Application Procedure

Institutional Admissions 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/), 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. Certain graduate programs require graduate entrance examinations. The applicant must have obtained a satisfactory score on the appropriate entrance examination if 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.

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, 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.

Application Procedure for Graduate Admission

Applicants can apply using the online application.

- Master’s & Doctoral Application
- Application Deadline
- Types of Admission
- Graduate Certificate Application Procedure
- Non Degree Status
- Graduate Readmission/Deferral Policy

Master’s & Doctoral Application Information

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. Letters of recommendation written by individuals qualified to judge the ability of the applicant to carry on graduate work and research as requested by the department. Refer to the department page to learn about the number of required recommendations.
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 an institutionally approved language test for students from countries where English is not the national language. The thresholds for English tests are set by the department. Institutionally approved English tests: TOEFL, TOEFL IBT Home Edition, IELTS, Duolingo, PTE Academic, and ASC English School Level 6. 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.

Graduate Certificate Candidate Application Information

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, submit the appropriate application fee, and submit an official transcript indicating the conferral of a bachelor’s degree. The graduate record exam (GRE) and letters of recommendation are 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.

Financial Assistance & Assistantships

FINANCIAL ASSISTANCE

- Applying for Financial Aid
- Other Types of Assistance

The Solution Center
(https://www.uml.edu/thesolutioncenter/financial-aid/default.aspx)
University Crossing Lobby
220 Pawtucket Street, Suite 131
Lowell, MA 01854
Telephone: 978-934-2000
Office Hours: Monday - Friday: 8:30 a.m. to 5 p.m.

Applying 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 (http://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.studentaid.ed.gov (https://www.studentaid.ed.gov/sa/fafsa/filling-out/fsaid).

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 Solution Center website. 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 merit-based 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 (www.sss.gov (http://www.sss.gov))

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
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 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 visit the Solution Center at [https://www.uml.edu/thesolutioncenter/financial-aid/Receiving-Aid/Types-Aid/graduate/loans.aspx](https://www.uml.edu/thesolutioncenter/financial-aid/Receiving-Aid/Types-Aid/graduate/loans.aspx).

**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 website ([https://studentaid.gov/help-center/answers/article/federal-direct-loan-program](https://studentaid.gov/help-center/answers/article/federal-direct-loan-program)) 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 Solution Center ([https://www.uml.edu/thesolutioncenter/financial-aid/Forms.aspx](https://www.uml.edu/thesolutioncenter/financial-aid/Forms.aspx)). 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.

### ASSISTANSHIPS

#### 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/Graduate-Student-Services/coordinators.aspx](https://www.uml.edu/Graduate-Student-Services/coordinators.aspx)) or chairperson (see [https://www.uml.edu/Grad/coordinators.aspx](https://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 ([https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf](https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)) (a grade point average under 3.0 on the official transcript). See the Academic Standing information at [www.uml.edu/catalog/graduate/policies/Academic_Standing.htm](https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf).

3. No University-funded teaching/research assistantship
may 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/Graduate-Student-Services/coordinators.aspx) in the student’s department.

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 (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Mathematics & Science Education (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)

Doctor of Philosophy in Engineering (Ph.D.)

- Chemical Engineering (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Civil Engineering (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Computer Engineering (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Electrical Engineering (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Energy Engineering (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Mechanical Engineering
  - Mechanical Engineering/Chemical Engineering
  - Mechanical Engineering/Civil & Environmental Engineering
  - Mechanical Engineering/Energy Engineering
  - Mechanical Engineering/Industrial Engineering
  - Mechanical Engineering/Manufacturing Engineering
- Plastics Engineering

Doctor of Nursing Practice (DNP)

- Nursing

Doctor of Philosophy (Ph.D.)

- Applied Psychology and Preventative Science
- Applied Biology (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
Biomedical Science;
Developmental & Evolutionary Biology;
Quantitative Biology & Biophysics; and
Cellular & Molecular Biology
- Biomedical Engineering & Biotechnology
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Business Administration
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Management International Business
  Accounting Leadership Finance Management Information Systems
- Chemistry
  Biochemistry Environmental Studies Green Chemistry
- Computer Science Computational Mathematics
- Criminology and Criminal Justice
  Crime, Criminals Community Global Perspectives on Crime Justice System & Policy Technology & Criminal Justice Victims, Crime & Justice
- Earth System Science
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Global Studies
  Security & Human Rights Socio-Economic Development Comparative Cultures
- Marine Sciences & Technology
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Nursing
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Pharmaceutical Science
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Physics
  Applied Mechanics Energy Engineering Atmospheric Sciences Radiological Sciences
- Polymer Science Polymer Science/Plastics Engineering

Doctor of Physical Therapy (DPT)
- Physical Therapy

Doctor of Science
- Public Health Epidemiology

Master’s Programs Offered
Listed by Degree Earned
- Master of Arts
- Master of Business Administration
- Master of Education
- Master of Music
- Master of Public Administration
- Master of Public Health
- Master of Science
- Master of Science in Engineering
- Education Specialist

Master of Arts (MA)
- Community Social Psychology
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Criminal Justice
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- History
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Peace & Conflict Resolution
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Security Studies
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
Master of Business Administration (MBA)
- General Business
- Accounting
- Business Analytics
- Entrepreneurship
- Finance (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Healthcare
- Information Technology (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- International Business
- Managerial Leadership
- Marketing

Master of Public Health (MPH)
Public Health (https://www.uml.edu/Health-Sciences/Public-Health/Programs-of-Study/masters/MPH.aspx)
- Dietetics
- Epidemiology
- Healthcare Management
- Nutrition
- Social and Behavioral Sciences

Master of Science (MS)
- Accounting
- Applied Biomedical Sciences
- Autism Studies
- Biological Sciences (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Bioinformatics
- Biotechnology
- Business Analytics
- Chemistry
- Chemistry & Polymer Science (PSM)
- Pharmaceutical Biochemistry (PSM)
- Computer Science
- Software Entrepreneurship - Not Accepting new applications
- Engineering Management (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Entrepreneurship
- Environmental Studies (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
Atmospheric Sciences
Environmental Engineering Sciences
Environmental Geoscience (PSM)

- **Finance**
- **Health Information Management**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf) Health Informatics Health Management
- **Information Technology**
- **Marine Sciences & Technology**
- **Mathematics**
  Mathematics for Teachers, Probability & Statistics
- **Nursing**
  Adult / Gerontological Nursing, Family Health Nursing
- **Pharmaceutical Science**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- **Physics**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- **Public Health**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- **Radiological Science & Protection**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf) Radiological Science and Protection (PSM), Medical Physics
- **Security Studies**
  CBRNE Security, Critical Infrastructure Protection, Cybersecurity

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

- **Chemical Engineering**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- **Civil Engineering**
  Leadership, Environmental Geoscience, Structural, Transportation
- **Computer Engineering**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- **Electrical Engineering**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- **Energy Engineering**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- **Mechanical Engineering**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- **Plastics Engineering**
  Leadership, Coatings & Adhesives, Fibers & Composites, Synthetic Fibers

**Education Specialist (EdS)**

- **Administration, Planning & Policy**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- **Curriculum & Instruction**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- **Reading & Language**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)

**Graduate Certificates Offered**

- **Additive Manufacturing (AM) in Radio Frequency (RF) & Microwave (MW) Applications**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- **Applied Statistics**
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Behavioral Intervention in Autism for Board Certified Behavior Analyst
• Behavioral Management in Autism (BCaBA)
• Biomedical Engineering and Biotechnology
• Biotechnology &Bioprocessing
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Business Analytics
• Chemistry (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Clinical Pathology
  (https://www.uml.edu/Catalog/Graduate/Health-Environment/Clinical-Lab-Nutritional-Sci/Certificate-Program.aspx)
• Commercial Development for Plastic Engineers
• Communications Engineering
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Composites and Materials
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Criminal Justice Leadership &Policy Development
• Cyber Security
• Design and Manufacturing
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Diversity in the Workplace
• Domestic Violence Prevention
• Energy Conversion
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Environmental Atmospheric Science
• Environmental Biotechnology
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Environmental GeoScience
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Ergonomics &Biomechanics
• Evaluation and Assessment
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Family Studies
• Field Programmable Gate Array
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Field Programmable Gate Array Lab-Enhanced
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf) (corporate program)
• Financial Management
• Forensic Criminology
• Foundations of Business
• Health Informatics
• Health Management
• Human Computer Interaction (We are not accepting applications at this time).
• Integrated Engineering Systems
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf) (interdisciplinary)
• Innovation and Entrepreneurship
• Materials Sciences &Engineering
• Medical Imaging and Instrumentations
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Medical Plastics Design &Manufacturing
• Microelectromechanical Systems/Nanoelectromechanical Systems
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Microwave and Wireless Engineering
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
• Modeling, Simulation, and Control of Systems and Processes
• Molecular &Cellular Biotechnology
Bachelor’s to Master’s Programs

Earn Two Degrees in as Little as Five Years

- Eligibility
- Course Credits
- How to Transition
- Francis College of Engineering Expanded Bachelor’s to Master’s Policy

NOTE: A course with a Pass/No Credit election cannot be applied to the university's Bachelor's to Master's Program.

In order to encourage outstanding UMass Lowell undergraduate degree students to continue their studies towards an advanced degree, qualified students may transition to the Bachelor's 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. No graduate application is required for UMass Lowell’s Bachelor’s to Master’s programs. 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.)

The transcripts of the students who declare their intention to transition to master’s programs will be reviewed by the graduate coordinator to ensure the GPA and prerequisite requirements are met. Students should also provide one letter of recommendation to support their transition to the master’s program. Refer to the Bachelor’s to Master’s (https://www.uml.edu/Academics/undergraduate-programs/bachelors-masters.aspx) page for more information.

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 2020 semester, an individual can defer to either the Fall 2020 or Spring 2021 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. Students who are confirmed to transition 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 the graduate program and submit all required admission materials.

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. A graduate level course used to fulfill both an undergraduate degree requirement and a undergraduate minor requirement is also eligible to be used in the Master’s, but only up to the maximum number allowed for the specific Master’s degree.
3. Only courses of 5000 level or higher may count toward the Masters degree.
4. Transfer credit is not accepted for graduate certificates. The Bachelor’s to Master’s program benefits do not include credits toward a graduate certificate.
5. 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 as follows:
   - Up to 12 credits may be transferred 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.
6. 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.
7. A course with a Pass/No Credit election cannot be
applied to the University's Bachelor's to Master's Program.

How to Transition to Bachelor's to Master's Programs

Undergraduate students are requested to apply to transition by submitting the application for transition found on the Undergraduate Bachelor's to Master's page (https://www.uml.edu/Academics/undergraduate-programs/bachelors-masters.aspx). Students normally apply to transition in the second semester of their third year as an undergraduate (up until the last day of classes in their final semester before graduation).

Francis College of Engineering Expanded Bachelor's to Master's Policy

The Francis College of Engineering participates in the UMass Lowell Bachelors to Masters Program and expands this benefit to applicants from other ABET-accredited engineering programs. All applicants from ABET-accredited institutions who meet the UMass Lowell BS/MS admissions criteria may transfer (double count) eligible graduate-level credits taken for the completion of their undergraduate degree program at their home institution to their UMass Lowell (UML) masters degree program. The maximum number of credits to be transferred will be the same as are allowed by UMass Lowell Francis students who graduate from the College of Engineering. Additionally, all Bachelors to Masters rules and regulations, including minimum grade requirements, must be met.

Eligibility

Applicants for this expanded program must have a minimum undergraduate cumulative GPA of 3.0 in appropriate engineering majors from other ABET-accredited institutions. As with current admissions policy in Engineering, the GRE may be waived for applicants meeting these criteria (minimum GPA from ABET-accredited engineering program).

Double Counting

Consistent with the current transfer policy, only graduate courses with grades of B or better may transfer. Also consistent with current policy, each department decides whether a course from another institution may or may not fulfill a departmental program requirement.
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.

UMass Lowell instruction is scheduled during standard 15-week fall and spring semester terms. During the summer/winter terms varying shorter length special programs are available and may be considered as the equivalent to full-time status for the specific time period within a session. This is for enrollment purposes only.

The credit-hour policy, a statement of what students will learn is necessary if credit is based on a demonstration by the student of learning equivalent to that established as the expected product of a period of study corresponding to a time-based credit-hour assignment. The credit-hour standard for the course, and the way that the credit-hour standard is achieved, are communicated to students as part of the course syllabus or equivalent documentation.

Please note: Financial aid, veterans benefits or other types of aid define 9 credits for full-time study during the fall/spring terms. The grid below displays how the credit hour is met with shorter time sessions over the summer/winter.

<table>
<thead>
<tr>
<th># of weeks</th>
<th># of credit hour(s)</th>
<th># Calculated Credit Hour Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 credit</td>
<td>45</td>
</tr>
<tr>
<td>2</td>
<td>2 credits</td>
<td>90</td>
</tr>
<tr>
<td>3</td>
<td>3 credits</td>
<td>135</td>
</tr>
<tr>
<td>4</td>
<td>4 credits</td>
<td>180</td>
</tr>
<tr>
<td>5</td>
<td>5 credits</td>
<td>225</td>
</tr>
<tr>
<td>6</td>
<td>6 credits</td>
<td>270</td>
</tr>
</tbody>
</table>

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.

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 Bachelors 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.
Master of Science in Finance

The Finance Department at The Manning School of Business offers a graduate degree program in Master of Science in Finance (MSF) in addition to a finance options in the MBA and doctoral degree programs. All degree programs offered by the Finance Department, along with all programs offered by the MSB are accredited by the Association to Advance Collegiate Schools of Business (AACSB). This accreditation is the highest level of accreditation for a business school, and documents the commitment of the Finance Department, the Manning School of Business, and the University of Massachusetts Lowell to excellence in education and continuous improvement of programs to keep them rigorous and relevant.

Curriculum

For undergraduate business majors, the MSF curriculum consists of 10 courses (30 credits): five required courses in Finance and five electives (two of which are recommended to be in Finance). For applicants who earned an undergraduate degree in an area other than business, this program is preceded by three prerequisite courses (with grades of B- or better) representing key foundation material in Accounting, Economics, and Finance. These prerequisite course credits will not count toward the MSF degree. The curriculum plan for the MSF is as shown in the curriculum outline.

The courses in the Manning School of Business are currently offered in an accelerated 8-week format. Student are allowed to register for a maximum of two courses (6 credits) per 8 week term.In order to petition to take more than two courses per 8-week term, the student needs to submit a graduate academic petition to the Manning School Graduate Office.

Admission Requirements

1. Undergraduate Degree: Official transcripts. A minimum overall GPA of 3.0 is required.
2. GMAT (minimum 500): can be waived for UMass Lowell undergraduates with a GPA of 3.2 and above and upon receipt of a recommendation by an UMass Lowell faculty member; also can be waived if the undergraduate GPA is 3.5 and above at an AACSB accredited (or equivalent) university.
3. TOEFL for international students: (600+ paper-based, 250+ computer-based, or 100+ Internet-based).
4. Successful completion of all other Graduate Admissions Office requirements, including three letters of recommendation.

Curriculum Outline: Master of Science in Finance (MSF)

Prerequisite Course Requirements

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT.5010</td>
<td>Financial Accounting (2 credits)</td>
</tr>
<tr>
<td>FINA.5010</td>
<td>Fundamentals of Finance (2 credits)</td>
</tr>
</tbody>
</table>

View the complete degree pathway.

- Total Number of Courses required for the degree: 10
- Total credit hours required for the degree: 30

Academic and Graduation Requirements

Academic and graduation requirements are similar to those of the other graduate programs in the MSB. Specifically, no more than six (6) MSF course credits of grades below a B may be counted toward the MSF, and no graduate degree will be awarded to any student whose overall cumulative grade point average is below 3.0. Other policies, as contained in the UMass Lowell graduate Catalog, will also apply as appropriate.

MSF Program Coordinator:

Prof. Ravi Jain
Phone: 978-934-2854
Email:MSF@uml.edu

Master of Science in Entrepreneurship Degree Program

- Program of Study
- Part-Time and Full-Time Study
- Admissions Process
- Course Descriptions

From a competitive perspective, the shift from a manufacturing base to a technology-innovation and knowledge-based economy requires new skills among organizational employees. In conversations with executive staff in major companies in the region we have been told repeatedly that the regions engineers and scientists need to be entrepreneurial. As competition and costs rise, research and development efforts must clearly contribute to business growth and the company bottom line. Thus, companies are looking for technical professionals who can generate new ideas and new businesses.
The goal of the Master of Science in Entrepreneurship (MS E) is to provide all students (engineers, business, scientists, social, arts, etc.) with the skills and knowledge required to drive innovation in today's collaborative, global workforce. Using a combination of class work, case work, and real-world project activity, students will:

- Understand and leverage the business opportunities accompanying low- to high-technology innovation within established companies and through the launch of new ventures.
- Develop an understanding of technology innovation and entrepreneurship from both an academic and applied perspective.
- Learn how to appropriately value and finance technology innovations and new ventures.
- Develop the market research and sales skills necessary to position technology innovations to create competitive advantage.
- Develop the management skills required to identify, launch and execute innovative products, services, and new ventures.
- Develop an applied understanding of the regulatory and property law issues accompanying the innovation and entrepreneurship processes.
- Develop the project management and interdisciplinary team skills required to manage in an open collaboration environment.

A graduate of the MS E program should be prepared to manage innovation in established firms, or to launch new technology-oriented ventures.

Program of Study

The MS E consists of ten courses (30 credits), including 4 core courses (12 credits), 4 elective courses (12 credits, 6 of which must be in Engineering and/or Science) and a 2 course (6 credit) practicum. Each student will participate in the development and delivery of a team capstone project (through the 2 course practicum) which will be reviewed by an external professional panel.

The courses in the Manning School of Business are currently offered in an accelerated 8-week format. Student are allowed to register for a maximum of two courses (6 credits) per 8-week term. In order to petition to take more than two courses per 8-week term, the student needs to submit a graduate academic petition to the Manning School Graduate Office.

- MS in Entrepreneurship degree pathway

Part-Time and Full-Time Study

Students are admitted on either a part-time or full-time basis. Courses meet during the evening hours beginning at 6 p.m., with additional online and blended course options.

Part-time students are expected to graduate within two years. For an MS student, the full-time course load is nine credits. Degree requirements usually are completed in one year for students attending full-time.

Admissions Requirements

Target Audience

The Program will be offered to engineering, science and select business graduates as a 5th year program (the University's Plus-One program) and to working professionals with an appropriate undergraduate degree in business, science, technology, or engineering.

Working Professionals

Admissions to the program will be determined based on an overall review of the following applicant materials: undergraduate degree and performance in science, engineering or business (other areas will be considered if the applicant demonstrates significant work experience in a technical field), GMAT or GRE score, three letters of recommendation (professional and academic) and a letter describing the applicant's professional goals and how earning a MS will assist in their professional development. For applicants from non-English speaking countries, a minimum score of the Test of English as a Foreign Language (TOEFL) or 600 (paper-based) or 100 (internet-based) must be obtained.

Plus-One Program (formerly the Accelerated Bachelor's to Master's Program)

The Plus-One Program option offered by the College of Management is an accelerated program offered to encourage outstanding undergraduate students in engineering, science, and business to continue study at the graduate level. Undergraduate students in these majors (i.e., science, engineering, or business), who have a GPA of 3.00 or better at the end of their junior year must apply for this program before they complete their undergraduate graduation requirements. Students who plan to apply to this program must meet with the MS in Entrepreneurship program advisor by their junior year to discuss any additional course requirements.
Course Descriptions:

**ENTR.6500 Innovation and Emerging Technologies (3 credits)**
This course examines technological innovation and its relationship to value-creation and business strategy. Emphasis is placed on emerging scientific and technical innovations and the opportunities and challenges they present to both existing businesses and new venture entrepreneurs. The overall goal of this course is to help you to understand, appreciate and learn to manage the technology innovation process. Students examining innovation strategies, planning models, evaluation models, licensing and the commercialization process required to launch new businesses around innovative products and technologies.

**ENTR.6300 Market Research for Entrepreneurs (3 credits)**
In this course students will learn and apply various marketing research techniques that will enable them to succeed as entrepreneurs. Some of the topics we will cover include: assessing customer needs, estimating market demand, deciding the features of the proposed product/service and the price that would be most attractive to their target market etc. The course will provide students with a overview of key marketing concepts, and understanding of the statistical methodology behind the market research techniques and practical application of the techniques via cases and projects.

**ENTR.6350 Financing Innovation and Technology Ventures (3 credits)**
This course focuses on strategies for financing innovation and new technology ventures both within a firm and on a stand-alone basis. Topics covered will include: different types of business organizations; different sources of funding including internal sources and external source such as angel investors, venture capitalists, etc.; short-term and long-term financial planning and forecasting; business valuation; term sheet negotiation and exit strategies including mergers and acquisitions and IPOs. Each aspect of the course will be covered within the context of a business plan an venture life-cycle.

**ENTR.6400 New Venture Creation**
This course is designed to help students identify, evaluate, and obtain control over opportunities that can be exploited by starting new companies. It essentially focuses on entrepreneurship as a generic activity. It explores the opportunities and challenges faced by individuals starting up new ventures and the probable paths of career development for the students pursuing entrepreneurship. Thus, for those who may be interested in starting or running a new business in their lives, this class will provide an essential foundation for the process, skills and resources required as well as the opportunities available to the young entrepreneurs.

**MIST.6350 Product Development (3 credits)**
This course will focus on managing innovation and technology projects and the critical role that a project manager plays in successful execution. Topics included in the course are: project planning, deliverables, managing quality, change management, documentation, communication, risk management, project team and human resource management approaches and creating and managing expectations.

**ENTR.6550 Corporate Entrepreneurship (3 credits)**
This course focuses on entrepreneurship in established companies. Corporate Entrepreneurship (CE) is a process by which companies adopt a conscious strategy to encourage creativity, innovation, outside-the-box thinking, experimentation and risk taking. As a result, companies promoting and implementing CE strive for competitive advantages in rapidly changing global markets. The course will cover components of CE, developing &implementing CE strategies and managing CE.

**MGMT.6400 Building &Managing Entrepreneurial Teams (3 credits)**
A critical element of success in the launch of new products, services and companies is the composition and experience of
the team members. This course examines the composition, development and lifecycle of entrepreneurial teams within the context of startups and existing corporations. Students will develop an understanding of the need for diverse experiences and skills among team members along with an understanding of how teams change as entrepreneurial processes progress. A particular emphasis will be placed on improving students' communications and collaboration skills in a cross-functional team context. Students will also explore evolving open collaborative approaches employed by companies to accelerate innovation by using customers, suppliers, partner and other organizations outside the four walls of a company.

ENTR.6880 (https://www.uml.edu/catalog/courses/ENTR/6880) Special Topics in Entrepreneurship & Innovation (3 credits)
Topics of current interest in Entrepreneurship. Innovation and Technology Management Subject matter to be announced in advance.

PLAS.5370 (https://www.uml.edu/catalog/courses/PLAS/5370) Business Law for Engineers (3 credits)
Employment agreements, including ethical work considerations, non-compete provisions, trade secrets, assignment of rights to inventions; contracts including types, terms, warranties, risk of loss, remedies of breach; legal aspects of product design, prototyping and testing materials, product & equipment defects and liability intellectual property including patents, trade secrets, trademarks, copyright, accounting for intellectual property, licensing; business torts, damages & remedies including environmental pollution, conversion, breach of contract, injunctions.

MECH.5760 (https://www.uml.edu/catalog/courses/MECH/5760) Engineering Project Management (3 credits)
Skills are developed enabling engineers to be effective decision maker and technical leaders in an environment where technology management, business operations and strategies for contract compliance are critical to achieving competitive advantage. Elements of the project planning and Control System are presented along with analytical methods important for maintaining Projects on schedule and within budget.

PLAS.5900 (https://www.uml.edu/catalog/courses/PLAS/5900) Survey of Intellectual Property (3 credits)
A review of patents, trademarks, copyrights and their application for protection of technology in the plastics industry. Other topics to be considered will be employee rights/non-competition agreements, foreign patent protection and technology licensing.

MECH.5750 (https://www.uml.edu/catalog/courses/MECH/5750) Industrial Design of Experiments
This course will familiarize the students with the concepts of Robust Design and statistical Design of Experiments (DOE) as applied in the design and manufacturing of new products. The course will discuss classical as well more current methodologies of DOE including Full Factorial, Fractional Factorial, Taguchi, Central Composite and D-Optimal Designs. The course will also provide for different methods for analysis of results including ANOVA, Signal to Noise, and Sampling techniques. Example experiments using industrial cases studies and the manufacturing laboratories at UML will be used.

MIST.6300 (https://www.uml.edu/catalog/courses/MIST/6300) E-Business
This course provides a foundation on digital commerce and e-business for MBA students. It will cover both technological and managerial aspects of managing e-business operations in either a traditional or pure "dot.com" organization. Issues covered include interactive marketing and market-spaces, agent-based commerce and intelligent markets. electronic shopping carts, user interfaces, personalization an targeted communications, security, encryption, and payment systems, privacy and intellectual property.

PUBH.6070 (https://www.uml.edu/catalog/courses/PUBH/6070) Healthcare Information Systems Credits
This course provides health care professionals with a practical understanding of health care information systems sufficient to work effectively with and support information systems design, development and implementation within a variety of health care setting. The course includes analysis and discussion of actual case examples. (Fall, Spring, Summer)

MKTG.6010 (https://www.uml.edu/catalog/courses/MKTG/6010) Customers and Markets (pre-req MKTG.6300)
Pursues the development of comprehensive and integrated marketing plans using industry/competitor analysis, market value chains, and forecasting. And emphasis is given to business-to-business marketing situations which require an in-depth analysis of the firm's complex organizational behavior and evolving buyer-seller relationship.

MIST.6560 (https://www.uml.edu/catalog/courses/MIST/6560) Cloud Computing
This course starts with an overview of modern distributed models, exposing the design principles, systems architecture, and innovative applications of parallel, distributed, and cloud computing systems. The course will focus on the creation an maintenance of high-performance, scalable, reliable systems, providing comprehensive coverage of distributed and cloud computing, including: Facilitating management, debugging migration, and disaster recovery through virtualization. Clustered systems for research or e-commerce applications. Designing systems as web services Principles of cloud computing using examples from open-source and commercial applications.

ENTR.6700 (https://www.uml.edu/catalog/courses/ENTR/6700) Global
Entrepreneurship
This course discusses state of global entrepreneurship and the opportunities for it. It will cover different forms of global entrepreneurship, influences of macro forces and factors for global entrepreneurs’ consideration. The course will offer a structured approach to thinking and creating entrepreneurship beyond domestic markets and operations. It will present entrepreneurship framework, case studies, group projects and connections with global entrepreneurs to understand "real-life global entrepreneurship".  

ENTR.5650
(https://www.uml.edu/catalog/courses/ENTR/5650)

Technology Entrepreneurship
This course is designed to help master’s level students, often from fields outside of business, understand how technological and social innovations lead to new business and how those are created, funded, governed, and grown.

Capstone Experience

ENTR.6800
(https://www.uml.edu/catalog/courses/ENTR/6800) New Venture Planning Capstone I (3 credits)
ENTR.6810
(https://www.uml.edu/catalog/courses/ENTR/6810) New Venture Implementation Capstone II (3 credits)

These two capstone courses focus on technology commercialization, business planning and initial incubation of an early-stage business by project teams; and, development of an investment proposal to launch a new business. Students will be exploring, identifying and analyzing the path "from Idea to Market" for technology and research projects. They will evaluate selected technology and research projects for commercial applications, explore different options available to productize & introduce to market and, where appropriate, complete a new venture business plan, and potentially launch or participate in launching a new business. The course will be offered as a continuous course over two consecutive semesters, requiring students to actually develop these commercialization projects. Each Team will be assigned to a faculty member who will instruct and guide them throughout the capstone experience.

Graduate Certificates in the Manning School of Business
The Manning School of Business offers graduate certificates in:

- Business Analytics
- Financial Management
- Foundations of Business
- Innovation & Entrepreneurship
- Supply Chain and Operations Management

Foundations of Business

Contact:

Manning School of Business Graduate Coordinators - phone: 978-934-2848, email: mba@uml.edu (mailto:mba@uml.edu).

Graduate students in the certificate program who are subsequently accepted into the UMass Lowell AACSB accredited MBA program may apply certificate courses with grades of B or better to their MBA degree.

Required Core Courses:

12 Credit Hours - six courses at two credit hours each.

- ACCT.5010
- FINA.5010
  (https://www.uml.edu/catalog/courses/FINA/5010) Business Financial Analysis
- MKTG.5010
  (https://www.uml.edu/catalog/courses/MKTG/5010) Marketing Fundamentals
- POMS.5010
  (https://www.uml.edu/catalog/courses/POMS/5010) Operations Fundamentals
- MGMT.5010
  (https://www.uml.edu/catalog/courses/MGMT/5010) Organizational Behavior
- MGMT.5110
  (https://www.uml.edu/catalog/courses/MGMT/5110) Global Enterprise and Competition


Innovation and Entrepreneurship
Contact: Michael Ciuchta, Phone: 978-934-2993, Email: Michael_Ciuchta@uml.edu.

Prerequisites: None (although certain course may contain prerequisites).

This certificate assists the aspiring entrepreneur, inventor and mid-career professional in understanding and applying the process associated with starting a new business or creating new business opportunities within established organizations. This program can be tailored to those interested in creating technology-based ventures or Main Street businesses or engaging in corporate entrepreneurship.

The program consists of two required courses (either New Venture Creation, or Corporate Entrepreneurship, AND either Technological Entrepreneurship or Innovation & Emerging Technology) and two electives (see below). Graduate students in the certificate program who are subsequently accepted into the UMass Lowell MS in Entrepreneurship or MBA program may apply applicable certificate courses with grades of B or better to their degree program.

**Required Courses:** (6 Credit hours, two 3 credit courses)

One of the following:

- ENTR.6400
  (https://www.uml.edu/catalog/courses/ENTR/6400)
  New Venture Creation
- ENTR.6550
  (https://www.uml.edu/catalog/courses/ENTR/6550)
  Corporate Entrepreneurship

One of the following:

- ENTR.6500
  (https://www.uml.edu/catalog/courses/ENTR/6500)
  Innovation & Emerging Technology
- ENTR.6510
  (https://www.uml.edu/catalog/courses/ENTR/6510)
  Technological Entrepreneurship

**Elective Courses** (6 Credit hours, two 3 credit courses chosen from the following):

- ENTR.6100
  (https://www.uml.edu/catalog/courses/ENTR/6100)
  Global Entrepreneurship & Innovation I**
  OR
- ENTR.6110

- ENTR.6350
  (https://www.uml.edu/catalog/courses/ENTR/6350)
  Financing Innovation & Technology Ventures
- ENTR.6400
  (https://www.uml.edu/catalog/courses/ENTR/6400)
  New Venture Creation*
- ENTR.6450
  (https://www.uml.edu/catalog/courses/ENTR/6450)
  New Product Development
- ENTR.6500
  (https://www.uml.edu/catalog/courses/ENTR/6500)
  Innovation & Emerging Technology*
- ENTR.6510
  (https://www.uml.edu/catalog/courses/ENTR/6510)
  Technological Entrepreneurship*
- MKTG.6010
  (https://www.uml.edu/catalog/courses/MKTG/6010)
  Customer and Markets***
- MKTG.6300
  (https://www.uml.edu/catalog/courses/MKTG/6300)
  Market Research for Entrepreneurs

* If not used to satisfy required course
** Not offered online
*** Recommended elective if using as pathway to MBA

**Admissions Requirements:** Undergraduate degree. Related experience in science, engineering, technology or business preferred.

**Financial Management - Certificate**

Contact: Ravi Jain, phone: 978-934-2854, email: Ravi_Jain@uml.edu.

The Graduate Certificate in Financial Management is a 12 credit program designed for non-financial mid-management professionals in the private and public sectors who wish to advance to decision-making positions within their organizations.
Individuals with undergraduate degrees in fields other than business management with finance as the major who wish to acquire additional academic credentials to advance within their organization or who wish to change career paths and improve their competitive position in the job market will benefit from this program. Especially, for many employees working in the technical and scientific fields without any financial background, the Financial Management certificate will provide them with the knowledge needed for decision-making roles within their technical or scientific fields.

**Prerequisite:**

- ACCT.5010
  (https://www.uml.edu/catalog/courses/ACCT/5010)
  Financial Accounting and FINA.5010
  (https://www.uml.edu/catalog/courses/FINA/5010)
  Business Financial Analysis

**Required Course: (3 credits)**

- FINA.6010
  (https://www.uml.edu/catalog/courses/FINA/6010)
  Corporate Finance

**Elective Courses (Any three at three credits each - total of 9 credits)**

- FINA.6020
  (https://www.uml.edu/catalog/courses/FINA/6020)
  Advanced Corporate Finance
- FINA.6110
  (https://www.uml.edu/catalog/courses/FINA/6110)
  Financial Statement Analysis
- FINA.6210
  (https://www.uml.edu/catalog/courses/FINA/6210)
  Securities and Portfolio Management
- FINA.6220
  (https://www.uml.edu/catalog/courses/FINA/6220)
  Advanced Portfolio Management
- FINA.6230
  (https://www.uml.edu/catalog/courses/FINA/6230)
  Security Analysis / Student Managed Fund
- FINA.6240
  (https://www.uml.edu/catalog/courses/FINA/6240)
  Fixed Income Securities
- FINA.6350
  (https://www.uml.edu/catalog/courses/FINA/6350)
  Programming for Finance
- FINA.6310
  (https://www.uml.edu/catalog/courses/FINA/6310)
  Empirical Methods in Finance
- FINA.6410
  (https://www.uml.edu/catalog/courses/FINA/6410)
  Cryptocurrency
- FINA.6420
  (https://www.uml.edu/catalog/courses/FINA/6420)
  Decentralized Finance (DeFi)
- FINA.6610
  (https://www.uml.edu/catalog/courses/FINA/6610)
  Financial Risk Management
- FINA.6710
  (https://www.uml.edu/catalog/courses/FINA/6710)
  CFA Exam Review
- FINA.6750
  (https://www.uml.edu/catalog/courses/FINA/6750)
  Financial Derivatives
- FINA.6880
  (https://www.uml.edu/catalog/courses/FINA/6880)
  Current Topics in Finance
- FINA.6910
  (https://www.uml.edu/catalog/courses/FINA/6910)
  International Financial Management
- Any other graduate (6000 level) Finance Course

Graduate students in the certificate program are encouraged to extend their education further by applying for admission to the M.B.A. program may apply certificate courses with grades of B or better towards their M.B.A. degree requirements.

**Supply Chain and Operations Management**

Contact: Yao Chen, phone: 978-934-2764, email: Yao.Chen@uml.edu. This certificate assists individuals who wish to acquire additional academic credentials to advance within their organization or who wish to change their career paths and improve their competitive position in the job market.
Especially, for many employees working in the technical and scientific fields without an operations or industrial engineering background, the program will provide them with the knowledge needed for decision-making roles within their technical or scientific fields. The program is to meet the needs of those mid-career professionals in non-operations positions, who require a greater understanding of operations to advance towards decision-making positions in their organizations, to communicate effectively with operations managers, to pursue new careers in industrial engineering or operations management, or to demonstrate the contribution of their unit and/or ideas to the organizations value chain.

The certificate requires students to complete 12 hours of graduate study. This consists of four three-credit Supply Chain and Operations Management courses. Graduate students in the certificate program who are subsequently accepted into the UMass Lowell MBA program may apply certificate courses with grades of B or better to their MBA degree.

**Prerequisite Coursework** (prior to certificate coursework)

- ECON.2010 [Microeconomics](https://www.uml.edu/catalog/courses/ECON/2010)
- ECON.2110 [Statistics](https://www.uml.edu/catalog/courses/ECON/2110)
- POMS.5010 [Operations Fundamentals](https://www.uml.edu/catalog/courses/POMS/5010)

**Required: 3-credit courses**

- POMS.6010 [Operations Management](https://www.uml.edu/catalog/courses/POMS/6010)
- POMS.6020 [Global Supply Chain Management](https://www.uml.edu/catalog/courses/POMS/6020)
- POMS.6030 [Service Management](https://www.uml.edu/catalog/courses/POMS/6030)
- MIST.6450 [Information Technology Project Management](https://www.uml.edu/catalog/courses/MIST/6450)

Admissions Requirements: Undergraduate degree and related experience in science, engineering, technology or business (other areas will be considered in consultation with the program coordinator).

**Graduate Certificate in Business Analytics**

Contact:Luvai Motiwalla, phone: 978-934-2754, email:Luvai_Motiwalla@uml.edu.

The Graduate Certificate in Business Analytics is a 12-credit program designed for working professionals in various fields (e.g. business, engineering, health sciences, or computer science) who need to gain analytical skills to advance their educational and/or professional goals. Appropriate, successfully completed coursework taken as part of this graduate certificate program can later be applied and transferred either to the MBA degree program (as part of the Business Analytics option) or to the M.S. in Business Analytics degree program.

Admissions Requirements: Undergraduate degree and related experience in business, science, engineering, or technology is required. In addition, all students are required to have taken the following courses:

- Introductory Statistics, such as ECON.2110 [Statistics for Business and Economics I](https://www.uml.edu/catalog/courses/ECON/2110)
- Management Information Systems (MIS), such as MIST.2010 [Management Information Systems](https://www.uml.edu/catalog/courses/MIST/2010)
- All Applicants must submit an application, application fee, and official transcript to the Office of Graduate Admissions.

**Graduate Certificate in Business Analytics Curriculum Outline**

**Required Elective Courses - Two from each group listed (total Courses required = 4)**

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Database Management</th>
<th>3</th>
</tr>
</thead>
</table>
MIST.6060 (https://www.uml.edu/catalog/courses/MIST/6060) Business Intelligence & Data Mining 3
MIST.6150 (https://www.uml.edu/catalog/courses/MISR/6150) Data Engineering for Business Analytics 3

Group 2
POMS.6120 (https://www.uml.edu/catalog/courses/POMS/6120) Statistics for Predictive Analytics 3
POMS.6220 (https://www.uml.edu/catalog/courses/POMS/6220) Decision Analytics 3
POMS.6240 (https://www.uml.edu/catalog/courses/POMS/6240) Analytical Decision Making Tools 3

Total Credits Required: 12

Curriculum Summary
Total Number of courses required for certificate 4
Total Credit Hours required for certificate 12

All courses listed above are currently offered on-campus; many of them are also offered on-line. The certificate can be earned through on-campus classes or a combination of on-campus and online classes.

Students who complete the certificate and choose to pursue an MBA degree or MS Business Analytics degree would need to apply for, and meet the requirements of, those respective programs.

SUGGESTED DEGREE PATHWAY FOR THE MASTER OF SCIENCE IN FINANCE (MSF)
The Master of Science in Finance is a 30-credit program including five required finance courses, a minimum of three finance elective courses, and a maximum of two non-finance elective courses.

Required Finance Courses

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Name</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINA.6010 (<a href="https://www.uml.edu/catalog/courses/FINA/6010">https://www.uml.edu/catalog/courses/FINA/6010</a>)</td>
<td>Corporate Finance</td>
<td>3</td>
</tr>
<tr>
<td>FINA.6210 (<a href="https://www.uml.edu/catalog/courses/FINA/6210">https://www.uml.edu/catalog/courses/FINA/6210</a>)</td>
<td>Securities &amp; Portfolio Management</td>
<td>3</td>
</tr>
<tr>
<td>FINA.6750 (<a href="https://www.uml.edu/catalog/courses/FINA/6750">https://www.uml.edu/catalog/courses/FINA/6750</a>)</td>
<td>Financial Derivatives</td>
<td>3</td>
</tr>
</tbody>
</table>

Subtotal - Number of Core Credits Required 15

Finance Elective Courses (select a minimum of three)

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Name</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINA.6200 (<a href="https://www.uml.edu/catalog/courses/FINA/6200">https://www.uml.edu/catalog/courses/FINA/6200</a>)</td>
<td>Advanced Corporate Finance</td>
<td>3</td>
</tr>
<tr>
<td>FINA.6110 (<a href="https://www.uml.edu/catalog/courses/FINA/6110">https://www.uml.edu/catalog/courses/FINA/6110</a>)</td>
<td>Financial Statement Analysis</td>
<td>3</td>
</tr>
<tr>
<td>FINA.6220 (<a href="https://www.uml.edu/catalog/courses/FINA/6220">https://www.uml.edu/catalog/courses/FINA/6220</a>)</td>
<td>Advanced Portfolio Management</td>
<td>3</td>
</tr>
<tr>
<td>FINA.6230 (<a href="https://www.uml.edu/catalog/courses/FINA/6230">https://www.uml.edu/catalog/courses/FINA/6230</a>)</td>
<td>Security Analysis/ Student Managed Fund</td>
<td>3</td>
</tr>
<tr>
<td>FINA.6240 (<a href="https://www.uml.edu/catalog/courses/FINA/6240">https://www.uml.edu/catalog/courses/FINA/6240</a>)</td>
<td>Fixed Income Securities</td>
<td>3</td>
</tr>
<tr>
<td>FINA.6350 (<a href="https://www.uml.edu/catalog/courses/FINA/6350">https://www.uml.edu/catalog/courses/FINA/6350</a>)</td>
<td>Programming for Finance</td>
<td>3</td>
</tr>
<tr>
<td>FINA.6410 (<a href="https://www.uml.edu/catalog/courses/FINA/6410">https://www.uml.edu/catalog/courses/FINA/6410</a>)</td>
<td>Cryptocurrency</td>
<td>3</td>
</tr>
<tr>
<td>FINA.6420 (<a href="https://www.uml.edu/catalog/courses/FINA/6420">https://www.uml.edu/catalog/courses/FINA/6420</a>)</td>
<td>Decentralized Finance (DeFi)</td>
<td>3</td>
</tr>
<tr>
<td>FINA.6710 (<a href="https://www.uml.edu/catalog/courses/FINA/6710">https://www.uml.edu/catalog/courses/FINA/6710</a>)</td>
<td>CFA Exam Review</td>
<td>3</td>
</tr>
<tr>
<td>FINA.6880 (<a href="https://www.uml.edu/catalog/courses/FINA/6880">https://www.uml.edu/catalog/courses/FINA/6880</a>)</td>
<td>Current Topics in Finance</td>
<td>3</td>
</tr>
<tr>
<td>FINA.XXXX (<a href="https://www.uml.edu/catalog/courses/FINA">https://www.uml.edu/catalog/courses/FINA</a>)</td>
<td>Any other graduate (6000 level) Finance course</td>
<td>3</td>
</tr>
</tbody>
</table>

Subtotal - Number of Finance Credits Required 9-15

Non-Finance Elective Courses (select a maximum of two)

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Name</th>
<th>Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT.6010 (<a href="https://www.uml.edu/catalog/courses/ACCT/6010">https://www.uml.edu/catalog/courses/ACCT/6010</a>)</td>
<td>Accounting Information for Management Decisions</td>
<td>3</td>
</tr>
<tr>
<td>ACCT.6300 (<a href="https://www.uml.edu/catalog/courses/ACCT/6300">https://www.uml.edu/catalog/courses/ACCT/6300</a>)</td>
<td>Taxation of Business Entities</td>
<td>3</td>
</tr>
<tr>
<td>ACCT.6600 (<a href="https://www.uml.edu/catalog/courses/ACCT/6600">https://www.uml.edu/catalog/courses/ACCT/6600</a>)</td>
<td>Accounting Data Analytics</td>
<td>3</td>
</tr>
<tr>
<td>ENTR.6350 (<a href="https://www.uml.edu/catalog/courses/ENTR/6350">https://www.uml.edu/catalog/courses/ENTR/6350</a>)</td>
<td>Financing Technology and Innovation Ventures</td>
<td>3</td>
</tr>
<tr>
<td>MGMT.6150</td>
<td>International Business</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>MIST.6060</td>
<td>Business Intelligence and Data Mining</td>
<td>3</td>
</tr>
<tr>
<td>MIST.6150</td>
<td>Data Quality for Business Analytics</td>
<td>3</td>
</tr>
<tr>
<td>MIST.6030</td>
<td>Database Management</td>
<td>3</td>
</tr>
<tr>
<td>POMS.6120</td>
<td>Statistics for Predictive Analytics</td>
<td>3</td>
</tr>
<tr>
<td>POMS.6220</td>
<td>Decision Analytics</td>
<td>3</td>
</tr>
<tr>
<td>POMS.6240</td>
<td>Analytical Decision Making Tools</td>
<td>3</td>
</tr>
<tr>
<td>XXXX.XXXX</td>
<td>Graduate course approved by the MSF program</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>coordinator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subtotal - Number of Non-Finance Credits Required</td>
<td>0-6</td>
</tr>
</tbody>
</table>

Total number of courses required for the degree = 10

Total credit hours required for degree = 30

Last Updated 5/4/2022
Master of Science in Accounting

- Program of Study
- Admissions Requirements
- Curriculum

Program of Study

- General Option
- Business Analytics Option
- Corporate Accounting Leadership Option
- International Business Option

The Master of Science in Accounting (MSA) program in the Manning School of Business at UMass Lowell provides an economically affordable opportunity for qualified students to meet the licensing requirements to become Certified Public Accountants (CPAs) and prepare for success in a competitive environment and a respected profession, one whose members continue to be in high demand from public accounting firms, financial institutions, industry, government agencies, municipalities, schools, hospitals and charitable organizations. The Massachusetts Board of Public Accountancy has classified the MSA program at Manning School of Business as Level 1 and deemed the program to be substantially equivalent to AACSB standards. Any student who earns a graduate degree in accounting from a Level 1 program is judged to have satisfied the educational requirements to take the CPA exam. Students who earn degrees from non-Level 1 programs must demonstrate that they have satisfied such educational requirements. Therefore, our MSA programs Level 1 status makes it easier for UMass Lowell accounting graduates to eventually become CPA's.

The MSA program can be completed on a full-time or part-time basis and all courses are available online. Students must complete the general MS in Accounting or choose an option in Business Analytics, Corporate Accounting Leadership, or International Business. For a full-time student, the 10-course, 30-credit program can typically be completed in one calendar year (e.g., four courses in the fall, four in the spring, and two in the summer). Part-time students will, on average, complete the program in about three years. We accept students with undergraduate accounting, business and non-business degrees. Students without an accounting undergraduate degree from an accredited U.S. institution will have to complete a series of prerequisite courses prior to beginning the MSA program.

Admission Requirements

- GPA - Minimum undergraduate GPA of 3.0 (overall);
- GMAT (500+); can be waived if the undergraduate GPA is at least 3.5 at an AACSB-accredited school and upon receipt of a recommendation by a faculty member; GMAT can also be waived for students in the UMass Lowell Plus 1 Program with an undergraduate GPA of 3.0 or greater.
- Successful completion of all other University of Massachusetts Lowell Graduate Admissions requirements including three letters of recommendation and Master of Science in Accounting TOEFL minimums.
- Exceptions or modifications to the above will be considered on a case-by-case basis.
- An internship or other relevant employment in the field is strongly encouraged, either before or during the program.
- Students without an undergraduate accounting degree will need to complete the following courses prior to being considered for the MAS: Principles of Financial Accounting, Intermediate Accounting II, Cost Accounting, Federal Income Tax, and Auditing. These courses can be taken either at UMass Lowell, or at any other AACSB-accredited university. Additional coursework in business might also be necessary. Please contact MSA coordinator Stefanie Tate (mailto:stefanie_tate@uml.edu) for more information.

Curriculum

The Master of Science in Accounting requires 10 courses (30 credits). Students complete a core of 5 required courses (15 credits), two additional accounting courses (6 credits), and then complete three courses (9 credits) from business courses outside of accounting. Students can complete the general program or concentrate in a particular field by electives one of three options (Business Analytics, Corporate Accounting Leadership or International Business).

The courses in the Manning School of Business are currently offered in an accelerated 8-week format. Student are allowed to register for a maximum of two courses (6 credits) per 8 week term. In order to petition to take more than two courses per 8-week term, the student needs to submit a graduate academic petition to the Manning School Graduate Office.

Students without an accounting undergraduate degree granted by an accredited US institution will be required to complete a series of up to eight accounting prerequisite courses prior to
starting the MSA courses. For details on program prerequisites, please contact MSA Coordinator, Stefanie Tate (mailto:stefanie_tate@uml.edu).

Degree Pathways:

- General Option
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Business Analytics Option
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Corporate Accounting Leadership Option
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- International Business Option
  (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)

Courses are generally selected from the UMass Lowell MBA program; other courses can be selected with the approval of the MSA Coordinator.

Students without an accounting undergraduate degree granted by an accredited US institution will be required to complete a series of up to eight accounting prerequisite courses prior to starting the MSA courses. Details on the prerequisites can be found online or by contacting the MSA Coordinator.

ACADEMIC AND GRADUATION REQUIREMENTS

- Academic and graduation requirements will be similar to those of the Manning School of Business MBA program.
- No more than six course credits of grades below a B may be counted toward the MSA.
- No graduate degree will be awarded to any student whose overall cumulative grade point average falls below 3.0.
- Other policies, as contained in the UMass Lowell graduate catalog, will also apply as appropriate.
- For a full-time student, the 10-course, 30-credit MSA program can typically be completed in one calendar year (e.g., four courses in the fall, four in the spring, and two in the summer).
- Part-time students will proceed at a slower and more varied pace (on average, about three years).
- The Manning School of Business will accept up to six graduate credits from other AACSB institutions on a case-by-case basis.

For more information about the Master of Science in Accounting, contact:

Stefanie Tate, CPA, Ph.D.
MSA Coordinator
Phone: 978-934-2815
Email: Stefanie_Tate@uml.edu (mailto:Stefanie_Tate@uml.edu)
ACCT.5010 Financial Accounting (Formerly ACCT/60.501) - Credits: 2
An introduction to financial accounting within the context of business transactions and business decisions. This course is a broad introduction to using accounting information from the user's perspective with little emphasis on traditional debits, credits, journal entries and ledgers. Emphasis is placed on preparing and understanding financial statements.

ACCT.6010 Accounting Information for Management Decisions (Formerly ACCT/60.601) - Credits: 3
Prerequisite: Student must be matriculated and must have completed foundation core courses. Focuses on the manager's view as opposed to the accountant's view of the decision process and related quantitative and qualitative information needs. The course material examines accounting information that will achieve faster, better, and cheaper operations. New strategic cost management models, such as ABC and target costing, are explored and contrasted with traditional cost approaches.

ACCT.6020 Advanced Management and Sustainability Accounting (Formerly ACCT/60.602) - Credits: 3
In the new environment of change, accountants are increasingly called on to support strategy through increasing efficiencies and reducing costs. This course will examine the different ways that accountants can add value through an understanding of value chain activities, use of technology, and extending value chain activities to develop a sustainability strategy.

ACCT.6050 Government and Non-Profit Accounting (Formerly ACCT/60.605) - Credits: 3
This course introduces students to financial accounting and reporting issues related to state and local government and nonprofit organizations. Students will learn how to prepare, analyze, and interpret these entities financial statements.

ACCT.6120 Advanced Cost Management (Formerly ACCT/60.612) - Credits: 3
An examination of cost data in ambiguous situations to assist managers in decision-making and strategy implementation. Emphasis is placed on advanced cost management for strategic planning, management control and performance evaluation in multinational business entities.

ACCT.6200 Tax Factors in Business Decisions (Formerly ACCT/60.620) - Credits: 3
What role do accountants play in the globalizing business environment? This course will explore this topic, emphasizing global capital markets and financial reporting, the impact of global organizational structures and information systems on managerial accounting, and complex issues of audit and taxation that emerge in this global environment. To appreciate the impact of globalization, the course will consider such aspects as variations in the currencies, cultures, history, ethical issues and legal systems of different regions of the world, emphasizing how managers need to consider global opportunities and risks in their decision-making manage effectively.

ACCT.6230 Contemporary Accounting Issues (Formerly ACCT/60.623) - Credits: 3
Significant and rapid changes in accounting rules are impacting the financial reporting and analysis that management uses to make business decisions. This course will explore contemporary accounting topics that accounting professionals will face in the workplace and how the accompanying requirements are changing the way that companies and their business partners use, report, analyze, and interpret financial data. Subjects covered will vary as conditions change but may include International Financial Reporting Standards (IFRS), Fair Value Measurements, Post-Retirement Benefits, Revenue Recognition, or other current accounting topics.

ACCT.6300 Taxation of Business Entities (Formerly ACCT/60.630) - Credits: 3
This course provides coverage of gross income and business deductions, and provides a comprehensive overview of the taxation of corporations, partnerships, and sole proprietorships. This course will also cover the history of federal taxation, estate and gift taxes, and how the taxation of business entities fits into the entire tax system.

ACCT.6400 Financial Accounting Theory and Research (Formerly ACCT/60.640) - Credits: 3
A comprehensive exposure at an intermediate level to accounting theory and practice. Emphasis is placed on applying underlying accounting theory to complex accounting measurement problems. The effects of alternative methods are considered throughout the entire course.

ACCT.6450 Fraud Examination and Forensic Accounting (Formerly ACCT/60.645) - Credits: 3
This course introduces students to forensic accounting, with a significant focus on fraud examination, elements of fraud and the types of fraud schemes, including fraudulent financial statements, asset misappropriation, corruption, and money laundering. This course will focus on how professionals including business owners, executives, managers and accountants will benefit from understanding the causes, types and scope of fraud, fraud prevention, fraud detection, and fraud investigation. This course will cover management fraud, employee embezzlement and other types of fraud. The principles and methodology of fraud prevention, detection and investigation (e.g., forensic accounting) will be discussed. Students will develop skills in this course which will help them in multiple professions.

ACCT.6550 Advanced Auditing (Formerly ACCT/60.655) - Credits: 3

This course provides a more in-depth study of auditing topics including audit planning, evidence gathering and evaluation, professional standards and regulatory agencies, and a practical approach to accounting and auditing research. Applications will be drawn from public and private sector audits.

ACCT.6600 Accounting Data Analytics - Credits: 3

Topics to be covered in this course include managing and leaning data, building and evaluating models, visualizing the results of data analyses, and drawing conclusions from the analytics. A series of accounting topics with data analytics application will be discussed, such as fraud and earnings management detection, and financial statement analyses. Students should leave this course with skills necessary to understand data and manage data, to translate accounting and business problems into actionable proposals, and to present data/results to managers and data scientists.

ACCT.6770 Directed Study: Accounting (Formerly ACCT/60.677) - Credits: 3

ACCT.6990 Accounting Internship (Formerly ACCT/60.699) - Credits: 3

ACCT.7510 Accounting Research Methodology (Formerly ACCT/60.751) - Credits: 3

ACCT.7620 Empirical Financial Accounting Research II (Formerly ACCT/60.762) - Credits: 3

This is part II of a two part doctoral seminar in Empirical Financial Accounting Research. This course introduces and develops a broad understanding of empirical accounting research in financial reporting. The intent is to provide an overview of archival research and an in-dept analysis of current financial accounting research. This course will focus on the types of questions and innovative methods accounting academics are currently pursuing and developing.

ACCT.7720 Auditing and Corporate Governance Research (Formerly ACCT/60.772) - Credits: 3

This course is designed to expose doctoral students to major research areas in auditing and corporate governance research, with an emphasis on primarily archival research and secondarily judgment and decision making research. In line with Empirical Financial Accounting Research, emphasis will be placed on a significant number of research topics and methods by participating in active discussions about challenging research opportunities and auditing and corporate governance research.

ACCT.7960 Doctoral Dissertation (Formerly ACCT/60.796) - Credits: 1-9

Doctoral dissertation research.

ACCT.7970 Managerial Research Seminar (Formerly ACCT/60.797) - Credits: 0

The course will involve an on-going monthly presentation from across scholarly disciplines. Speakers will be drawn from local, national, and international universities. Attendance will be mandatory; PhD students should gain an appreciation for high level scholarship and corporate governance research.

ACCT.7990 Independent Study: Accounting - Credits: 3
BUSI.7010 Doctoral Curricular Practical Training
(Formerly BUSI 701) - Credits: 1

An internship, practicum or other type of employment that is either required by the student's 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 student's field of study and contain a curricular component.
FINA.5010 Business Financial Analysis (Formerly
FINA/61.501) - Credits: 2

Introduces students to the finance function in a firm. Students
are exposed to a variety of analytical techniques and to theory
applied to financial decision making. Study will include effects
of major financial decisions such as investment, financing
and dividends on the value of a firm, in the light of their risk-return
relationship under the assumption that the maximization of
shareholder wealth is the goal of management. Pre-requisites:
MBA or Certificate Programs or Permission of MBA Director.

FINA.6010 Corporate Finance (Formerly FINA
/61.601) - Credits: 3

Relates working capital strategy, capital investment analysis,
long-term financing, and capital structure decisions in a risk-
return framework to the dynamics of the firm and the market
in which it operates.

FINA.6020 Advanced Corporate Finance (Formerly
FINA 602/61.621) - Credits: 3

This course covers advanced topics of financial decision-
making concepts such as financial restructuring, mergers and
acquisitions, different forms of debt and equity financing,
leasing, and real options. The course includes techniques to
incorporate uncertainty in financial analysis, to hedge
corporate risk, and to restructure a firm through leveraged
buysouts or under bankruptcy protection. It also includes
advanced topics such as real options, theories of behavioral
corporate finance, and the process to navigate extraordinary
financial situations such as financial restructuring and
liquidation.

FINA.6050 Mergers, Acquisitions, and Corporate
Restructuring (Formerly FINA 605) - Credits: 3

This course examines the process by which takeovers and other
corporate control transactions take place. Of particular interest
will be the empirical evidence of capital market reactions to
corporate control transactions, to defensive measures by management
against takeover bids and the valuation effects of these
activities. We will also investigate restructuring activities that
have significant effects on firm assets, liabilities, and equity
claims, as well as their underlying economic motives. A Major
focus will be the interaction of strategic planning, valuation,
financial strategies, and investment decisions in the life cycle of
the firm. This course is indispensable for those who plan to
pursue careers in corporate finance, investment banking,
private equity, and management consulting.

FINA.6100 Global Financial Markets and Monetary
Policy (Formerly FINA 610/61.610) - Credits: 3

This course examines the interactions between changing
perceptions of macroeconomic conditions and movements in
the prices and yields on financial market instruments. The
orientation of this course is heavily institutional with emphasis
on helping students develop a "Wall Street" perspective on
asset choice and the likely impact of macroeconomic conditions
and policies on financial market prices. At the same time, the
dependence of macroeconomic policy outcomes on global
financial markets' expectations of future real growth in the US
and in the world economy, expectations of inflation, sovereign
default risk and of interest rates will be stressed.

FINA.6110 Financial Statement Analysis (Formerly
FINA 611) - Credits: 3

This course introduces students to a comprehensive financial
statement analysis and valuation framework that integrates
financial reporting, financial analysis and valuation, and the
application of this framework to fundamental analysis. This
course provides students with hands-on experience in financial
statement analysis. Students will be introduced to general tools
of financial analysis, theoretical concepts, and practical
valuation issues. By the end of the course, students should be
comfortable with using firms financial statements to develop an
understand of their performance and to establish a basis for
making reasonable valuation estimates.

FINA.6210 Security Analysis and Portfolio
Management (Formerly FINA 621/61.721) - Credits: 3

This course introduces the student to the main theories and
practice of investments and portfolio management. The student
will learn about various investment opportunities including real
and financial assets; the investment environment including the
money and capital markets; the investment process including
identification of goals, data gathering and analysis etc.; and,
decision making under a changing market environment. The
material covered will include: selection of assets - with special
emphasis on securities selection through technical analysis and
fundamental analysis, computation of risk and return of
individual assets, asset allocation and portfolio formation,
computation of risk and return of portfolios, measurement of
portfolio performance and rebalancing of portfolios. Also
included in the material will be topics such as the "pyramid"
approach, forecasting and the use of indicators and, market
and industry indexes, models such as the CAPM, bond and
stock valuation, mutual funds, domestic versus global
investment etc.

FINA.6220 Advanced Portfolio Management
(Formerly FINA 622/61.735) - Credits: 3

This course develops investment theory as applicable to
portfolio management and securities selection. Topics covered include identification of investor goals, identification of investment opportunities in real and financial assets under volatile capital market conditions as well as analysis and decision making under conditions of certainty and uncertainty. Related concepts include technical analysis and fundamental analysis, pyramid approach to investing, changing risk and return through asset allocation and portfolio formation, valuation of basic securities and rebalancing of portfolios.

FINA.6240 Fixed Income Securities (Formerly FINA/61.624) - Credits: 3
Financial Securities whose valuation depends on interest rates, such as Treasury securities, municipal bonds, and corporate bonds are called Fixed Income Securities. In this course, students will learn how to value and manage the risk of these securities.

FINA.6530 Financial Institutions and Markets (Formerly FINA 653/61.732) - Credits: 3
Analysis of the theory and practice of financial intermediation by institutions in the financial markets, including debt, equity, and foreign exchange markets. Study of the role of financial intermediaries including commercial banks, investment banks, and brokers. Other topics include financial market policy making and regulation in financial markets with an aim to understanding the rationale and nature of such policies and regulations.

FINA.6550 Global Financial Regulation and Compliance - Credits: 3
This course will provide an in depth survey of some of the major regulatory regimes within which the global financial services industry operates. Participants will learn the principles and techniques required to establish and maintain an effective compliance regime consistent with a strong ethical corporate culture. The course will rely upon examination of real-world examples; and, students will participate in a significant case study, requiring them to design an effective compliance program for a hypothetical firm operating in multiple jurisdictions.

FINA.6610 Financial Risk Management (Formerly FINA 661) - Credits: 3
This course deals with the theoretical and practical approaches to effective financial risk management. It covers risk management techniques for corporations and for management of equity, bond, derivatives and investment portfolios. Topics include measurement of corporate risk exposure, portfolio risk exposure and value at risk (VAR) for financial institutions; risk and diversification, modern portfolio theory, concentrated equity positions, portfolio benchmarking, the importance of asset allocations; market risk management, currency risk exposures, credit risk management, interest rate risks, and operational & integrated risk management; and computer applications.

FINA.6750 Financial Derivatives (Formerly FINA/61.675) - Credits: 3
The primary emphases in this course are the valuation and practical application of derivatives for both hedging and speculation. Topics include the characteristics of options, forward contracts, futures, and swaps; arbitrage and the valuation of derivatives; creating value and profit diagrams; and the structure of the derivatives markets. Ethical and economic issues associated with the use of derivatives as reported in the current financial press are also covered.

FINA.6770 Independent Study: Finance (Formerly FINA/61.677) - Credits: 3
Pre-Requisites: MBA Foundation Core and 61.601, or permission of MBA Coordinator.

FINA.6880 Current Topics in Finance (Formerly FINA/61.688) - Credits: 3
Topics of current interest in Finance. Subject matter to be announced in advance. For a current semester course title, please log on to ISIS, the Inter-Campus Student Information System.

FINA.6910 International Financial Management (Formerly FINA/61.691) - Credits: 3
The international dimension of the finance function of the firm. Financial constraints of the international environment and their effect on the standard concepts of financial management. The techniques of adapting risk analysis to the international situation. Study of international currency flows, monetary systems, forward cover and international banking policies.

FINA.7200 Financial Economics and Research (Formerly FINA 720) - Credits: 3
This doctoral-level course will introduce students to financial economics and the research methodology that supports advancement in the field. One major course objective is to provide the core theoretical foundations on which the various subfields, such as corporate finance and investments, rely upon. The second objective is to become familiar with financial data and the methodology to test the empirical evidence to validate theoretical arguments. Topics will include utility theory under
uncertainty, stochastic dominance, state preference theory, mean-variance portfolio theory, asset pricing, and contingent claims pricing. Topics that support corporate finance, such as information asymmetry and agency theory, will also be introduced.

FINA.7400 Corporate Finance Theory (Formerly FINA/61.740) - Credits: 3
This course covers topics in corporate finance including agency theory, theory of the firm, market for corporate control, financing policy, and dividend policy, among others.

FINA.7410 Investments Theory (Formerly FINA/61.741) - Credits: 3
This course covers topics in optimal portfolio choice and asset pricing including discrete-time and continuous time models for portfolio choice and security prices, Black-Scholes model of asset pricing, and general-equilibrium asset pricing models, among others.

FINA.7430 Seminar in Corporate Finance (Formerly FINA/61.743) - Credits: 3
This course is a doctoral level seminar covering both theoretical and empirical research in the area of corporate finance.

FINA.7440 Seminar in Investment Analysis (Formerly FINA/61.744) - Credits: 3
This course is a doctoral level seminar covering both theoretical and empirical research in the area of investments and asset pricing.

FINA.7840 Special Topics in Finance (Formerly FINA/61.784) - Credits: 3
This is a doctoral level course covering both theoretical and empirical research in an area of finance as determined by the instructor.

FINA.7960 Doctoral Dissertation (Formerly FINA 796) - Credits: 1-9
Doctoral dissertation research.

FINA.7970 Managerial Research Seminar (Formerly FINA 797) - Credits: 0
The course will involve an on-going monthly presentation from across scholarly disciplines. Speakers will be drawn from local, national, and international universities. Attendance will be mandatory; PhD students should gain an appreciation for high level scholarship and corporate governance research.
Master of Business Administration (MBA) Degree Program

- Entrance Requirements
- Part-time/Full-time Study
- Admission to MBA Courses
- Residency Requirement
- Curriculum Requirements
- Options

American business is facing a very different internal and external environment today. This environment is characterized by rapid technological change, increased international competitiveness in manufacturing and other sectors, and a labor force which expects a higher quality of work life than did previous generations of employees. These changes directly affect the health and vitality of any region's economy.

The UMass Lowell Master of Business Administration (MBA) program is designed primarily as a part-time evening program to serve middle level working professionals and others seeking management careers in business and industry. The program is designed to prepare students to manage effectively in rapidly changing regional, national, and global competitive environments. The MBA program not only requires a thorough understanding of the traditional functional areas of business, but also provides a detailed, integrated examination of issues faced by contemporary managers.

The unifying theme of industry analysis addresses the challenges posed by global competition, such as, accelerated change and complexity of technology, globalization of markets, increasing cultural diversity of human resources, ethical concerns, changing political processes, increasing role of governments in business, evolving organizational structures, and other similar issues. With this philosophical framework as its driving force, the MBA program at the University of Massachusetts Lowell prepares graduates to become leaders in a wide variety of commercial, industrial and governmental settings.

Additionally, three elective courses allow students to tailor their program to their specific professional needs. The awarding of the MBA degree signifies that the student has developed integrative skills in problem solving and decision making and can relate these skills to all functional areas of business. The development of this expertise entails an examination and application of advanced analytical tools.

Entrance Requirements

Application to the MBA program utilizes a rolling admissions policy and is open to students who have earned a 4-year baccalaureate degree. An aptitude for management decision-making and demonstrated academic ability are the most important qualifications for admissions. It is also required that applicants have an adequate mathematics background. Applicants should submit, along with their graduate school application, an official transcript of grades from their undergraduate institution(s), an official Graduate Management Admission Test (G.M.A.T.) score (the Graduate Record Examination is an acceptable alternative), three letters of recommendation, (letters of recommendation from work related sources are preferred), a resume, and a one-page written statement of academic and career goals. Students for whom English is not their national language must also submit an official score report for the Test of English as a Foreign Language (TOEFL).

Part-time and Full-time Study

MBA students may attend either full-time or part-time. On campus courses meet during the evening hours beginning at 6:30 PM. Most courses are currently also offered in an online format. Courses are offered in the fall, spring, and summer semesters. A minimum full-time course load is considered to be 9 credits. Full-time students usually complete their degree requirements in two years. Part-time students must complete their degree requirements within five years.

Admission to MBA Courses

MBA advanced core courses are open only to Manning School of Business graduate students who are fully matriculated degree candidates.

Residency Requirement

To be recommended for the MBA degree, students are required to complete a minimum of ten courses (30 credits) beyond the Foundations Core in the MBA program at the University of Massachusetts Lowell. Only under special circumstances, and with prior approval, are students permitted to complete courses at other institutions.

The courses in the Manning School of Business are currently offered in an accelerated 8-week format. Student are allowed to register for a maximum of two courses (6 credits) per 8 week term. In order to petition to take more than two courses per 8-week term, the student needs to submit a graduate academic petition to the Manning School Graduate Office.

Curriculum Requirements

The MBA program consists of twelve credit hours of foundation core courses which may be waived through previous undergraduate work, and thirty credit hours (10 courses) of advanced courses and electives, for a total of 42 credit hours.
Guidelines for Graduate Equivalency Credit of Foundation Core Courses:

The maximum number of courses that can be given equivalency credit is 12 credits. A student accepted to the UMass Lowell MBA program may request equivalency credit for any of the core courses listed above. These courses may be credited with exemption (meaning a replacement course is not required) if the equivalent undergraduate course work was completed with a grade of “B” or better within the past ten years. Additionally, up to two courses for 6 credits can be transferred in from an AACSB-accredited MBA program.

Degree Pathways for the Options

Students may choose General Business or concentrate in a particular field by taking three electives in a given area. To take electives, students must have completed the foundation core and be matriculated.

Degree Pathways for Options:

- Accounting (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Business Analytics (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Entrepreneurship (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Finance (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Healthcare (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf) (for students entering before Spring 2022)
- Healthcare (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf) (for students entering Spring 2022 and beyond)
- Information Technology (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- International Business (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Managerial Leadership (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)

Master of Science in Business Analytics (MSBA)

About MSBA

Business Analytics is the process of transforming raw data into business intelligence and insight. As companies generate more data at ever faster rates, the need for business analytics professionals is growing. The Master of Science in Business Analytics (MSBA) program will help you: Develop the ability to collect, manage and analyze data from a variety of sources; enhance your understanding of business processes and systems; develop the ability to understand and communicate insights gleaned from descriptive, predictive and prescriptive analytics.

Private and public firms in fields as diverse as health care, finance, logistics and marketing need business analysts to help them identify and solve problems related to forecasting, customer relationship management and revenue optimization - to name only a few. Experts predict that in the next 10 years hundreds of thousands of new jobs will be created in the domain of business analytics.

The MSBA program at UMass Lowell is a 30 credit program, which may be completed either full-time or part-time. The program integrates theory and practice, giving students a solid foundation of analytical skills that can be used to solve real-world problems.

Admissions Requirements

The following are general admissions requirements for MSBA. Exceptions will be considered on a case-by-case basis. To begin your application online, please go to the Graduate Admissions webpage (https://www.uml.edu/Grad/default.aspx) and click the link for the online application at the bottom of the page.

1. The Graduate Admissions Application form and application fee.
2. Bachelor’s degree from an accredited college or university with a minimum overall GPA of 3.0. A CED foreign credential evaluation (http://www.cedevaluations.com/) is required for
degrees earned outside of the United States.
3. GMAT (minimum 500) or GRE (with equivalent minimum score). The GMAT/GRE may be waived based on certain criteria. To apply for a GMAT Waiver, please complete the GMAT Waiver Form (https://www.uml.edu/docs/GMAT%20Waiver%207-18-2016_tcm18-206299.pdf) (pdf) and email it to msba@uml.edu (mailto:msba@uml.edu).

4. Introductory-level business course prerequisites in the following areas:
   View Descriptions of Courses (https://www.uml.edu/Catalog/Advance-search.aspx)
   Note: Additional courses may be required for different tracks/concentrations. See below for track details.

5. Students must exhibit sufficient recent knowledge of statistics. Students, with a grade C or below, or have not taken a statistics course in the last 5 years prior to admission will be required to pass a competency exam in statistics.

6. Three letters of recommendation from instructors who have taught you, ideally in the field of study for which you are applying. Letters may also be from employers or supervisors who are in a position to compare your performance with that of your peers.

7. Statement of Purpose: Submit a 500 - 750 word statement indicating your immediate and long-range goals and any areas of specific interest or experience that may be relevant to the graduate program.

8. Resume or CV that lists your education and work experience.

9. Student for whom English is not their national language must also submit an official TOEFL score of 100 or higher or an IELTS score of 7.5 or higher. A waiver may be given to candidates who have completed at least two semesters of full-time college/university work in the United States by the date of submission of the application.

The Master of Science in Business Analytics requires 10 courses (30 credits). Students complete a core of 7 required courses (21 credits) and then complete three courses (9 credits) within one of four tracks (Accounting Analytics, Big Data, Managerial Decision Making, Marketing Analytics or Finance Analytics).

The courses in the Manning School of Business are currently offered in an accelerated 8-week format. Students are allowed to register for a maximum of two courses (6 credits) per 8 week term. In order to petition to take more than two courses per 8-week term, the student needs to submit a graduate academic petition to the Manning School Graduate Office.

Degree Pathway for:

- Accounting Analytics (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Big Data Analytics (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Managerial Decision Making (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Marketing Analytics (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)
- Finance Analytics (https://www.uml.edu/resources/catalog-archive/current/Graduate.pdf)

The Manning School of Business Website (https://www.uml.edu/MSB/default.aspx) has more information on the Master of Science in Business Analytics.

For more information about the Master of Science in Business Analytics, contact:
MSBA Coordinator
Email:MSBA@uml.edu (mailto:MSBA@uml.edu)
MGMT.5010 Organizational Behavior (Formerly MGMT/66.501) - Credits: 2

Introduces students to management and organizational behavior. Its general purpose is to study and understand the behavior of individuals and groups in organizations. It is directed toward behavioral action components and emphasizes the close relationship between the study of organizational behavior and the practice of management. Pre-requisites: MBA or Certificate Programs, or Permission of MBA Director.

MGMT.5040 Curricular Practical Training (Formerly MGMT/66.504) - Credits: 1

An internship, practicum or other type of employment that is either required by the student's 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 student’s field of study and contain a curricular component. Contact the Manning School of Business Graduate Programs office for additional details.

MGMT.5110 Global Enterprise and Competition (Formerly MGMT/66.511) - Credits: 2

To be taken as last course in foundation core. Is an integrated investigation of global competitive issues to help students understand the processes of organization and technological innovation which permit businesses to achieve competitive advantages in a global environment. This course also deals with the nature and techniques of industry analysis necessary to the formulation of effective global strategy for the firm.

MGMT.5750 Business Fundamentals for Scientists and Engineers (Formerly PSM 575) - Credits: 3

Is designed for science and other non-business professionals seeking to excel as managers. This course will introduce core business principles. Starting with managing ourselves, and others, we will move through the functional business disciplines. There will be weekly, theme-based case studies and related articles that will provide ample opportunity to work individually and in teams. The goal of this course is to build your knowledge of business principles and develop the analytic and practical skills necessary to contribute in decision-making and operations.

MGMT.6010 Managing Organizational Change (Formerly MGMT/66.601) - Credits: 3

Examines how business enterprises are designed, managed and changed to operate efficiently and perform effectively within their competitive environments. It critically examines organizations that vary in terms of such characteristics as size, complexity, goals, and technology as they operate under different circumstances and at various stages of their life cycles. The role and impact of individual managers receive particular attention.

MGMT.6100 Managerial Leadership - Credits: 3

This course examines leadership theory and research with an emphasis on preparing students for the leadership challenges they face in their professional careers. Topic covered include: the difference between management and leadership; the role of experience; effective use of power and influence; leader traits and characteristics; and the situational factors leaders must assess in facilitating group effectiveness and teambuilding. Students will have the opportunity throughout the course to develop specific leadership skills and practice these skills through exercises, applied reading and class projects.

MGMT.6150 International Business - Credits: 3

This course addresses the issues involved in doing business overseas, and how it differs from purely domestic business. It surveys the changing international business landscape, focusing on the opportunities and challenges that company decision makers face in the global marketplace, and the factors that influence their decision to internationalize. Special attention is given to the broad concept of globalization - of markets and production - multinational enterprises include: governments, central banks, financial markets, regional and multilateral institutions (e.g., World Band, IMF, WTO), and the role of individuals who shape the international environment.

MGMT.6250 Negotiations (Formerly MGMT/66.625) - Credits: 3

Pre-Requisite: MBA Foundation Core.

MGMT.6301 Management Consulting - Credits: 3

Management Consulting is a global industry with over 4200 billion in annual revenue. This course provides students with an in-depth conceptual and practical understanding of the consulting industry; how consulting firms are organized; project proposal writing; project life cycles; management of the consultant-client relationship; and consulting processes and tools relevant to the management and organizational issues many companies often face and that consultants often address. Upon completion of the course students will have a sufficient understanding of the consulting profession to explore this field as a potential career option.

MGMT.6400 Building and Managing Teams (Formerly MGMT/66.640) - Credits: 3
One critical determinant of success in an on-going corporate venture or launch of a new product, service or company is the performance of teams. This course examines the key roles of leader and follower in the development of project teams in both start-ups and existing companies. It will address issues relating to team composition, team member capabilities, and team dynamics as teams develop and change over time. Emphasis is placed on acquiring the interpersonal, communication and collaboration skills necessary for effective team performance.

MGMT.6450 Advanced Professional Communication (Formerly MGMT/66.645) - Credits: 3

Workforce analytics is the use of empirical data to improve the management of an organization's human resources. The goal is for students to develop analytical literacy that will enable them to understand and apply fundamental analytic techniques, engage knowledgeably with data scientists in the application of more complex forms of analysis, interpret the analytical reporting of others with greater sophistication, and apply empirical evidence to employee-related decisions. The course emphasizes the link between workforce analytics and strategic decision making at all levels of leadership that will guide strategic performance management, talent development, and optimal investment in human capital. It is thus a high value leadership tool central to the achievement of organizational goals.

MGMT.6500 Workforce Analytics - Credits: 3

This reading and discussion course for advanced MBA students explores the new skill and performance requirements imposed on middle managers by globalization and technology. Particular attention is given to emerging organizational forms that expand the emphasis on such things as individual free agency, the creation and synthesis of innovations, internal entrepreneurship, influence without authority and the coordination of activities over remote work sites.

MGMT.6540 Managing Global and workforce Diversity - Credits: 3

As business becomes increasingly global and U.S. demographics continue to change, leaders need specific knowledge and skills to navigate, manage, and develop a perspective that incorporates cross-cultural and demographic diversity. This course considers how employers respond to these new workforce realities, by examining the concepts, policies, and practices facing managers in a global, diverse workplace.

MGMT.6550 Mid-Management Skills for the New Business Environment (Formerly MGMT/66.655) - Credits: 3

Automation, artificial intelligence, and other disruptive technologies are changing the fundamental nature and characteristics of work. This tidal wave of change is being referred to as the “future of work.” The purpose of this course is to help students understand these shifts to make them become better managers, entrepreneurs and strategist. Specifically, it will enable students to: 1) identify and understand the technological drivers that are changing the nature of work; 2) assess the industry implications of such changes; 3) examine how these larger changes are affecting how we organize and strategize; 4) understand the challenges of implementing new approaches to work; and 5) assess the ways in which individuals can adapt to the new work environment.

MGMT.6520 Human Resources Management (Formerly MGMT/66.652) - Credits: 3

An introduction to the primary human resource functions-job design, recruitment, selection, training, managing workforce diversity, employee development, performance appraisal, compensation and benefits, with an emphasis on how these functions are affected by Equal Employment Opportunity requirements. 3 credits

MGMT.6530 Ethical Leadership in the Global Economy - Credits: 3

This course explores the role of ethical values, including the value of sustainability, as a core leadership responsibility in organizations operating in a global context. Reviewing several pedagogical approaches, students will become versed in ethical thought, analysis, and action. The course covers the decision making process from idea formulation through communication among various stakeholders to the creation and implementation of ethical organizational processes and goals. Students are provided with the tools needed to become leaders in establishing ethical programs in various settings including small, medium, and large companies with diverse operations.
interactive case-based.

MGMT.6770 Independent Study: Management (Formerly MGMT/66.677) - Credits: 1-6

MGMT.6880 Current Topics in Management (Formerly MGMT/66.688) - Credits: 3

Topics of current interest in Management. Subject matter to be announced in advance. For a current semester course title, please log onto ISIS, the Inter-Campus Student Information System. Please see "notes" for the class to see the full description for individual topics.

MGMT.6910 Strategy Formation and Implementation (Formerly MGMT/66.691) - Credits: 3

Reviews strategies for positioning a firm within its competitive environment. Fundamental concepts in strategic management; role of the CEO, levels and components of strategy, competitive analysis, and formulation and implementation of strategy are explored. Pre-Requisite: MBA Advanced Core.

MGMT.7300 Research Design I (Formerly MGMT/66.730) - Credits: 3

Seminar will address study design, including but not limited to methods, hypothesis development and testing, reliability, and validity.

MGMT.7330 Research Design Methods II (Formerly MGMT/66.733) - Credits: 3

Expanding beyond Research Design Methods I Student will begin the design of a research project which considers the range of research methodologies and the implications of their use.

MGMT.7440 Independent Study (Formerly MGMT/66.744) - Credits: 3

Students will be expected to establish a relationship with a faculty member and develop and submit a paper to a top academic conference within their first two years.

MGMT.7450 Seminar in Organization Theory (Formerly MGMT/66.745) - Credits: 3

This course focuses on how organizations form, interact, thrive and decline. Drawing on foundational and contemporary research literature, we study major schools of thought including classical management theory; behavioral theory of organizational decision making and learning; social construction processes (including sensemaking); organizational identity, culture and conflict; forms of organizing; interorganizational relationships and networks; population ecology; organizational economics; institutional theories (old and new); and organizational change processes. For each topic, we analyze theoretical and empirical research to consider how different theories benefit from various research methods and how specific methods are used to explore different theoretical perspectives.

MGMT.7460 Seminar in Organizational Behavior (Formerly MGMT/66.746) - Credits: 3

The doctoral seminar in organizational behavior focuses on theoretical perspectives that explain individual behavior and social processes in organizational settings. The course will draw on literature at the micro and meso levels of analysis. It will provide a broad exposure to the major research domains of this discipline such as motivation, organizational justice, decision making, leadership, power, and organizational change. Emphasis will be placed on critical evaluation of existing paradigms and emerging trends.

MGMT.7470 Leadership Theory and Concepts (Formerly MGMT/66.747) - Credits: 3

This doctoral seminar will provide an in-depth review of the theoretical and conceptual frameworks that characterize organizational leadership research, and provide an overview of the empirical research stemming from these frameworks. Students will develop a critical understanding of the literature and an ability to engage in the scholarly discourse surrounding leadership. The course will also help students develop their ideas regarding their own contribution to the field.

MGMT.7820 Business Policy & Strategy (Formerly MGMT/66.782) - Credits: 3

This course will focus on the various schools of thought for explaining firm performance variance, specifically industry structure, competitive advantage, and competitive position.

MGMT.7960 Doctoral Dissertation (Formerly MGMT 796) - Credits: 1-9

Doctoral dissertation research.

MGMT.7970 Managerial Research Seminar (Formerly MGMT 797) - Credits: 0

This course will involve mandatory attendance at on-going monthly presentations by invited scholars from local, national, and international universities. The goal of the course is to enhance PhD student appreciation for, and familiarity with, high quality research in various business-related disciplines.
ENTR.5910 Independent Study (Formerly ENTR 591) - Credits: 1

ENTR.6100 Global Entrepreneurship and Innovation I (Formerly ENTR /64.610) - Credits: 3

The Course is offered as a 2-week intensive experiential learning of Global Entrepreneurship and Innovation. It is designed to help students to understand the importance of entrepreneurship and innovation in today's global economy and to cultivate an entrepreneurial mind-set among the students in the UMass Lowell. Students will work in interdisciplinary, multi-cultural environments exploring problem solving techniques, opportunities identification, business concept development and venture planning using standard business model framework and bringing ideas to reality.

ENTR.6110 Global Entrepreneurship and Innovation II (Formerly ENTR /64.611) - Credits: 3

The Course is offered as a 2-week intensive experiential learning of Global Entrepreneurship and Innovation. It is designed to help students to understand the importance of entrepreneurship and innovation in today's global economy and to cultivate an entrepreneurial mind-set among the students in the UMass Lowell. Students will work in interdisciplinary, multi-cultural environments exploring problem solving techniques, opportunities identification, business concept development & Venture planning using standard business model framework and bringing ideas to reality.

ENTR.6350 Financing Innovation and Technology Ventures (Formerly ENTR /64.635) - Credits: 3

This course focuses on strategies for financing innovation and new technology ventures both within a firm and on a stand-alone basis. Topics covered will include: different types of business organizations; different sources of funding including internal sources and external sources such as angel investors, venture capitalists, etc.; short-term and long-term financial planning and forecasting; business valuation; term sheet negotiation and exit strategies including mergers and acquisitions and IPOs. Each aspect of the course will be covered within the context of a business plan and venture life-cycle.

ENTR.6400 New Venture Creation (Formerly ENTR/64.640) - Credits: 3

This course is designed for students who are interested in entrepreneurship. The focus is on entrepreneurship as generic activity. It explores the opportunities and challenges face by individuals who seek to start a new ventures and the probable career development paths that are available. For those who may be interested in starting or running a new business, the course will provide an essential foundation for this process, identify the skills and resources required, and explore the opportunities available to the young entrepreneur.

ENTR.6450 New Product Development (Formerly 66.630) - Credits: 3

This course will enable students to understand the complexities involved in new innovation and technology-based product development. Through examples and exercises, students will be exposed to such topics as creative problem solving, customers/suppliers/partners involvements and inputs processes, integration among all functions, building and managing cross functional teams, rapid prototyping and development, creating a learning organization and measurements.

ENTR.6500 Innovation and Emerging Technology (Formerly ENTR /64.650) - Credits: 3

This course examines technological innovation and its relationship to value-creation and business strategy. Emphasis is placed on emerging scientific and technical innovations and the opportunities and challenges they present to both existing businesses and new venture entrepreneurs. The overall goal of this course is to help you to understand, appreciate and learn to manage the technology innovation process. Students examine innovation strategies, planning models, evaluation models, licensing and the commercialization process required to launch new businesses around innovative products and technologies.

ENTR.6510 Technological Entrepreneurship (Formerly ENTR 565 and ENTR.5650) - Credits: 3

This course is designed to help master's level students, often from fields outside of business, understand how technological and social innovations lead to new businesses and how those are created, funded, governed, and grown.

ENTR.6550 Corporate Entrepreneurship (Formerly ENTR /64.655) - Credits: 3

This course focuses on entrepreneurship in established companies. Corporate Entrepreneurship (CE) is a process by which companies adopt a conscious strategy to encourage creativity, innovation, outside-the-box thinking, experimentation and risk taking. As a result, companies promoting and implementing CE strive for competitive advantages in rapidly changing global markets. The course will cover components of CE, developing & implementing CE strategies and managing CE.
Each student team will be assigned to a faculty member(s) who will instruct and guide them throughout this process. Capstone II may only be taken by students in the M.S.I.T.E. program.

ENTR.6880 Current Topics in Entrepreneurship (Formerly ENTR /64.688) - Credits: 3

This course is designed for an entrepreneur or an intrapreneur that focuses on key marketing concepts, methods, and strategic issues relevant for start-up and early-stage entrepreneurs and new ventures within an established company. It will give students a broad and deep understanding of such topics; Entrepreneurship and marketing; Marketing Opportunities; Market Development; Distribution strategy; pricing Strategy; Customer Relationship Strategy; Communication Strategy; and Effective use of Social Media. Start-up entrepreneurs and intrapreneurs face the challenge of matching large resources of established companies and thus have to utilize different ("entrepreneurial") marketing methods to succeed.

ENTR.6990 Independent Study (Formerly ENTR /64.699) - Credits: 3

This is a full-semester seminar devoted to the diverse field of entrepreneurship. During the semester, we will cover seminal articles as well as contemporary topics and debates. Our emphasis is on reading and discussing academic articles from various perspectives on entrepreneurship. Students are expected to actively participate and contribute to class discussions as well as prepare a research proposal.

ENTR.7420 Seminar in Corporate Entrepreneurship (Formerly ENTR /64.742) - Credits: 3

In this course, students will become familiar with and develop an in-depth understanding of the concepts, models, and paradigms that collectively form the foundation for corporate entrepreneurship. The purpose is to develop a keen awareness of major gaps that exist in the literature. Students will develop the ability to critically integrate findings from the literature and strengthen the skills needed to conduct original research in the related areas.

ENTR.7430 Seminar in Innovation and New Product Development (Formerly ENTR /64.743) - Credits: 3

This seminar is on the progress of the scholarly research on innovation and new product development. Topics include: types, drivers, and outcomes of innovation; new product development processes, how innovations and new products can help an organization develop a sustainable competitive
ENTR.7440 Current Topics in Innovation and Entrepreneurship (Formerly ENTR /64.744) - Credits: 3

This course examines current topics facing entrepreneurs and companies in strategic marketing of their innovative products and services. The specific issues covered include customers risk and value perceptions, buyer-seller relations, customer lifetime value, international advantage.

ENTR.7960 Doctoral Dissertation (Formerly ENTR /64.796) - Credits: 1-9

Doctoral dissertation research.

ENTR.7970 Managerial Research Seminar (Formerly ENTR /64.797) - Credits: 0

The course will involve an on-going monthly presentation from across scholarly disciplines. Speakers will be drawn from local, national, and international universities. Attendance will be mandatory; PhD students should gain an appreciation for high level scholarship and corporate governance research.

MKTG.5010 Marketing Fundamentals (Formerly MKTG 501,62.501) - Credits: 2

Describes how marketing strategies and plans of a competitive enterprise are formulated, implemented, and adjusted over time. Behavioral and quantitative aspects are covered, as well as analysis of the environmental forces affecting marketing decisions. Pre-requisites: MBA or Certificate Programs, or Permission of MBA Director.

MKTG.5450 Professional and Scientific Communication (Formerly PSM 545) - Credits: 3

This course will help you improve your professional communication. A science professional who can communicate quickly, clearly and effectively will be most successful in the workplace. In this course, you will gain a fuller understanding of the communication process, and will practice the application of effective communication skills. You will develop both written and oral communication within the context of your professional area. Students will prepare and present a variety of short to moderate length presentations and written assignments. These assignments simulate those encountered in the "real-world" including persuasive presentations, oral and written reports, media interviews, memoranda, and crisis situations. This class will also display the impact of new technologies such as e-mail and presentational software and the opportunities they present and constraints they place on effective communication. Supplemental course reading and materials included as appropriate.

MKTG.6010 Customers and Markets (Formerly MKTG 615/62.615) - Credits: 3

Prerequisite: Student must be matriculated and have finished foundation core. Pursues the development of comprehensive and integrated marketing plans using industry/competitor analysis, market value chains, and forecasting. An emphasis is given to business-to-business marketing situations which require an in-depth analysis of the firms' complex organizational behavior and evolving buyer-seller relationship.

MKTG.6150 Sustainable Marketing (Formerly MKTG 615/62.615) - Credits: 3

MKTG.6200 Sales Management (Formerly MKTG.620) - Credits: 3

This course offers students the opportunity to understand how sales management is conducted in small entrepreneurial organizations and large established enterprises. Topics include aligning the sales function with overall organizational objectives, integrating sales into the value delivery process, recruiting a talented sales team and meeting enterprise goals through target setting, compensation schemes, effective use of sales automation systems, and the importance of the Internet and other emerging technologies in the sales discipline. The course will explore the range of sales skills from the consultative selling of complex deals to transactional account management, as well as structural options such as product specialization, customer segment focus and territory alignment.

MKTG.6250 Digital Marketing (Formerly MKTG 625/62.625) - Credits: 3

This course combines a strategic view of digital marketing and its challenges and opportunities with a tactical approach whereby through case studies, interactive sessions, class exercises, and client projects, students learn about the latest research and best practices in the industry. Topics to be covered include digital marketing strategy, digital marketing and business model innovation, social media marketing, search engine optimization, mobile marketing, video marketing, web analytics and measurement, legal and security issues, and multichannel integration. Students will leave the course with a working knowledge of the tools and processes for creating, managing, and executing digital marketing plans.

MKTG.6300 Market Research (Formerly 62.630) - Credits: 3
In this course students will learn and apply various marketing research techniques that will enable them to make soundly based decisions about new products or services in either an existing firm or new venture. Some of the topics covered include: assessing customer needs, estimating market demand, deciding the features of a proposed product/service and the price that would be most attractive in its target market. The course will provide students with an overview of key marketing concepts, and understanding of the statistical methodology behind market research techniques and practical application of these techniques through cases and projects.

**MKTG.6350 Marketing Analytics - Credits: 3**
Marketing Analytics will cover commonly used methods in the Marketing area, such as regression analysis and t-tests. Students will work with actual sales and customer data to determine appropriate strategic actions. Students will also learn how to use relevant analysis software, such as Excel and SPSS.

**MKTG.6700 International Marketing (Formerly MKTG 670/62.670) - Credits: 3**
This course gives students a comprehensive view of marketing planning activity related to foreign markets. It is aimed at developing your understanding of the various dimensions in a business enterprise that are influenced by marketing. Marketing is a leading, integrated activity that influences the enterprise as a whole. Understanding of key trends in the global context and how they might affect a firm’s marketing activity is fundamental for all employees, particularly marketers, executive management and the leadership team including the CEO, and managers at all levels in various functions of the company. This course provides a comprehensive introduction to this fascinating subject in business management.

**MKTG.6770 Independent Study: Marketing (Formerly MKTG 677/62.677) - Credits: 3**
Pre-Requisite: MBA Foundation Core and 62.601 or permission of MBA Coordinator.

**MKTG.6880 Current Topics in Marketing (Formerly MKTG 688/62.688) - Credits: 3**
Topics of current interest in Marketing. Subject matter to be announced in advance. For a current semester course title, please log on to ISIS, the Inter-Campus Student Information System.

**MKTG.7100 Seminar in Marketing and Innovation Strategy - Credits: 3**
This seminar aims to build the foundation for scholarly research in marketing on strategy-related phenomena. The seminar involves in-depth discussions of seminal and cutting-edge ideas and methodologies on some important topics in marketing and innovation strategy research. Discussion topics include, but are not limited to, branding, new product/service development, and competitive dynamics.

**MKTG.7200 Seminar in Consumer Behavior - Credits: 3**
This seminar aims to build the foundation for scholarly research on phenomena related to consumer judgement and decision-making. The seminar involves in-depth discussions of seminal and cutting-edge ideas and methodologies on some important topics in consumer behavior research. Discussion topics include, prospect theory, rational choice, framing, task effects, and biases.

**MKTG.7300 Seminar in Business-to-Business Marketing - Credits: 3**
This Seminar aims to build the foundation for scholarly research on phenomena related to business-to-business marketing. The seminar involves in-depth discussions of seminal and cutting-edge ideas and methodologies on some important topics. Discussion topics include but are not limited to, account management, transaction cost economics, agency theory, resource dependence, networks and alliances.

**MKTG.7960 Doctoral Dissertation - Credits: 1-9**
Doctoral dissertation research.
MIST.6010 Management Information Systems
(Formerly 63.601, MIST 601) - Credits: 3
Examines computer technologies, database management, and
data communications as vehicle to improve and/or restructure
business processes and decision making effectiveness to create
competitive advantage.

MIST.6030 Database Management (Formerly
63.730: Advanced Data Management, MIST 603) -
Credits: 3
This course provides students with in-depth knowledge for
modeling, designing, implementing, and managing database
systems for operational and decision support purposes. Topics
covered include relational database model, entity-relationship
modeling, normalization, SQL language, data warehousing,
data quality and integration, data and database administration,
and object-oriented database.

MIST.6060 Business Intelligence and Data Mining
(Formerly MIST 606) - Credits: 3
This course introduces the concepts and technologies of
business intelligence and data mining. The course studies how
data-oriented business intelligence techniques can be used by
organizations to gain competitive advantages, as well as how to
design and develop these techniques. Topics include
classification, clustering, association analysis, prediction, and
text and web mining. Data-mining related ethical issues will
also be discussed.

MIST.6070 Electronic Business (Formerly 63.630: E-
business, MIST 607) - Credits: 3
This course provides a foundation on digital commerce and e-
business for MBA students. It will cover both technological and
managerial aspects of managing e-business operations in either
a traditional or pure "dot.com" organization. Issues covered
include interactive marketing and market-spaces, agent-based
commerce and intelligent markets, electronic shopping carts,
user interface issues, EDI transaction via Extranets, database
interfaces, personalization and targeted communications,
security, encryption, and payment systems, privacy and
intellectual property.

MIST.6080 Enterprise System Management
(Formerly 63.640, MIST 608) - Credits: 3
This course, an MBA elective, will focus on Enterprise
Resource Planning (ERP) systems that integrate information
spanning the functional boundaries within an organization.
ERP systems include like SAP/R3, PeopleSoft, Oracle, and
Customer Relationship Management (CRM) like Seibel,
Tariva, etc. The goals of the course are to help students
understand ERP systems and their underlying components and
technologies, the implications of implementing ERP in
organizations. Course will cover management and technical
issues during the pre-implementation, installation, and post-
installation stages of the ERP and/or CRM software in
organizations. This course will cover topics such as: ES
planning, business process re-engineering, selection of ES
software and vendors, role of outside consultants, budgeting
and resource planning, systems conversion, testing, user
training, stabilization, role of top management, IT staff,
consultants, design teams, and employee, and other topics.

MIST.6100 Information Technology Infrastructure
(Formerly 63.610, MIST 610) - Credits: 3
This course examines in detail, the two major technologies for
establishing the Information Technology (IT) architecture
&Infrastructure in an organization. Topics include Multi-user
Database environments, review of IT architectures, the
migration of legacy systems, network (WAN, LAN) design,
deployment, and management, and role of the Internet,
Extranet, and Intranet.

MIST.6140 Social and Economic Networks (Formerly
63.745: Electronic Commerce. MIST 614) - Credits: 3
This course introduces the concepts and technologies of social
network analysis. The course studies how social media
analytics can be used by organizations to gain competitive
advantages, as well as how to develop and implement the
techniques of network analysis. We cover graph theory, graph
database, social influence, community detection, information
diffusion, and applications of network analysis of
recommendation and feature selections. Upon successful
completion of this course, students will possess a working
knowledge of many concepts of social media analytics and
associated techniques and will be able to solve real-world data-
driven decision problems at strategic, tactical, and operational
levels.

MIST.6150 Data Quality for Business Analytics
(Formerly 63.760 Enterprise Information Systems,
MIST 615) - Credits: 3
This course provides students with knowledge and skills to
process data for business analytics. Topics include data quality
requirement and data preparation for business analytics,
impact of data quality on analytics, and methods for assessing
and improving data quality in the context of business analytics.

MIST.6160 Advanced Data Mining (Formerly 63.798:
Independent Study in Management Information, MIST
616) - Credits: 3
The course will cover advanced data mining techniques with applications in different business domains. Students will be introduced to advanced analytic solutions aimed at addressing issues related to big data including volume, variety, and velocity. Topics will focus on performing descriptive and predictive analytics through programmatic analytic platforms as well as text analytics techniques for unstructured or semi-structured data. Concepts will be introduced through a hands-on approach using state-of-the-art analytic platforms and tools.

MIST.6170 Advanced Machine Learning - Credits: 3
This is an advanced course on machine learning and data science for business. In this course, students learn how to analyze, design and develop machine learning techniques and tools for business analytics. Applications to both strategic and operational problems in today's data-driven ecosystem will be discussed. Topics included are supervised learning, unsupervised learning, statistical learning, ensemble learning, model and performance evaluation, text feature learning, text analytics, artificial neural networks, deep neural networks, deep learning, and machine learning and AI related privacy and ethical issues. The course will be taught using Python programming language.

MIST.6350 Project Management (Formerly MIST/MGMT 635) - Credits: 3
This course will focus on managing innovation and technology projects and the critical role that a project manager plays in successful execution. Topics included in the course are: project planning, deliverables, managing quality, change management, documentation, communication, risks management, project team and human resource management approaches and creating and managing expectations.

MIST.6450 Information Technology Project Management (Formerly 63.620, MIST 645) - Credits: 3
Application and integration of the project management body of knowledge (PMBOK) areas to managing information technology (IT) projects. Focuses on project management tools and techniques for defining and managing the project's goal, scope, schedule, and budget. Other topics include quality management, risk management, change management, and knowledge management as they are related to IT projects.

MIST.6490 Business Analytics Capstone Project - Credits: 3
Students will be guided through the process of developing their soft (communications) and hard (Technical) skills while delivering a business analytics project to support decision making in organizations. In this culminating project, students draw on the breadth and depth of the curriculum to address an industry supplied problem in small teams. The capstone project will involve application of industry accepted methodologies and analytical tools to solve real-world problems in R&D marketing, supply chain, healthcare, finance and/or other disciplines. Students who cannot participate in university provided projects, with the permission of the program coordinator, are provided with two alternative project options: a) conduct a real-world business analytics project individually in a similar manner as above with an organization of their choice; or b) conduct a data analytics project individually as part of a research project under the guidance of an OIS Department faculty member.

MIST.6880 Current Topics in Management Information Systems (Formerly 63.688, MIST 688) - Credits: 3
Selected topics having current and future impact in the field of MIS. Subject matter to be announced in advance.

MIST.7060 Data Analytics (Formerly 63.706, MIST 706) - Credits: 3
This course introduces the concepts and technologies of data analytics and data mining for transforming data into insight and business intelligence. The course studies how the data-driven analytics technologies can be used by organizations to gain competitive advantages, and how to design and develop these technologies. Topics include data integration, data transformation, prediction, classification, clustering, association, text mining, optimization, model and performance evaluation, and data-mining related privacy and ethical issues.

MIST.7070 Electronic Commerce (Formerly 63.707, MIST 707) - Credits: 3
This course provides a foundation on digital commerce and e-business research for PhD. students. It will cover both technological and managerial aspects of managing e-business operations in either a pure (Dot.Com) organization or traditional organization (bricks-and-click). Issues covered include interactive marketing and market-spaces, agent-based commerce and intelligent markets, electronic shopping carts, user interface issues, EDI transaction via Extranets, database interfaces, personalization and targeted communications, security, encryption, and payment systems, privacy and intellectual property. Students will be conducting literature review in each of these key e-business areas and identify potential future research directions.

MIST.7080 Enterprise Systems (Formerly 63.708,
MIST 708) - Credits: 3
The course will focus on implementation issues with Enterprise Systems (also called Enterprise Resource planning -- ERP) which integrate the informational and functional boundaries within organization. The goals of the course are to help students understand the underlying ERP components and technologies, change management, and process integration in organization. Conceptual models will be analyzed on topics such as business process management, customer relationship management, supply chain management, privacy and security, and outsourcing issues as related to the implementation of enterprise systems. Students will be assessed through case analysis, exams, and research paper proposals.

MIST.7090 Independent Study in Management Information Systems (Formerly 63.709, MIST 709) - Credits: 1-3
An opportunity for the student to carry out individualized study relating to the field of Management Information Systems under the supervision of a member of the faculty. Pre-requisites: MBA Foundation Core and Permission of MBA Coordinator

MIST.7370 Multivariate Statistical Methods (Formerly 63.737, MIST 737) - Credits: 3
This course introduces statistical methods and techniques for multivariate data analysis. The course studies basic ideas underlying multivariate statistical methods and covers various applications of multivariate statistical analysis. The course discusses the design of a multivariate study, the choice of a multivariate method, the procedure of multivariate statistical analysis, and the interpretation of the analysis results. Topics include multivariate normal distribution, multivariate analysis of variance and covariance (MANOVA and MACOVA), principal components, factor analysis, structure equation modeling, canonical correlation, discriminant analysis, and cluster analysis.

MIST.7500 Seminar in Information Systems Research (Formerly 63.750, MIST 750) - Credits: 3
This course focuses on the contemporary topics in information systems research. The materials discussed in this course will be selected form leading IS research publications. Subject areas may be organizational, social, or technological in nature. Research methodologies may be empirical, computational or economics oriented. This course will normally be taught by multiple faculty members jointly.

MIST.7880 Current Topics in Management Information Systems (Formerly MIST 788) - Credits: 3
This course addresses one or more topics having current or future impact on the research fields of Information Systems. Topics can change at each course offering. Typically, the course will focus on emerging research streams in Management Information Systems, exploring new techniques and research methodologies used in the literature that yield high-impact research results.

MIST.7900 Doctoral Dissertation (Formerly MIST 790) - Credits: 1-9
Doctoral dissertation research.

MIST.7970 Managerial Research Seminar (Formerly MIST 797) - Credits: 0-1
The course will involve an ongoing monthly presentation from across scholarly disciplines. Speakers will be drawn from local, national, and international universities. Attendance will be mandatory; PhD students should gain an appreciation for high level scholarship and corporate governance research. "Variable credit course, student chooses appropriate amount of credits when registering."

MIST.CAPSTO Non-Credit Capstone Review - Credits: 0

POMS.5010 Operations Fundamentals (Formerly 63.501/POMS 501) - Credits: 2
Provides students with an introduction to operations management and operations analysis. The latter furnishes the student with a set of quantitative tools which are useful in designing and operating the former. These techniques are also generally applicable to other functional areas/courses within the MBA Program. Pre-requisites: MBA or Certificate Programs, or Permission of MBA Director.

POMS.5CO-OP Curricular Practical Training - Credits: 0-1
Curricular Practical Training. "Variable credit course, student chooses appropriate amount of credits when registering."

POMS.6010 Operations Management (Formerly 63.671/POMS 601) - Credits: 3
Examines the strategic and tactical operations processes of manufacturing and service firms that foster global competitiveness. This course focuses on traditional and newer
approaches including just-in-time, total quality management, MRP, flexible manufacturing systems, and capacity and management that lead to an integrated operations strategy. Cost reductions, flexibility, and market responsiveness are also considered.

**POMS.6020 Global Supply Chain Management**  
(Formerly POMS 602) - Credits: 3

Supply chain management has become a crucial factor in the success of many leading organizations, including for-profit and not-for-profit companies, government agencies, and humanitarian relief efforts. This course will start with principles and concepts of supply chain management, tracing the flows of materials, funds, and information required to develop and deliver products and services around the globe. Topics covered include sourcing, logistics, demand planning, and inventory management, along with the use of quality tools and lean methodologies to improve supply chain operations and develop supplier relationships. This course will also discuss the challenges, key issues, and trends in global supply chain management, such as sustainability, disruptions, security, and innovation.

**POMS.6030 Service Management**  
(Formerly 63.673/POMS 603) - Credits: 3

This course is intended to provide students with the necessary tools and understanding to manage service operations. Service firms represent the fastest-growing sector of the economy. This course will focus on the various aspects involved in the management of service operations. The service operations are managed differently to their intangibility, time-sensitivity, high levels of customer involvement and lack of engineering standards. This course will explore topics such the measurement of productivity and quality, managing capacity and demand, management of waiting line, management of technology, and the most used service analytic tool - Data envelopment Management.

**POMS.6040 Managerial Quality Control**  
(Formerly 63.690/POMS 604) - Credits: 3

Covers methods and managerial aspects related to quality management topics including statistical process control, quality cost and quality assurance.

**POMS.6120 Statistics for Predictive Analytics** - Credits: 3

This course introduces statistical methods and techniques for predictive analytics. This is part of the business-analytics umbrella of courses. The main focus of this course is on regression, a powerful and widely used predictive method.

Topics covered include simple linear regression, multiple regression, variable selection, model diagnostics, and systems of regression equations. The course also covers classification techniques using statistical methods such as linear discriminant function and logistic regression. Spreadsheet software, such as MS Excel, and statistical software, such as SAS and R, will be heavily utilized.

**POMS.6210 Advanced Statistics for Business Analytics** - Credits: 3

This course introduces important statistical techniques in business analytics such as time series analyses, multivariate analyses, and fundamental concepts in casual inferences. This course is practice-oriented with a focus on business contexts such as housing finance, e-commerce and online marketing.

**POMS.6220 Decision Analytics** - Credits: 3

This course covers the three main facets of business analytics: descriptive, predictive, and prescriptive analytics. Students will gain the knowledge of managerial decision-making (commonly referred to as data analytics, decision support systems-DSS, data mining). Some of the business analytic topics covered include neural networks, decision trees, support vector machines, k-means, association rule mining, Analytical Hierarchy Process, Data Envelopment Analysis, expert systems, optimization, and simulation.

**POMS.6240 Analytical Decision Making Tools** - Credits: 3

This course covers principles and techniques of applied mathematical modeling for managerial decision making. Emphasis is on the methods of prescriptive analytics, including optimization models, decision analysis, simulation modeling, and risk analysis. Problems studied will include applications in finance, health care, marketing, operations, and management. Cases studies will be used extensively to demonstrate the practical use of models to improve managerial decision making. In addition to developing and applying models, emphasis will be placed on explaining the models and interpreting their results.

**POMS.7090 Independent Study: Operations Management**  
(Formerly 63.779/POMS 709) - Credits: 3

Pre-requisites: MBA Foundation Core and Permission of MBA Coordinator

**POMS.7100 Predictive Modeling & Causal Analytics** - Credits: 3
This class first builds the fundamentals for the advanced predictive modeling techniques in various domains of business. It also covers the methods to combine forecasts from various prediction models. Then it explores the integration methods of structural equation modeling (covariance-based and partial least squares-based) along with the prediction modeling approaches, all of which are encompassed within the term of causal analytics.

**POMS.7200 Non-parametric Modeling - Credits: 3**

Benchmarking and performance evaluation are used to improve an organization’s products and processes. This course focuses on linear programming models used in benchmarking and performance evaluation. The technique is called data envelopment analysis (DEA). DEA has been proven to yield exceptional insights and substantial results in practice. Our emphasis is on basic concepts, mathematical formulas, and their applications. This is a spreadsheet-based modeling course. The mathematical models will be established and solved by using Excel and Excel Solver. Some Visual Basic for application (VBA) coding is required.

**POMS.7300 Prescriptive Analytics: Optimization & Simulation - Credits: 3**

In this course, fundamental prescriptive analytics methodologies i.e. optimization and simulation are covered. This course provides an overview of optimization and simulation frameworks to solve wide range of issues in management science and also their applications are studied.

**POMS.7900 Doctoral Dissertation - Credits: 1-9**

Doctoral dissertation research.

**POMS.7970 Managerial Research Seminar - Credits: 0-1**

The course will involve an on-going monthly presentation from across scholarly disciplines. Speakers will be drawn from local, national, and international universities. Attendance will be mandatory; PhD students should gain an appreciation for high level scholarship and corporate governance research. "Variable credit course, student chooses appropriate amount of credits when registering."