To formally withdraw from a course during this period, or thereafter, the student must drop the course through SiS (https://www.uml.edu/Enrollment/SiS/default.aspx) self service (www.uml.edu/enrollment/sisis/default.aspx). If the student fails to officially drop a course, he or she will remain enrolled and be required to pay for tuition and fees. In
addition, if the student does not drop a course and does not attend classes, he or she will receive an “F” on the official transcript.

Changes in Registration

Courses may be added or dropped through self-service in SiS (https://www.uml.edu/Enrollment/SiS/default.aspx). Students who wish to add a course during the sixth through 10th day of classes will need a permission number from the instructor of the course. Permission numbers are not needed to drop a course. In addition, students may change from audit to credit or from credit to audit during this period. Courses dropped during the first 10 academic days will not appear on the student’s permanent record. No new courses may be added and no course may be changed from audit to credit after the tenth academic day. Thereafter, a student wishing to drop courses must do so by the date indicated in the Graduate Academic Calendar (http://www.uml.edu/Registrar/Calendars/default.aspx).

No refund of tuition and fees is allowed after the tenth day of the semester. The grades for courses dropped after the tenth day will appear as W on the student’s record.

Change of Program

A graduate student wishing to change departments or transfer to a doctoral program upon completion of his or her master’s degree must follow the steps listed below:

1. No transfers will be considered until the student has been in the original department in which he or she was accepted for at least one semester.
2. All sections of a new application sheet must be completed.
3. If so desired, the student may request that all test scores, letters of recommendation, etc., in his or her original file be used as part of his or her new application package.
4. The student must specify on the application form when his or her master’s degree will be completed and when he or she will actually begin doctoral studies (for students applying to a doctoral program).
5. A check made payable to University of Massachusetts Lowell to cover the application fee must be included, or payment must be made by credit card when applying online.

Right of Access to Student Records

Access
University Student Records
Release of Student Records
Release Exclusions
Additional Information

Access

The Family Educational Rights and Privacy Act of 1974 (FERPA) grants any student currently in attendance, or any former student, the right of access to inspect or review his or her educational files, records, or data. Students who wish to inspect their records must file a Right of Access form with the office or department in which the desired record is kept. Right of Access forms are available in the Office of Student Services or through student self service. Wherever practicable, within ten days of receipt of the Right of Access form, the office or department will notify the student as to the date, time, and location when the desired record will be available for inspection. If a student believes that circumstances effectively prevent inspecting and reviewing the records at the designated date, time, and location when the desired record will be available for inspection. If a student believes that circumstances effectively prevent inspecting and reviewing the records at the designated date, time, and location when the desired record will be available for inspection.

University Student Records

The University maintains the following general records on students:

Admission File - Admissions Office (https://www.uml.edu/Grad/default.aspx) - www.uml.edu/grad
Permanent Academic Records - Registrar’s Office (https://www.uml.edu/Registrar/default.aspx) - www.uml.edu/registrar
Health Records - Health Services Office - www.uml.edu/student-services/health/
The file of each student must contain a record of all non-University affiliated individuals or organizations requesting access to information in the file, plus statements that specify the legitimate educational purposes for which access was requested.

Except as otherwise permitted under FERPA, information or records concerning individual students may not be released to any individual or agency without the students written permission. Any request for such information received without such written permission will not be honored and will be returned with a request for a written release from the student.

Release of Student Records

FERPA allows release of a students education records without the students written permission under certain circumstances, including the following:

1. To personnel of the University, i.e., faculty, administrators, or staff for legitimate educational purposes only.
2. To officials of other institutions in which the student seeks admission or intends to enroll, provided that the student is notified of the release.
3. To federal or state officials in connection with the audit and evaluation of programs funded by federal or state governments, with the enforcement of legal requirements that relate to such programs, or in connection with the students application for or receipt of financial aid.
4. To accrediting organizations in order to carry out their accrediting functions.
5. To parents who claim the student as a dependent on their IRS statement.
6. In connection with an emergency, to appropriate persons if revealing such information is necessary to protect the health or safety of the student or other persons.
7. In response pursuant to a validly issued subpoena, subject to advance notification of the student unless such notice is prohibited by court order.
8. As otherwise permitted under or consistent with FERPA.

The following data are considered informational in nature and may be released without the permission of the student, at the discretion of the University: students name, major, acknowledgement of a student’s participation in officially recognized activities and sports, weight and height of members of athletic teams, date(s) of attendance; degrees, certificates, awards received; the most recent previous educational agency or institution attended by the student and appointment as a Resident Assistant or Community Development Assistant. For graduate students who are teaching credit courses, work department, office address, and employments category are also defined as directory information.

Release Exclusions

Any student who wishes to have some or all of his or her directory information excluded from release by the University without prior permission must complete the appropriate selections available thru student self service.

Additional Information

Any student who believes that his or her records are inaccurate or misleading may request a hearing with the Dean of Students to discuss the contents of such records and whether or not they need to be changed. Additional information on procedures or policies relating to University compliance with the Family Rights and Privacy Act can be obtained from the Office of Student Services or the Registrar’s Office.

Statute of Limitations (Time Limit for Degree Completion)

A graduate degree, at either the master’s or doctoral level, implies a significant mastery of a discipline within a specified time period. A well designed curriculum is not a mere collection of classes that add up to a set number of credits. It is, rather, a coherent selection of courses with an overall educational achievement that is greater than the sum of its parts. However, this coherence is lost if the program is completed over a long time span.

Master’s degree requirements must be completed within a five-year period from the semester of admission. For those master’s programs requiring 45 or more credits, the time limit is six years.

The doctoral degree must be completed within an eight-year period beginning with the semester of admission as fully matriculated or matriculated with conditions.

A student may obtain an extension of one year by filing an Academic Petition.
signed by his or her coordinator, department chair, and college dean, and which is then submitted to the Registrar’s Office.

Time Extension Appeal Procedure

In exceptional cases, an additional extension may be granted by the Graduate Policy and Affairs Committee (GPAC). In this case, the student must submit an Academic Petition(http://www.uml.edu/docs/petition_grad_tcm18-3545.pdf), a letter of explanation accompanied by a detailed schedule for degree completion, and a letter from the student’s coordinator or thesis advisor in support of the request.

Transcripts

In order to obtain a transcript, a student may print an unofficial transcript or order an official copy through self-service in ISIS (https://www.uml.edu/Enrollment/SiS/default.aspx). If ISIS is not available, a transcript may be ordered by filling out a Transcript Request Form (www.uml.edu/docs/transcriptrequest_tcm18-3516.pdf) and submitting it to the University of Massachusetts Lowell Registrar’s Office at 883 Broadway Street, Lowell, MA 01854.

Course Listing on the Graduate Transcript

All graduate courses for which a student registers (including repeated courses) are listed on the transcript and are used to calculate the student’s grade point average whether or not they are taken to fulfill degree requirements. In addition, undergraduate courses which a student takes to fulfill prerequisite requirements before or during matriculation in a graduate program, or courses taken for personal enrichment, will also be listed on the transcript.

Transfer Credit

The following are minimal guidelines for transfer of credit. Individual departments are free to impose more stringent requirements. Only courses completed elsewhere within five years prior to the date of admission to a graduate degree program at the University of Massachusetts Lowell may be considered by the faculty of the department for transfer in accordance with the following regulations.

1. A maximum total of 12 graduate credits earned with a grade of B or better may be transferred to a master’s degree program. The limits of 12 credits toward a master’s and 24 toward a doctoral degree do not apply to any credits earned at UMass Lowell by students while in a non-degree or undergraduate BA/MA or BS/MS status, provided the courses were taken within the department offering the masters or doctoral degree.

2. Grades of C or better for courses taken at UMass Lowell when the student held non-degree status may also be transferred (by Academic Petition) into a degree program. However, the 6 and 9 credits with grades below a B (graduation limit) for master’s and doctoral degrees, respectively, (see Retention Policy) and calculation of the cumulative grade point average based on all graduate courses taken at the University (see Academic Grades) remain in effect.

3. An official transcript and description of the course(s) must be submitted with the written request.

4. The courses presented must be from an accredited U.S. or Canadian institution authorized to grant graduate degrees.

5. The courses presented for a master’s degree must not have been used in earning another master’s degree.

6. The courses presented must be appropriate to the degree program for which the applicant is applying.

7. The courses presented must be graduate level.

8. Transfer credit may not be granted for research seminars, clinical courses, practica, internships, or special projects.

9. Transfer credit from another U.S. or Canadian institution must not exceed equivalent course credit (typically 3) at UMass Lowell, and will be based on UMass Lowell’s standard of 37.5 semester contact hours being equal to 3 credits. One and two course credit transfers will also be considered providing they are proportional to the 37.5 semester contact hour standard.

10. Students who wish to transfer credit must file (within the first semester of matriculation) the Academic Petition form available from the Registrars Office.

11. With the approval of the department, a maximum of 6
University Appeals Process Regarding Academic (Non-Grade Appeal and Non-Misconduct) Issues

The following procedure provides a mechanism for formal adjudication of any academic issues (non-misconduct and not related to grade appeal) which may arise. For information regarding the process for grade appeals, see the Graduate Grade Appeal Process.

Responsibility for initiation of each of the steps belongs to the appellant.

Step 1. If an informal discussion between the student and the instructor or individual with whom the student has a conflict does not resolve the issue, the resolution of an academic appeal of a student should begin within the department. The first step in the resolution of a problem or disagreement should be a discussion between the instructor, the student, and his/her faculty advisor or the coordinator of the program.

Step 2. If the matter cannot be resolved after such a discussion, a formal appeal, in writing and containing the pertinent facts, should be presented by the student to the chairperson/head of the department within two months of the occurrence that precipitated the appeal. Any appeal made outside this time period shall not be considered by any University body. The chairperson of the department will appoint committee composed of faculty members in the department. Within seven working days, this committee shall convene and discuss the appeal with the student and the instructor, coordinator, or individual with whom the student has a conflict. The student may be accompanied by his or her advisor or a faculty representative during the discussion of the appeal. The committee, by a majority vote after deliberations with only members of the committee present, shall render a decision within five working days and notify the appropriate parties in writing with the rationale for the decision included in the notification.

Step 3. If the decision of the departmental committee is not satisfactory to all parties, the appeal may be forwarded to the College Dean within two weeks of the decision of the departmental committee. The Dean will appoint a college committee composed of area coordinators of all graduate programs within the college or a suitable committee of faculty. The committee will be chaired by the college dean, or his/her designee. Within seven working days, the committee shall convene and discuss the appeal with the student. At this level the student may request to be present at the committee meetings, that discussions or proceedings be tape recorded, and that a transcript be prepared from the tape. The request for a recording must be made at the time the appeal is made to the college committee. The college committee shall render a decision by majority vote after deliberations with only members of the college committee present within five working days and notify the appropriate parties in writing with the rationale for the decision included in the notification.

Step 4. If the decision of the college committee is not satisfactory to all parties, the appeal may be forwarded to the Graduate Policy and Affairs Committee (GPAC) within ten working days after the decision of the college committee. The committee shall convene within ten working days after the GPAC chairperson has received a written request for a hearing from the appellant, and discuss the appeal with the student and faculty advisor or representative. A request for recording and preparing a transcript of the discussions with the student present may be made at the time of appeal. The committee shall render a written decision within five working days and notify the appropriate parties. The decision of the Graduate Policy and Affairs Committee shall be final, and the information accumulated during the appeal procedure shall be forwarded to the Provost to be kept on file. If any decision involving the awarding of a degree is made and the official deadline for graduation exercises has passed during the appeal, the degree date will reflect the initiation of the appeal.

The above time periods define working days as days when classes are in session for the fall and spring semesters. Efforts will be made to honor the same time periods during intercession and June - August although some flexibility must be accepted by the appellant because of potential difficulties in assembling committee members during these periods.

The GPAC chairperson may modify the Step 4 hearing time framework at his/her discretion to coincide with regularly scheduled GPAC meetings. In either of the above cases, the appellant must be notified in writing by the hearing officer (along with an explanation) of any modification of the hearing time schedule. The chairperson may recommend that final voting/discussion of Step 4 cases be done in Executive Session with only committee members present.

University Disciplinary Procedures for Graduate
Students

Academic Dishonesty - Academic Integrity Policy

Administrative Dismissal from the University

Administrative dismissal may be invoked when a student fails to comply, after due notice, with an administrative regulation of the University. Examples of some conditions which justify administrative dismissal are listed in the Undergraduate Catalog at www.uml.edu/catalog/undergraduate/policies/administrative_dismissal.aspx (https://www.uml.edu/catalog-AY16/pdf/Undergraduate.pdf) and apply to all students, undergraduate and graduate.

Non-Academic Misconduct


Withdrawal Policies

Withdrawal from a Course

Withdrawal from the University

A student finding it necessary to withdraw from a course must do so within the time specified in the graduate academic calendar (https://www.uml.edu/Registrar/Calendars/default.aspx) (www.uml.edu/Registrar/Calendars/ (https://www.uml.edu/Registrar/Calendars/default.aspx)). The student’s permanent record will indicate a grade of W for the course(s) from which he or she has withdrawn unless the withdrawal has taken place within the first 10 class days of the semester during which time no record will be kept. (See Dropping Classes and Refund Policy in this Catalog for information on dropping a course.)

Withdrawal from the University

A student who wishes to withdraw from the University must submit his/her request in writing to the Registrar’s Office. This procedure ensures that the student’s academic and financial obligations are cleared before leaving the University. If a student officially withdraws from the University by the withdrawal date indicated in the graduate academic calendar, the permanent record will indicate a grade of W. If the student fails to follow the official withdrawal procedure and does not withdraw in good standing, the student will not be permitted readmission to a graduate program at the University except under extenuating circumstances.

All previous application materials will remain on file for a two year period. At any time during this period, a student who has officially withdrawn may request readmission by completing and submitting only the cover page of the graduate application and paying the application fee. After two years, a student must file a new, complete application and submit the appropriate fee to the Graduate Admissions Office (https://www.uml.edu/Grad/default.aspx) (www.uml.edu/grad (https://www.uml.edu/Grad/default.aspx)) in order to be readmitted.
College of Health Sciences

The graduate programs of the College of Health Sciences prepare health care providers with specialized knowledge and skills for the roles of practitioner, leader and researcher. The College of Health Sciences is led by Shortie McKinney, Ph.D. (https://www.uml.edu/Health-Sciences/About/staff/McKinney-Shortie.aspx)

View the faculty in the College of Health Sciences (https://www.uml.edu/Health-Sciences/faculty/Faculty-list.aspx).

Graduate Programs Offered

Master of Public Health

- Public Health (http://www.uml.edu/Catalog/Graduate/Health-Sciences/Public-Health/Default.aspx)

Master of Science (MS) - degree awarded in the following fields:

- Clinical Laboratory Sciences
  Concentrations: Clinical Research, Clinical Administration, Health Informatics, Nutritional Sciences, Public Health Laboratory, Sciences, Option
- Professional Science Master’s Option - Clinical Laboratory Sciences
- Health Informatics and Management
  Concentrations: Health Informatics, Health Management
- Nursing
- Pharmaceutical Science (http://www.uml.edu/Catalog/Graduate/Health-Sciences/Pharmaceutical-Sciences/Master-Pharmaceutical-Sciences.aspx)
- Work Environment
  Options: Occupational and Environmental Hygiene, Epidemiology, Ergonomics / Safety, Work Environment Policy, Cleaner Production and Pollution Prevention

Doctor of Physical Therapy (DPT)

Doctor of Philosophy (PH.D.) - degree awarded in the following field:

- Nursing
- Health Promotion
- Pharmaceutical Science

Post-Master’s Doctorate in Nursing Practice (DNP) Program

Doctor of Science (SC.D.) - degree awarded in the following field:

- Work Environment
  Options: Occupational and Environmental Hygiene, Epidemiology, Ergonomics / Safety, Work Environment Policy, Cleaner Production and Pollution Prevention
- Graduate certificates are available in some academic majors.

Professional Science Masters in Pharmaceutical Sciences

Admissions and Degree Requirements

Applicants to the Professional Science Masters (PSM) program in Pharmaceutical Sciences must possess a BS degree or be in their last semester of a baccalaureate program. Up to 12 credits of appropriate graduate coursework with a grade of B or better can be transferred into the program if approved by the Graduate Coordinator of the Pharmaceutical Sciences programs.

The Professional Science Masters in Pharmaceutical Sciences program will consist of 36 credits of coursework to be completed either full-time or part-time. Full-time students should complete the program within two years and part-time students should complete the program within five years. The Program Coordinator and advisors in the program will advise PSM students about course selections.

Upon admission or through the successful completion of prerequisite courses, students will be expected to have successfully demonstrated undergraduate level knowledge in calculus, general and organic chemistry, biochemistry and physics.

Curriculum Plan

<table>
<thead>
<tr>
<th>Pharmaceutical Science Core Courses</th>
<th>(26 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHRM.6100 Principles of Pharmaceutical</td>
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### Sciences

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM.5500</td>
<td>Biochemistry 1</td>
<td>3 credits</td>
</tr>
<tr>
<td>CHEM.5620</td>
<td>Pharmaceutical Biochemistry</td>
<td>3 credits</td>
</tr>
<tr>
<td>PHRM.6200</td>
<td>Pharmacokinetics</td>
<td>3 credits</td>
</tr>
<tr>
<td>CHEM.6310</td>
<td>Principles of Medicinal Chemistry I</td>
<td>3 credits</td>
</tr>
<tr>
<td>MLSC.7070</td>
<td>Drug Metabolism</td>
<td>3 credits</td>
</tr>
<tr>
<td>PHRM.6400</td>
<td>Pharmaceutical Analysis</td>
<td>4 credits</td>
</tr>
<tr>
<td>PHRM.6410</td>
<td>Drug Delivery</td>
<td>3 credits</td>
</tr>
</tbody>
</table>

#### PLUS Courses (9 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSMA.5550</td>
<td>Leadership for Scientists</td>
<td>3 credits</td>
</tr>
<tr>
<td>PSMA.5450</td>
<td>Professional and Scientific Communication</td>
<td>3 credits</td>
</tr>
<tr>
<td>XX.XXX</td>
<td>PLUS Elective</td>
<td>3 credits</td>
</tr>
</tbody>
</table>

A Professional Internship is required for students in this program and must be a minimum of 350 hours and 3-6 months in length. The internship is designed to provide students with an opportunity to obtain real-world experience in business, government agencies, non-profit organizations or research laboratories. Internships or research project experiences will typically take place in pharmaceutical, biotechnological or medical device companies or institutions. Consideration will be given for students that have previous or current professional employment in the pharmaceutical sciences, however, in these cases, a new project experience will be required that adds to the students current set of skills.
Department of Clinical Laboratory & Nutritional Sciences

The UMass Lowell Department of Clinical Laboratory and Nutritional Sciences offers the following graduate programs:

- **Master of Science in Clinical Laboratory Sciences**
  - Concentrations: Clinical Research
  - Clinical Administration
  - Health Informatics
  - Nutritional Sciences
  - Public Health Laboratory Sciences
  - Option: Professional Science Master’s Option
  - Graduate Certificates: Clinical Pathology
  - Nutritional Sciences
  - Public Health Laboratory Sciences
  - Bachelor’s-Master’s Program

Program Philosophy

The Master of Science degree program in Clinical Laboratory Sciences provides medical technologists and individuals with medical, biological or biochemical backgrounds with specialized knowledge in the clinical laboratory sciences. The mission of the program is to allow individuals to expand their understanding of the clinical sciences and be able to apply state-of-the-art research techniques to the advancement of diagnostic technology. Knowledge of such skills will permit upward mobility into entry level supervisor positions and dissemination of clinical information in educational settings. Students may choose from concentrations in research, clinical administration, health informatics, nutritional sciences and public health laboratory sciences.

Faculty in the Department of Clinical Laboratory and Nutritional Sciences have extensive research track records. Many are recognized nationally and internationally as experts in their fields and participate in professional organizations, holding office at local and national levels. Department faculty are successful in obtaining research funding and are very productive in publishing their research findings in peer-reviewed scientific journals.

Program Overview

The Master of Science program is typically completed in two years, however, students may choose to progress through the program on a part-time basis. The Bachelor’s-Masters program in one additional year beyond the B.S. degree. The program integrates management components from the Health Management and Policy Program, and environmental health components from the department of Work and Environment. Students take a required core of five courses and then select five program concentration courses from among the areas of research, nutritional sciences, clinical administration, health informatics and public health laboratory sciences. Students may also select a Professional Science Masters combining business courses and business internship. Online graduate certificate programs allow gradual transition from a work setting into this academic program. Students may continue on into programs such as Ph.D. in Biomedical Engineering and Biotechnology (participant in UMass system-wide graduate degree program) or the Ph.D. in Chemistry, Biochemistry Option (in collaboration with Chemistry Department).

Admission Requirements

1. A baccalaureate degree from an accredited university or college with a recommended GPA of 3.0 or better.
2. Sound preparation in the biological or clinical sciences with a chemistry background for the research concentration.
3. A minimum official score on for the Graduate Record Examination Aptitude Test (GRE) of 151 verbal and 157 quantitative. GRE’s are required unless the student has completed a previous American Masters degree. For students who graduated from a university in a country where English is not the official language. TOEFL scores should be at least 550 (paper-based), 213 (computer-
based), or 79 (internet-based). The GRE is not required for the certificate programs.

4. For the Clinical Administration concentration: clinical certification is required.

5. For the Clinical Research concentration, sound preparation in the biological or clinical sciences is required, to include successful completion of a course in biochemistry or equivalent.

6. Three letters of recommendation pertaining to academic ability and professional performance unless the applicant is already a student in the undergraduate program and applying into the Bachelor’s-Master’s Program.

7. Students will also be asked to submit a personal statement and a resume.

Program Requirements

The student must possess basic statistical and computer skills prior to admission, or may complete without credit within the graduate program of study, an introductory course in computers and a course in statistics prior to the third semester. Skill level can be determined through discussion with the Graduate Coordinator.

Master of Science in Clinical Laboratory Sciences

The UMass Lowell Department of Clinical Laboratory and Nutritional Sciences offers a Master of Science in Clinical Laboratory Sciences with the choice of five concentrations and one option:

Concentrations:
- Clinical Research
- Clinical Administration
- Health Informatics
- Nutritional Sciences
- Public Health Laboratory Sciences

Option:
- Professional Science Master’s

Degree Requirements

The Master of Science degree program in Clinical Laboratory Sciences requires the successful completion of a minimum of 30 semester hours of graduate level courses. These include 15 credit hours of core courses and either: A) a non-project option where 15 course credits are selected from a concentration area. B) A project option where a student takes 4 credit hours of graduate project and 12 course credits from a concentration area. Students may petition to transfer up to 12 graduate course credits of related content from other programs, and this requires approval by the department graduate coordinator and or department graduate faculty committee. The M.S. Program in Clinical Laboratory Sciences with Professional Master’s Option (PSM) requires 34 total credits (see below).

Part-Time Study

Students are allowed to matriculate on a part-time basis (taking one or two courses) and most professionally employed students that pursue the M.S./degree in Clinical Laboratory Sciences do so. Most classes meet once per week and are scheduled in the evening or online for student convenience.

Bachelor’s-Master’s Program

Undergraduate students in this program move through the master’s program at an accelerated rate by taking two 500-level courses during their senior year and count those credits toward both their undergraduate and graduate degrees. Students apply during their Junior year.

Program of Studies

Core Curriculum

The core curriculum includes the following courses (15 credits) and must be taken by each program student:

- HSCI.5500 Human Development and Pathophysiology (3cr)
- MLSC.6400 Quality Assurance, Control and Improvement in the Clinical and Public Health Laboratory (3cr)
- MLSC.5750 Topics in Clinical Laboratory Sciences (3cr)
- MLSC.5530 Advanced Clinical Chemistry (3cr)
- MLSC.5800 Clinical Applications of Molecular Genetics (3cr)

Concentration Areas

A. Clinical Research

Students selecting this concentration are expected to have prior certification or a sound preparation in the biological sciences and chemistry. In addition to the core curriculum, students must take the following prescribed elective:

- MLSC.5510 Advanced Pathophysiology (3cr)

Students selecting the project option take Project (4cr) and 12 credits from departmental course offerings or from courses approved by the Graduate Coordinator and/or department graduate committee. Students not selecting the project option
are required to take 12 graduate course credits in addition to
the core curriculum and the Advanced Pathophysiology course.

Students not selecting the project option are required to take
15 graduate course credits in addition to the core curriculum.

*Note: Other graduate level courses from outside of the
Clinical Laboratory Master’s Program may be used as electives
with Graduate Coordinator pre-approval.

B. Clinical Administration

Students selecting this concentration must have a clinical
certification approved by the chairperson of the Department of
Clinical Laboratory and Nutritional Sciences. In addition to the
core curriculum, students must take the following graduate
Health Administration courses or others approved by the
Graduate Coordinator:

PUBH.5020 Organizational Behavior in Health Care (3cr)
PUBH.5140 Health Care Management (3cr)
PUBH.6070 Health Care Information Systems (3cr)
PUBH.6250 Health Policy (3cr)

Students selecting the project option take Project (4cr) and 12
credits of graduate Health Administration course offerings.
Students not selecting the project option are required to take
the four concentration courses and an additional 3 cr
department elective.

*Note: Other graduate level courses from the Health Services
Administration Program may be substituted for these courses
with Graduate Coordinator approval. Students not selecting
the project option are required to take 15 graduate course
credits in addition to the core curriculum.

C. Health Informatics

This concentration is intended for students with a background
in health who wish to be prepared to apply current information
technology to the management of health care services and
information. Students must possess a baccalaureate degree and
basic computer skills. In addition to the core curriculum, students
must take an additional 3 cr department elective and
the following graduate Health Informatics courses or other as
approved by the Graduate Coordinator:

PUBH.6070 Healthcare Information Systems (3cr)
PUBH.5310 Health Informatics (3cr)
PUBH.6320 Health Information System Planning (3cr)
PUBH.6330 Healthcare Database Design (3cr)

Students not selecting the project option are required to take
15 graduate course credits in addition to the core curriculum.

D. Nutritional Sciences

This concentration is designed for students with a
baccalaureate degree in an allied health or biological sciences
field who wish to enhance their understanding of nutrition and
health promotion. In addition to the core curriculum, students
must take the following graduate Nutritional Sciences courses:

NUTR.5720 Nutrition and Gene Expression (3cr)
NUTR.5060 Biochemistry of Lipids (3cr)
NUTR.5630 Vitamins and Minerals (3cr)
NUTR.5820 Seminar in Advanced Nutrition (3cr)

Students also select Project (4 Cr) and 12 credits from
departmental course offerings or from courses approved by the
department chair, graduate coordinator or graduate committee.
Students not selecting the project option are required to take
15 graduate course credits in addition to the core curriculum.
The four graduate Nutritional Sciences courses offered also
comprise the Graduate Certificate in Nutritional Sciences.
Students may apply for this certificate program before official
matriculation in the master’s degree program.

Students not selecting the project option are required to take
15 graduate course credits in addition to the core curriculum.

E. Public Health Laboratory Sciences

This concentration is intended for qualified students with a
background in Clinical Laboratory Sciences, Community
Health, Environmental Health, Health Administration, Work
Environment, Biological Sciences or Chemistry who would like
to help satisfy a critical need for qualified public health
scientists.

Students must possess a baccalaureate degree and basic
computer skills.

In addition to the core curriculum, students in this
concentration must take the required course, Introduction to
Public Health and the Public Health Laboratory, and an
additional 4 courses. Three of these courses must be selected
from one of the following areas.

Required Course - Department of Clinical Laboratory and
Nutritional Sciences
MLSC.5410 Introduction to Public Health and the Public
Health Laboratory (3 cr)

Concentrations/Elective Courses (credits)

Infectious Disease and Quality Control - Department of
Clinical Laboratory and Nutritional Sciences

- MLSC.6130 Infectious Disease (3 cr)
- MLSC.6150 Medical Mycology and Parasitology Lecture
  (3 cr)
- MLSC.5120 Medical Bacteriology Lecture (3 cr)
- MLSC.6400 Quality Assurance, Control and Improvement
  in the Clinical and Public Health Laboratory (3 cr)
**Health Management and Policy** - Department of Community Health and Sustainability

- PUBH.5140 Health Care Management (3 cr)
- PUBH.5020 Organizational Behavior in Health Care (3 cr)
- PUBH.6260 Leadership and Change (3 cr)
- PUBH.6040 Health Data Analysis (3 cr)

**Health Informatics** - Department of Community Health and Sustainability

- PUBH.6070 Healthcare Information Systems (3 cr)
- PUBH.6320 Healthcare Information System Planning (3 cr)
- PUBH.6330 Healthcare Database Design (3 cr)

**Environmental Testing** - Department of Work Environment

- PUBH.5750 Introduction to Epidemiology (3 cr)
- PUBH.5030 Toxicology and Health (3 cr)
- PUBH.5061 Introduction to Environmental Health (3 cr)
- PUBH.6220 Biomarkers for Occupational & Environmental Health (3 cr)

**Professional Sciences Masters Option**

This degree option (34 total credits) contains approximately 2/3 science (24 credits) and 1/3 business/communication (9 credits) courses and a 1 credit internship experience with a reflective seminar (34 credits program total). The 5 required scientific core courses are the same. Three department elective courses may selected from the following:

**STEM Elective Courses (9 cr), choose any three**

- MLSC.7340 MS Project in Clinical Laboratory Sciences (3 cr)
- MLSC.5510 Advanced Pathophysiology (3 cr)
- MLSC.5310 Clinical Immunohematology (3 cr)
- MLSC.6150 Medical Mycology and Parasitology (3 cr)
- NUTR.5060 Biochemistry of Lipids (3 cr)
- NUTR.5720 Nutrition and Gene Expression (3 cr)
- NUTR.5820 Seminar in Advanced Nutrition (3 cr)
- NUTR.5630 Vitamins and Minerals (3 cr)
- NUTR.5410 Introduction to Public Health and the Public Health Laboratory (3 cr)

(Other graduate level courses outside of the Department of Clinical Laboratory & Nutritional Sciences will be considered to be included on an individual basis.)

**Business Courses Required (9 credits)**

- PSMA.5450 Professional and Scientific Communication
- PSMA.5550 Leadership for Scientists
- PSMA.5350 Project Management for Science Professionals

*All offered online

Also required:

**Professional Experience (1 credit)**

MLSC.7700 Professional Internship

A Professional Internship is required for students in this program and is expected to be a minimum of 350 hours and have a 3-6 month duration. The internship is designed to provide students with an opportunity to obtain real-world experience in business, government agencies, non-profit organizations or research laboratories. Internships or research project experiences will typically take place in Clinical, Pharmaceutical, Diagnostic, Biotechnological or Medical Device Companies or Institutions.

Research experience can also be obtained at the university or other research centers. Given the number of full time faculty in the department, the university will assist the Department of Clinical Laboratory and Nutritional Sciences and the students with arranging corporate internships. To be eligible for the Professional Internship, students will be required to have 1) completed a minimum of 12.0 credits of STEM courses, 2) completed a minimum of 6.0 credits of PLUS courses, 3) attained an overall minimum GPA of 3.0 and 4) department permission.

Since most program students will have a scientific background and are in a scientific Master of Sciences Program, Professional Internships with a business will be most desirable. Consideration will be given for students that have previous or current professional employment experience, however, in these cases, a new project experience will be required that adds to the students current set of skills. All students will be required to submit a final written report and give oral presentation on their work at a Seminar. All post-internship students will participate in this seminar. All Professional Internships require department faculty supervision. Students should register for 36.770 during the final semester of internship participation.
Graduate Certificates in Clinical Laboratory & Nutritional Sciences

The UMass Lowell Department of Clinical Laboratory and Nutritional Sciences offers three graduate certificate programs.

- Clinical Pathology
- Nutritional Sciences
- Public Health Laboratory Sciences

Download Graduate Certificate Application Form (https://www.uml.edu/docs/Updated%20Certificate%20forms_tcm18-3166.pdf) (pdf)

Clinical Pathology

Clinical Laboratory and Nutritional Sciences Department

Contact: Nancy Goodyear, Ph.D. (mailto:nancy_goodyear@uml.edu), 978-934-4427

Clinical Pathology combines the theoretical and technical knowledge of human anatomy and physiology, clinical chemistry, genetics, immunology, microbiology, hematology, histocompatibility, cellular pathology and other fields as they pertain to the diagnosis, monitoring and prevention of disease.

The 12 credit Graduate Certificate in Clinical Pathology is a unique program that was developed for medical laboratory personnel, medical professionals, nurses, biologists and biochemists who are interested in expanding and updating their knowledge in clinical pathology. Personnel employed in the biomedical and biotechnology industries are another population of students who will benefit from this certificate program.

Required Courses:

- HSCI.5500 Human Development and Pathophysiology
- MLSC.5510 Advanced Pathophysiology

Electives - Choose 2:

- MLSC.5530 Advanced Clinical Biochemistry
- MLSC.5800 Clinical Applications of Molecular Genetics
- MLSC.6130 Infectious Disease
- MLSC.6157 Medical Mycology and Parasitology

Nutritional Sciences

Clinical Laboratory and Nutritional Sciences Department

Contact: Nancy Goodyear, Ph.D. (mailto:nancy_goodyear@uml.edu), 978-934-4427

Current emphasis on dietary concerns in the areas of science or medicine and society-at-large demonstrate the need for post-baccalaureate programs in the nutritional sciences. This 12 credit certificate program is designed for the health professional (e.g. medical technologist, clinical lab scientist, biologist, nurse, physician, physical therapist, exercise physiologist, athletic trainer, personal trainer) currently employed with experience in a health career or related science field. Students must present evidence that they have baccalaureate degree in any one of the above or related fields.

Required Courses:

- NUTR.5060 Biochemistry of Lipids
- NUTR.5630 Vitamins and Minerals
- NUTR.5720 Nutrition and Gene Expression
- NUTR.5820 Seminar in Advanced Nutrition

Public Health Laboratory Sciences

Contact: Nancy Goodyear, Ph.D., 978-934-4427

This 12 credit certificate program will help to satisfy a critical and timely need for qualified public health laboratory scientists. Students must take a total of 4 courses consisting of 2 required courses and 2 electives. The student must meet with the coordinator of this program to select the electives that best fit their educational needs.

Required Courses (from the Department of Clinical Laboratory and Nutritional Sciences)

Offered Online only - two courses for a total of six credits

- MLSC.5410 Introduction to Public Health and the Public Health Laboratory
- MLSC.6130 Infectious Disease

Elective Courses (from the Department of Clinical Laboratory and Nutritional Sciences and Department of Work Environment)

Online Courses

- PUBH.5040 Health Data Analysis
- PUBH.5080 Principles and Practices of Biological Safety
- PUBH.5160 Laboratory Environmental Health and Safety
- MLSC.5800 Clinical Applications of Molecular Genetics

On Campus Courses

- MLSC.6400 Quality Assurance, Control and Improvement in the Clinical and Public Health Laboratory
- PUBH.5060 Principles of Environmental Health
- PUBH.6190 Measurement of Chemical Exposures
- PUBH.5030 Toxicology and Health

For qualified individuals, the 12 earned graduate credits are transferable to an appropriate graduate degree program with the approval of the graduate program coordinator.
MLSC.5310 Clinical Immunohematology (Formerly 36.531) - Credits: 3
Lecture and case study discussions look at the major red cell antigen/antibody systems that are of importance in understanding transfusion therapies, compatibility testing, and pathological diseases. Emphasis is on differentiation and clinical significance of each system. Donor selection regulations, component preparation, and hemotherapy will also be discussed. Students will be required to do a presentation, poster, and paper on an advanced topic in Clinical Immunohematology.

MLSC.5410 Introduction to Public Health and the Public Health Laboratory (Formerly 36.541) - Credits: 3
This course is designed to provide an overview of public health and the public heath laboratory covering topics such as the legal basis and history of public health, public health structure, communications and interactions, and epidemiology. Emphasis will be placed on the role of the public health laboratory and its core functions, its role in policy development, infectious disease, environmental issues, emergency preparedness, newborn screening, global issues, and public health research. Public health laboratory methodology, regulation and improvement, and quality assurance will also be examined.

MLSC.5510 Advanced Pathophysiology (Formerly 36.551) - Credits: 3
Disease processes as appropriate and inappropriate as variants of normal physiological functions. A detailed examination of certain important and illustrative diseases rather than a survey of diseases in general.

MLSC.5530 Advanced Clinical Chemistry (Formerly 36.553) - Credits: 3
This course is designed to give an in-depth understanding in clinical chemistry. Topics include: analytical techniques and the selection of methodologies. The course allows for a detailed examination and discussion of selected articles from the Journal of Clinical Chemistry.

MLSC.5600 Molecular Pathology (Formerly 36.560) - Credits: 3
This graduate course is designed to study the molecular aspects of disease. Applications and techniques utilized in the field of molecular pathology are emphasized. This course is intended to provide students with information required to understand the increasing role of molecular pathology in the daily practice and management of chronic disease in medicine. Major emphasis on strength and limitations of clinical diagnostics technologies and their utilization in these applications are presented. This course will also provide a review of current molecular pathology literature and principles as they relate to specific organ systems.

MLSC.5750 Topics in Clinical Laboratory Science I (Formerly 36.575) - Credits: 3
This course provides students with the knowledge that is fundamentally necessary to understand the routine operations of the clinical diagnostic laboratory. The course will familiarize students with the diagnostic application of the most current testing methodologies and also provide a forum to discuss and critically review primary literature pertinent to current clinical laboratory issues.

MLSC.6130 Infectious Disease (Formerly 36.613) - Credits: 3
This course is designed for graduate students in the health sciences focusing on the pathophysiology of infectious disease. Major infectious organisms will be discussed as biological models and presented in the way they affect major systems of the body. Emphasis will be placed on journal readings describing significant episodes of emerging infections and current technology in diagnosis and treatment of infectious diseases.

MLSC.6150 Medical Mycology and Parasitology (Formerly 36.615) - Credits: 3
This course is designed to instruct students in diagnostic medical mycology and parasitology. Diseases, specimen collection and handling, laboratory identification and treatment of medically significant fungi and parasites will be studied. Discussion of AIDS related infections and prophylactic treatment will be evaluated. Life cycles of parasites, prevention and environmental protection plans will be analyzed.

MLSC.6400 Quality Assurance, Control and Improvement in the Clinical and Public Health Lab (Formerly 36.640) - Credits: 3
This course is designed to provide an overview of total quality management issues in the Clinical and Public Health laboratory. Topics presented will include CLIA and quality control in the laboratory, clinical and public health laboratory QC calculations, charts and graphs, regulations involving new control lots, out-of-control QC situations, method comparison, instrument validation, and quality assurance. Emphasis will be placed on meeting all federal regulations including the FDA, state regulations, as well as meeting professional agency
real-world experience in business, government agencies, non-
profit organizations or research laboratories. Internships or
research project experiences will typically take place in
Clinical, Pharmaceutical, Diagnostic, Biotechnological or
Medical Device Companies or Institutions. Research experience
can also be obtained at the University or other Research
Centers. All students will be required to submit a final written
report and give oral presentation on their work at a Seminar
that all post-internship students participate in. To be eligible
for the Professional Internship, students will be required to
have 1) completed a minimum of 12.0 credits of STEM
courses, 2) completed a minimum of 6.0 credits of PLUS
courses, 3) attained an overall minimum GPA of 3.0, and 4)
Department Permission.

NUTR.5060 Biochemistry of Lipids(Formerly 36.506)
- Credits: 3
This advanced course in the nutritional biochemistry and
physiology of lipids will detail the role of lipids in the normal
and pathological processes at both the cellular and whole
organism level. Topics will range from general discussions of
the digestion, absorption and transport of lipids to the role of
eicosanoids and lipid soluble anti-oxidants during normal and
diseased states, such as atherosclerosis, diabetes and
hypertension. Subject matter will also include a discussion of
the various interventions for the prevention and treatment of
certain of these disease states. There will also be discussion of
the current issues in lipid nutrition.

NUTR.5630 Vitamins and Minerals(Formerly 36.563)
- Credits: 3
Provides a foundation for understanding the role of vitamins
and minerals in human nutrition. Emphasis is placed on their
roles in human biochemistry and physiology. The mechanism
of action for each nutrient is examined. The course will explore
the effects of nutrient deficiency, and identify the best dietary
sources for each vitamin and mineral.

NUTR.5720 Nutrition and Gene Expression(Formerly
36.572) - Credits: 3
A Professional Internship is required for students in the
Professional Sciences Option of the Clinical Laboratory
Sciences Masters Program. It is expected to be a minimum of
350 hours and have 3-6 month duration. The internship is
designed to provide students with an opportunity to obtain
Regulation of eukaryotic gene expression by specific nutrients, hormones, and metabolites will be discussed. Transcriptional, post-transcriptional, and translational mechanisms of specific nutrients with emphasis in disease development or prevention. The information gained will be useful for design of appropriate diets, based on inherited biochemical characteristics. This course will enable students to link their knowledge of nutrition with the growing body of knowledge on the human genome and specific hereditary diseases with a nutritional component. Students will be required to submit a paper in nutrition and gene expression, on a topic agreed upon by student and instructor.

NUTR.5820 Seminar in Advanced Nutrition (Formerly 36.582) - Credits: 3

Review and analysis of contemporary research publications in human nutrition. Recently discovered nutrients that may be essential to human health will be evaluated. We will critically examine the benefits of dietary modification in controlled investigations. Course will focus on published studies of the relation of dietary practices to health and disease. We will examine nutrition policy, and the way scientific findings in nutrition translate into public health practice. This course will be of value to students who wish to critically examine literature in human nutrition, and who seek to develop new directions for nutrition research.

NUTR.6000 Programs and Principles in Public Health Nutrition - Credits: 3

This course provides advanced study in public health and community nutrition. Concepts related to cultural competency, public health and nutrition policy, health promotion, and the nutrition care process will be learned through lectures, quest lectures, in-class activities, case studies, and peer-led discussions. Students will have the opportunity to practice skills in community and public health nutrition settings such as food pantries and senior nutrition centers.

NUTR.6010 Nutrition Assessment (Formerly 36.601) - Credits: 3

This course provides an overview of tools used to assess nutritional health, dietary adequacy, dietary variety, and food security. Lectures and lab will be integrated together to demonstrate and provide experience in methods needed to assess, screen, and monitor physiological and dietary indicators of nutritional health. There will be an emphasis on methods and tools for assessing body composition, biochemical indicators, dietary intake, energy expenditure, and physical activity. Students will learn how to select and apply these methods in community, clinical and research settings and determine the strengths and limitations of each assessment tool.

NUTR.6020 Public Health Nutrition (Formerly 36.602) - Credits: 3

This course will examine a broad range of community-based nutrition research, programs and policies within the United States. Settings for public health nutrition programs have broadened to include non-profit agencies, worksites, health centers, clinics, hospitals, schools, churches, supermarkets, sports centers, senior centers, and emergency feeding sites. Students will engage in experiential learning and use case studies to practice innovative approaches to community nutrition. Field visits will allow students to interact with and learn from public health experts Students will be required to write a funding proposal for a community nutrition program that they have developed in small groups.

NUTR.6030 Global Nutrition (Formerly 36.603) - Credits: 3

This course is an examination of the food and nutrition issues around the world. The impact of food production and food intake on the environment and global nature of our food systems will be reviewed. The course will also include consideration of specific nutrient deficiencies, as well as nutrition-related aspects of infectious and chronic disease along with the programs and resources available to combat malnutrition for children and adults worldwide.

NUTR.6040 Nutrition Epidemiology (Formerly 36.604) - Credits: 3

This course is designed for graduate students who are interested in conducting or better interpreting epidemiologic studies relating diet and nutrition status to disease and health. There is an increasing awareness that various aspects of diet and nutrition may be important contributing factors in chronic disease. There are many important problems, however, in the implementation and interpretation of these studies. The purpose of this course is to examine methodologies used in nutritional epidemiologic studies in lecture and lab settings, and to review the current state of knowledge regarding diet and other nutritional indicators as an etiologic factor in disease.

NUTR.6050 Food and Nutrition Management - Credits: 3

This course provides advanced study in food and nutrition management principles. Topics include management theory, personnel selection, training, evaluation, organizational behavior, communication, governmental influences, labor management relations, marketing, and budgeting. This course requires group work, development of a business plan, and completion of management related case studies.
NUTR.6060 Advanced Clinical Nutrition - Credits: 3

This course provides advanced study in clinical nutrition. Topics include the nutrition care process, standardized language and documentation, evidence-based practice, confidentiality of medical records, JCAHO regulations, and coding and billing. Case studies will be completed to review and advanced learning about medical nutrition therapy for acute and chronic nutrition-related diseases. As part of this course, students will practice providing nutrition assessment, counseling, education, professional documentation, and evaluation in clinical nutrition settings.

NUTR.6660 Community Nutrition Supervised Practice - Credits: 1

This supervised practice experience is the application of knowledge and skills in community and public health nutrition. Students will practice nutrition assessment, nutrition counseling, and nutrition education for a wide range of populations at high nutritional risk. Students will develop cultural awareness and skills in cultural competency.

NUTR.6670 Food and Nutrition Management Supervised Practice - Credits: 1

This supervised practice experience is the application of knowledge and skills in food and nutrition management. There will be hands-on experience in human resource and financial management. Management skills specific to the food service industry, including management functions related to safety, security and sanitation, will also be incorporated. Students will also be able to apply knowledge in food production, distribution, and food service systems along with skills in menu planning. There will be an emphasis on using strategies to reduce waste and protect the environment.

NUTR.6680 Clinical Nutrition Supervised Practice - Credits: 1

This supervised practice experience is the application of knowledge and skills in clinical nutrition. Students will receive hands-on experience in nutrition assessment, diagnosis, and treatment of nutrition-related diseases while using skills in nutrition counseling and applying principles from behavior change theories. Students will be able to practice documentation of nutrition care and participate as members of an interdisciplinary team.

NUTR.7100 Nutrigenomics(Formerly 36.710) - Credits: 3

The elucidation of the human genome has created a unique opportunity to study and understand how nutrients and bioactive food components influence gene expression and product activity. This knowledge will allow for a better understanding of how these interactions vary with individual genetic diversity in the development of chronic disease states. The goal will be to improve the quality of life through the use of diet in the prevention and treatment of human disease. This includes the use or restriction the specific nutrients and food compounds to maintain homeostasis in the body from the biochemical level to organ systems. The ability for nutritionists and healthcare professionals to create and optimize diets requires and understanding of the interactions between nutrients and genes, proteins and metabolic pathways in regulation of disease pathways.
HSCI.5020 Graduate Global Health Experience - Credits: 3
The Global Health Experience provides an experiential learning experience in health within a country outside of the United States. Students will study the health issues of a given country while examining the socio-cultural, economic and environmental determinants of health within that society. The strengths and weaknesses of the existing health care system will be analyzed. Students will explore the culture, environment, and health care system under the direction of College of Health Sciences faculty.

HSCI.5500 Human Development and Pathophysiology (Formerly 30.550) - Credits: 3
The physiological steady state of the human body and disruptions that result over the life span will be examined as well as the pathophysiological mechanism manifested in disease states. The course addresses defense, compensating, and adaptive responses to the pathophysiological processes as they apply to the various systems rather than being a survey course of diseases.

HSCI.5770 Health Disparities in a Global Economy (Formerly 30.577) - Credits: 3
This course examines the impact of a global economy on health disparities and the impact of health on global economic sustainability. The interconnectedness of health across nations and regions in a global economy presents new challenges. The growing health disparities between wealthy and poor countries will be analyzed. Students will be encouraged to anticipate future health challenges in an expanding global economy and propose solutions to the growth of global health disparities. Cross cultural understanding of the environmental and economic impact on health disparities of the world’s populations will be analyzed, including access to quality, affordable health care.

HSCI.6140 Health Care Management (Formerly 30.614) - Credits: 3

PUBH.5061 Introduction to Environmental Health (Formerly 19.506) - Credits: 3
This course will survey the rapidly growing field of environmental health through an introduction to the links between environmental stressors and impacts on public health. The course will explore human and industrial activities that impact on environmental health such as population, food production, air and water pollution, waste, the built environment, toxic substances, pests, and global climate change. The course will also examine the types of diseases and illnesses that result from environmental impacts. Students will be encouraged to examine in greater detail a specific topic in environmental health of personal interest.

PUBH.5930 Directed Study (Formerly 19/31/32.593) - Credits: 1-3
Department of Community Health & Sustainability

The UMass Lowell Department of Community Health and Sustainability offers the following graduate programs:

- Master of Science in Health Informatics and Management (Health Informatics Option and Management Option)
- Graduate Certificates in Health Informatics and Management

Mission

The mission of the department is to prepare individuals to become public health professionals and researchers who work to create a sustainable future. Our approach provides the foundation for the design, implementation, and evaluation of policies, programs, and technologies, with a curriculum and research focus based on the behavioral and social determinants of health. Our programs encompass the areas of Community Health, Health Promotion, Environmental Health, Occupational Health, Health Management, Health Informatics and Health Policy.

Master of Science in Health Informatics and Management

- Program Objectives
- Admission Requirements
- Degree Requirements
- Capstone Project Requirement
- Other Questions

The Health Informatics and Management Program offers a masters degree in the following concentrations:

- Health Informatics
- Health Management

Program Objectives

At the local, regional and national level, our healthcare system confronts new challenges in coping with the many changes in technology, information systems, financing and management. For many health industry professionals seeking career advancement, a Masters Degree is often required. Moreover, according to the Bureau of Labor Statistics, the employment of medical and health services managers is predicted to grow much faster than average through 2022.

The Health Informatics and Management (HI+M) program predominantly enrolls mid-career professionals working within health provider and other health-related organizations. Many students complete a Graduate Certificate before seeking admission to the Masters Degree program, and the Certificate courses are accepted as credits toward the Masters Degree.

UMass Lowell is one of the largest accredited online education providers in New England. The program was developed under a blended learning grant from the Alfred P. Sloan Foundation and its Sloan-C initiative, the HI+M program offers graduate studies in a new blended format that offers the "best of both worlds" combining face-to-face and online classes and provides a more accessible program of study for busy professionals. More recently, our graduate certificate in health Informatics is being offered online and provides students with a flexible opportunity to expand their educational preparations in the area of Health Informatics.

Admission Requirements

1. Official transcript indicating graduation from an accredited baccalaureate institution.
2. Three letters of recommendation addressing academic ability and professional performance.
3. A page-length Statement of Purpose indicating career plans, interests and objectives in pursuing a graduate degree.
4. A professional resume.
5. Acceptable scores on the Graduate Record Examination (GRE). If a student has already completed an HI+M Graduate Certificate program with a grade point average of 3.5 or better, the GRE is not required.
6. TOEFL scores must be submitted if the applicant is a citizen of a non-English speaking country and has not earned an academic degree in the United States. (Minimum score: 79).

Although a background in health is not required for admission, applicants with significant health industry experience are given preference when program capacity is limited. For other applicants, ones academic record and professional work experience are especially important. Applications can be submitted and evaluated at any time. We nevertheless recommend that those seeking admission for the Fall semester have applications complete by May 15, and that those seeking admission for the Spring semester have applications complete by December 15. All application materials go to Graduate Admissions.
Degree Requirements

Thirty-six credits (eleven 3-credit courses, plus a 3-credit Capstone Project) are required to obtain the Masters Degree. The specific course requirements are indicated below, separately for Health Informatics and Health Management. Some course substitutions may be allowed based on prior academic and work experience.

Health Informatics Concentration:

Health Informatics students are required to take the following six courses:

- PUBH.5020 Organizational Behavior in Healthcare
- PUBH.5110 Healthcare Finance
- PUBH.5120 Operations Analysis and Quality Improvement
- PUBH.5140 Healthcare Management
- PUBH.6160 Law and Ethics in Healthcare
- PUBH.7330 Capstone Project

Health Informatics students additionally take the following six Health Informatics courses:

- PUBH.5310 Health Informatics
- PUBH.6070 Healthcare Information Systems
- PUBH.6320 Health Information Systems Planning
- PUBH.6330 Healthcare Database Design
- PUBH.6350 Healthcare Project Management
- PUBH.6380 Strategic Planning in Healthcare and HIT
- PUBH.6390 Electronic Health Record Systems

Health Management Concentration:

Health Management students are required to take the following nine (9) courses:

- PUBH.5020 Organizational Behavior in Healthcare
- PUBH.5060 Quantitative Methods in Healthcare Management
- PUBH.6070 Healthcare Information Systems
- PUBH.6330 Healthcare Database Design
- PUBH.6350 Healthcare Project Management
- PUBH.6380 Strategic Planning in Healthcare and HIT
- PUBH.6390 Electronic Health Record Systems
- PUBH.6160 Law and Ethics in Healthcare
- PUBH.6250 Health Policy
- PUBH.7330 Capstone Project

Health Management students additionally take three of the following courses as electives:

- PUBH.5150 Applied Health Economics
- PUBH.5270 Planning and Marketing in Healthcare
- PUBH.6260 Leadership in Healthcare
- PUBH.6270 Socioeconomic Inequalities in Health
- PUBH.6320 Health Information Systems Planning
- PUBH.6330 Healthcare Database Design
- PUBH.6350 Healthcare Project Management
- PUBH.6380 Strategic Planning in Healthcare and HIT
- PUBH.6390 Electronic Health Record Systems

Capstone Project Requirement

Near the end of their Masters Degree program, students register for the Capstone Project course and complete an independent study under faculty supervision. The Capstone Project applies concepts and skills learned in the program, and culminates in a substantial business-type report. Many students complete a Capstone related to their work in the field. For students who don’t work in healthcare, Capstone internships can be arranged. All Capstone students present their findings at a semester-end program event that is open to all.

For General Questions

Robert Holmes, Ph.D.
Southwick 328 A
E-mail: Robert_Holmes@uml.edu
Phone: 978-934-5318

For Program-Specific Questions

Kimberly Flodin, MSHMP
HIM Program Student Advisor
Department of Community Health & Sustainability
College of Health Sciences
E-mail: Kimberly_Flodin@uml.edu
Phone: 978-934-6628

Graduate Certificate Programs in Health Informatics and Management

HI+M Certificate Requirements

The Health Informatics and Management (HI+M) program offers four-course Graduate Certificates in three different areas:
1. Health Management

Many students complete one of these Certificates before seeking admission to the HI+M Masters degree program, as the Certificate courses are accepted as credits toward the Masters degree. Moreover, students who complete a Graduate Certificate with a grade point average of 3.5 or better are not required to take the Graduate Record Exam in applying for admission to the MS program.

UMass Lowell is one of the largest accredited online education providers in New England. As developed under a blended learning grant from the Alfred P. Sloan Foundation and its Sloan-C initiative, the HI+M program offers graduate studies in a new blended format that offers the best of both worlds—combining face-to-face and online classes—providing a more accessible program of study for busy healthcare and IT professionals.

Admission Requirements

1. Official transcript indicating graduation from an accredited baccalaureate institution.
2. A one-page statement of purpose indicating career plans, interests and objectives in pursuing a graduate degree.
3. A professional resume.
4. TOEFL scores must be submitted if a citizen of a non-English speaking country and have not earned an academic degree in the United States (Minimum Score: 79).

Although a background in health is not required for admission, applicants with significant health industry experience are given preference when program capacity is limited. For other applicants, ones academic record and professional work experience are especially important. Applications can be submitted and evaluated at any time. We nevertheless recommend that those seeking admission for the Fall semester have applications complete by May 15, and that those seeking admission for the Spring semester have applications complete by December 15. All application materials go to Graduate Admissions.

Health Management Certificate

The Health Management Certificate is offered primarily as a continuing education opportunity for health industry professionals interested in pursuing career advancement. It teaches core skills required in healthcare management and helps students gauge interest and prospects for continuing with a full 12-course MS program.

Required Courses:

- PUBH.5110 Healthcare Finance
- PUBH.5140 Healthcare Management

Elective Courses (choose two):

- PUBH.5060 Quantitative Methods in Health Management
- PUBH.5020 Organizational Behavior in Healthcare
- PUBH.5310 Health Informatics
- PUBH.6070 Healthcare Information Systems
- PUBH.5120 Operations Analysis and Quality Improvement
- PUBH.5150 Applied Health Economics
- PUBH.6160 Law and Ethics in Healthcare
- PUBH.6250 Health Policy
- PUBH.5270 Planning and Marketing in Healthcare
- PUBH.6260 Leadership in Healthcare
- PUBH.6270 Socioeconomic Inequalities in Health
- PUBH.6320 Health Information Systems Planning
- PUBH.6330 Healthcare Database Design
- PUBH.6350 Healthcare Project Management
- PUBH.6390 Electronic Health Record Systems

Health Informatics Certificate

The Health Informatics Certificate is primarily meant to provide healthcare professionals with the requisite skills and understanding required to support health IT initiatives where they already work.

Required Courses:

- PUBH.5310 Health Informatics
- PUBH.6070 Healthcare Information Systems

Elective Courses (choose two):

- PUBH.6320 Health Information Systems Planning
- PUBH.6330 Healthcare Database Design
- PUBH.6350 Healthcare Project Management
- PUBH.6380 Strategic Planning in Healthcare and HIT
- PUBH.6390 Electronic Health Systems

For General Questions

Robert Holmes, Ph.D.
Southwick 328 A  
E-mail: Robert_Holmes@uml.edu  
(phone:robert_holmes@uml.edu)  
Phone: 978-934-5318  

For Program-Specific Questions  

Kimberly Flodin, MSHMP  
HIM Program Student Advisor  
Department of Community Health & Sustainability  
College of Health Sciences  
E-mail: Kimberly_Flodin@uml.edu  
(phone:kimberly_flodin@uml.edu)  
Phone: 978-934-6628
PUBH.5000 Analytical Context of the Work Environment (Formerly 19.500) - Credits: 3

An overview course to be taken in the first semester in the Master’s program. Case studies are used to introduce students first to the hazard analysis methods, and second, to the prevention methods of each of the department’s sub-disciplines. Interconnections between exposures and illness/accident development are reviewed at three levels: individual, work organization and society.

PUBH.5010 Social and Behavioral Determinants of Health (Formerly PUBH 501) - Credits: 3

This course provides a foundation for the analysis of social and behavioral influences on public health. Planning, implementation, and evaluation of initiatives designed to improve public health are discussed. The course reviews prominent concepts in the social and behavioral sciences and provides examples of their impact on public health. Psychosocial theories of health promotion and how they inform public health practice are analyzed. Public health competencies in social and behavioral sciences provide a foundation for the course content.

PUBH.5020 Organizational Behavior in Health Care (Formerly 32.502) - Credits: 3

Provides a systems overview of the organizational structure and behavior of individuals in healthcare institutions, along with an examination of the role of managers, clinicians and other leaders. The course applies organizational, behavioral and social science practice and theory to healthcare organizations.

PUBH.5021 Health Policy and Management (Formerly PUBH 502) - Credits: 3

The course provides students with a foundation of public health practice and management. Topics include critical issues for the future of healthcare in the U.S., leadership and politics in public health, partnerships to improve public health, leading and managing change in public health organizations, and improvement in public health practice. The course also provides an overview of the U.S. healthcare system, its organization, management and financing, current policy issues (e.g., cost, quality and access) and healthcare reform activity.

PUBH.5030 Toxicology and Health (Formerly 19.503) - Credits: 3

Examines the effects of the major and chemical physical hazards in the modern work environment. Presents principles of toxicology as well as the toxicology of heavy metals, organic solvents, pesticides, harmful dusts, asphyxiants. Mechanisms of the effects on human physiologic systems are described along with the physiologic effects of ionizing radiation, heat stress, noise and repetitive trauma.

PUBH.5050 Qualitative Research Methods (Formerly 19.505) - Credits: 3

This course explores and examines non-quantitative methodologies in the social sciences and political economy. The course will discuss hypothesis generation, survey design, research problem design, case studies, ethnographic methods, participatory research methods, content analysis, interviewing techniques and key informant interviews. Doctoral students in work environment policy are particularly urged to take this course. The course will be offered in collaboration with the Department of Regional Economic and Social Development as course 57.592.

PUBH.5060 Quantitative Methods in Health Management (Formerly 32.506) - Credits: 3

The course teaches analytic methods that can be used to improve the decision making of healthcare managers, clinicians and others within the healthcare industry. Students learn the following: the conceptual foundations of quantitative analysis - e.g., what statistics is all about, how to think statistically and how to understand and interpret statistical findings; the importance of quantitative methods in supporting healthcare decision-making and developing evidence-based practices; bivariate and multivariate statistical methods for analyzing and testing hypotheses; and how to use an industry-standard data analysis and statistical software in developing and reporting analytic findings.

PUBH.5080 Principles and Practices of Biological Safety (Formerly 19.508) - Credits: 3

This course is designed to provide an overview of hazard recognition, evaluation and control of potentially hazardous biological materials. This introduction to the field will cover the potential risks of working with biological materials, the use of engineering, work practices and administrative measures for hazard control and regulations governing the area of biosafety. Requires working knowledge of Microbiology, and permission of Instructor.

PUBH.5100 Fundamentals of Occupational Health (Formerly 19.510) - Credits: 3

This course provides an overview of key topics in the field of occupational health and safety including physical agents and biological and chemical hazards. The measurement and control of various physical agents are covered, including noise, radiation and extreme environments. The course provides an
in-depth understanding of indoor air quality problems that may result in health risks as well as prevention and remediation options. Students will understand the health risks from blood borne pathogens, as well as the regulations and methods of prevention. They will also gain knowledge of hazard communication regulations, material safety data sheets and how to research chemical hazards.

PUBH.5110 Health Care Finance (Formerly 32.511) - Credits: 3
Provides broad exposure to the concepts and practices of healthcare finance and healthcare financial management. Teaches a practical understanding of basic healthcare financial issues, financial reporting and analysis, and provider payment structures. The course enables students to read, analyze and use healthcare financial information in today's healthcare environment.

PUBH.5120 Operations Analysis for Quality Improvement (Formerly 32.512) - Credits: 3
This course teaches a multi-disciplinary approach to operations analysis, process redesign and quality improvement in healthcare. Students study the history, development and principles of quality improvement in healthcare; how quality improvement processes have been used in various healthcare settings; the tools and processes used in quality improvement; how to structure and implement a quality improvement program; and how to collect, analyze and interpret quality improvement data.

PUBH.5140 Healthcare Management (Formerly 32.514) - Credits: 3
This course provides a framework for addressing management problems in healthcare organizations, providing an overview of how healthcare institutions are organized and governed, the role of the management, physicians, nurses and other clinical and support staff in these organizations, and the management systems designed for their efficient and effective operation.

PUBH.5141 Aerosol Science (Formerly 19.514) - Credits: 3
Basic properties of airborne particles, with particular regard to properties important to health. Includes basic properties of gasborne particles, uniform particle motion, particle collection mechanisms, filtration, particle sampling, respiratory deposition, particle statistics, electrical properties, and optical properties. Course includes lectures and laboratory.

Students study basic economic concepts and how they are applied to healthcare and gain a broad familiarity with the health economics and related health services research literature, as well as experience using economics to analyze health policy issues.

PUBH.5160 Laboratory Environmental Health and Safety (Formerly 19.516) - Credits: 3
This course is designed to provide an overview of hazard recognition, evaluation and control in laboratory environments. This introduction to the field will cover the potential risks of working with chemicals, radioactive materials, animals and biological materials. It will also introduce the use of engineering, workpractices and administrative measures for hazard control and regulations governing the area of laboratory safety.

PUBH.5161 Introduction to Industrial Hygiene (Formerly 19.521) - Credits: 2
PUBH.5230 Introduction To Ergonomics (Formerly 19.523) - Credits: 2
PUBH.5250 Industrial Hygiene and Ergonomics (Formerly 19.525) - Credits: 3
A survey course covering introductory topics in ergonomics and industrial hygiene. Ergonomics topics include work measurement, anthropometry, biomechanics, psychosocial stress and work reorganization, special emphasis is placed on the recognition and control of work-related musculoskeletal disorders. Industrial hygiene topics will cover the identification, measurement, and control of chemical and physical hazards in the work environment including principles of air sampling and analysis, ventilation and other control technologies, and the use of personal protective equipment with special attention to respiratory and hearing protection.

PUBH.5270 Planning and Marketing in Healthcare (Formerly 32.527) - Credits: 3
The course examines the history, principles and methodologies of health services planning and marketing. Students learn how to develop various types of health plans (e.g., community and regional, strategic, business and marketing plans). They also learn about the research process and data resources required to support health services planning and marketing. Practical approaches to health care problems are studied using case analysis of actual healthcare projects and programs.

PUBH.5300 Ergonomics and Work (Formerly 19.530) - Credits: 3
An overview of the scientific basis for design of the workplace to optimize physical and mental interaction of workers with machines, tools, and work methods. Topics include work measurement, anthropometry, biomechanics, work physiology, cumulative trauma disorder and information presentation and processing.

PUBH.5310 Health Informatics (Formerly 32.531) - Credits: 3

The course provides healthcare professionals with a conceptual and practical understanding of information and communication systems, and how they are used. It also addresses the systems analysis, development and implementation challenges in optimizing today’s complex healthcare systems designs to improve both use and clinical outcomes. Students learn the theory, techniques and systems used for transforming clinical data into information useful for decision-making. The current and future role of the health care informatics professional is discussed.

PUBH.5311 Occupation Biomechanics (Formerly 19.531) - Credits: 3

The anatomical and physiological basis of human motor capabilities. Quantitative models are developed to explain muscle strength performance, motion control, physical fatigue, and acute and chronic musculoskeletal trauma, particularly static link models of lifting and other manual activities. Application to the evaluation and design of various tasks and occupations.

PUBH.5320 Occupational Biomechanics Laboratory (Formerly 19.532) - Credits: 3

A laboratory presentation of the biomechanical basis for understanding and predicting human motor capabilities using bioinstrumentation. Computerized data acquisition, electromyography and load cells for strength measurement are examples of the equipment used in this lab. Particular emphasis is placed on the evaluation of occupational activities.

PUBH.5330 Intervention Research (Formerly 19.533) - Credits: 3

This course covers the design, implementation and evaluation of interventions to reduce risk factors for poor health and related outcomes. Topics include the use of causal diagrams to identify possible intervention points; logic models for program evaluation; and design of formal evaluation research studies. Selected scientific articles will be used to illustrate topics covered in the lectures. Each student will select a public health problem of interest and develop a case study over the course of the semester.

PUBH.5400 Occupational Safety Engineering (Formerly 19.540) - Credits: 3

The purpose of this course is to introduce students to the principles of safety hazards in the work environment. This course is primarily designed to emphasize the safety aspects of the hazards at work. It begins with the historical development of occupational safety and health and progressively examines the fundamentals of recognition, measurement, evaluation, and control of occupational safety hazards.

PUBH.5420 Human Factors (Formerly 19.542) - Credits: 3


PUBH.5490 Sustainable Housing Development and Land Use: Policy and Practice (Formerly 19.549) - Credits: 3

Housing is fundamental to the quality of life in communities, and housing policies shape the availability of this fundamental good. This course will examine the economic, environmental, social, and cultural factors that shape housing and its sustainability. Overall housing and land use policy in the United States will be summarized, with students learning of the ways in which housing policy impacts communities, states, and regions. The course will then give students a detailed understanding of the process through which housing is developed and the role the market, government, funders, workers, and housing consumers play in influencing the creation and development of housing. The course will highlight the ways in which current housing development policy and practices are not sustainable, and will examine more recent efforts to establish standards and practices that enhance sustainability. Students will learn how to take a housing project through the various stages, such as project conceptualization, market analysis, design, site acquisition, financing, construction, and occupancy. While the course focuses on the U.S. context, students will learn of international efforts to achieve greater sustainability in housing. The course will provide students with both practical and theoretical knowledge of housing and land use policy and development practices. Case studies of actual projects will be presented.
PUBH.5500 Environmental Law (Formerly 18/19.527) - Credits: 3

The large body of law, which has developed since the early 1960’s, is examined in considerable detail. Federal laws relating to the environment, particularly with the Environmental Protection Agency and the Occupational Safety and Health Acts. State and local laws and ordinances are discussed where pertinent.

PUBH.5510 Work Environment Policy (Formerly 19.551) - Credits: 3

PUBH.5550 Comparative Environmental (Formerly 19.555) - Credits: 3

Human social and productive activities often harm the natural environment. Environmentally related health problems will become more prominent and put additional stress on industrial, as well as transitional and developing nations. A sustainable world is one that provides not only for environmental viability but also economic health, social justice and political participation. This course is designed to explore the dynamics and interactions of social, economic and political factors that aid or impede a community’s ability to contribute to global environmental sustainability. The course will be offered in collaboration with the Department of Regional Economic and Social Development as course 57.518.

PUBH.5560 Analyzing Peace Violence and War (Formerly 19.556) - Credits: 3

This course examines the political, and social factors that cause violence and war, together with the possibilities for peaceful citizen action and constructive solutions to violence and conflicts. Different arenas of conflict are discussed, ranging from workplaces, families and communities, to nations, to the world.

PUBH.5570 Toxic Use Reduction (Formerly 19.557) - Credits: 3

Toxic Use Reduction (TUR) is a new approach to hazardous waste management and environmental protection. Rather than addressing chemical contamination as waste (after its generation), to be managed through permits and emission regulations, TUR focuses on chemicals while still in production. In Massachusetts, firms are required to prepare plans demonstrating how they will reduce or eliminate the use of toxic chemicals. The course is organized as a set of discussions and case studies from the real-life program.

PUBH.5590 Conflict Resolution (Formerly 19.559) - Credits: 3

This course gives students an understanding of the main issues and solutions involved in community level conflict resolution; e.g., in neighborhoods, workplaces, and other institutions. It develops students’ skills in practicing conflict resolution and/or evaluating programs in the field of dispute resolution. It is important to understand why conflict happens and how to resolve conflict.

PUBH.5674 Water, Sanitation, and Public Health - Credits: 3

This course introduces students to the critical role of water and water sanitation in protection of public health. The course will provide an overview of the basics of water treatment systems and the role of local public health professionals in water preservation. Students will be introduced to the importance of water and the global water crisis; the basic principles of water hydrology and the connection between surface and ground water; water chemistry, microbiology and common contaminants in water supplies (nutrients, pathogens, and chemicals); water and waste water treatment and protection systems (including storm-water runoff, pools and beaches), their functioning, regulation, and testing; and the emerging issues in water protection, such as hydrofracking. Meets Core Curriculum Essential Learning Outcome for Critical Thinking & Problem Solving (CTPS).

PUBH.5750 Introduction to Epidemiology - Credits: 3

Epidemiology is the study of the distribution and determinants of disease in human populations, and the risk factors associated with diseases. This course provides an introduction to epidemiology and the associated biostatistical methods that constitute the principal quantitative methods for disease prevention. Topics include: measures of disease frequency, measures of central tendency and spread, rates and risks, precision and validity, bias, simple linear regression, and the important study designs (population surveys, cohort, case-control and cross-sectional studies).

PUBH.5770 Introduction to Biostatistics - Credits: 3

This is a practical course in biostatistical methods for health research. Emphasis is placed on developing an understanding of the use and interpretation of standard biostatistical methods. Topics include probability and sampling distributions, regression and ANOVA, methods for analyzing rates and proportions, power and sample size calculations. Students will gain experience in using a statistical software package to apply and expand their data analysis skills.

PUBH.5790 Disability Outcomes and Interventions (Formerly 19.579) - Credits: 3
PUBH.6000 Practicum/Capstone I (Formerly 19.600) - Credits: 3

This is the introductory, first-recommended course in health research. It provides an overview of the importance of research in public health and the methods used to conduct research. Students will be introduced to the major components of a research study, including formulation of a hypothesis, selection of an appropriate research design, data collection, analysis, and interpretation of results.

PUBH.6010 Practicum/Capstone II (Formerly 19.601) - Credits: 3

This is a second course in a two-semester sequence that provides the opportunity to apply practical skills through a culminating practice experience for students in the Master’s programs in Work Environment and Public Health. The course is designed to provide students with the opportunity to examine an interdisciplinary problem in depth and propose a solution to the problem by applying technical knowledge and skills obtained in their program to a real world issue. The product will be a report and a public presentation of the project.

PUBH.6040 Geographic Information Systems (GIS) for Health (Formerly PUBH.604) - Credits: 2

This course discusses global health efforts in relationship to human health and quality of life. Using a case methodology, this course will enable students to analyze complex health and development challenges in the less-developed world, and propose and evaluate interventions that address challenges. Topics include maternal and child health, nutrition, infectious and noninfectious diseases, natural disasters, sanitation and health inequality. Access to health care in developing and developed countries will be analyzed. The concept of positive deviance will also be explored.

PUBH.6050 Advanced Research Methods in Work Environment (Formerly 19.605) - Credits: 3

A doctoral seminar focused on developing research skills needed for advancing understanding of the causes of health and safety hazards in the work environment as well as their solutions. The seminar is organized as a series of three modules of roughly one month each. The topics will vary each semester depending on the research fields of the students enrolled as well as the expertise of the participating faculty members. The goal is to provide, for several important current topics, depth in theory, background literature, stat of the art measurement tools and methods at an advanced level appropriate to students undertaking independent research. All doctoral students are required to take two semesters of this seminar for a total of six modules.

PUBH.6070 Healthcare Information Systems (Formerly 32.607) - Credits: 3

This course discusses global health efforts in relationship to human health and quality of life. Using a case methodology, this course will enable students to analyze complex health and development challenges in the less-developed world, and propose and evaluate interventions that address challenges. Topics include maternal and child health, nutrition, infectious and noninfectious diseases, natural disasters, sanitation and health inequality. Access to health care in developing and developed countries will be analyzed. The concept of positive deviance will also be explored.

PUBH.6090 Work in Progress Seminar (Formerly PUBH.609) - Credits: 1

This seminar will provide an overview of spatial analysis of data of importance to environmental and public health issues and students will analyze implications of spatial data analysis for public health.
19.609) - Credits: 3

This seminar course provides a forum for doctoral students (and advanced master's students) to discuss their research with their peers and the faculty in a supportive interdisciplinary community. Doctoral trainees from all Work Environment fields are required to present their work in progress to their peers. Although all doctoral students must register for this seminar for credit in one semester during their career, they are expected to attend and present regularly while they are in the research and writing phase of their doctorate.

PUBH.6100 Exposure Assessment (Formerly 19.610) - Credits: 3

Concepts of quantification of occupational exposures (chemical and physical hazards) for purpose of correlating health effects with exposures. Topics discussed include reasons for conducting exposure assessment, sampling methods, sampling strategies (for epidemiology, compliance, control), and statistical considerations. Principles are illustrated through a series of case studies.

PUBH.6110 Physical Properties of Aerosols (Formerly 19.611) - Credits: 3

A seminar covering aspects of aerosol science not discussed in 19.514 but necessary for the completion of research projects involving aerosols. Topics covered include the electrical, thermal, and optical properties of aerosols, particle agglomeration, evaporation and condensation, and the generation and measurement of test aerosols. Course will consist of lectures and laboratory sessions.

PUBH.6120 Exposure Data Analysis (Formerly 19.612) - Credits: 3

An advanced seminar covering statistical considerations for exposure sampling and data analysis. Topics include sampling data distributions; the effects of averaging time, autocorrelation, multiple task jobs and limit of detection samples on the sampling distribution; the use of linear models to examine between and within worker variability in exposure; the determination of homogeneous exposure groups; the development of multiple regression models to predict exposure levels and evaluate exposure determinants; and methods of model development, interpretation and validation.

PUBH.6130 Environmental Epidemiology (Formerly PUBH.613) - Credits: 3

An advanced course in modern epidemiologic methods as applied to physical and chemical hazards in the environment. Students read and critique some of the classic studies that have led to recognition of the effects of the environment on health, as well as some current topics of intense and active research. Major topics covered include: air pollution and lung disease, water pollution and infectious disease, ionizing radiation and cancer, outbreak investigation for foodborne infectious agents, lead poisoning, and endocrine disruption. Through reading the literature, students strengthen their skills in study design and analysis, while learning about important aspects of environmental health.

PUBH.6131 Design and Evaluation Of Ventilation Systems (Formerly 19.613) - Credits: 3

A seminar intended for students pursuing research involving industrial ventilation system design and evaluation. It covers material not included in 19.518, such as recent theoretical models which describe system performance, design of systems for high-temperature operation, trouble-shooting techniques, and advanced instrumentation techniques. Course consists of lectures and laboratory sessions.

PUBH.6140 Evaluation of Work Environment Hazards (Formerly 19.614) - Credits: 3

This course provides the work environment professional with a systematic method of evaluating chemical, ergonomics and work organizational hazards in the field. Formal walk around inspections are conducted and formal reports are prepared. Sampling strategies and statistical considerations in the quantification of occupational exposures are covered. The health risks and control of physical hazards (noise and vibration) in the work environment are a major focus of this course.

PUBH.6150 Solutions for Work Environment Hazards (Formerly 19.615) - Credits: 3

Techniques for controlling exposure to airborne contaminants. Basic controls include substitution, ventilation, isolation, administrative controls, and personal protective equipment. Special focus is placed on Toxic Use Reduction (TUR) and Pollution Prevention strategies.

PUBH.6160 Law and Ethics in Healthcare (Formerly 32.616) - Credits: 3

This course presents an overview of legal and ethical issues facing managers and providers in health care. It provides students with a foundation of health law and ethics and reviews health care legal and ethical situations and dilemmas. The goals are to provide students with practical knowledge of health law and ethics and their application to the real world of health care.
PUBH.6161 Exposure and Risk Assessment (Formerly 19.616) - Credits: 3

This course covers quantitative and qualitative approaches to the development of sampling strategies. Statistical considerations in the quantification of occupational exposures are covered. Assessment of dermal exposures and the use of biomarkers for exposure assessment are also a focus of this class. An introduction to the methods of risk assessment will also be covered.

PUBH.6180 Risk Management and Training (Formerly 19.618) - Credits: 3

This course will introduce models of health and safety management with a focus on communication with management and employees. Development of effective worker training programs will be covered. The methods and policy implications of quantitative risk analysis and assessment will be introduced and cases discussed.

PUBH.6191 Measurement of Chemical Exposure (Formerly 19.619) - Credits: 3

Basic properties of airborne particles, with particular regard to properties important to health. Sampling and analysis methods used in the evaluation of occupational exposures to aerosols, gases, vapors. Direct reading instrumentation, calibration and data processing. Integrated sampling methods and chemical analysis of organic and inorganic compounds will be covered in class and lab.

PUBH.6200 Advanced Exposure Assessment (Formerly 19.620) - Credits: 3

An advanced seminar covering exposure assessment for studies of acute and chronic respiratory disease, pharmacologic modeling for exposure assessment and the design of models to evaluate the role of production process factors in determining workplace airborne exposures. The course assumes a prior background in epidemiology and biostatistics as well as industrial hygiene and toxicology.

PUBH.6210 Nanomaterials: Exposure, Health and Safety (Formerly 19.621) - Credits: 3

This course presents a comprehensive overview of environmental health and safety issues of nanotechnology, with focus on biologically based exposure assessment and control. Methods based on biology, toxicology, and knowledge of disease mechanisms are presented for identifying and quantifying nanoscale materials exposures found in occupational/environmental setting and consumer products and for designing exposure assessments for the study of health effects. This course is needed to fill a gap in the current curriculum offerings and to assist the various researchers in understanding possible risks associated with diverse nanotechnologies. The course will include introductory lectures, paper critiques, and laboratory sessions.

PUBH.6220 Biomarkers in Occupations and Environment (Formerly 19.622) - Credits: 3

PUBH.6230 Skin Exposure to Chemicals (Formerly 19.623) - Credits: 3

This new course, the only of its kind in the occupational &environmental hygiene program in the country, will discuss the significance of occupational environmental and household skin exposure to chemicals, skin exposure assessment and regulatory aspects. The course will address important topics, such as physiology and metabolism of normal skin, skin absorption of a variety of chemicals, including solids and nanomaterials, factors affecting skin permeation, permeability of compromised skin barrier integrity, skin sampling methods, skin-lung interactions and prevention of skin exposure, through a mix of didactic presentations and critical discussion of the scientific peer-reviewed literature. Each session will start with a presentation on the topic, followed by guided discussions of realistic, but provocative, scenarios. As laboratory space and instrumentation becomes available in the near future, a laboratory component will be added to the course to emphasize major sampling techniques and illustrate/visualize skin permeation of chemicals.

PUBH.6250 Health Policy (Formerly 32.625) - Credits: 3

This course provides students with a basic framework for health policy analysis and examines major aspects of U.S. health policy. Detailed consideration and discussion focus on the relationship of national policy to the planning, implementation and funding of healthcare services. The course covers topics such as the healthcare policy environment in the U.S, government-funded healthcare through Medicaid and Medicare, and the Massachusetts healthcare reform.

PUBH.6260 Leadership in Healthcare (Formerly 32.626) - Credits: 3

The purpose of this course is to encourage students to carefully analyze their leadership style and skills within the context of health care. The course includes the study and application of leadership theories, concepts, and skills. Students will also assess their own leadership potential through the completion of readings, personal and leadership self-assessments, values exploration, and leadership skill exercises.

PUBH.6270 Socioeconomic Inequalities in Health
The course explores the relationship between social and economic justice and public health. Focusing primarily on the U.S., the forces that either establish and exacerbate or prevent socioeconomic inequities will be analyzed to understand the intricate links between social, behavioral, physical, and biological determinants of health. Several theoretical orientations will be reviewed in order to better understand how each frames research and public health strategies that have been used to address health inequalities. Students will be able to competently articulate the relationships between social and health inequalities. They will be able to explain the strengths and limitations of different theoretical orientations to these issues and frame the policy needs to positively reduce health disparities.

PUBH.6300 Research Design for Ergonomics
(Formerly 19.630) - Credits: 3

Procedures for conducting research on ergonomics (human factors, biomechanics, etc.). Experimental design alternatives, field research, survey research, considerations of data collection and reduction, sequential design procedures, and ethical use of human subjects.

PUBH.6320 Health Information System Planning
(Formerly 32.632) - Credits: 3

A course examining contemporary healthcare information system requirements and focusing on the design, implementation, and modification of these systems. Actual or hypothetical health system related projects are used to support the theoretical framework.

PUBH.6321 Advanced Biomechanics (Formerly 19.632) - Credits: 3

A course in advanced biomechanical modeling methods, covering three dimensional static models, optimization methods and dynamic models. Special emphasis will be placed on biomechanical models of the hand. Time will also be dedicated to reviewing current developments in the scientific literature.

PUBH.6330 Healthcare Database Design (Formerly 32.633) - Credits: 3

A practical approach to the design, and development of a relational database with an emphasis on healthcare. Analyzing the requirements of the database proceeds to the design of the structure of the relational database, which is then developed in a Relational Database Management System (RDBMS). Microsoft Access is used as the RDBMS platform.

PUBH.6350 Healthcare Project Management
(Formerly 32.635) - Credits: 3

A graduate level course providing a comprehensive foundation for project management as it applies to healthcare. Students will be introduced to the theory and concepts of project management, and the tools to manage projects with a specific focus on health information technology.

PUBH.6380 Strategic Planning in Healthcare and HIT
(Health Information Technology) (Formerly 32.638) - Credits: 3

A graduate-level course introducing healthcare professionals to strategic planning for the information systems organization. Skills learned in this course will enable the student to work effectively with and support the information systems planning effort and assure business alignment.

PUBH.6381 Methods In Work Analysis (Formerly 19.638) - Credits: 3

Criteria for selection of an approach to ergonomic job analysis depend on the combination of exposures (micro- and macro-level ergonomic stressors) observed to be present as well as the analytical goal. Many ergonomic analysis techniques are based on traditional industrial engineering approaches (time-motion study and work sampling), applied to the identification and evaluation of potential risks to workers’ health. A variety of methods, both observational and instrumental, will be discussed; laboratory sessions will permit hands-on application of several of these for critical evaluation.

PUBH.6390 Electronic Health Record Systems
(Formerly 32.639) - Credits: 3

The course addresses Electronic Health Records (EHR) integration with patient care flow, clinical decision making and patient engagement, as well as clinical quality reporting. The students also learn core EHR functions. The course uses industry-leading EHR software as a learning tool to demonstrate how electronic health record technologies are used in a clinical setting.

PUBH.6400 Macroergonomics: A comprehensive approach to Job and Organizational Design (Formerly 19.640) - Credits: 3

The purpose of this course is to introduce students to the Macroergonomics field. Macroergonomics, also known as the third generation of ergonomics, is a top-down sociotechnical systems approach to the design of organizations, work systems, and jobs. The goal of macroergonomics is a fully harmonized
work system at both the macro- and micro-ergonomic level which results in improved productivity, job satisfaction, health and safety, and employee commitment.

PUBH.6430 Health Work Organization Design (Formerly 19.643) - Credits: 3

Rationales for prevention; determinant of job change feasibility, classic and alternative work organization theories, alternative productivity conceptions, health and growth assessment strategies, conducive work processes, work-group based re-design processes, communicative and network-oriented processes, organization-level change process, product redesign, occupational and political strategic issues.

PUBH.6510 Work Environment Policy (Formerly 19.651) - Credits: 3

This course provides an overview of occupational safety and health policy in the U.S. It focuses on the legal context, especially on OSHA, but also provides an analytical framework for examining the role of social, economic and political factors in the recognition and control of occupational hazards.

PUBH.6540 Work, Technology and Training (Formerly 19.654) - Credits: 3

This course examines the broader issues of the impact of technology on the work environment and on workers. Topics include technology and craft work, Taylorism and the development of mass production methods, labor in the “factory of the future”, skill-based automation, shop floor programming, and other issues in technology policy. The course is offered in collaboration with the Department of Regional Economic and Social Development as 57.503.

PUBH.6550 Introduction to Environmental and Natural Resource Economics (Formerly 19.655) - Credits: 3

This course introduces students to the economic and policy aspects of environmental quality and natural resource issues. The course also incorporates relevant work-environment related issues. Simple and complex models are used to blend economic theory with environmental facts. Students will learn to derive policy insights form theoretical constructs. The primary objective is to show how the basic principles in economics can play a valuable role in analyzing and evaluating critical environmental issues and help in determining policy guidelines. Standard benefit cost of efficiency criteria will be applied to a wide variety of environmental, work-environment and natural resource problems. In attempting to do so we shall also emphasize how difficult it is to model actual environmental problems in the real world, We shall draw upon the basic tools of environmental and health economics to discuss current policy issues and questions that policy makers confront in practice. Graduate students in work environment will be required to do an economic analysis of an occupational health and safety intervention.

PUBH.6580 Clean Product Design (Formerly 19.658) - Credits: 3

This advanced seminar will provide an introduction to clean product design and management which includes the use of lifecycle thinking, eco-design concepts, materials analysis, inherent product safety, recycling and reuse, produce take back, and design for the environment. As background, the seminar will cover renewable resources, bio-based materials and green chemistry solutions and conclude with a consideration of new forms of sustainable consumption.

PUBH.6590 Cleaner Production (Formerly 19.659) - Credits: 3

This course will explore the rapidly expanding developments in cleaner production methods and policies. The course will focus on new directions in environmentally conscious manufacturing and product design in Europe. The subject will cover topics ranging from European demonstration projects, environmental auditing, cleaner technology assessment, eco-efficiency models, water and energy conservation, sustainable product design, eco-design and life cycle assessment, product take-back and extended product life, full cost accounting, industrial ecology, environmental management systems and ISO 14000. Special emphasis will be given to new information data sources and an introduction to new cleaner production methods software.

PUBH.6660 MPH Practicum I (Formerly PUBH.666) - Credits: 3

This practicum is the first of two culminating experiences in the MPH program that requires a student to apply theories and principles from coursework in a public health setting. The practicum is a planned, supervised and evaluated practice experience under the supervision of a qualified preceptor. Students meet bi weekly on campus in a seminar with a faculty member who oversees the practicum experience. Students may begin work on their final capstone applied practice or research project during the practicum.

PUBH.6670 MPH Practicum II (Formerly PUBH.667) - Credits: 3

This practicum is the second culminating experience during the student’s final semester in the MPH program. Students will demonstrate the mastery of a body of public health knowledge and achievement of the MHP competencies through a
practicum experience under the supervision of a qualified preceptor and faculty member, a biweekly seminar, and completion and presentation of an applied practice or research project.

PUBH.6710 Comparative Health Systems (Formerly 32.671) - Credits: 3

The course explores and compares national health systems (public health and healthcare). Each will be examined to understand its orientation and capacity to promote health, prevent morbidity and premature mortality, and provide primary healthcare for all. Analysis will address the political, economic, and social contexts within which the system functions, as well as their underlying principles. Systems will include the U.S., European nations, and developing nations from Latin America Asia, and Africa. Criteria put forward in health promotion charters and declarations developed through World health organization sponsored meetings will be used to assess each systems' strengths and limitations. Students will be able to competently articulate the principles, criteria for effectiveness, and policies and practices that can establish successful achievement of strong international public health indicators as a foundation for sustainable social development.

PUBH.6720 Socioeconomic Inequalities and Health (Formerly 32.672) - Credits: 3

This course explores the relationship between social and economic justice and public health. Focusing primarily on the U.S., the forces that either establish and exacerbate or prevent social inequities will be analyzed to understand the intricate links between social, behavioral, physical, and biological determinants of health. Several theoretical orientations will be reviewed in order to better understand how each frames research and public health strategies that have been used to address health inequalities. Students will be able to competently articulate the relationships between social and health inequalities. They will be able to explain the strengths and limitations of different theoretical orientations to these issues and frame the policy needs to positively reduce health disparities. Permission of instructor.

PUBH.6731 Aging and Society (Formerly PUBH 680) - Credits: 3

This course will focus on the study of aging as a social process affecting individuals, society, and social institutions and the impact of social structure and institutions on older adults. The course will use a life course perspective of aging to examine the social construction of old age influenced by race/ethnicity, gender, sexual orientation, socio-economic disparities, and income and educational opportunities. Changing context of family, work and religion impacting the aging population in contemporary society will be analyzed. Effective public health policies and programs to address the well-being of the aging population will be discussed.

PUBH.6734 Epidemiology of Aging (Formerly PUBH 682) - Credits: 3

This course focuses on concepts, principles, and methods of epidemiological research in the study of population aging. Interpretation of the relevance of epidemiological findings to the public health of older populations will be examined. Theoretical and methodological issues in conducting epidemiological research with an aging population will be analyzed.

PUBH.6735 Occupational Epidemiology (Formerly PUBH 614) - Credits: 3

An advanced course in modern epidemiologic methods as applied to occupational health risks and interventions. Students read and critique numerous studies in the field, and learn the particular methods and difficulties of conducting epidemiologic studies in the work environment. Major topics covered include: causal inference in epidemiology, point and interval estimation for cohort and case control studies, exposure assessment for epidemiology, multivariate linear and logistic models for control of confounding.

PUBH.6737 Global Aging and Health (Formerly PUBH 681) - Credits: 3

This course will provide an overview of the relevance of global aging to public health in high-income, emerging economies, and low-income countries. The course will examine the global perspective of public policy issues related to the aging of the world population. Topics include: demographic trends, global burden of disease, health systems design and caregiving models, social insurance programs, age-friendly cities, cross-cultural perspectives on aging, social change and aging, and public policy responses driven by a global aging population.

PUBH.6750 Introduction to Manuscript Writing (Formerly 19.675) - Credits: 1

This seminar will cover the basics of how to structure and write an article for a peer-reviewed journal. Participants will bring at least one article from their own field that can serve as a model, as well as a sample of their own writing (can be a course paper or other draft manuscript). Both peer and instructor feedback will help to inform revisions of the draft.

PUBH.6760 Introduction to Proposal Writing (Formerly 19.676) - Credits: 1

This seminar will cover the basics of how to write a thesis
Participants will bring an idea for a project and, if possible, an outline or draft of a proposal to be developed further with peer and instructor feedback.

PUBH.6780 Occupational Respiratory Disease Epidemiology (Formerly 19.678) - Credits: 3

Advanced course on the methods and content of research on occupational respiratory disease with focus on the appropriate use of spirometry, symptom questionnaires, and chest radiography in cross sectional and longitudinal studies. Reviews pathophysiology, prevalence, latency considerations and diagnosis of both acute and chronic respiratory disease caused or exacerbated by work. Special attention is devoted to the impact of the healthy worker selection effect in respiratory epidemiology studies.

PUBH.6790 Psychiatric Diseases and Work (Formerly 19.679) - Credits: 1

This course will explore the relationships between mental health and psychiatric diseases and working life. Both the impacts of mental illness on work, as well as the effects of work and the work environment on mental health will be covered. By the end of the semester, students will understand: basic psychiatric terminology, and the different psychiatric syndromes in relation to their clinical symptomatology and long term prognoses; how to assess those syndromes using epidemiologic screening tools; and the current state of the art on the impact of working conditions on mental diseases and mental health, and the impact of these on working life.

PUBH.6800 Introduction To SAS (Formerly 19.680) - Credits: 0-1

This course is designed for researchers who will be doing data analysis using SAS. No prior programming experience is necessary, though familiarity with and general experience in use of a PC (DOS and Windows) is required. The course covers topics including: basics of SAS, reading raw data and existing SAS data sets, modifying data, combining data sets, basic statistical procedures, sorting, summarizing, and printing data.

PUBH.6820 Applied Epidemiology Methods (Formerly 19.682) - Credits: 3

A second level course in modern epidemiologic methods. This course is designed for those planning to work in public health or healthcare. Emphasis is placed on the design and conduct of field studies. Students read the current literature, and learn the particular methods and difficulties of conducting epidemiologic studies in the work environment. Major topics covered include: casual inference in epidemiology, point and interval estimation for cohort and case control studies, exposure assessment for epidemiology, control of confounding, cross-sectional and longitudinal study designs.

PUBH.6830 Risk Assessment (Formerly 19.683) - Credits: 3

This course will review both the methods and policy implications of risk assessment in the development of occupational and environmental standards. Students will conduct risk assessments on real problems, and study important cases in which these methods have been used in setting public policy.

PUBH.6831 Nutrition & Physical Activity in Aging Populations (Formerly PUBH 683) - Credits: 3

The course reviews the importance of two key life-style behaviors, nutrition and physical activity, in older adults. Methods of nutritional and physical activity assessment, inter-relationships between nutrition, physical activity, and health, and public health policy impacting nutrition, activity and health will be discussed. Physiological, psychological and socio-economic issues affecting nutrition and physical activity among older adults will be analyzed. The impact of nutrition and physical activity in health, longevity, and quality of life in aging populations will be analyzed.

PUBH.6840 Musculoskeletal Epidemiology (Formerly 19.684) - Credits: 3

An advanced course on methods and content of research on work-related musculoskeletal disorders. Reviews pathophysiology, diagnosis, prevalence, latency and surveillance issues. The key literature is examined with attention to study design, quality of exposure assessment, control of bias and adequacy of statistical analysis.

PUBH.6850 Public Health Research and Data Management - Credits: 3

This course provides an overview of qualitative and quantitative research methods that are foundational to the planning and development of public health programs. Systematic reviews of the literature for the purpose of utilizing and evidence-based approach to the implementation of public health programs will be discussed. Survey research, community-based participatory research, qualitative interviews and focus groups will be among the research strategies examined.

PUBH.6860 Public Health Program Planning and Development - Credits: 3
This course provides an overview of the theories and strategies for planning and developing programs that address population health issues. A systematic approach to assessing the need for public health programs and the framing of program goals and objectives will be discussed. Utilizing and evidence-based approach to the planning and development of public health programs by assessing and mobilizing resources, partnership building, data collection and analysis, and decision-making will be analyzed within a population-based context.

PUBH.6870 Quantitative Models for Public Health - Credits: 3

Emphasis in this course is placed on understanding the underlying assumptions of quantitative models and on gaining an intuitive understanding of the most common modeling procedures. The types of models covered will be those frequently used in the analysis of health and environmental data, for applications such as analysis of survey research, quantitative risk assessment, and pharmacokinetics. Methods to be studied include ordinary least squares, the method of maximum likelihood, Monte Carlo methods, systems of ordinary difference equations, and basic simulation techniques. There will be a diverse set of readings, frequent computer exercises to be worked either individually or in groups, and a final project.

PUBH.6871 Health Communication and Technology - Credits: 3

Students will explore the theories and practice of communication in public health, with a particular emphasis on the role of technology in sharing public health information. The impact of social and environmental factors on the success of health messages, and the relevance of social media and other technology to positively impact issues in population health will be analyzed. The strategic and ethical use of media in developing and implementing effective public health communications is a focus of the course. The targeting of health communication campaigns to populations for the purpose of influencing behaviors and health policy will be examined.

PUBH.6880 Research Synthesis Environmental Health Policy (Formerly 19.688) - Credits: 3

Introduces students to methods used to synthesize, evaluate, and present environmental, epidemiologic, and other scientific data for environmental health policy. Through presentation of a variety of existing methods, case studies, guest lectures, and group projects, students will develop an understanding of the complexities and issues involved in evaluating and synthesizing scientific information for public policy. The course will examine methods for using both quantitative and qualitative research findings.

PUBH.6890 Advanced Regression Modeling (Formerly 19.689) - Credits: 3

This course will cover introductions to several regression methods used in epidemiology to model exposure-response relationships. Topics include simple and multivariate linear regression, logistic regression, Poisson regression, and survival analysis (Cox model). We will introduce other advanced methods such as mixed models, propensity scores and principal component analysis as time allows.

PUBH.6900 Critical Review Health Regulations (Formerly 19.690) - Credits: 3

Course designed to explore the practical applications of epidemiologic methods to the setting of actual standards. Students gain experience in distinguishing minor from major design and analysis flaws. Course is presented as a seminar with four case studies and problem analysis.

PUBH.6950 Chemical Process/Sustainability (Formerly 19.695) - Credits: 3

This course surveys the basis of chemical engineering process design and fundamentals of unit operations. The student will be able to understand the basics of chemical engineering design methods for the purpose of enhancing sustainability of chemical production processes.

PUBH.7010 Independent Study: Industrial Hygiene (Formerly 19.701) - Credits: 3

Advanced topics in industrial hygiene, exposure assessment or exposure control not offered in the regular curriculum. Topics may vary from year to year.

PUBH.7020 Independent Study: Industrial Hygiene (Formerly 19.702) - Credits: 1

Advanced topics in industrial hygiene, exposure assessment or exposure control not offered in the regular curriculum. Topics may vary from year to year.

PUBH.7030 Independent Study: Ergonomics (Formerly 19.703) - Credits: 3

Advanced topics in biomechanics, work physiology, occupational safety or human factors not covered in the regular curriculum. Content may vary from year to year.

PUBH.7040 Independent Study: Ergonomics
(Formerly 19.704) - Credits: 1
Advanced topics in biomechanics, work physiology, occupational safety or human factors not covered in the regular curriculum. Content may vary from year to year.

PUBH.7080 Independent Study: Epidemiology
(Formerly 19.708) - Credits: 1
Advanced topics in occupational epidemiology, design and confounding, exposure-response modeling, or surveillance not covered in the regular curriculum. Content may vary from year to year.

PUBH.7090 Independent Studies: Occupational Epidemiology (Formerly 19.709) - Credits: 1
Advanced topics in occupational epidemiology, design and confounding, exposure-response modeling, or surveillance not covered in the regular curriculum. Content may vary from year to year.

PUBH.7110 Independent Study: Industrial Hygiene
(Formerly 19.711) - Credits: 3
Advanced topics in industrial hygiene, exposure assessment or exposure control not offered in the regular curriculum. Topics may vary from year to year.

PUBH.7120 Independent Study: Industrial Hygiene
(Formerly 19.712) - Credits: 2
Advanced topics in industrial hygiene, exposure assessment or exposure control not offered in the regular curriculum. Topics may vary from year to year.

PUBH.7130 Independent Study: Ergonomics (Formerly 19.713) - Credits: 3
Advanced topics in biomechanics, work physiology, occupational safety or human factors not covered in the regular curriculum. Content may vary from year to year.

PUBH.7150 Independent Study: Work Environment Policy (Formerly 19.715) - Credits: 3
Advanced topics in work environment policy, risk perception, risk communication and management, regulatory affairs or labor-management programs not covered in the regular curriculum. Content may vary from year to year.

PUBH.7170 Independent Study: Epidemiology
(Formerly 19.717) - Credits: 3
Advanced topics in occupational epidemiology, design and confounding, exposure-response modeling, or surveillance not covered in the regular curriculum. Content may vary from year to year.

PUBH.7190 Independent Study: Clean Production
(Formerly 19.719) - Credits: 3
Advanced topics in clean production, pollution prevention, and environmental protection efforts. Not offered in the regular curriculum. Topics may vary from year to year.

PUBH.7210 Selected Topics: Industrial Hygiene
(Formerly 19.721) - Credits: 3

PUBH.7230 Selected Topics: Ergonomics (Formerly 19.723) - Credits: 3

PUBH.7250 Epidemiologic Theory (Formerly 19.725) - Credits: 1-3
An advanced seminar in epidemiologic theory. The goal of the course is to develop each student's own theoretical perspective on the field to ground practical problems of study design and analysis. Students read a major text in modern chronic disease epidemiology as well as relevant papers, and discuss and evaluate the perspectives of different authors. Topics include: causality, study designs, measures of disease frequency, measures of association, statistical inference, biases, and confounding.

PUBH.7270 Sel Top: Epidemiology (Formerly 19.727) - Credits: 3

PUBH.7280 Sel Top: Work Env Policy (Formerly 19.728) - Credits: 3

PUBH.7290 Selected Topics: Clean Production
(Formerly 19.729) - Credits: 3

PUBH.7330 Capstone Project (Formerly 32.733) - Credits: 3
Near the end of one's Master's Degree program, students register for Capstone Project and complete an independent study under faculty supervision. The Capstone Project applies concepts and skills learned in the program. It involves research and development, and culminates in a substantial (20 pages or more) business-type report. Many working professionals develop projects related to work assignments. Students are also required to present their Capstone Projects to students, faculty and alumni at a semester-end student recognition event.
PUBH.7331 Graduate Project (Formerly 19.733) - Credits: 3
Advanced research project required of all master’s degree candidates in the ergonomics, industrial hygiene, occupational epidemiology and work environment policy concentrations.

PUBH.7350 Independent Study: Policy (Formerly 19.735) - Credits: 3
PUBH.7360 Graduate Project - Work Environment (Formerly 19.736) - Credits: 6
PUBH.7370 Independent Study: Epidemiology (Formerly 19.737) - Credits: 3
PUBH.7390 Graduate Project - Work Environment (Formerly 19.739) - Credits: 9
Advanced research project required of all master’s degree candidates in the ergonomics, industrial hygiene, occupational epidemiology and work environment policy concentrations.

PUBH.7430 Master’s Thesis Research (Formerly 19.743) - Credits: 3
PUBH.7590 Doctoral Dissertation/Work Environment (Formerly 19.759) - Credits: 1-9
Minimum of 18 semester hours of graduate courses at an acceptable level; approval of a written proposal outlining the extent and nature of proposed research work.

PUBH.7610 1-Credit Continued Graduate Research (Formerly 19.761) - Credits: 1
1-Credit Continued Graduate Research course is for students with less than one year to defend or complete program. Part of reduce course load program for international students.

PUBH.7630 Continued Graduate Research (Formerly 19.763) - Credits: 3
PUBH.7700 Directed Readings: Epidemiology Biostatistics (Formerly 19.770 - Credits: 3
PUBH.7750 Capstone/Thesis Review (Formerly 32.775) - Credits: 1
PUBH.7760 Curricular Practical Training (CPT) (Formerly 32.776) - Credits: 0-1
An internship, practicum or other type of employment that is either required by the students academic program or an experience for which a student receives academic credit. To be eligible the student must be in legal F-1 status and have been enrolled full-time for one academic year. CPT work experience must be in the students field of study and contain a curricular component.

PUBH.9990 Intercampus Graduate Research (Formerly 19.999) - Credits: 0
This course will allow doctorate students to remain active while they are taking courses/research at the other UMASS campuses.
Programs of Study

Pharmaceutical sciences is an exciting field that offers many different career opportunities in the biopharmaceutical and pharmaceutical industries, and in research and academia. We offer an M.S., Professional Science Masters and Ph.D. program in Pharmaceutical Sciences.

Pursue the degree that's right for you:

- **Masters** support technical roles in research and production settings that will help meet the demand for new drugs that treat human disease and evaluate the safety and effectiveness of drug therapies.
- **Professional Science Masters** gain both technical and business skills to work in the laboratory and assume leadership roles in the pharmaceutical industry.
- **Ph.D.** discover new drugs that treat human disease and evaluate the effectiveness and safety of drug therapies.

Visit the

**Pharmaceutical Sciences program website**.

**Contact:**

Brenda Geiger (mailto:brenda_geiger@uml.edu)
Program Coordinator
Weed Hall
978-934-3872

Masters in Pharmaceutical Sciences

Admission and Degree Requirements

Applicants to the M.S. or Professional Science Masters programs in Pharmaceutical Sciences must have a B.S. degree or be in the last semester of their baccalaureate program. Up to 12 credits of graduate work of appropriate course work with a grade of B or better can be transferred into the UMass Lowell MS Pharmaceutical Science programs if approved by the Graduate Coordinator.

Upon admission or through the successful completion of prerequisite courses, students will be expected to have successfully demonstrated undergraduate level knowledge in biochemistry, calculus, general and organic chemistry and physics.

The M.S. curriculum will consist of 37 credits of coursework. Coursework will generally be scheduled in the fall and spring semesters. Full-time students should finish in two years. Students who attend part-time should finish within five years.

The Program Coordinator and advisers in the program will guide M.S. students through a part-time or full-time program of study. Full-time study is equivalent to 9 credits per semester.

Plan of Study by Semester for Full-Time M.S. Students

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>1</td>
<td>PHRM.6100</td>
<td>Principles of Pharmaceutical Sciences</td>
<td>4</td>
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<tr>
<td></td>
<td>CHEM.5500</td>
<td>Biochemistry I</td>
<td>3</td>
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<tr>
<td></td>
<td>HSCL.5500</td>
<td>Human Development and Pathophysiology</td>
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<tr>
<td>2</td>
<td>CHEM.5620</td>
<td>Pharmaceutical Biochemistry</td>
<td>3</td>
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<tr>
<td></td>
<td>BIOL.5420</td>
<td>Cell Biology</td>
<td>3</td>
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<td></td>
<td>PHRM.6200</td>
<td>Pharmacokinetics</td>
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<tr>
<td>3</td>
<td>CHEM.6310</td>
<td>Principles of Medicinal Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PHRM.7070</td>
<td>Drug Metabolism</td>
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<tr>
<td></td>
<td>PHRM.6300</td>
<td>Pharmaceutical Research Design and Ethics</td>
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<td><strong>Total:</strong></td>
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<tr>
<td>4</td>
<td>PHRM.6400</td>
<td>Pharmaceutical Analysis</td>
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<td>PHRM.6410</td>
<td>Drug Delivery</td>
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<td></td>
<td>PHRM.7100</td>
<td>Advanced Topics in Pharmaceutical Sciences</td>
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<td></td>
<td><strong>Total:</strong></td>
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<tr>
<td></td>
<td><strong>Total Credits for MS degree:</strong> 37 credits</td>
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Certificate in Pharmaceutical Science

Brenda Geiger, Ph.D. (mailto:brenda_geiger@uml.edu)
978-934-3872

This graduate certificate is a four-course program in Pharmaceutical Sciences intended for individuals who are interested in getting acquainted with pharmaceutical sciences. The courses offered in the certificate program are foundation courses in the Pharmaceutical Sciences MS and Ph.D programs.

Prerequisites:
Baccalaureate degree from an accredited institution with a minimum GPA of 3.25.

Completed undergraduate courses in calculus, general and organic chemistry, biochemistry and physics with grades of C or above.

Required Courses:

- PHRM.6100 Principles of Pharmaceutical Sciences
- PHRM.6200 Pharmacokinetics
- PHRM.6410 Drug Delivery
- PHRM.7070 Drug Metabolism

Ph.D. in Pharmaceutical Sciences

Admissions and Degree Requirements

Applicants to the Ph.D. in Pharmaceutical Sciences program must have a B.S. or M.S. degree or be in the last semester of their baccalaureate or masters program. For courses from prior masters degrees to be applied toward meeting course credit requirements in the doctoral program, courses must be closely related to courses within the Ph.D. program.

Beyond the prerequisite courses, the curriculum will consist of a minimum of 49 credits of coursework and 12 credits of dissertation research. Coursework will generally be scheduled in the fall and spring semesters. The expectation is that full-time students will finish the program in 4 to 5 years. The Program Coordinator and advisors in the Ph.D. program will guide graduate students through a full-time program of study. Full-time study is equivalent to 9 credit hours per semester.

Plan of Study by Semester for Ph.D. Students

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
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<td>PHRM.6100</td>
<td>Principles of Pharmaceutical Sciences</td>
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<td></td>
<td>CHEM.5300</td>
<td>Biochemistry I</td>
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<td>HSCI.5500</td>
<td>Human Development and Pathophysiology</td>
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<td>Semester 2</td>
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<td>CHEM.5620</td>
<td>Pharmaceutical Biochemistry</td>
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<td>BIOL.5420</td>
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<td>PHRM.6200</td>
<td>Pharmacokinetics</td>
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<td>Semester 3</td>
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<td></td>
<td>PHRM.6310</td>
<td>Principles of Medicinal Chemistry I</td>
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<td>PHRM.7070</td>
<td>Drug Metabolism</td>
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<td>Pharmaceutical Research Design and Ethics</td>
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<td>Semester 4</td>
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<td>PHRM.6410</td>
<td>Drug Delivery</td>
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<th>Semester 5</th>
<th>Course Code</th>
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<tr>
<td></td>
<td>PHRM.7100</td>
<td>Advanced Topics in Pharmaceutical Sciences</td>
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<table>
<thead>
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<th>Exit point for Master’s Degree</th>
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<tr>
<td>Option course</td>
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<td>Dissertation and seminar</td>
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<th>Semester 6</th>
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<tr>
<td></td>
<td>PHRM.7120</td>
<td>Pharmacoepidemiology</td>
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<td></td>
<td>PUBH.5770</td>
<td>Introduction to Biostatistics</td>
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<tr>
<td></td>
<td>PHRM.7130</td>
<td>Applied Clinical Pharmacokinetics</td>
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<tr>
<th>Nuclear Pharmacology and Imaging Option</th>
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<th>Credits</th>
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<tr>
<td>RADI.5980</td>
<td>Introduction to Medical Imaging</td>
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<tr>
<td>RADI.5340</td>
<td>Internal Radiation Dosimetry &amp; Bioassay</td>
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<td>RADI.5410</td>
<td>Radiochemistry</td>
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<td>Radiation Biology</td>
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<table>
<thead>
<tr>
<th>Plan of Study by Semester for Ph.D. Students</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Semester 7</td>
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<tr>
<td></td>
<td>PHRM.7080</td>
<td>Mechanisms of Drug Action</td>
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<td></td>
<td>CHEM.5510</td>
<td>Biochemistry II</td>
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<td>CHEM.XXX</td>
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<th>Medical Chemistry Option</th>
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<tr>
<td>CHEM.6320</td>
<td>Principles of Medicinal Chemistry II</td>
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<td>PHRM.7080</td>
<td>Mechanisms of Drug Action</td>
<td>3</td>
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<tr>
<td>CHEM.5510</td>
<td>Biochemistry II</td>
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<td>CHEM.XXX</td>
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<th>Pharmacogenomics/Personalized Pharmacotherapy Option</th>
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<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>PHRM.7090</td>
<td>Pharmacogenomic Principles and Applications</td>
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<tr>
<td>MLSC.5510</td>
<td>Advanced Pathophysiology</td>
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<td>MLSC.5800</td>
<td>Clinical Applications of Molecular Genetics</td>
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<tr>
<td>PHRM.XXX</td>
<td>Pharmaceutical Sciences elective</td>
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<tr>
<th>Drug Discovery Option</th>
<th>Course Code</th>
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<tr>
<td>BIOL.5280</td>
<td>Molecular Biotechnology: Recombinant Protein Production</td>
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<td>BIOL.5760</td>
<td>Cell Culture</td>
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<td>BIOL.5880</td>
<td>Structural Biology</td>
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<tr>
<td>PHRM.7080</td>
<td>Mechanisms of Drug Action</td>
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SubTotal # Option Credits Required: 12 -13 credits
Dissertation and Seminar Courses (Total courses required = 4)

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<tr>
<td>BIOL.5670</td>
<td>Molecular Biology</td>
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<td>BIOL.5690L</td>
<td>Molecular Techniques</td>
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<td>BIOL.5760</td>
<td>Cell Culture</td>
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<td>BIOL.5320</td>
<td>Genomics</td>
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<td>BIOL.5340L</td>
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<td>MLSC.7100</td>
<td>Nutrigenomics</td>
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<tr>
<td>MLSC.5600</td>
<td>Molecular Pathology</td>
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<td>CHEM.5380</td>
<td>Biochemical Mechanisms</td>
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<td>CHEM.5600</td>
<td>Advanced Physical Biochemistry</td>
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<td>CHEM.5680</td>
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<td>CHEM.5700</td>
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<td>CHEM.5140</td>
<td>Advanced Analytical Chemistry</td>
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<tr>
<td>RADI.6980</td>
<td>Advanced Medical Imaging</td>
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SubTotal Dissertation & Seminar Credits Required: 12 - 24 credits

Other/Elective Course Choices (Total courses required = 0 to 1)

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>BIOL.5670</td>
<td>Molecular Biology</td>
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<td>BIOL.5690L</td>
<td>Molecular Techniques</td>
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<td>BIOL.5760</td>
<td>Cell Culture</td>
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<td>MLSC.7100</td>
<td>Nutrigenomics</td>
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<tr>
<td>MLSC.5600</td>
<td>Molecular Pathology</td>
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SubTotal # Elective Credits Required 0 - 4

Curriculum Summary

Total number of courses required for the degree: 20
Total credit hours required for degree: 61

Prerequisite or Other Additional Requirements:

Qualifying Examination for Doctoral Candidacy after completion of major required courses.
PHRM.6100 Principles of Pharmaceutical Sciences  
(Formerly PHSC 610) - Credits: 4

The purpose of this introductory course in the pharmaceutical sciences is to provide an overview of the drug development process, involving drug discovery, drug action, and drug delivery. The student will become acquainted with cutting-edge research in discovery, action, and delivery and will gain laboratory experience. This course provides a foundation in pharmaceutical sciences along with theoretical, practical, regulatory, and professional issues in the pharmaceutical sciences.

PHRM.6200 Pharmacokinetics (Formerly PHSC 620)  
- Credits: 3

This course focuses on the study of the biochemical and physiological effects of drugs and the mechanisms of their actions. The quantitative aspects of drug absorption, distribution, metabolism, and excretion will be explored. The philosophy of pharmacokinetic modeling and its application in practice will be introduced.

PHRM.6300 Pharmaceutical Research Design and Ethics (Formerly PHSC 630) - Credits: 3

This course explores research methodologies and statistics that are commonly used in pharmaceutical research. Scientific integrity in research will be discussed, as well as ethical issues in conducting pharmaceutical research in the laboratory.

PHRM.6400 Pharmaceutical Analysis (PHSC 640)  
- Credits: 4

Students in this course analyze the purity, strength, and quality of drugs and pharmaceutics by applying modern analytical methods. Raw materials and completed dosage forms will also be analyzed in the laboratory.

PHRM.6410 Drug Delivery (Formerly PHSC 641)  
- Credits: 3

The biological, biophysical and chemical factors that influence drug delivery systems will be analyzed. Principles of cellular drug transport, in vivo drug transport, and modern drug delivery, including drug targeting will be explored. The course will also address membrane trafficking and intracellular transport and the utilization of these mechanisms in drug delivery and targeting.

PHRM.6501 Drug Discovery - Credits: 3

Drug discovery is the translational application of biology, chemistry, medicine, business and law in the identification of new medicines. This course is designed to provide each student with a full understanding of the challenges and opportunities that face scientists engaged in this enterprise in the biotech and pharmaceutical industries. Active learning objectives (case studies; project team work) are included to supplement the more didactic course materials, and to provide a simulation of the approaches used in industry to accomplish the key goal—the nomination of a clinical drug candidate worthy of extensive investment and testing in humans.

PHRM.7070 Drug Metabolism (Formerly 36.707) - Credits: 3

This course provides an overview of the structure, function and regulation of major drug metabolitic enzymes and transporters.

PHRM.7080 Mechanisms of Drug Action (Formerly 36.708) - Credits: 3

This course reviews the general principles of drug action and the pharmacological activities of various classes of drugs. The major focus is on the molecular mechanisms of drug action, with a detailed discussion of one or more prototypes of each drug class. Selected examples of drug discovery and development are also discussed. At the completion of the course, students will have knowledge of the molecular basis of pharmacological activity, the mode of action of major classes of therapeutic agents and familiarity with rational approaches to drug design.

PHRM.7090 Pharmacogenomic Principles and Applications (Formerly 36.709) - Credits: 3

Pharmacogenomics utilizes knowledge related to the variability in the human genome to understand and predict the differences in drug response and toxicity of pharmaceutical agents. This includes not only the determination of pharmacologically relevant genes that alter individual pharmacokinetic and pharmacodynamic response but also those polymorphism’s and other mutations that predispose a person to development of various diseases. Personalizing therapies based on genotypic information should increase efficacy and decrease toxicity of agents. Current applications covered include anti-cancer and anti-viral therapies and anticoagulation.

PHRM.7100 Advanced Topics in Pharmaceutical Sciences (PHSC 710) - Credits: 2

Select advanced topics and the evaluation of scientific literature in pharmaceutical sciences will be discussed in this seminar.

PHRM.7110 Clinical Research Design and Methodology (Formerly PHSC 711) - Credits: 3
Experimental research methodologies and the ethical issues in clinical pharmaceutical research will be analyzed. Principles of translational research will be discussed. Students will develop a pharmaceutical clinical trial protocol.

**PHRM.7120 Pharmacoepidemiology (Formerly PHSC 712) - Credits: 3**

In this course the student applies epidemiological knowledge, reasoning, and research methods to the examination of the use and effectiveness of pharmacotherapy in human populations.

**PHRM.7130 Applied Clinical Pharmacokinetics (Formerly PHSC 713) - Credits: 3**

This course reviews the major methods, models, and equations used in pharmacokinetics with their physicochemical and physiological assumptions and limitations. Current graphic and computer methods of applying pharmacokinetics experimental and clinical data will be explored. Clinical research literature and approaches to the design of studies will be explored.

**PHRM.7140 Nanotechnology and Drug Delivery (Formerly PHSC 714) - Credits: 3**

A multidisciplinary course covering nanotechnology based drug delivery, materials and processes for novel drug delivery systems, synthesis of biocompatible nanoparticles for healthcare, product design, products today and regulatory issues.
Department of Physical Therapy

The Department of Physical Therapy offers the following graduate programs:

- Doctorate in Physical Therapy
- Graduate Certificate in Disability Outcomes

Program Mission

The Mission of the Department of Physical Therapy is consistent with that of the College of Health Sciences and the University of Massachusetts Lowell in that it promotes the concepts of human health and development through:

1. Teaching of theory and practice of physical therapy in classroom and community-based settings by preparing graduates to practice their profession with knowledge, competence, and respect for human well-being.
2. Scholarship in the discovery, application and dissemination of knowledge in physical therapy and health.
3. Public service in partnership with local, regional, and national organizations advancing prevention-based strategies in health.

Program Philosophy

The faculty (https://www.uml.edu/Health-Sciences/PT/faculty/default.aspx) of the Department of Physical Therapy believes that individuals have intrinsic worth and a right to optimal health and function. Function is defined as those activities identified by an individual as essential to support physical, social, and psychological well being and to create a personal sense of meaningful living. Physical therapists provide services to patients/clients with impairments, functional limitations, disabilities, or changes in physical function and health status resulting from injury, disease, or other causes. Physical therapists also can prevent the development of impairment, functional limitation, or disability by identifying disablement risk factors and by buffering the disablement process through prevention and wellness strategies.

The physical therapist is professionally educated in a program that synthesizes graduate study with undergraduate knowledge, and experiential learning. The graduate of the Doctor of Physical Therapy program is prepared to function as an ethical and competent practitioner who uses effective clinical decision making and psychomotor skills to provide services to patients/clients. The five elements of patient/client management include examination, evaluation, diagnosis, prognosis, and intervention. The graduate also is prepared to interact and practice in collaboration with a variety of health professionals, provide prevention and wellness services, consult, educate, and engage in critical inquiry. Finally, the graduate is prepared to direct and supervise physical therapy services, including support personnel. Graduates are expected to assume a leadership role in health care and to practice autonomously and cooperatively in a variety of practice settings such as: hospitals, rehabilitation centers, extended care facilities, schools, sports medicine clinics, community health and private practices, and industrial or workplace settings.

The faculty believes that students are active participants in the educational process. As potential professionals, the relationship between students and faculty is one in which there is mutual respect, understanding, and interchange of ideas. The faculty, as experienced professionals, are resource persons, mentors, and role models for the developing professional. The faculty view themselves as facilitators of the learning process. Students are expected to demonstrate commitment to learning as the basis for continued personal and professional growth, effective interpersonal and communication skills, problem-solving and critical thinking skills, and appropriate professional conduct. Effective use of time and resources, feedback, and stress management strategies are important components of the behaviors of the successful student.

Doctoral Program in Physical Therapy

The Doctor of Physical Therapy (DPT) program at UMass Lowell prepares individuals for entry into the profession of physical therapy. The fully accredited program requires a baccalaureate degree for admission and a three-year full-time commitment, including part of each summer.

The curriculum provides a comprehensive foundation in the art and science of physical therapy. Methods of instruction include classroom lecture and discussion, small group / problem-based learning, and skill development during laboratory and clinical experiences. Emphasis is placed on the development of clinical decision-making and critical inquiry skills across the curriculum, culminating in the completion of a Final Research Project (done in small groups) that meets peer review standards for presentation and/or publication.

The clinical education program consists of four extended clinical education experiences (each eight weeks in length) and two shorter blocks (one and two weeks in length) for a total of 35 weeks. Students experience a variety of practice settings and patient populations in preparation for general practice.

- Program Objectives
- Admission Requirements
- Course of Study
Program Objectives

The graduate of the entry-level Doctor of Physical Therapy program at the University of Massachusetts Lowell will be prepared to:

1. Exhibit attributes, characteristics and behaviors of professionals.
2. Practice physical therapy in a safe, effective, ethical, autonomous, reflective, culturally sensitive and legal manner.
3. Apply the principles of the scientific method and evidence-based practice to interpret and use professional literature in clinical practice; participate in, plan, and conduct research; evaluate outcomes, new concepts/theories and technologies.
4. Provide skilled planning, direction, organization, and effective management of human, technical, environmental, and financial resources.
5. Provide effective direction and supervision of personnel essential to the provision of high quality physical therapy.
6. Provide appropriate wellness screening, prevention and wellness activities, and the promotion of positive health behaviors.
7. Advocate effectively for patient/clients and facilitate necessary change within the health care delivery system to assure quality health care.
8. Demonstrate commitment to personal and professional development.
9. Successfully complete all courses and capstone projects.
10. Pass the National Physical Therapy Examination.

The program objectives are adapted from the Guide to Physical Therapy Practice, American Physical Therapy Association and Generic Abilities (May et al. Journal of Physical Therapy Education.9:1, Spring 1995).

Minimum Admission Requirements

1. Baccalaureate Degree from an accredited university of college within past 10 years.
2. Undergraduate cumulative GPA of 3.0 or greater.
3. Pre-Requisite Science GPA of 3.0 or greater.
4. Graduate Record Examination::290 combined.
5. Computer literacy in word, excel and power point is expected
6. Documented personal experience in a physical therapy setting (volunteer or paid). Minimum 35 hours
7. Statement of Purpose
8. Three (3) letter of recommendation, one (1) of which must be submitted by a licensed physical therapist.
9. Required prerequisites coursework:
   - General Pharmacology (200 level course >2 credits)
   - Psychology
   - Statistics
   - Science Anatomy and Physiology with labs, 2 semesters
   - Chemistry with labs, 2 semesters
   - Physics with labs, 2 semesters
   - Exercise Physiology (upper-level [300+] course)
   - Kinesiology (upper-level [300+] course)

Important Notes:
The completed application deadline is November 1st for admission to the subsequent academic year’ (summer’s) class.

- All documents in support of an application are due at the deadline, e.g. letters of recommendation, official transcripts, official GRE scores, etc.
- No more then two (2) pre-requisite courses may be missing at the time of application. Courses which are “in-Progress” at the time of the application deadline are considered missing.
- Students may be asked to provide documentation of equivalent course content proposed to meet admission criteria.
- Any/All applications deemed incomplete at teh application deadline will be ineligible for a full department review.
- Meeting the minimum application requirements does not guarantee admission into the program.

All International Applicants:

- Transcripts must be evaluated: Center for Educational Documentation: www.cedevaluations.com
The DPT class consists of both external and internal (Exercise Physiology graduates from U Mass Lowell) graduates. Highly qualified juniors in the Exercise Physiology program are accepted into the DPT program under expedited or early admission, pending successful completion of their baccalaureate requirements.

**Additional Program Requirements**

1. Proof of yearly physical examination by a physician indicating satisfactory general health status and proof of immunization for measles, mumps, rubella, tetanus, polio, diphtheria, tuberculosis, and Hepatitis B is required prior to clinical education experiences.
2. A CORI check (Criminal Offender Record Information) prior to clinical education experiences is required.
3. Costs related to clinical education experiences including transportation, housing, meals and tuition/fees are assumed by the student. Students should expect and plan for out-of-state clinical placements.
4. Professional behavior (defined as Generic Abilities) is required during all academic and clinical education experiences.

**Course of Study**

DPT Curriculum

DPT Course Checklist
([https://www.uml.edu/docs/DPT%20Prerequisite%20course%20checklist%20(9-14)_tcm18-171121.pdf](https://www.uml.edu/docs/DPT%20Prerequisite%20course%20checklist%20(9-14)_tcm18-171121.pdf))
DPTH.5010 Pharmacology (Formerly 34.501) - Credits: 2

An introduction to the chemistry, biochemistry and physiological actions of various pharmaceuticals. Fundamental concepts will be stressed and will include a discussion of drug receptors, drug receptor interactions, pharmacokinetics, enzyme induction, drug metabolism, drug safety and effectiveness and idiosyncratic reactions. Several major groups of drugs will be studied including: central nervous system stimulants, hypnotics, narcotic analgesics, anti-inflammatory drugs, cholinerics, adrenergics, adrenergic blocking drugs, antihypertensives, antihistamines, diuretics, adrenal steroids, anti-anemic drugs and antibiotics. Articles from the current literature will be discussed.

DPTH.5100 Models and Measurement in Disability (Formerly 34.510) - Credits: 3

This course will introduce students to the World Health organization’s International Classification of Function and discuss its implications for models and measurement of disability. Discussion will focus on defining and measuring disability based on the enabling-disabling process with both temporal and spatial dynamics. Temporal dynamics will include both short cycle dynamics (days to weeks) as well as longer range cycles (i.e. the life cycle). Spatial dynamics will include multi level - bidirectional interactions that emerge through cell, organ, system, organism, and environmental scales. The multi level structure will be emphasized as a mechanism to link disciplines and the need for diverse strategies required for examining, evaluating and intervening for reducing disability. There will be an emphasis on the important recurrent feedback loops between human and environment in long-term health trajectories and transitions from health to disability and from acute disturbances to chronic conditions. These discussions will occur in two primary areas: musculoskeletal and cardiovascular system dynamics. Open to: Undergraduate Seniors and Graduate Students It is recommended that students have completed at least a year of upper division exercise physiology, biological science, engineering or psychology coursework. In addition, a year of general physics and a semester of statistics or research methods is recommended but not required.

DPTH.6010 Clinical Anatomy (Formerly 34.601) - Credits: 3

Clinical Anatomy is a study of the structures of the human body, utilizing lectures, demonstrations and A.V. materials. It is a foundation course for physical therapy procedures courses. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6020 Neuroscience: Anatomy (Formerly 34.602) - Credits: 3

Neuroscience anatomy presents the structural features of the central nervous system as they relate to problems encountered in clinical neurology. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6030 Anatomy Laboratory (Formerly 34.603) - Credits: 1

Clinical Anatomy Laboratory is a visualization of the structures of the human body utilizing laboratory dissection of prospected parts and human cadavers. The laboratory also incorporates the recognition of underlying structures using surface anatomy and palpation of body and soft tissues. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6040 Neuroscience: Physiology/Neurology (Formerly 34.604) - Credits: 3

Neuroscience presents the principles of neurophysiology, neurology, and motor control as related to the practice of physical therapy. Topics in neurophysiology include: conduction and transmission of the nerve impulse, neuromuscular synaptic transmission and skeletal muscle contraction, muscle tone and spinal reflexes, the neurophysiology of sensation and movement, and the transmission of pain. Neurological conditions will be integrated with these various neurophysiological topics through the use of case studies and will include: peripheral nerve injuries, neuromuscular conditions, and diseases/conditions of the central nervous system. An introduction to the major theories of motor control and their applications to physical therapy examination and intervention will be discussed through problem solving and case studies. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6050 Physical Therapy Interventions I Lecture (Formerly 34.605) - Credits: 3

This course introduces the student to the principles of patient evaluation and treatment utilizing case studies to integrate didactic information into practical clinical situations. The appropriate use of evaluation procedures and the rationale for safe and effective use of treatment procedures are emphasized. Topics include: principles of biomechanical analysis, body mechanics, principles of goniometry and muscle testing, patient positioning and transfers, gait training and activities of daily living with assistive devices, wheelchair prescription and mobility, isolation/sterile technique, wound care, monitoring vital signs, heat and cold modalities, aquatic therapy, and evaluation of normal gait. All physical therapy graduate courses (number 34.) are restricted to PT majors only.
DPTH.6060 Neuroscience Laboratory (formerly 34.606) - Credits: 1

This course introduces the student to the principles of patient evaluation and treatment utilizing case studies to integrate didactic information into practical clinical situations. The appropriate use of evaluation procedures and the rationale for safe and effective use of treatment procedures are emphasized. Topics include: principles of biomechanical analysis, body mechanics, principles of goniometry and muscle testing, patient positioning and transfers, gait training and activities of daily living with assistive devices, wheelchair prescription and mobility, isolation/sterile technique, wound care, monitoring vital signs, heat and cold modalities, aquatic therapy, and evaluation of normal gait. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6070 Physical Therapy Interventions I Laboratory (formerly 34.607) - Credits: 1

This laboratory course develops the psychomotor skills necessary to apply the didactic knowledge presented in the Physical Therapy Interventions I Lecture to clinical situations. The safe and effective performance of various evaluation and treatment techniques is emphasized. Topics include: patient interviewing; isolation/sterile techniques; wound care and bandaging; monitoring vital signs; patient positioning and bed mobility; transfers; gait training and activities of daily living with assistive devices; wheelchair mobility; massage/soft tissue mobilization/lymph edema management; heat and cold modalities; gait analysis; goniometry and strength testing; postural analysis and anthropometry. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6080 Musculoskeletal Physical Therapy I (formerly 34.608) - Credits: 3

This course is the first of a three-course series which explores physical therapy management of musculoskeletal dysfunction. In this first course, general models for physical therapy intervention will be presented. The evaluation, treatment and prevention of pathological conditions affecting the musculoskeletal system of the lower extremity will be emphasized. Normal function will be included as a basis for recognizing and therapeutically resolving dysfunction of skeletal and joint structures, muscles and soft tissues. A problem-solving approach to resolve impairments, contributing to functional limitations and disabilities, will be stressed. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6090 Medical/Surgical Pathology (formerly 34.609) - Credits: 3

This course presents an introduction to the study of diseases commonly seen in people with conditions treated by physical therapists. Mechanisms of cell growth, response to injury, and cell death are reviewed. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6100 Musculoskeletal Physical Therapy I Laboratory (formerly 34.610) - Credits: 1

This laboratory course develops the psychomotor skills to allow clinical application of didactic knowledge gained in Musculoskeletal Physical Therapy I Lecture. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6110 Professional Issues/Clinical Practice (formerly 34.611) - Credits: 3

This course will be divided into two sections. The first course section will provide an overview of physical therapy as a profession. Student Generic Abilities will be introduced as they apply to classroom instruction and clinical practice. The APTA (American Physical Therapy Association) Standards of Practice, Code of Ethics, disciplinary Process, The Scope of Physical Therapy Practice and The Massachusetts Practice Act will be discussed. The second course section will emphasize the development of effective teaching and learning strategies as it applies to physical therapy in the clinical setting. Discussions and exercises will center on the concepts of motivation and compliance in learning, learning/teaching styles, documentation, designing measurable goals, clinical teaching methods/techniques and tools, the art of effective communication, reinforcement strategies, principles of evaluation and giving effective feedback. Emphasis is placed on creating a climate that encourages learning. A teaching experience will be planned, implemented and evaluated by each student group. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6120 Cardiopulmonary Physical Therapy I (formerly 34.612) - Credits: 3

Cardiopulmonary Physical Therapy provides instruction in a variety of pathological cardiopulmonary conditions encountered by physical therapists. The course emphasizes examination, evaluation and interventions employed by the physical therapist in dealing with these conditions. Students will be expected to integrate and synthesize information from related courses in a variety of cardiopulmonary problem solving experiences. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6140 Cardiopulmonary Physical Therapy I Laboratory (formerly 34.614) - Credits: 1
Cardiopulmonary Physical Therapy Laboratory is taken concurrently with Cardiopulmonary Physical Therapy 34.612. The Laboratory experiences are designed to provide an opportunity to practice examination, evaluation, and interventions as discussed in lecture and demonstrate psychomotor proficiency in each procedure. The course emphasizes procedures employed by the physical therapist in dealing with cardiopulmonary conditions. In addition, students will be expected to integrate and synthesize information from related courses in a variety of cardiopulmonary problem solving experiences. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6150 Clinical Education I Seminar (formerly 34.615) - Credits: 1

This course is the first in a series of two one-credit weekly seminars. The class will continue to explore the professional issues and clinical practice begun in 34.611 in various settings. Requirements include successful completion of the one week Clinical Education Fieldwork Experience I in Spring, Year 1. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6160 Research Methods (formerly 34.616) - Credits: 3

This course presents the role of research in the development and critical analysis of physical therapy clinical practice. Students are guided through the process of clinical scientific research including the following content areas: philosophy of science and causation, problem and hypothesis identification, review and analysis of scientific literature, methods of hypothesis testing, data analysis and interpretation and critique/ evaluation of research results.

DPTH.6170 Neurological Physical Therapy Lecture I (formerly 34.617) - Credits: 3

This course is the first of two courses dealing with the physical therapy management of adult patients/clients with neurological dysfunction. Concepts, practical applications, and strategies based on theories of motor skill development, motor control, and motor learning will be discussed. A variety of neurological conditions with different levels of impairments, functional limitations, and disabilities will be examined. Emphasis is on the development of clinical decision making skills using a problem-solving approach. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6180 Neurological Physical Therapy Laboratory I (formerly 34.619) - Credits: 1

This laboratory course must be taken concurrently with Neurological Physical Therapy I, 34.617. Emphasis is on the development of problem solving and psychomotor skills necessary for successful management of the patient/client with neurological dysfunction. Videotapes and patient demonstrations are used to develop skills in examination, evaluation, and clinical decision making. Peer practice is used to promote the development of psychomotor skills in advanced therapeutic exercise and functional training. Problem solving in the application of interventions for different levels of impairments, functional limitations, and disabilities is stressed. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6200 Neurological Physical Therapy II (formerly 34.620) - Credits: 3

This course is the second of two courses dealing with physical therapy management of adult patients with neurological dysfunction. Concepts, practical applications, and strategies based on theories of motor skill development, motor control, and motor learning will be discussed. A variety of neurological conditions with differing levels of impairments, functional limitations, and disabilities will be examined. Emphasis is on the development of clinical decision making skills using a problem-solving approach. Practice is offered in the development of appropriate plans of care. Concurrent laboratory sessions emphasize the development of assessment and intervention skills. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6210 Musculoskeletal Physical Therapy II Lecture (formerly 34.621) - Credits: 3

This course is the second of a three-course series which focuses on physical therapy management of musculoskeletal dysfunction. Treatment of the ankle and foot will be included as a continuation of the first course. The evaluation, treatment and prevention of pathological conditions affecting the upper extremity will be emphasized. Normal function will be included as a basis for recognizing and therapeutically resolving dysfunction of skeletal and joint structures, muscular and soft tissues. A problem-solving approach to resolve impairments, which contribute to functional limitations and disabilities, will be stressed. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6220 Neurological Physical Therapy II Laboratory (formerly 34.622) - Credits: 1

This course is the second of two lab courses dealing with physical therapy management of adult patients with neurological dysfunction. Videotapes and patient demonstrations will be used to promote clinical decision making skills in examination and evaluation of patients with neurological dysfunction. Classroom laboratory experiences
(peer practice) will be used to provide the student with the opportunity to gain mastery of psychomotor skills in advanced therapeutic exercise. Problem solving in the application of interventions for different levels of impairments, functional limitations, and disabilities will be stressed. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6230 Musculoskeletal Physical Therapy II Laboratory (formerly 34.623) - Credits: 1

This laboratory course develops the psychomotor skills to allow clinical application of didactic knowledge gained in Musculoskeletal Physical Therapy II Lecture. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6250 Physical Therapy Interventions II (formerly 35.625) - Credits: 3

This course is a study of advanced physical therapy procedures which utilize electrophysics and electrophysiology in evaluating and treating a variety of physical impairments. The course will emphasize theories and techniques used in electrodiagnosis, electromyography, functional electrical stimulation, iontophoresis, transcutaneous electrical stimulation, biofeedback, laser and therapeutic electrical currents including light and radar waves. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6260 Geriatric Physical Therapy (formerly 34.626) - Credits: 3

This course will focus on the special needs of the elderly and on the physical therapy management of the geriatric client. The physical changes associated with normal aging as well as pathological changes will be discussed and analyzed. Program planning will stress holistic consideration of the rehabilitative, cognitive/behavioral, and psychosocial needs of the elderly. (Re)Evaluation including functional evaluation, treatment planning (and treatment plan evaluation), treatment cost effectiveness, documentation, reimbursement issues will be analyzed as they relate to the physical therapy management of the geriatric client. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6270 Physical Therapy Interventions II Laboratory (formerly 34.627) - Credits: 1

This course is a practical application of theories and principles presented in 34.625, Physical Therapy Interventions II Lecture. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6280 Musculoskeletal Physical Therapy III (formerly 34.628) - Credits: 3

This course provides the second-year physical therapy student with an introduction to physical therapy evaluation and management of dysfunction of the cervical, thoracic and lumbar spine, ribcage, and pelvis. The development of evaluation strategies, documentation skills, organized clinical decision making, and effective patient management techniques will be emphasized. Discussions and exercises will focus on developing patient diagnoses, functional problems lists, long and short-term goals, and treatment strategies. Critical thinking/problem solving strategies will be incorporated into all aspects of patient management. Emphasis will be on creating a climate that encourages learning. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6290 Directed Research (formerly 34.629) - Credits: 1-3

The directed research experience provides students with the opportunity to develop a research project with the guidance of a faculty advisor. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6300 Musculoskeletal III Laboratory (formerly 34.631) - Credits: 1

This laboratory course provides the student the opportunity to apply the didactic knowledge gained in the Musculoskeletal Physical Therapy II Lecture through a problem solving approach. Additionally, specific evaluation and functional management techniques for the spine and pelvis will be demonstrated by instructors and practiced by students. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6310 Pediatric Physical Therapy Lecture (formerly 34.631) - Credits: 3

This laboratory course provides the student the opportunity to apply the didactic knowledge gained in the Musculoskeletal Physical Therapy II Lecture through a problem solving approach. Additionally, specific evaluation and functional management techniques for the spine and pelvis will be demonstrated by instructors and practiced by students. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6330 Pediatric Physical Therapy Laboratory (formerly 34.633) - Credits: 1

Through classroom and clinical laboratory experiences, the student will be given the opportunity to gain introductory level
skill in the examination, evaluation, intervention, and development of a physical therapy plan of care for infants, children, and adolescents who have disabling problems requiring physical therapy intervention. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6350 Clinical Education II Seminar (formerly 34.635) - Credits: 1

This course is the second in a series of two one-credit weekly seminars. The class will continue to explore the professional issues and clinical practice begun in 34.611 and 34.615 in various practice settings. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6370 Integrating Clinical Practice (formerly 34.637) - Credits: 3

This course will focus on integrating clinical reasoning skills in physical therapy with an emphasis on evidence-based research and current concepts of disablement. Students will share clinical experiences focusing on utilization of best practices and Clinical Practice Guidelines. Students will evaluate the use of diagnostic imaging in making clinical decisions based on evidence. Finally, students will utilize knowledge of functional movement deficits in developing effective patient evaluation and management strategies.

DPTH.6390 Medical/Surgical -Orthopedics (formerly 34.639) - Credits: 3

Medical Surgical conditions (Orthopedics) presents topics related to the pathology and medical-surgical treatment of musculoskeletal disorders. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6400 Professional Prep in PT (formerly 34.640) - Credits: 3

This course will focus on facilitating the students transition into the Physical Therapy Profession including successful completion of the professional licensure examination, the National Physical Therapy Exam: Student groups will outline and present review materials for the exam to each other including a list of sources for further study. The faculty facilitator will oversee the development and content of the presentations and supervise practice examinations. Students are guided through reflection in practice, development of a personal professional development plan, a Vision and Mission Statement including continuing education, pro bono and community service and participation in the American Physical Therapy Association. Other topics will include strategies for successful interviewing.

DPTH.6410 Business Skills in Physical Therapy (formerly 34.641) - Credits: 2

This course provides an overview of the operation of physical therapy services. The course will emphasize a micro approach concerning issues and trends related to the delivery of health care and their implications for the management of physical therapy services. Key issues will include facilities design and clinic organization, personnel management, budgeting, and operations management. Topics related to the key issues will include: marketing, quality improvement, utilization review, legal and ethical issues such as sexual harassment, and integration of the Guide to Physical Therapy Practice and the LAMP (Leadership, Administration, Management, and Professionalism) document with respect to these topics. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6420 Health Policy & Admin (formerly 34.642) - Credits: 3

This course explores the social, political, and economic policies that impact the delivery of physical therapy services and health. The course underscores the issues of professionalism, leadership, management, and the advocacy to foster excellence in autonomous practice for the benefit of members and society. The course emphasizes leadership in promoting cultural competence, global health initiatives, social responsibility, effective application of technology, and health services research.

DPTH.6430 Evidence Directed Care (formerly 34.643) - Credits: 3

This course presents the role of evidence in the development and critical analysis of physical therapy clinical practice guidelines and practice recommendations. Students are guided through the process of analyzing, weighting, comparing and integrating sources of evidence. Methods of integrating various forms of evidence that will be specifically covered include literature reviews, meta-analyses, systematic reviews, clinical prediction rules and clinical practice guidelines.

DPTH.6440 Clinical Education Fieldwork II (formerly 34.644) - Credits: 1

This is the continuance of Directed Research experience providing students with the opportunity to complete and present a research project with the guidance of a faculty advisor. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6450 Physical Interventions III (formerly...
34.645) - Credits: 3
All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6460 Complex Cases in Physical Therapy (formerly 34.646) - Credits: 3
This online course which runs concurrently with Clinical Education Experience III (34.653) is designed to promote evidence based practice, professional correspondence, and further socialization into the profession of physical therapy through sharing of complex clinical cases encountered during the clinical experience. Students will describe their clinical placement setting as well as several complex cases through Blackboard while following the confidentiality guidelines as set forth in the Health Insurance Portability and Accountability Act (HIPAA).

DPTH.6470 PT Interventions III Lab (formerly 34.647) - Credits: 1
All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6480 Service Learning in Physical Therapy (formerly 34.648) - Credits: 3
This three-credit course is designed to serve as a service-learning experience in the final year for doctoral physical therapy students. The course is designed to provide relevant and meaningful service opportunities for culturally competent physical therapy services with a focus on prevention, health promotion, fitness, and wellness to individuals, groups, and communities. The service learning experience will prepare students for active civic participation in a diverse society. Through the use of readings, discussion, reflection and presentations students will gain an understanding what it means to build the capacity of a community and develop the competency skills of an entry level physical therapy practitioner.

DPTH.6500 Clinical Education Experience I (formerly 34.650) - Credits: 3
A ten-week full time clinical education experience designed to integrate basic physical therapy evaluation and treatment procedures with an emphasis on the musculoskeletal and cardiopulmonary systems. Students are directly supervised by licensed physical therapists in acute care and outpatient settings.

DPTH.6510 Sectional Human Anatomy (formerly 34.651) - Credits: 3
Sectional Human Anatomy is a study of the structures of the human body as revealed through Computed Tomographic images. It is a foundational course for the medical physics program.

DPTH.6520 Clinical Education Experience II (formerly 34.653) - Credits: 3
This twelve-week full time experience promotes the development of an autonomous professional through the synthesis and utilization of advanced academic theory in evaluation and treatment. Students are expected to use sound scientific rationale and a problem solving approach in all aspects of patient care. Students are allowed to explore areas of interest in a variety of settings.

DPTH.6530 Clinical Education Experience III (formerly 34.653) - Credits: 3
The final, full time, twelve-week clinical experience is designed to promote full socialization into the profession of physical therapy. Students are expected to function as independently as possible utilizing the problem-solving process as a basis for all clinical decision making. Communication, coordination and consultation with other members of the health care team and responsibility for total client management is emphasized. Settings in pediatrics, neurological rehabilitation, outpatient orthopedics and acute care facilities are appropriate for this experience.

DPTH.6540 Clinical Education Experience IV (formerly 34.654) - Credits: 3
(Spring, 3rd year) The final full time eight-week clinical experience is designed to promote socialization into the profession of physical therapy. Students are expected to function as independently as possible using the problem solving process as a basis for all clinical decision making. Communication, coordination and consultation with other members of the health care team and responsibility for total client management is emphasized. Settings in pediatrics, neurological rehabilitation, outpatient orthopedics and acute care facilities are appropriate for this experience. All physical therapy graduate courses (number 34.) are restricted to PT majors only.

DPTH.6580 Independent Studies (formerly 34.658) - Credits: 3
All physical therapy graduate courses (number 34.) are restricted to PT majors only.
DPTH.6590 Sectional Human Anatomy Laboratory
(formerly 34.659) - Credits: 1
Sectional Human Anatomy Laboratory provides training in the recognition of anatomical structures from CT images, and the direct translations among CT images, Body surface features, and cadaveric structures.

DPTH.6600 Directed Research (formerly 34.660) - Credits: 2
Directed Research toward the DPT degree.

EXER.5010 Physiological Dynamics (Formerly 38.501) - Credits: 3
This course will provide intermediate to advanced coverage of physiological dynamics. A myriad of complex dynamics underlie health and disease and represent highly integrated regulatory systems with cycles, oscillations and feedbacks across time and scale. Physiological Dynamics will teach students basic tools for analyzing the dynamics of the physiological systems; and to identify normal dynamics and relate altered dynamics to disease. The course will focus on the interpretation of physiological dynamics in understanding healthy response to exercise, stress, fatigue and disease. Topics will include physiological origins and implications of; the normal electrocardiogram (ECG); common ECG abnormalities, temporal variations in the physiological system (heart rate variability, blood pressure variability, blood flow, pulse transit time); and multi level relationships between components of physiological regulation. A common theme will be the added clinical information associated with understanding the temporal and spatial dynamics of the physiological systems. Temporal dynamics will include both short cycle dynamics (days to weeks) as well as longer range cycles (i.e. the life cycle). Spatial dynamics will include multi level - bidirectional interactions that emerge through cell, organ, system, organism, and environmental scales. There will be an emphasis on the important recurrent feedback loops between human and environment in long-term health trajectories and transitions from health to disease and from acute disturbances to chronic conditions.
Public Health Graduate Program

**Master of Public Health (MPH)**

- Program Description
- Admissions Requirements
- Option in Dietetics (https://www.uml.edu/catalog-AY16/pdf/Graduate.pdf)
- Option in Epidemiology (http://www.uml.edu/Catalog/Graduate/Health-Sciences/Public-Health/MPHEpidemiology.aspx)
- Option in Population Health (http://www.uml.edu/Catalog/Graduate/Health-Sciences/Public-Health/MPH-Population-Health.aspx)
- Option in Healthcare Management (http://www.uml.edu/Catalog/Graduate/Health-Sciences/Public-Health/MPH-HMO.aspx)
- Option in Nutrition (http://www.uml.edu/Catalog/Graduate/Health-Sciences/Public-Health/MPH-Nutrition.aspx)
- Certificate in Public Health Studies (http://www.uml.edu/Catalog/Graduate/Health-Sciences/Public-Health/graduate-certificate-phs.aspx)

**Program Description**

The Master of Public Health program is a 42-credit post-Baccalaureate program with four specialization options Epidemiology, Healthcare Management, Nutrition and Population Health. The program accepts both full and part-time students and provides students with knowledge essential to the practice of public health on a global scale. Students develop a strong foundation in public health by studying biostatistics, environmental health issues, epidemiology, health policy and management and social and behavioral determinants of health, as well as study in specialization areas so that graduates gain the expertise necessary to address some of the worlds most pressing problems.

Graduates of the MPH program will:

- Analyze public health literature and apply evidence-based practices to public health issues.
- Identify, quantify and then promote reduction of the harmful impacts of current and emerging technologies on health.
- Address current public health challenges through multidisciplinary approaches that apply the latest scientific knowledge, collaboration, and creative problem-solving skills.

**Admission Requirements**

- An application completed online at www.uml.edu/grad/ (http://www.uml.edu/grad/)
- Transcripts from a completed BA or BS degree in any field, or senior-year status, with an overall GPA of at least 3.0.
- Grades of C or better in required, prerequisite college-level courses. These include a minimum one semester of statistics and one semester of either biology or anatomy and physiology. Applicants who are missing prerequisites may be admitted with the provision that they meet with their advisor before or during their first semester and develop a plan of study to complete the prerequisites during the first year.
- Three Letters of recommendation from individuals able to judge an applicant’s readiness for graduate study.
- A statement of purpose, typically a 1-2 page document providing information about the applicant’s future plans, a description of how the MPH degree fits into these plans and evidence of an applicant’s readiness for graduate study.
- GRE score. The GRE requirement may be waived with a prior graduate degree or with successful completion of the 12-credit Graduate Certificate in Public Health Studies with a GPA of at least 3.5.

**For International Applicants**

- TOEFL scores of at least 79 (Internet-based) are required.
- Transcripts from colleges outside the United States must be certified by a credentialing agency such as WES (www.wes.org) or CED (www.cedevaluations.com). To receive prerequisite credit fo undergraduate courses in statistics, biology or anatomy and physiology, the document must be
Graduate Certificate in Public Health Studies

Overview
Admission Requirements
Required Courses
Elective Courses

Overview:
The field of public health is ever changing and expanding. It has played a major role in promoting the health of the nation, the world and in extending life expectancy. It is expected that the growing demand for public health professional will confront a critical shortage in the near future. A four-course, 12 credit Graduate Certificate Program in Public Health Studies is intended for individuals with diverse health, natural science and social science backgrounds who are interested in careers in public health. The courses offered in the certificate program are foundation courses in the MPH program. The certificate is expected to serve as a conduit into the MPH Program for students who are not yet ready for application/admission. The certificate program will enable students to decide whether they should apply to a 42 credit MPH program. The graduate certificate will also provide students in the health care field with the additional course work to advance careers in the area of public health.

Students who successfully complete the Graduate Certificate in Public Health at UMass Lowell with a GPA of 3.5 or higher may waive the GRE requirement if applying to the MPH program. Upon acceptance into the MPH program, the 12 credits from the Graduate certificate in Public Health with a course grade of 3.0 pr higher may be transferred into the MPH degree program.

Admission Requirements:

- Baccalaureate degree from an accredited institution with a minimum GPA of 3.0
- Completed Certificate Application form
- Official Transcript from the baccalaureate institution
- Completed undergraduate courses in Statistics and either Biology or Anatomy & Physiology with grades of C or above.

Elective Courses (Choose Two):

- PUBH.5021 Health Policy and Management
- PUBH.5010 Social and Behavioral Determinants of Health
- PUBH.5061 Introductions to Environmental Health

Master of Public Health Gerontology Option

- Introduction
- Graduates of the MPH Gerontology will be prepared to
- Information
- Curriculum

Introduction
Aging, a global phenomenon in the 21st century, has major individual, societal, economic and political consequences. Aging populations increase demands on effective public health systems and social services resulting in the need for public health specialists educated in the field of gerontology. By 2030, one in every five Americans will be 65 years or older. According to the Center for Disease Control "about 80% of older adults have one chronic condition and 50% have at least two". Gerontology is one of the fastest growing disciplines. Students in the MPH Gerontology specialization will be prepared to conduct and evaluate population bases research that is essential to address the important public health concerns of aging societies, both nationally and internationally. As people are living longer and the number of older adults is increasing, a dramatic public health workforce shortage of specialist in aging is predicted in the coming decades. The MPH Gerontology specialization is designed to prepare the...
next generation of gerontology specialists in the field of aging policy, planning, teaching and research.

Graduates of the MPH Gerontology option will be prepared to:

- Assume leadership positions in aging policy or public health in the public and private sector.
- Recognize, respect and value individual and societal diversity in aging populations.
- Utilize critical thinking skills in applying diverse approaches to addressing aging issues in a diverse society.
- Utilize research strategies to evaluate public health programs for an aging population.

For more information, please contact:

Leland Ackerson, Ph.D. at: leland_ackerson@uml.edu

Curriculum

Fall Year 1
19.506 Introduction to Environmental Health
19.575 Introduction to Biostatistics & Epidemiology
PUBH.502 Health Policy and Management

Spring Year 1
PUBH.680 Aging and Society
19.577 Biostatistics for Health Data
PUBH.501 Social and Behavioral Determinants of Health
XX.XXXX Elective

Fall Year 2
PUBH.681 Global Aging and Health
PUBH.682 Epidemiology of Aging
XX.XXXX Elective
PUBH.666 MPH Practicum I

Spring Year 2
PUBH.683 Nutrition and Physical Activity in Aging Populations
33.717 Evaluation Research
PUBH.667 MPH Practicum II

* Part-time plans of study can be arranged in consultation with an academic advisor. Full-time plans of study that begin in the Spring Semester will include the same courses taken in a slightly different order.

For more information, please contact: Judith Hull. (mailto:judith_hull@uml.edu)

Curriculum Plan

Fall Semester Year 1:
- PUBH.5750 Introduction to Epidemiology
- PUBH.5010 Social and Behavioral Determinants of Health
- PUBH.5021 Health Policy and Management

Spring Semester Year 1:
- PUBH.5770 Introduction to Biostatistics
Master of Public Health Healthcare Management Option

Overview

At the local, regional and national level, our healthcare system confronts new challenges in coping with the many changes in technology, information systems, financing and management. According to the U.S. Bureau of Labor Statistics, "Employment of medical and health services managers is expected to grow by 22% from 2010 to 2020". The MPH concentration in Healthcare Management will prepare graduates to manage public health programs and organizations. Students will learn the conceptual, organizational, personnel and financial skills required for effective, but also compassionate and ethical, work performance.

The current graduate program within the Department of Community Health and Sustainability has achieved regional distinction among students interested in the management of healthcare information systems. The faculty engaged in healthcare management who teach in the program has been an asset to the program and will teach the classes with students who are experienced managers working throughout the healthcare industry and a diverse mix of clinicians, including both NP’s and MD’s will enrich the educational experiences.

NOTE: Part-time plans of study can be arranged in consultation with an academic adviser. Full-time plans of study that begin in the Spring Semester will include the same courses taken in a slightly different order.

Grades with a Master’s degree in public health with an option in Healthcare Management will have advanced education in healthcare finance, law and ethics in healthcare, operations analysis and quality improvement, healthcare management and healthcare information systems. They will be prepared to assume leadership positions.

Graduates of the Healthcare Management Option in MPH program will be prepared to:

- Develop, implement and evaluate public health initiatives
- Assume "hands" management of public health programs and organizations.
- Provide leadership as a thoughtful, analytical and ethical manager within the public health community.
- Support increased efficiency, effectiveness and accountability within the public health workplace.

For more information, please contact: Leland Ackerson, Ph.D., Leland_Ackerson@uml.edu.

Curriculum Plan

Fall Semester Year 1

- PUBH.5061 Introduction to Environmental Health
- PUBH.5750 Introduction to Epidemiology
- PUBH.5021 Health Policy and Management

Spring Semester Year 1

- PUBH.5120 Operations Analysis and Quality Improvement
- PUBH.5770 Introduction to Biostatistics
- PUBH.5010 Social and Behavioral Determinants of Health
- XXXX.XXXX Elective

Fall Semester Year 2

- PUBH.5140 Healthcare Management
- PUBH.6070 Healthcare Information Systems
- XXXX.XXXX Elective
- PUBH.6660 MPH Practicum I
Spring Semester Year 2

- PUBH.5110 Healthcare Finance
- PUBH.6160 Law and Ethics in Healthcare
- PUBH.6670 MPH Practicum II

*Part-time plans of study can be arranged in consultation with an academic advisor. Full-time plans of study that begin in the Spring Semester will include the same courses taken in a slightly different order.
School of Nursing

The School of Nursing offers the following graduate programs:

- Doctoral Program (Ph.D.)
- Post-Master’s Doctorate in Nursing Practice (DNP) Program
- Master’s - Doctor of Nursing Practice Fast Track Program
- Master’s of Science in Nursing
- Bachelor’s-Master’s Program

The objectives of the masters program curriculum are to provide advanced practice nursing education which focuses on:

1. Health promotion of individuals, families and groups from diverse populations;
2. Management of health problems in collaboration with client, families, and health professionals;
3. Leadership in the profession; and

The graduate program is designed for a four-semester, two-calendar year schedule, although part-time study is possible. Within each major area of specialization all students are prepared with knowledge and skills necessary for leadership in a variety of settings. Methods of inquiry, research and scholarly techniques are integral parts of the curriculum.

Program Outcomes

The masters degree program educates graduates who are prepared to:

1. Practice in the advanced nursing role of the specialty
2. Collaborate with clients, peers, and other health professionals
3. Demonstrate leadership in the profession of nursing.

Admission and Degree Requirements

Requirements for the master’s program are:

- A baccalaureate degree with a major in nursing from an accredited program,
- An undergraduate scholastic average of 3.0 or better,
- An introductory course in statistics,
- License to practice nursing in the Commonwealth of Massachusetts and professional nursing experience,
- A resume,
- Three letters of recommendation pertaining to academic ability and professional competency with one preferably...
from a Baccalaureate faculty member. The others should be from professional supervisors. Professional supervisors’ titles must be included.

- Written Statement: A goal statement that briefly highlights relevant work history and immediate and long term professional goals as an advanced-practice nurse. Goal statements should be congruent with the specialty tracks offered at UMass-Lowell (FNP or AGNP) and demonstrate an understanding of the scope of the advanced practice nurse in ambulatory, long term care settings.
- Computer literacy,
- Official transcripts, from all of your previous degree coursework (Associates and Bachelors in Nursing) as well as any completed or in progress graduate courses, and
- Completed application and fees.

A minimum of 42 credits of course work is required for graduation with an MS for all students. A research project or a thesis is an option but not required for graduation.

Students may be admitted for part-time study. Part-time students must meet the same admission requirements for graduate study as full-time students. Part-time students will meet with their assigned advisor and plan a schedule for their program of studies. All admitted students are advised to contact their assigned advisors for program of study recommendations and to register for courses during University advisement periods.

Transfer of credits for non-matriculated students: Non-matriculated students may take a maximum total of 12 graduate credits (4 courses) earned with a grade of B or better prior to matriculation which may be applied toward the MS degree. Those taken at another accredited institution may be transferred if appropriate to the MS degree program in nursing and after approval by the faculty of record for the UMass Lowell course and the petition signed by the Graduate Coordinator. To qualify as a transfer the course must have been taken within 5 years prior to the date of matriculation. Transfer of credits may not be granted for Advanced Health Assessment, Specialty Courses or Specialty Practicum courses.

Admission is competitive. Admission is competitive and only completed applications will be reviewed. Priority deadlines are February 1 for fall matriculation. We do not have Spring semester acceptances at this time. Applications received after these dates, if there are openings, will be reviewed on a case-by-case basis. Students may take up to 4 courses (12 credits) from University of Massachusetts Lowell or other accredited graduate program taken prior to matriculation. Please seek advice from Valerie King MS/DNP Admission Coordinator for appropriate courses to take as a non-matriculated student. Upon admission, these courses can be transferred in but may not affect your projected year of graduation due to capacity limits of current cohorts.

Additional Information

The following health and professional documentation is required upon admission: Current CPR certification, RN nursing license, required immunizations (or titers indicating immunity) influenza, Hepatitis B, MMR, Tdap, varicella, PPD; and recent health exam by health care provider. In addition every student must be cleared by CORI (Criminal Offender Record Information). Students who cannot provide this information will be unable to complete required clinical practicum.

Degree Pathway for full time option*

Semester I
- NURS.6000 Theoretical Foundations for Nursing (3 credits)
- HSCI.5500 Human Development &Pathophysiology (3 credits)
- NURS.5520 Social, Cultural &Policy Issues in Health Care (3 credits)
- NURS.6510 Advanced Health Assessment and Diagnostic Reasoning (3 credits)
- TOTAL: 12 credits

Semester II
- NURS.6600 Family Health Nursing I (4 credits)
- NURS.6630 Family Health Nursing Practicum I (180 hours) (3 credits)
- NURS.5590 Social, Cultural &Policy Issues in Health Care (3 credits)
- NURS.6510 Advanced Health Assessment and Diagnostic Reasoning (3 credits)
- TOTAL: 10 credits

Semester III
- NURS.6610 Family Health Nursing II (4 credits)
- NURS.6640 Family Health Nursing Practicum II (180 hours) (3 credits)
- NURS.5590 Advanced Pharmacology (3 credits)
- TOTAL: 12 credits
• TOTAL: 10 credits

Semester IV

• NURS.6620 Family Health Nursing III (4 hours/week didactic plus 240 clinical hours) (4 credits)
• NURS.7330 Research Project or Elective (3 credits)
• Elective (3 credits)
• TOTAL: 10 credits

TOTAL Credits Needed : 42

*Part time option available and varies according to number of courses taken and current capacity in specialty cohorts.

Areas of Specializations:

Adult-Gerontological Nursing

Adult/Gerontological Specialty Track Degree Pathway Full Time Information
(https://www.uml.edu/docs/MS%20in%20Nursing%20Degree%20Pathway%20AGNP%20Track%20Full%20and%20Part%20Time%20October%202015_Final_tcm18-222976.pdf) (pdf)

Adult/Gerontological Primary Care Track Degree Pathway Part Time Information
(https://www.uml.edu/docs/MS%20in%20Nursing%20Degree%20Pathway%20AGNP%20Track%20Full%20and%20Part%20Time%20December%202015_tcm18-232574.pdf) (pdf)

This specialty focuses on promoting health of young adults age 13 and up, adults and older adults during the process of normal aging and identifying and treating common health problems. Students develop advanced skills in communicating with young adults, adults and older adults, health assessment, health teaching and nursing intervention and evaluation. Students are prepared as nurse practitioners and eligible to sit for the adult gerontological primary care nurse practitioner certification exam.

Specialty Courses:

• NURS.6600 Family Health Nursing I
• NURS.6630 Family Health Nursing Practicum I
• NURS.6610 Family Health Nursing II
• NURS.6640 Family Health Nursing Practicum II
• NURS.6620 Family Health Nursing III

Family Health Nursing

Family Health Specialty Track Degree Pathway Full Time Information
(https://www.uml.edu/docs/MS%20in%20Nursing%20Degree%20Pathway%20FNP%20Track%20Full%20and%20Part%20Time%20October%202015_Final_tcm18-231675.pdf) (pdf)

Family Health Track Degree Pathway Part Time Information
(https://www.uml.edu/docs/MS%20in%20Nursing%20Degree%20Pathway%20FNP%20Track%20Full%20and%20Part%20Time%20December%202015_tcm18-232575.pdf) (pdf)

This specialty focuses on facilitating the health practices of families during the process of normal development and identifying and treating common health problems across the life span. Students develop advanced skills in communicating with families, health assessment, health teaching and nursing intervention and evaluation. Students are prepared as nurse practitioners and are eligible to sit for the family nurse practitioner certification exam.

Speciality Courses:

• NURS.6100 Adult-Gerontological Nursing I
• NURS.6130 Adult-Gerontological Nursing Practicum I
• NURS.6110 Adult-Gerontological Nursing II
• NURS.6140 Adult-Gerontological Nursing Practicum II
• NURS.6120 Adult-Gerontological Nursing III

Ph.D. in Nursing Program

The Doctor of Philosophy in Nursing Program at UMass Lowell is a research-focused doctoral degree in nursing with a focus in health promotion. The focus in health promotion allows students to acquire cutting edge knowledge in the field of health promotion, a top priority in the nation. The executive program model uses a cohort system, which allows students to progress through the program together, either part-time or full-time. Students generally attend core nursing courses once/month on a Saturday; the remaining course modules are conducted online. Graduates will advance knowledge in the fields of nursing and health promotion at the individual, family and community level.

• Ph.D. Program
• Admission Requirements
The Ph.D. Program

Established in 1996, the program has produced graduates who are leaders in nursing and health promotion research. All nursing courses are offered using a weekend-blended model with two courses offered completely online. This is the only Nursing Ph.D. program in New England that uses this flexible approach to learning.

Graduates of the Ph.D. in Nursing program are prepared to:

1. Extend the body of knowledge in nursing and health promotion through research and theory development.
2. Create change in health outcomes among targeted populations through the development and implementation of health promotion research.

Admission Requirements

Students who wish to apply for admission to the Ph.D. program must submit a graduate admissions application form. Applications are reviewed on a rolling basis. The preferred deadline is April 1 for Fall admission; new students are only accepted in the Fall. The graduate application form can be obtained from the UMass Lowell Graduate Admissions Office.

Requirements include:

1. B.S. degree in nursing with a minimum G.P.A. of 3.3
2. A masters degree in Nursing or health-related field with a minimum GPA of 3.3
3. A current Massachusetts R.N. license or eligibility (International students may waive this requirement but must have an equivalent nursing degree and will be evaluated on an individual basis)
4. An official transcript of all previous academic records (both graduate and undergraduate)
5. Official GRE score results, taken within the past 5 years.
6. A personal statement about the applicants interest in the program that includes professional goals
7. Three letters of recommendation from individuals who can assess the applicants potential for doctoral work
8. A recent Curriculum Vitae
9. International students must submit evidence of an equivalent undergraduate program in nursing and masters program in nursing or related field.
10. International students must submit an acceptable TOEFL or IELTS score.

NOTE: GREs are required. Completion of a graduate course in statistics is strongly recommended; Writing examples are also highly recommended to accompany the personal statement.

The Ph.D. Admissions Committee is chaired by the Ph.D. Program Director and comprised of at least one other faculty member who teaches in the graduate program. The Admission Committee will interview applicants and make the final decision. There are three types of decisions:

1. Accept
2. Accept with conditions, or
3. Deny

The application process is described as follows:

• The applicant logs onto Graduate Admissions website to obtain all required application forms and documents.
• The applicant completes the application form online and pays the fee.
• The applicant submits documents online to Graduate Admissions Office as they are ready.
• The Graduate Admissions Office notifies the Director of Ph.D. Program in Nursing once the application is complete.
• The Ph.D. Admissions Committee reviews all applicants to determine candidates to interview.
• The Ph.D. Admissions Committee conducts interview for those who passed the initial review.
• The Ph.D. Admissions Committee makes a decision and submits it to Graduate Admissions.
• The applicant receives a letter from Graduate Admissions for either acceptance or denial

Degree Requirements
The doctoral program in nursing with a focus in health promotion requires a total of 48 semester credits beyond the masters degree. Students may enroll full or part-time. Part-time students are expected to enroll with their cohort for a minimum of 2 courses/semester in the first two years. A sample program of studies for full and part time students includes:

Sample Course of Study (Full Time) - Degree Pathway

(https://www.uml.edu/docs/PhD%20in%20Nursing%20Degree%20Pathway%20Full%20and%20PartTime%20October%202015-Final_tcm18-248375.pdf)

<table>
<thead>
<tr>
<th>Sample Full Time Plan of Study</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td><strong>UMass Lowell Ph.D. Nursing Program</strong></td>
<td></td>
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<tr>
<td><strong>Fall Semester Year 1</strong></td>
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<tr>
<td>NURS.7010 Philosophy of Science (weekend blended format; 1 Saturday/month with 3 online modules)</td>
<td>3</td>
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<tr>
<td>NURS.7020 Theoretical Foundations of Health Promotion (blended)</td>
<td>3</td>
</tr>
<tr>
<td>NURS.7070 Epidemiology in Health Promotion (online)</td>
<td>3</td>
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<td><strong>TOTAL</strong></td>
<td><strong>9</strong></td>
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<tr>
<td><strong>Spring Semester Year 1</strong></td>
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<tr>
<td>PUBH.5770 Introduction to Biostatistics (evening on campus)</td>
<td>3</td>
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<tr>
<td>NURS.7300 Quantitative Research Methods and Grantsmanship ONLINE</td>
<td>3</td>
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Sample Course of Study (Part Time)

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Spring Semester Year 4
NURS. 7530 Dissertation Credits 3
Fall and Spring Semesters Year 5
NURS. 7530 Dissertation Credits (Dissertation Defense) 3-6
Elective (if only 9 dissertation credits in total taken) 3
TOTAL PROGRAM CREDITS 4

Nursing Qualifying Examination

The qualifying examination is designed to determine the students ability to analyze and synthesize conceptual, theoretical and methodological knowledge as it pertains to health promotion within a substantive research area. The examination provides a method of assessment to ascertain if the student is ready to advance to the dissertation stage. It consists of two written publishable papers, that are focused on: a concept or theory; a systematic review on a specific topic related to the students research area; or a paper related to research methods. Both papers will be original, critical evaluations that relate to the students identified research area. Students are eligible to complete the qualifying examination after completion of all of the core courses (33 credits).

Dissertation

Dissertation planning may be initiated in the first year, but formal work begins following successful completion of the Nursing Qualifying Examination and all course work. At this time a Dissertation Committee is formed to direct the students research. The dissertation requirement is designed to demonstrate that the student has acquired a substantial body of knowledge related to the selected field of study, has developed the ability to use appropriate data analysis methods, and has contributed to the advancement of nursing knowledge related to health promotion. The students dissertation work must be original and represent a unique contribution to the literature.

Contact:

Barbara Mawn, RN, Ph.D.
Ph.D. Program Director
113 Wilder Street, Suite 200 Lowell MA 01854
Office Location: Health and Social Science Building, Room 204
Barbara_Mawn@uml.edu (mailto:Barbara_Mawn@uml.edu)
978-934-4485

About the Program

Our DNP program educates advanced practice registered nurses and nurse leaders who seek to develop or expand their leadership roles in the health care system. With the knowledge and skills acquired through UML’s DNP program, our graduates will be prepared to propose solutions to improve patient care and health care outcomes. This is achieved through an interdisciplinary curriculum which provides nurses with knowledge and skills in evaluation research, health policy, organizational leadership an financing, evidence-based practice and health care informatics. Our DNP graduates will have a positive impact on the health care system by using an evidence-based approach to improve health care delivery.

By enriching our DNP program with content on cultural competency, DNP graduates are prepared to reduce health care disparities for culturally diverse and underserved populations. Our graduates will also have advocacy skills that are essential in influencing governmental and organizational policy decisions.

The degree pathway in the Post-Masters DNP Program will be 3 academic years part-time in length. Full-Time study is available. Courses are delivered in a combination of online and blended formats. Both full-time and part-time degree pathway are available.

Entry Options:

- Post Master’s DNP
- Fast Track MS to DNP

Post-Masters Doctorate of Nursing Practice Program

Specific application requirements include:

- Program application submitted to the Graduate Admissions office
- MS in Nursing with APRN preparation with national certification as an APRN or board eligible for certification OR MS in Nursing with a current RN license
- Prior official transcripts from undergraduate and graduate programs
- Three letters of recommendation (one academic recommendation preferred)
- Interview with nursing faculty
- Minimum cumulative GPA of 3.0 on a 4.0 scale in a nursing Masters degree program, 3.3 GPA preferred.
- Written narrative of professional goals
- 500 Master’s or Post-Master’s practicum hours
Resume
TOEFL if appropriate

**Priority application deadline is April 1.** Admission is competitive. Applications received after that date will be reviewed on a space available basis.

**Post MS DNP Curriculum**

- [Degree Pathway Information](https://www.uml.edu/docs/DNP%20Brochure%20Inseert%20Post%20MS%20DNP%20courses%20007172015_tcm18-229932.pdf)

**Fast Track MS to DNP Curriculum**

- [Degree Pathway Information](https://www.uml.edu/docs/DNP%20Brochure%20Inseert%20Fast%20Track%20MS-DNP%20courses%20007172015_tcm18-229933.pdf)

**Contact**

Barbara Mawn (mailto:barbara_mawn@uml.edu) RN, Ph.D.
Phone: 978-934-4415

**Graduate Certificates in Nursing**
NURS.5220 Independent Study Health Promotion (Formerly 33.522) - Credits: 1-3
Health Promotion gerontological clinical practicum is designed to be taken as a co-requisite to 33:611 Gerontological Nursing II didactic, in which the student focuses on comprehensive assessment and diagnosis of health problems in older adults with complex, multi-system health issues. Students utilize evidence-based research to design, implement and evaluate intervention strategies to promote optimum functioning and wellness. Pharmacological and complementary therapies are applied. Client teaching is included.

NURS.5520 Social, Cultural and Policy Issues in Health Care (Formerly 33.552) - Credits: 3
This course links health and illness to other central domains of life: gender, kinship, and culture within the context of the family, community and the current health care system. It draws on concepts from the social, health, and policy sciences to critically examine factors relating to health and health-seeking behaviors across the life course. Ethical dimensions of health policy formation and implementation are analyzed.

NURS.5540 Palliative and End of Life Nursing Care (Formerly 33.554) - Credits: 3
Through didactic, discussion and field experiences, participants in this course explore research and theory related to death, dying, grief, bereavement, and end-of-life-care throughout the lifespan. Personal, professional, cultural, and ethical barriers and facilitators to the provision of palliative care will be examined using a holistic approach. Comfort and restorative care will be considered within the context of the family and the community in a variety of settings where palliative care is provided.

NURS.5580 Geropsychiatric and Mental Health Nursing (Formerly 33.558) - Credits: 3
The focus of this course is on the nursing care of older adults with psychiatric and mental health problems. This course promotes a holistic approach to mental health care of older adults within the community and long-term care setting. Nursing implications of psychopharmacology, behavioral, and complementary interventions will be discussed. Community resources for older adults with psychiatric and mental health problems will be explored.

NURS.5590 Advanced Pharmacology (Formerly 33.559) - Credits: 3
This nursing course focuses on clinical pharmacology and the mechanisms of drug action which determine therapeutic efficacy in clinical practice. Content includes basic pathophysiology, clinical pharmacology and monitoring parameters and standards of practice. Emphasis is given to implications of patient safety, patient diversity and patient teaching.

NURS.6000 Theoretical Foundations for Advanced Nursing Practice (Formerly 33.600) - Credits: 3
Course focuses on the analysis, critique, and application of theory as a basis for advanced practice nursing. Relationships among theories, research, and nursing practice are emphasized.

NURS.6010 Research for Evidence-Based Practice (Formerly 33.601) - Credits: 3
Course focuses on the critique of research studies for the purpose of determining implications for evidence-based practice. The research process will be applied to researchable nursing problems. The role of frameworks, ethics, research designs, sampling theory, and measurement strategies are emphasized.

NURS.6020 Clinical Psychopharmacology (Formerly 33.602) - Credits: 3
This survey course aims to educate advanced practice nurses for safe and effective prescribing practices in the treatment of psychiatric illnesses. The course utilizes a symptom management framework that integrates concepts from normative psychobiology with pathophysiology of the psychiatric diseases. From this perspective, emphasis is placed on gaining a fundamental understanding of the hypothesized compliment between the pathophysiologic basis of the disease state and mechanism of action of the drug treatment as a basis for rational selection of pharmacologic treatment. Current standards of practice and treatment algorithms are emphasized in helping the student to develop a working knowledge of psychopharmacology for the practice arena.

NURS.6100 Adult Gerontological Nursing I (Formerly 33.610) - Credits: 4
The focus of this course is on the advanced practice nursing role in the holistic assessment and management of health problems of the adult and older adult within a family and community context. Evidence-based strategies to prevent and treat common health problems and to maintain and promote health through the application of advanced knowledge, theory, relevant research and critical decision making are emphasized. Community resources, pharmacological therapies, and complementary strategies are addressed.

NURS.6110 Adult Gerontological Nursing II (Formerly
33.611) - Credits: 4

The focus of this course is on health promotion and biopsychosocial well-being of young, middle aged and older adults from diverse cultures. Utilizing current scientific research, physical/natural sciences, social sciences, and the humanities, implications for advanced nursing interventions and health policy are identified. Principles of pharmacology and pharmacological therapies, and complementary therapies are addressed.

NURS.6120 Adult/Gerontological Nursing III
(Formerly 33.612) - Credits: 4

This capstone course builds on the adult/gerontological nursing curriculum of the previous three semesters. Issues related to health care policy and legislation relative to their impact on the role of the nurse practitioner within primary care are analyzed. Advanced knowledge of the management of complex health issues is integrated in nursing practice. Transition to the role of the advanced practice nurse is examined and actualized through an intensive, precepted, clinical experience.

NURS.6130 Adult Gerontological Nursing Practicum I
(Formerly 33.613) - Credits: 3

This course focuses on comprehensive assessment and diagnosis of health problems in adults and older adults with complex, multi-system health issues. Students utilize evidence-based research to design, implement and evaluate intervention strategies to promote optimum functioning and wellness. Pharmacological and complementary therapies are applied. Group leadership, client and peer teaching are included.

NURS.6140 Adult-Gerontological Nursing Practicum II (Formerly 33.614) - Credits: 3

The focus of this course is on promotion of biopsychosocial well-being of adults and older adults through comprehensive assessment of health, the diagnosis of age-related changes and health problems, and the design, implementation and evaluation of pharmacologic and complementary intervention strategies. The application of scientific knowledge, theory and research findings to clinical practice is emphasized.

NURS.6510 Advanced Health Assessment and Diagnostic Reasoning (Formerly 33.651) - Credits: 3

This course focuses on the development of advanced critical thinking and clinical judgment skills through comprehensive health assessment. Health promotion and health maintenance content, including relevant research findings are utilized to evaluate health status and to evaluate health risk among individuals and groups. Age, gender, and cultural variations in health and implications for advanced practice are included. Advanced practice health assessment skills are developed and refined.

NURS.6600 Family Health Nursing I (Formerly 33.660) - Credits: 4

Focus is on the advanced practice-nursing role in the holistic assessment and management of health problems of the family across the lifespan within a family and community context. Evidence-based strategies to prevent and treat common health problems and to maintain and promote health through the application of advanced knowledge; theory, relevant research and critical decision-making are emphasized. Community resources, pharmacological therapies, and complementary strategies are addressed.

NURS.6610 Family Health Nursing II (Formerly 33.661) - Credits: 4

The focus of this course is on health promotion and management of common health issues pertaining to woman and to infants, children, and adolescents. Based on current scientific research, students develop skills in analyzing data, differential diagnosis, and developing holistic plans of care that address the health promotion, illness prevention, and primary care needs of a wide-variety of client populations.

NURS.6620 Family Health Nursing III (Formerly 33.662) - Credits: 4

This capstone course builds on the family nursing curriculum of the previous three semesters. Issues related to health care policy and legislation relative to their impact on the role of the nurse practitioner within primary care are analyzed. Advanced knowledge of the management of complex health issues is integrated into nursing practice. Transition to the role of the advanced practice nurse is examined and actualized through an intensive, precepted, clinical experience.

NURS.6630 Family Health Nursing Practicum I
(Formerly 33.663) - Credits: 3

The focus of this course is on the advanced practice-nursing role in the holistic assessment and management of health problems of the family across the lifespan within a family and community context. Evidence-based strategies to prevent and treat common health problems and to maintain and promote health through the application of advanced knowledge, theory, relevant research and critical decision-making are emphasized. Community resources, pharmacological therapies, and complementary strategies are addressed.

NURS.6640 Family Health Nursing Practicum II
This course focuses on health promotion, illness prevention, and treatment through the comprehensive assessment and management of common health issues of infants, children, adolescents and woman in the context of family and social environments. Application of theory, knowledge, and research findings to clinical practice is emphasized. The utilization of current clinical technologies is introduced.

NURS.6770 Thesis Review (Formerly 33.677) - Credits: 1
NURS.6890 Scholarly Project/Capstone (Formerly 33.689) - Credits: 3
This capstone project affords the student the opportunity for further knowledge development in an area of interest and learning need. The faculty-guided experience involves the development of a scholarly project which may involve a number of options: a scholarly review of the literature in a specific area; development of clinical teaching materials related to some dimension of sleep and/or sleep disorders; or a translational research project whereby a body of current research is interpreted for application to practice. The project will be negotiated with the faculty of record to meet the objectives of the course.

NURS.7010 Philosophy of Science (Formerly 33.701) - Credits: 3
This course provides doctoral students in nursing with philosophical perspectives in science, the nature of knowledge and its development, nursing knowledge development and philosophical underpinning to theory development, methods in scientific inquiry.

NURS.7020 Theoretical Foundations of Health Promotion (Formerly 33.702) - Credits: 3
Study of the multidisciplinary theories, which direct or have the potential to direct inquiry in health promotion. Course content is derived from nursing, anthropology, psychology, sociology, economics, medicine and management.

NURS.7060 Measurement in Health & Behavioral Research (Formerly 33.706) - Credits: 3
This course provides students with theoretical principles of measurement and design in health and behavioral research. The strategies, techniques, and issues in the development and administration of survey instruments will be critically examined. Psychometric properties using standardized approaches to measurement will be analyzed.

NURS.7070 Epidemiology of Health Promotion (Formerly 33.707) - Credits: 3
This course provides an in-depth exploration of the concepts and methods of epidemiological research. Students will critique the principles of epidemiology with an emphasis on health promotion research. Students will analyze and develop epidemiological approaches, which seek to promote health and prevent disease.

NURS.7130 Curriculum and Teaching In Nursing (Formerly 33.713) - Credits: 3
The focus of this course is on development, implementation, and evaluation of nursing curricula and academic courses. Contemporary theories of learning are applied to analysis of student learning needs, teaching strategies and educational methodologies. This course is intended for those nursing students post-MS or enrolled in doctoral study who wish to teach in the academic and/or practice environment. However, students in a MS program who are interested may register for the course with permission.

NURS.7150 Independent Study (Formerly 33.715) - Credits: 3
The study of highly specific content area related to the student’s dissertation topic. Course objectives and projects are jointly designed by student and faculty member. No more than 1 independent study is acceptable as cognate credit.

NURS.7160 Qualitative Methods (Formerly 33.716) - Credits: 3
The study of predominating qualitative methodology in the health sciences literature. Emphasis is on phenomenology, ethnography, life history/narrative, critical incidents, grounded theory, case study, and associated methodologies.

NURS.7170 Evaluation Research (Formerly 33.717) - Credits: 3
This course focus is on the basic concepts of evaluation research and their application to education, health and social programs. Specific design and analytic approaches that effect quality evaluation research will be reviewed. Students will design a mock evaluation study. Prerequisites: Completion of a graduate level research methods course.

NURS.7180 Independent Study (Formerly 33.718) - Credits: 1
NURS.7300 Quantitative Research Methods and
Grantsmanship (Formerly 33.730) - Credits: 3
This course introduces students to strategies and methods in research including an analysis of theoretical and empirical links, operationalization of concepts, research design, and ethics in behavioral research. Students will identify appropriate funding sources and complete a research grant application.

NURS.7310 Health Promotion Research (Formerly 33.731) - Credits: 3
This course focuses on interdisciplinary health promotion research that targets diverse individuals, families, groups, and communities/society. Students will identify and analyze ethical issues, philosophical and conceptual underpinnings, measurement principles and major gaps in current knowledge in nursing and health promotion. Students will critique research approaches to health promotion studies and propose a research study in a topic relevant to health promotion.

NURS.7330 Graduate Project - Nursing (Formerly 33.733) - Credits: 3
Course focus is on application of the nursing research process. The student actively engages in at least two aspects of research under the guidance of a faculty mentor. The course product has practical implications for nursing practice.

NURS.7370 Advanced Qualitative Methods (Formerly 33.737) - Credits: 3
This course will focus on the in-depth historical and philosophical underpinnings of qualitative research. The student will examine and critique various analytic qualitative methods. The student will complete a project incorporating qualitative analysis using a qualitative software program.

NURS.7380 Mentored Research Experience (Formerly 33.738) - Credits: 3
In this course students participate in a mentored research experience. Opportunities are provided for the application of research skills using an interdisciplinary approach. Students conduct health promotion research and undertake a leadership role in the dissemination of culturally competent scholarship to improve nursing and health promotion practice.

NURS.7390 Mentored Research Experience (Formerly 33.739) - Credits: 3
In this course, students participate in a mentored research experience. Students actively contribute as a member of a research study that will contribute to scientific knowledge.

NURS.7430 Master’s Thesis - Nursing (Formerly 33.743) - Credits: 3
Course focus is on the application of the full research process to a topic relevant to nursing practice and/or health outcomes. The student is expected to propose, conduct and defend the study under the guidance of a designated faculty thesis committee.

NURS.7530 Doctoral Dissertation (Formerly 33.753) - Credits: 1-6
A structured series of sequenced seminars which guides students through dissertation proposal development, defense, collection and analysis of data. The first seminar concludes with the development of Chapters I and II of the dissertation; the second seminar concludes with defense of the proposal; and the third seminar culminates in the development of discussion and conclusions of the dissertation effort.

NURS.7560 Doctoral Dissertation (Formerly 33.756) - Credits: 6
A structured series of sequenced seminars which guides students through dissertation proposal development, defense, collection and analysis of data. The first seminar concludes with the development of Chapters I and II of the dissertation; the second seminar concludes with defense of the proposal; and the third seminar culminates in the development of discussion and conclusions of the dissertation effort.

NURS.7590 Doctoral Dissertation (Formerly 33.759) - Credits: 9
A structured series of sequenced seminars which guides students through dissertation proposal development, defense, collection and analysis of data. The first seminar concludes with the development of Chapters I and II of the dissertation; the second seminar concludes with defense of the proposal; and the third seminar culminates in the development of discussion and conclusions of the dissertation effort.

NURS.7610 Continued Grad Research (Formerly 33.761) - Credits: 1
Continued Grad Research
In this course the student will explore the role of the DNP in evaluating evidence to inform practice. The student will also identify a critical issue or influential trend within the health care system that impacts health care delivery. Methods relevant to reviewing, analyzing, synthesizing, and applying evidence from the scientific literature will be discussed. Models of systematic reviews of the literature will be explored and implemented. Decisions will be made relative to the student's topical area of interest and identification of the Scholarly Project Chair.

NURS.7710 Advanced Nursing Leadership and Management (Formerly 33.771) - Credits: 3
This course consists of a seminar and leadership experience. The seminar will explore the major concepts in leadership and management and their application in the health care setting. The role of DNP will also be discussed in terms of leadership in the health policy, education, and clinical settings. A leadership project will be completed by the end of the semester.

NURS.7720 Scholarly Project Implementation (Formerly 33.772) - Credits: 3
In this course, the student will implement the Scholarly Project according to DNP Scholarly Project guidelines. Building on the previous semesters; course work and proposal design, students will meet in seminar every other week on campus to share progress on the project and to discuss issues related to implementation. Seminars will serve to guide students through the phases of the scholarly project implementation and evaluation.

NURS.7730 Evidence Dissemination, Advocacy & Policy (Formerly 33.773) - Credits: 3
this course will include a weekly seminar. The students will complete the scholarly project by undertaking dissemination activities. The student will analyze policies influencing DNP practice and quality, cost, and access to health care and participate in the policy making process.

NURS.7740 Scholarly Project Design (Formerly 33.774) - Credits: 3
Department of Work Environment

The UMass Lowell Department of Work Environment offers the following graduate programs:

- **Doctor of Science**
- **Master of Science**
- **Graduate Certificates:** Laboratory and Biosafety

Our programs provide training and research on the identification, characterization and control of chemical, physical, psychosocial, and biological risks associated with work environments as well as in understanding and developing respect for the complex social, political and economic context in which environmental and occupational health problems must be studied and addressed.

Our model of research and education integrates a rigorous scientific methodology with practical collaboration with the region’s industry, labor, communities and governments to design safer and cleaner systems of production.

The goal of the graduate program is to prepare professionals with the ability to scientifically evaluate the hazards of production as well as to design efficient alternatives to hazardous exposures.

The Department also has the broader objective of promoting sustainable production: environmentally sound systems of production, healthy work environments, and productive work organizations. The overarching principle is to design production that: is non-polluting; conserving of energy and natural resources; economically efficient; safe and healthful for workers, neighbors, and consumers; and rewarding for employees.

Master of Science

Graduates of the Master of Science program will be prepared to become prevention practitioners in one of two work environment options (occupational and environmental hygiene [OEH] or occupational ergonomics/safety [OES]). A dual option master’s degree that combines these two options is also possible by completing all required courses for both options. The dual option master’s degree is also available by combining either OEH or OES with either epidemiology or cleaner production & pollution prevention. The Department offers a program leading to the masters degree with two choices for a culminating experience: a thesis option or non-thesis option (project or capstone course). Candidates choosing the thesis option are guided by a committee of three faculty members.

Accelerated Degree Program

The department participates in the University’s effort to encourage outstanding graduate students to begin study toward an advanced degree while still undergraduates. Arrangements are possible for joint programs that combine a bachelor’s degree in another department with a masters degree in the Department of Work Environment. Such arrangements are made for eligible students after discussions with graduate coordinators in both departments. Please see Bachelor’s-Master’s Program for eligibility and application requirements.

Doctor of Science

The doctoral program is designed to prepare research scientists with a strong orientation towards prevention and applied research. The program includes advanced graduate work in each of five work environment options (occupational & environmental hygiene, occupational ergonomics & safety, epidemiology, work environment policy and cleaner production and pollution prevention). Candidates will, under the direction of a faculty advisor and dissertation committee, carry out original research culminating in a doctoral dissertation.

Master of Science Program in Work Environment

The UMass Lowell Department of Work Environment offers a 36-credit master’s program with two options:

- Occupational Ergonomics/Safety
- Occupational and Environmental Hygiene

Dual Option Master of Science in Work Environment

A dual option master’s degree that combines these two options is also possible by completing all required courses for both options. This dual option requires completion of 39 credits.

The option master’s degree is also available by combining either Occupational & Environmental Hygiene or Environmental Hygiene or Occupational Ergonomics & Safety with either Epidemiology or Cleaner Production & Pollution Prevention.

- Epidemiology
- Cleaner Production & Pollution Prevention

Program Information:

- Admission Requirements
Admission Requirements

Successful applicants will meet the standards of the Graduate Admissions [Link](https://www.uml.edu/Grad/default.aspx) at the University of Massachusetts Lowell and, in addition, will have demonstrated the ability and motivation necessary for independent creative work and an interest in issues of the work environment. Strong preference will be given to candidates with both a quantitative academic background and experience in industry, government or health care. At the same time, the faculty of the Department of Work Environment believes that the program (and the profession) is strengthened by admitting students from a wide diversity of backgrounds, and therefore students with non-traditional educational or work backgrounds will be considered carefully. Excellent written communication skills are important in graduate school, as well as in professional careers. For this reason, the Department places special emphasis on documentation of writing ability. The applicants statement required as part of the graduate application is one such document, but applicants may also submit other writing samples if they wish.

To be admitted applicants must have a BA or BS with an overall GPA of at least 3.0. Applicants must have a grade of C or better in required, prerequisite technical courses. For the Occupational and Environmental Hygiene Program the technical courses must include at a minimum one semester of: college-level mathematics (calculus or statistics preferred), general chemistry, (organic chemistry preferred), biology (physiology or anatomy preferred) and physics. For the Occupational Ergonomics & Safety program, technical courses must include college level mathematics (calculus preferred), biology (physiology or anatomy preferred) and physics. For the Epidemiology, Cleaner Production and Policy programs, technical courses include college level mathematics (statistics preferred) and biology (physiology or anatomy preferred). Applicants who are deficient in their technical course requirements may be admitted with the provision that they meet with their adviser before or during their first semester to make a plan to compensate for any deficiencies.

GREs are required unless the student has completed a previous American graduate degree. For students who graduated from a university in a country where English is not the official language, TOEFL scores should be at least 550 (paper-based), 213 (computer-based), or 79 (internet-based).

A faculty committee will evaluate each applicants complete packet of application materials including GPA, GRE, TOEFL, experience, recommendations and essay. Meeting minimum requirements does not guarantee acceptance. In some cases, applicants who do not meet one of our entry requirements may be admitted if other parts of their application outweigh the deficiency. In addition, applicants who do not meet one of our entry requirements may be admitted if they have completed 9 credits of Work Environment Department courses, all with a B+ or better and resulting in a GPA of at least 3.3 as a non-matriculated student.

An applicant interested in part-time study may wish to first enroll in a Work Environment core course as a non-matriculated student (see the Graduate Catalog application procedure for details) to learn more about the program, and so that faculty can get to know the prospective degree candidate as well. A maximum of 4 courses (12 credits) may be taken before matriculating. An applicant who has taken one or more Work Environment courses is strongly encouraged to obtain at least one letter of recommendation from a Work Environment instructor.

Application dates: The Department of Work Environment has rolling admissions, and will consider applications at any time. However, the following points should be considered.

Departmental Financial Assistance: An applicant for full-time study who wishes to be considered for departmental funding should have a completed admissions application (including undergraduate transcripts, letters of recommendation, and GRE scores) submitted to the Office of Graduate Admissions by April 15 for admission the following September. Applications received after that date risk not being considered for departmental funding. Awards are generally announced beginning in June. The Department will try to accommodate students who request an early decision because of the need to respond to competing requests. Please contact the Department if you are in this situation.

Mid-year Admissions: A student may begin in January, the start of the second semester. However, course sequences are designed for the student who starts in September, and so it is more difficult to plan an orderly course schedule beginning in January. Also, departmental funding is not generally available for those starting in January. If a student starting in January wishes to be considered for departmental funding, she/he may apply for the next cycle, starting in September of the same year.

Accelerated Bachelor’s-Master’s Program

Please see Accelerated Bachelor’s-Master’s Program for details.

Academic Adviser

Each graduate student admitted into the Department of Work Environment will be assigned an academic adviser who will assist in the selection of courses and who will develop, with the student, a program which will meet the needs and requirements for the desired concentration.

Practicum/Capstone Course
This six-credit two-semester sequence (PUBH.6000/PUBH.6010) provides the opportunity to apply practical skills through a culminating practice experience for students in the Master’s programs in Work Environment and Public Health. The course is designed to provide students with the opportunity to examine an interdisciplinary problem in depth and propose a solution to the problem by applying technical knowledge and skills obtained in their program to a real-world issue. The product will be a report and a public presentation of the project.

Masters Thesis

A student selecting the thesis option will arrange, through the academic adviser, to have a three-member faculty committee appointed at the time a thesis proposal is submitted. At least two of the committee members shall be from the students area of concentration. The committee is responsible for approval of the proposal. The report on the research work will then be performed primarily under the supervision of the academic adviser. The thesis must be prepared in appropriate form and be presented to the thesis committee for final approval. The student is required to give an oral defense of the thesis before the committee and other faculty members. The completed thesis must conform to the format specified in the "Thesis Guide (https://www.uml.edu/thesolutioncenter/Forms/Academic-Forms.aspx)," available from the Registrars Office (https://www.uml.edu/Registrar/default.aspx).

Course Requirements for the Masters Degree

This is a 36 credit program. A core of 15 credits is required of all students in the masters degree program. An additional 21 credits is required for each of the option for students with no prior experience. Advanced professional standing as evidenced by a CIH, CSP or CPE can result in a reduction of up to 12 credits.

Core Courses:

One of the following:

PUBH.5030 Toxicology and Health - 3 credits
PUBH.5510 Work Environment Policy and Practice - 3 credits
PUBH.5750 Introduction to Epidemiology - 3 credits
PUBH.6000 Work Environment Practicum/Capstone - 3 credits
PUBH.6010 Work Environment Practicum/Capstone - 3 credits

Total required core courses: 15 credits

Areas of Specialization

Occupational and Environmental Hygiene

Occupational and Environmental Hygiene (OEH-IH) is concerned with the protection of worker health through the prevention of occupational illness and injury. Occupational and environmental hygienists accomplish this goal through the recognition, evaluation, control and prevention of occupational and environmental hazards.

The Occupational & Environmental Hygiene program is specifically designed to achieve the following educational objectives:

1. **Technical Competence**: Demonstrate a high level of technical and scientific competence in the application of the fundamentals of recognition, evaluation, control and prevention of occupational and environmental hazards.

2. **Analytic Competence**: Demonstrate the ability to solve complex problems through observation, literature review, measurement and data analysis.

3. **Effective Communication**: Utilize effective oral and written communications to interact with technical and lay audiences around occupational and environmental health issues.

4. **Effective Teamwork**: Work independently and as part of an occupational and environmental health team to address complex problems in occupational and environmental health.

5. **Ethical Practice**: Understand the moral, ethical, legal and professional responsibilities for the protection of occupational and environmental health and integrate an awareness of social and global issues into practice.

6. **Life long Learning**: Understand the need to engage in lifelong learning and undertake appropriate activities to address this need, including professional advancement leading to professional certification.

The following courses are required in addition to the core:

PUBH.5100 Fundamentals of Occupational Health - 3 credits
PUBH.5400 Ergonomics and Work - 3 credits

OR PUBH.5400 Occupational Safety Engineering - 3 credits

And
The curriculum allows the Occupational Ergonomics and Safety students to choose 9 credits in electives. These electives will be selected by each student in accordance with her/his background, interests, and career goals. It is expected that the set of chosen electives will represent a coherent "track" or "option" within the concentration. These choices should be thoroughly discussed with the advisor. Tracks include "general practice" in safety and ergonomics: musculoskeletal disorder; and psychosocial strain/work organization.

Electives can also be used to for required courses in another option en route to a dual option master's with either Occupational an Environmental Hygiene (39 credits total) or Epidemiology (42 credits total).

**Epidemiology**

Epidemiology is the study of the distribution and determinants of disease in human populations. Today's occupational epidemiologist is called upon to identify previously unsuspected diseases caused by exposure to hazards in the work environment, to assess the health risks of new technologies, to recommend a scientific basis for the setting of occupational standards to protect worker health, and to evaluate the ability of control technologies or other interventions to limit health risks. Epidemiology is a rapidly evolving discipline using increasingly sophisticated statistical methods to quantify the risks of low level, long term exposures to hazardous physical and chemical agents. The field is highly interdisciplinary, drawing on physiology, toxicology, biostatistics, industrial hygiene and ergonomics. To meet this need for epidemiologists in industry, government and academia, the student in the epidemiology concentration will be trained in the full spectrum of epidemiologic methods.

The following courses are required in addition to the core:

- PUBH.5770 Introduction to Biostatistics - 3 credits
- PUBH.6161 Exposure and Risk Assessment - 3 credits
- PUBH.6820 Applied Epidemiologic Methods - 3 credits
- PUBH.6870 Quantitative Models for Public Health - 3 credits
- PUBH.6890 Advanced Regression Modeling - 3 credits

**Cleaner Production and Pollution Prevention**

This specialization is one of the few programs of its kind in the country. It combines a working knowledge of the work environment in its core curriculum and an intensive study experience in the principles and techniques of production for sustainability. The sustainable production systems of the future must integrate economic performance with sound environmental policy and strong safeguards for workers and public health. Pollution Prevention or environmentally conscious manufacturing is characterized by sound management, creative and productive design, environmentally
friendly products, waste minimization and work organizations that protect health while assuring economic returns.

The following courses are required in addition to the core:

- PUBH.5570 Toxic Use Reduction - 3 credits
- PUBH.6590 Cleaner Production Principles - 3 credits
- PUBH.6020 Sustainability Assessment Tools - 3 credits
- PUBH.6030 Global Development and Health - 3 credits

The dual option with Occupational &Environmental Hygiene and Cleaner Production &Pollution Prevention requires a total of 45 credits.

Doctor of Science in Work Environment

The UMass Lowell Department of Work Environment offers a doctoral program that focuses on occupational and environmental hygiene, ergonomics and safety, epidemiology, work environment policy and cleaner production, pollution prevention.

Admission Requirements

Doctoral training is built upon the substantial didactic training gained in the masters degree programs. To be eligible for admission to a doctoral program, an applicant will need to demonstrate appropriate undergraduate education with adequate preparation in quantitative sciences and a master’s degree in work environment or a related field. He or she will need to provide a minimum of three letters of reference attesting to the ability to perform advanced graduate work and to provide a written statement of career objectives and the relationship of doctoral training to those objectives. Evidence of academic ability must be provided in the form of undergraduate and graduate transcripts detailing an acceptable grade point average (generally a minimum of 3.0, with 3.5 in quantitative sciences). Performance on the Graduate Record Examination Aptitude Test must be at a high level. Discussions and visits with potential faculty advisors are encouraged and an interview may be required.

Academic Advisor

For a doctoral candidate, the primary responsibility for evaluating progress will rest with the student's academic advisor along with the Dissertation Committee. Upon matriculation, the student will be assigned an advisor in conjunction with the Graduate Student Coordinator and the student. The advisor must be from among the faculty of the Work Environment Program. The advisor will assist the student in complying with all the university requirements in achieving eligibility for the degree, including selection of courses and aiding in the development of the dissertation.

Requirements for the Doctoral Degree

Degree requirements include: six to eighteen credit hours of courses beyond the masters degree plus twelve to 24 credits of dissertation research for a total of 30 post-master's credit hours. A student with a masters degree from another institution will need to show knowledge in all subject areas required for the equivalent Work Environment masters degree from the University of Massachusetts Lowell. Courses will be selected to ensure each student has met all the major master's competencies and is adequately prepared in research methods and background needed for their dissertation. At least two semesters of Advanced Research methods (PUBH.6050) and 1 semester of Work in Progress Seminar (PUBH.6090) are required of all doctoral students. There is no language requirement but each major area may require additional advanced research methods courses. The student will work with a doctoral program advisor to propose a set of courses to meet the requirements and to prepare a preliminary thesis proposal. Following completion of all required course work, the student will be eligible to take a written qualifying examination. The exam will be designed to test the knowledge in the major field. Upon meeting the course and written exam requirements, the student must pass an oral qualifying exam based on his or her written dissertation proposal.

Doctoral Dissertation

The doctoral dissertation will be based on a substantial body of original research carried out by the candidate. The selection of the research topic will be the responsibility of the student in consultation with the academic advisor. The student and advisor will develop a Dissertation Committee of at least 3 faculty members, with at least two from the Department of Work Environment. The committee will review the student’s progress and approve the dissertation. The dissertation will, in general, be in the form of three publishable manuscripts and will include an appropriate literature review and overview of the dissertation research. At a minimum, one of these manuscripts must be submitted to a peer-reviewed journal before graduation. The student is required to give an oral defense of the dissertation before the Committee and other faculty members. The defense is open to the public.

Occupational and Environmental Hygiene

Likely areas of research include: Exposure science and biomarkers, exposure hazards and controls in health care, indoor air &healthy buildings, exposure hazards and controls in nanotechnology, sampling &analytical methods for airborne contaminants, exposure assessment for epidemiology, noise hazard assessment and control, toxic use reduction or integration of sustainable production an occupational hygiene, exposure hazards an controls in construction.

Occupational Ergonomics and Safety
Areas of doctoral research include: Field evaluation of ergonomic and safety exposures and hazard surveillance, biomechanical modeling, psychophysical methods for exposure assessment; technical and social factors in reorganizing work; strategies for injury prevention and control; macroergonomics, evaluation of control measure effectiveness.

Epidemiology

Examples of areas of research in which doctoral work is encouraged include: respiratory epidemiology, injury epidemiology, exposure modeling for epidemiology, occupational disease surveillance, epidemiology and musculoskeletal disease and occupational cancer epidemiology.

Work Environment Policy

Areas of research include: International occupational and environmental health policies, economic impacts of occupational injury and illness, integration of materials policy and health policy, environmental justice an urban ecology, labor and technology, occupational health and labor/management programs, alternative methods of risk assessment, health and safety impacts of new technologies, management of chemical information, toxic use reduction.

Cleaner Production and Pollution Prevention

Areas of research include: sustainable product design, integrated product policy, green chemistry, product take back, ecological taxes, materials policy, sustainability indicators in the workplace, environmental management systems and integrating occupational health and pollution prevention.

Graduate Certificate Programs in Work Environment

The UMass Lowell Department of Work Environment offers graduate certificates in the following areas:

- Disability Outcomes (interdisciplinary)
- Diversity in the Workplace (interdisciplinary)
- Laboratory and Biosafety
- Public Health Laboratory Sciences (interdisciplinary)
- Radiological Health Physics and General Work Environment Protection (interdisciplinary)

Graduate Certificate Application Form (https://www.uml.edu/docs/Updated%20Certificate%20forms_tcm18-3166.pdf) (pdf)

Disability Outcomes

Departments and programs participating in the certificate include Physical Therapy, Work Environment, Nursing, and Biomedical Engineering and Biotechnology

Sean Collins, P.T., Sc.D., C.C.S.
sean_collins@uml.edu

In the prevention and management of chronic disability, this certificate is designed to augment the preparation of researchers and/or clinicians with an appreciation of the interactions among personal attributes, clinical disease features, and socioeconomic and working conditions. Students will examine the state of the art theoretical perspectives in disability outcomes. They will develop advanced knowledge and skills in their chosen areas of expertise, including disability evaluation; design and conduct of epidemiologic studies of disease outcomes and their risk factors; evaluation and control of relevant environmental factors that affect work and health outcomes; and development and analysis of strategies for the improvement of disease outcomes, based on public and private policy alternatives.

The certificate is designed for students with a background in engineering, public health, clinical services, community programs or psychology. Through the program students complete a core of six credits in courses specifically oriented to Disability Outcomes and six additional elective credits (chosen with their advisor) in the participating departments (see below).

Required Courses: (3 credits each)

- DPTH.5100 Models and Measurement in Disability
- PUBH.5790 Disability Outcomes and Interventions

Elective Courses: (3 credits each - choose two courses)

- PUBH.5750 Introduction to Epidemiology
- PUBH.6380 Methods of Work Analysis
- PUBH.5420 Human Factors
- PUBH.6100 Exposure Assessment
- PUBH.6430 Healthy Work Organization
- PUBH.6040 Health Data Analysis
- PUBH.6250 Health Policy
- NURS.5520 Social, Cultural and Policy Issues in Health Care
- NURS.6010 Research Utilization

Or other electives with approval of the Certificate Program Coordinator.

Laboratory and Biosafety
Susan_Woskie@uml.edu (mailto:Susan_Woskie@uml.edu)

Purpose: The MassBiotech Council counts 440 companies, universities and service organization on its membership roles. Each Biotech organization must have an environmental health and safety office that covers biosafety, chemical, radiation and animal safety. It is difficult for companies to find a biosafety professional with an American Biosafety Association (ABSA) certification since there are currently no graduate or undergraduate programs in biosafety in the United States. The Laboratory &Biosafety Certificate introduces students to the fundamentals of biological safety as well as laboratory health and safety. This certificate is designed to be offered online, providing and affordable, accessible, entree to the field.

Who Should Apply: The biotech, biomedical and pharmaceutical sector is rapidly growing in the New England region. The job of a biological safety officer is in many ways similar to that of an Environmental Safety and Health Office, or an Occupational/Industrial Hygienist. It is concerned with protection of workers, and of the environment. Certified biological safety professionals “must develop knowledge of the principles of epidemiology, disease transmission patters, risk-assessment management, disinfection and sterilization, disease, microbiology, cell biology, and/or molecular biology, biochemistry is also recommended.

Required Courses: (Three 3-credit courses)

- PUBH.5150 Principles and Practices of Biological Safety
- PUBH.5160 Laboratory Environmental Health and Safety
- PUBH.5250 Recognition of Work Environmental Hazards: Introduction to Occupational Hygiene and Ergonomics

Elective Courses:

- PUBH.5730 Bioaerosols in Health and Biodefense
- PUBH.6180 Risk Management and Training
- PUBH.5750 Introduction to Biostatistics and Epidemiology
- MLSC.6130 Infectious Disease (online)
- MLSC.5150 Clinical Virology and Serology Laboratory
- MLSC.5110 Medical Bacteriology

Public Health Laboratory Sciences

Interdisciplinary program between the UMass Lowell departments of Clinical Laboratory & Nutritional Sciences, Community Health and Sustainability, Work Environment, and the Commonwealth of Massachusetts Department of Public Health Laboratories

Nancy Goodyear, Ph.D. (mailto:nancy_goodyear@uml.edu) Clinical Laboratory & Nutritional Sciences Department 978-934-4427 This program will help to satisfy a critical and timely need for qualified public health laboratory scientists. Concern about bioterrorist attacks post 9/11, the threat of disease epidemics from natural disasters, such as the tsunami crisis and Hurricane Katrina, as well as pandemics, such as Avian flu, exemplify circumstances that require appropriately trained public health laboratory personnel.

Program Requirements

Radiological Health Physics and General Work Environment Protection

Sukesh Aghara (mailto:sukesh_aghara@uml.edu) 978-934-3115

Purpose: This program provides advanced instruction about radiation and general work environment protections for professionals with health and safety responsibilities.

Who Should Apply: Graduate students majoring in either radiological sciences and protection or work environment are likely candidates for this program. Students should have a bachelor’s degree in a quantitative field and college courses in physics, chemistry, calculus and statistics. Many professionals in small to medium-sized industries have responsibility for health and safety with little or no formal instruction. Industries that use radioactive material or radiation and have no formal radiation protection or radiological health physics department often assign these responsibilities to employees who have more general work environment or safety responsibilities. It is also not uncommon for large industries that are licensed to possess radioactive material to assign general work environment responsibilities to the radiological health physics staff. Professionals with basic training in both general work environment and radiological health physics are particularly well-suited to work in small and medium-sized industries and to obtain top management positions responsible for all health and safety-related departments in large industries, government laboratories, and universities. The need for professionals in this field is projected to increase dramatically and continue for decades.

Program

The program is a collaborative endeavor between the university’s Physics and Radiological Sciences Program and the Work Environment Program. No other college or university in New England offers this type of program.

This certificate requires 14 credits of course work earned by taking four courses.
Required Courses:

- RADI.5010L Radiation Safety and Control I
- RADI.5020L Radiation Safety and Control II
- PUBH.5250 Introduction to Industrial Hygiene/Ergonomics

Elective Courses (choose 1):

- PUBH.5170 Physical Hazards Evaluation and Control
- PUBH.5180 Engineering Controls and Protective Equipment
- PUBH.5400 Occupational Safety and Health Engineering
- PUBH.6250 Field Evaluations in Work Environments

Master of Science in Work Environment - Professional Science Master's (PSM) Options

Applications are no longer being accepted for the PSM in Work Environment program.

Professional Science Masters Options in Work Environment

The Work Environment Profession Science Master’s Options are 36 credits, interdisciplinary, and problem-focused. Graduates learn to recognize, evaluate and control occupational and environmental health and safety issues. Technical preparation in such fields as statistics, toxicology, aerosol physics, analytical chemistry, and biomechanics is taught with direct applications to the identification, control and elimination of health and environmental hazards. Students also learn the dynamics of the workplace - the sociology, political science and economics of systems of production.

The Work Environment PSM options follow the same courses as the current masters degree programs with the addition of a one credit internship for students who do not have substantial professional work experience in their field.

Admission Requirements

The admission requirements are the same as in the current masters degree program:

- Baccalaureate degree from an accredited university or college with a recommended GPA of 3.0 or better.
- Graduate Record Examination Aptitude Test (GRE). For students who graduated from a university in a country where English is not the official language, TOEFL scores should be at least 550 (paper-based), 213 (computer-based), or 79 (internet-based).
- Documentation of good writing ability.
- Prerequisite technical courses (with a grade of C or better) must include: For the Occupational and Environmental Hygiene Program, one semester courses in mathematics (calculus or statistics preferred), general chemistry, organic chemistry, biology and physics. For the Ergonomics & Safety program, one semester courses in mathematics (calculus preferred), biology and physics. For the Epidemiology and Cleaner Production & Pollution Prevention programs, one semester courses in mathematics (statistics preferred) and human biology.
- Faculty committee will evaluate each applicants application materials including GPA, GRE, TOEFL, experience, recommendations and essay. Meeting minimum requirements does not guarantee acceptance. In some cases, applicants who do not meet all entry requirements may be admitted if they have completed 9 credits of Work Environment courses, all with a B+ or better as a non-matriculated student.

Curriculum

STEM Courses (24 credits total)

STEM Required Courses for ALL PSM options (9 Credits):

- PUBH.5030 Toxicology and Health (3 credits)
- PUBH.5250 Introduction to Industrial Hygiene and Ergonomics (3 credits)
- PUBH.5750 Introduction to Epidemiology (3 credits)

STEM Required SPECIALIZATION Courses (15 Credits)

Occupational & Environmental Hygiene

- PUBH.6160 Exposure and Risk Assessment (3 credits)
• PUBH.5400 Occupational Safety Engineering (3 credits)
• PUBH.6140 Evaluation of Work Environment Hazards (3 credits)
• PUBH.6150 Solutions to Work Environment Hazards (3 credits)
• PUBH.6190 Measurement of Chemical Exposures 5 (3 credits)

**Ergonomics and Safety**

• PUBH.5310 Occupational Biomechanics (3 credits)
• PUBH.5400 Occupational Safety Engineering (3 credits)
• PUBH.6380 Methods in Work Analysis (3 credits)
• Plus 2 STEM electives (6 credits)

**Cleaner Production/Pollution Prevention**

• PUBH.5570 Toxic Use Reduction (3 credits)
• PUBH.6100 Exposure Assessment (3 credits)
• PUBH.6590 Cleaner Production Principles (3 credits)
• Plus 2 STEM electives (6 credits)

**Epidemiology**

• PUBH.6820 Applied Epidemiologic Methods (3 credits)
• PUBH.6100 Exposure Assessment (3 credits)
• MATH.5910 Linear Modeling & Regression Methods (3 credits)
• PUBH.6870 Quantitative Models for Public Health (3 credits)
• PUBH.6890 Advanced Regression Modeling (3 credits)

(Other Graduate level courses outside of the Department of Work Environment may be chosen as STEM electives with advisory committee approval.)

PLUS courses (9 credits total)

PLUS Required Course for all PSM Options (3 credits):

• PUBH.5000 Analytical Context of the Work Environment

PLUS BUSINESS SPECIALIZATION Courses (6 credits total):

**Occupational & Environmental Hygiene**

• PUBH.6510 Work Environment Policy and Practice (3 credits)

• 1 PLUS elective (3 credits)

**Ergonomics and Safety**

• PUBH.5420 Human Factors (3 credits)
• 1 PLUS elective (3 credits)

**Cleaner Production/Pollution Prevention**

• PUBH.5500 Environmental Law & Policy (3 credits)
• PUBH.6510 Work Environment Policy and Practice (3 credits)

**Epidemiology**

• 2 PLUS electives (6 credits)

**Approved PLUS Elective Courses:**

**Business of Work Environment:**

• PUBH.5420 Human Factors (3 credits)
• PUBH.5500 Environmental Law & Policy (3 credits)
• PUBH.6400 Macroergonomics (3 credits)
• PUBH.6410 Principles of Accident Causation and Prevention (3 credits)
• PUBH.6430 Healthy Work Organization Design (3 credits)
• PUBH.6510 Work Environment Policy and Practice (3 credits)
• PUBH.6540 Work, Technology and Training (3 credits)

**Business Fundamentals:**

• MKTG.5010 Marketing Fundamentals (3 credits)
• MGMT.5010 Organizational Behavior (3 credits)
• ENTR.6500 Innovation and Emerging Technology (3 credits)
• MGMT.6300 New Product Development (3 credits)
• MKTG.6300 Market Research for Entrepreneurs (3 credits)
• MGMT.6350 Project Management (3 credits)
• FINA.6400 Financing Innovation and Technical Ventures (3 credits)

(Additional PLUS course choices will be available from a list of
approved courses provided by the PSM Coordinating Committee to include additional qualified courses from the College of Management and other relevant departments).

**Internship (1 credit)**

A Professional Internship is required for students in this program and is expected to be a minimum of 350 hours and have 3-6 month duration. The internship is designed to provide students with an opportunity to obtain real-world experience in business, government agencies, non-profit organizations or research laboratories. Internships or research project experiences will typically take place in industries and government agencies. Research experience can also be obtained at the University or other Research Centers.

To be eligible for the Professional Internship, students will be required to have 1) completed a minimum of 12 credits of STEM courses, 2) completed a minimum of 6 credits of PLUS courses, 3) attained an overall GPA of 3.0 or higher and 4) permission of the Graduate Coordinator. The internship will typically be undertaken in the summer between the first and second years, with continuation into the final year in some cases.

Students that have previous or current professional employment experience may request to waive the internship requirement, however, in these cases, a new project experience will be required that adds to the students current set of skills.

**Capstone Experience - Required for all PSM Options (2 credits)**

PUBH.6000 (0 credits) and PUBH.6020 (2 credits) are the courses for the Work Environment Capstone. The capstone courses are taken in the second (final) year of the program with PUBH.6000 taken in the Fall and PUBH.6020 in the spring semester.

All students will be required to submit a final written report and give oral presentation on their internship work during the capstone course in their final semester. All post-internship students will participate in this capstone class, as will all professionally employed students who have had the internship waived.