UNIVERSITY OF MARYLAND
University College
STATE UNIVERSITY • GLOBAL CAMPUS

2018–2019 CATALOG

THE GRADUATE SCHOOL

The University Made for You

UMUC.EDU

UMUC IN MARYLAND AND AROUND THE WORLD

At University of Maryland University College (UMUC), a high-quality education is always within reach. UMUC is dedicated to offering on-site and online courses and resources to adult students in Maryland and around the world. Under contract to the U.S. Department of Defense, UMUC is one of the largest providers of education to the U.S. military worldwide and serves 50,000 active-duty military servicemembers, reservists, veterans, and their families. With more than 140 worldwide classroom and service locations in more than 20 countries and territories and more than 90 undergraduate and graduate degree, certificate, and specialization curricula offered entirely online, UMUC makes it possible to earn a widely respected degree from just about anywhere.

UMUC's commitment to students around the globe extends far beyond providing access to excellent degree programs. An online academic and administrative services portal, MyUMUC, makes it simple for you to register for courses, pay tuition, apply for graduation, and update your personal information when it's convenient for you. You can also access academic and career advising, financial aid counseling, library services, and much more online via the university's website or by phone or e-mail. All over the world, UMUC gives you what you need to succeed.

From the Dean

It is my pleasure to welcome you to The Graduate School at University of Maryland University College (UMUC).

At UMUC, we are committed to improving the lives of adult learners. Each academic year we help thousands of students realize their academic and professional dreams. We recognize that when you decide to go to graduate school, you are making a commitment to pursue learning that is extremely important to you. So many of us at UMUC have walked similar paths to pursue our own higher education while balancing life, family, and work obligations. It is for this reason that we are sincerely committed to helping you achieve your goals and support you along your journey.

We design our graduate programs to help you build the knowledge, skills, and abilities essential to success. Our programs embrace innovation, and provide you with opportunities to practice the real-world work of your discipline, and our faculty of scholar-practitioners are leaders in their fields. They are strongly committed to engaging you in meaningful learning experiences that support your success and look for opportunities to mentor and coach you as you work and make learning more personalized.

Journeys often go more smoothly with a road map and good tools. This catalog provides valuable information related to program requirements, administrative policies, university resources, and services to help you navigate. This information is also available via our website at umuc.edu. While reviewing the catalog, do not hesitate to contact one of our academic advisors, who will answer any questions you may have and assist you in creating your individual academic road map.

I am confident that your graduate school journey will be successful and fulfilling. There may be some obstacles, small setbacks, or delays on the road, but never give up. Always feel free to reach out to your faculty, program chair, or my office. We are here to help and want your dreams to become a reality!

Sincerely,

E. Kathryn Klose

Kathryn Klose, PhD
Acting Vice Provost and Dean
The Graduate School
E-mail: graddean@umuc.edu

POLICY STATEMENT

This publication and its provisions do not constitute, and should not be regarded as, a contract between UMUC and any party or parties. At the time of publication, reasonable effort was made to ensure the factual accuracy of the information. However, this publication is not a complete statement of all policies, procedures, rules, regulations, academic requirements, and tuition and fees applicable to UMUC, its students, or its programs. In addition, changes or additions may be made to the policies, procedures, rules, regulations, and academic requirements set out in this publication. UMUC reserves the right to make these changes and additions to the information in this publication without prior notice.

This catalog provides the degree requirements and recommended curriculum for students who begin continuous study on or after August 1, 2018. (Details are listed on p. 143.) When a curriculum or graduation requirement is changed, it is not made retroactive unless the change is to the student's advantage and can be accommodated within the span of years normally required for graduation. See additional policies on pp. 161–163. Sources for any claims made throughout this catalog may be found on the UMUC website *(umuc.edu)*.

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Welcome to UMUC

MADE FOR YOU

From its founding in 1947, University of Maryland University College (UMUC) was designed to meet the educational needs of adult students like you—students who must balance study with the demands of work and family life.

Today UMUC has grown to be the largest public university in the nation, serving students throughout the state, the nation, and the world. Yet its focus on providing open access to high-quality educational programs and services—eliminating the barriers that can keep you from achieving your educational goals—remains unchanged.

CARRYING OUT THE MISSION

Students First
At UMUC, your success as a student is of paramount importance. The university seeks not only to help you fulfill your current education goals but also to create an educational partnership that will last throughout your life.

To that end, the university looks first for ways to ensure that you can easily access programs and services. Admission policies are designed to simplify the process (standardized tests are not generally required), making it possible for you to apply and register for most programs at the same time.

As a global university, UMUC makes it possible for you to take classes any time, any place, by offering one of the largest selections of online programs available—in addition to classes at sites throughout Maryland and the Washington, D.C., metropolitan area and at military sites all over the world. You can also access student services online and by phone, as well as on-site.

Convenience and flexibility are not the only concerns, however. UMUC seeks to create a learning environment that you will find respectful of diverse backgrounds—inclusive, responsive, and relevant.

Recognizing that financial concerns often present the biggest obstacle to higher education, UMUC also strives to keep tuition costs low and provides numerous financial aid opportunities, including scholarships for military and community college students.

Excellence
A regionally accredited university, UMUC is dedicated to providing the highest-quality programs and services and ensuring excellence in its online and hybrid courses.

In providing these programs, UMUC relies on a renowned faculty of scholar-practitioners—teachers who bring real-world experience to courses—and the use of the latest technologies. UMUC also is able to provide you with a wealth of resources because of its place within the University System of Maryland.

The success of UMUC's efforts is evident. Over the years, UMUC has garnered awards from such notable organizations as the University Professional and Continuing Education Association, the Sloan Consortium, and the Maryland Distance Learning Association.

Innovation
UMUC has always looked for new and better ways to serve students. Long before the online revolution, UMUC was delivering courses to students at distant locations, using any and all available technologies—from interactive television to voice mail. Today, you can access both courses and services online, using the university's learning management system and MyUMUC, its online gateway to services and information. Through its Center for Innovation in Learning and Student Success, UMUC leads the search for next-generation learning models and best practices for online learning.

FACILITIES AND PROGRAMS

UMUC offers degree programs from the associate level to the doctorate. Most undergraduate and graduate programs are available online. These academic programs are administered by The Undergraduate School and The Graduate School.

The university's administrative headquarters, located in Adelphi, Maryland, also serve as home to a prestigious art collection and a conference facility, the College Park Marriott Hotel and Conference Center at UMUC. The Academic Center at Largo houses both The Undergraduate School and The Graduate School, as well as all related academic support units. Most classes and services, however, are provided at more than 140 sites worldwide, as well as through cutting-edge technology—online via the university's website, the learning management system, and MyUMUC.

FOR ASSISTANCE

Contact us by e-mail at *gradinfo@umuc.edu* or by phone at 800-888-UMUC (8682).

About The Graduate School

MISSION STATEMENT

UMUC's Graduate School prepares you for effective leadership and citizenship in a global environment characterized by workforce diversity, increasing competition, and technological innovation. Programs are designed to extend educational access through multiple formats.

The Graduate School strives for excellence in the quality of programs offered and innovative delivery formats. The curriculum provides discipline-specific knowledge with emphasis on leadership, communication, technology, globalization, diversity, systems thinking, critical thinking, information literacy, research competency, and ethical practices. The Graduate School challenges you to continuously demonstrate effective leadership as you apply what you study to your professions and your daily lives.

ACADEMIC PROGRAMS

UMUC's graduate degrees are designed to provide a career-focused curriculum. Over the years, many of these programs have won awards for excellence. Recently, UMUC's graduate program in data analytics received the University and Professional Continuing Education Association (UPCEA) Mid-Atlantic Region Outstanding Program and Partnership Award.

A list of UMUC's graduate programs, organized by career field, is provided on the following pages.

Virtually all programs are available online. Coursework for some programs is available on-site at Maryland/national capital area locations in a hybrid format that combines on-site attendance with online study. For more information, e-mail *grad.advisor@umuc.edu* or call 800-888-UMUC (8682).

CONTINUOUS INNOVATION

As a leader in distance education, UMUC continually strives to ensure that its academic programs, course delivery formats, and student services meet the highest standards for excellence. Ongoing efforts focus on improving the student experience online and ensuring that programs meet the needs of today's workforce. These changes may involve the introduction of new or revised programs later in the academic year. Visit *umuc.edu/grad* for the latest program information, especially if you intend to enroll in 2018–2019. Also check *umuc.edu* for possible addenda to this catalog.

ACADEMIC RELATIONSHIPS

The Graduate School established academic relationships for its existing programs with a number of academic and government institutions, some of which are listed below.

The Undergraduate School
Articulation agreements between The Graduate School and UMUC's Undergraduate School allow students who completed their undergraduate degree at UMUC with majors in accounting, computer science, criminal justice, English, history, and social science, and coursework in emergency management and homeland security to reduce their total coursework for certain related graduate degrees. Details on each of these agreements are provided under the individual program descriptions.

Military Relationships
UMUC has established special relationships with a number of military institutions of higher education: Air War College, Air University, Defense Acquisition University, Defense Information School, Naval War College, National Defense University Information Resources Management College (iCollege), and Marine Corps College of Distance Education and Training. In most of these academic relationships, you may complete military specializations at the partner school as part of a master's degree program at UMUC (usually the Master of Science in Management or the Master of Science in Information Technology). More information on these academic relationships is available online at *umuc.edu/military-and-veterans* or by e-mail at *MilitarySupportServices@umuc.edu*.

Preparing for Graduate Study

As you probably know, more is expected at the graduate level than what is normally required at the undergraduate level. In addition, you usually must complete special requirements at the end of your graduate program. UMUC requires you to complete comprehensive exams and a dissertation only at the doctoral level. UMUC's master's degree programs require you to complete an integrative end-of-program capstone course in which you must demonstrate mastery of content covered throughout the program.

As long as you are continuously enrolled, you should refer to the catalog of the year in which you began graduate study for the specific requirements related to your program of study. Continuous enrollment is defined on p. 143.

In all programs, you must maintain a term and cumulative grade point average (GPA) of 3.0 to remain in good academic standing; in some, you must also earn a grade of B or better in each class to progress to the next class. Academic progress is assessed at the end of each term. Other requirements—such as time limits for degree completion and minimum GPA—also apply; details are provided on pp. 141–143.

While UMUC's course formats offer you considerable flexibility, graduate study requires a significant time commitment. Most courses involve group projects. Each week, you should expect to devote at least 3 hours of outside study for every credit in which you are enrolled. According to that calculation, you need to devote at least 9 to 18 hours per week to outside study, research, and reading.

NONPROGRAM COURSES

Because UMUC graduate students often enter graduate study with academic backgrounds in very different fields and return to study after a gap of many years, UMUC offers a number of courses outside the usual required program courses that are designed to help you succeed in your graduate studies. Complete course descriptions are provided on pp. 95–134.

Required Introductory Course
UCSP 615 Orientation to Graduate Studies at UMUC is designed to help you develop the skills and techniques you need to understand and manage the challenges involved in successfully completing a graduate program at UMUC and to familiarize you with research strategies and online library resources—material that is critical for 21st-century professionals.

This noncredit course is required for all new master's degree students, except those in programs that require CBR, DCL, or PRO 600. At the successful conclusion of the course, a grade of S (Satisfactory) or U (Unsatisfactory) is posted; the mark of I (Incomplete) is not an option. UCSP 615 must be completed within the first 6 credits of graduate study. It is recommended that you take this as your first course before beginning program coursework.

Optional Noncredit Courses
Noncredit courses (currently designated UCSP or ASC) are available in computer programming, financial accounting, information technology, writing, and research methods and generally last five to eight weeks. Although these courses carry no UMUC credit, they appear on your official academic transcript. At the successful conclusion of the course, a grade of S (Satisfactory) or U (Unsatisfactory) is posted; the mark of I (Incomplete) is not an option. You must be admitted or have an application on file before registering for noncredit courses.

Current information about fees for noncredit courses is available at *umuc.edu/tuition*.

COURSE FORMATS

UMUC offers courses online and in a hybrid format that combines on-site and online instruction.

Hybrid classes typically meet on-site at a UMUC location for four to six sessions per term; the remainder of the teaching and learning in the course occurs in the online classroom. The schedule of on-site sessions is provided at the beginning of the term. Hybrid classes are identified in the most current graduate schedule of classes.

Online courses maintain the same academic standards as on-site courses. Course content, learning materials, requirements, assignments, and class participation are comparable for online and hybrid courses; for example, you need to adhere to a course schedule for assignment deadlines.

Computer and Internet Access
UMUC is committed to ensuring that you acquire the level of technological fluency needed for active participation in contemporary society and have access to up-to-date resources.

As a UMUC student, you must be prepared to participate in asynchronous, computer-based class discussions; study groups; online database searches; course evaluations; and other online activities—whether you are taking a course online or in a hybrid format.

You must, therefore, ensure that you have some type of internet access. Barring individual course requirements, this access may be through use of a UMUC computer lab; university or public library; or other readily available, reliable source if you do not have home access. However, such access should be regularly available, and you must have a current e-mail address. Information on UMUC student e-mail addresses is available at *umuc.edu/umucgmail.*

Some academic programs may have specific technical requirements.*

Taking Online Classes
Before registering for an online course, you may want to consider the following:

1. You need to be prepared to write extensively, because nearly all communication is written. You need strong reading and writing skills in English.
2. You need to be competent in the use of computers and commonly used software programs.
3. Because the online classroom is asynchronous and you are expected to be an active participant, you are encouraged to log in frequently to check what has transpired in your online classroom (instead of classroom meetings).
4. You need disciplined work habits, effective time management skills, and the ability to work both alone and collaboratively.

Technical Requirements
You must meet certain minimum technical requirements to take graduate online courses; these requirements are subject to change. Review the current information about technical requirements at *umuc.edu/techreq*. You are responsible for your own internet access costs.

Some academic programs may have additional technical requirements, such as requiring you to download and install computer programs. To determine whether such requirements apply to your program, you should consult the program chair (listed under Contact Information).

Course Evaluations
UMUC uses feedback from you and your fellow students to make decisions about future courses. Individual responses are kept confidential. For online and hybrid classes, the notice appears in the online classroom when three-quarters of the class has been completed.

The following pages provide descriptions of the degree and certificate programs available through the UMUC Graduate School, including all course requirements and any academic or professional preparation required or recommended beyond general graduate admission requirements.

These descriptions also provide possible career fields toward which graduates of these programs may aim. Your degree should give you the skills—and often a necessary credential—for making a good start toward attaining a career in these fields.

Most degree and certificate programs follow a very specific curriculum with little or no choice. However, in some cases you may substitute a single 6-credit course that covers the same content as two required 3-credit courses or vice versa. These options are listed in the course requirements.

* Certain project management courses require the use of a computer with a Microsoft Windows operating system.

Program Overview

DOCTORAL PROGRAM

Doctor of Management*

Doctor of Management in Community College Policy and Administration○

ACCOUNTING AND FINANCE PROGRAMS

Master of Science in Accounting and Financial Management

Master of Science in Accounting and Information Systems

Master of Science in Management
- Accounting
- Financial Management

BUSINESS AND MANAGEMENT PROGRAMS

Master of Business Administration

Master of Science in Management
- Acquisition and Supply Chain Management
- Human Resource Management
- Interdisciplinary Studies in Management
- Nonprofit and Association Management
- Project Management

CYBERSECURITY PROGRAMS

Master of Science in Cybersecurity Management and Policy

Master of Science in Cybersecurity Technology

Master of Science in Digital Forensics and Cyber Investigation

Master of Science in Information Technology
- Information Assurance

EDUCATION AND TEACHING PROGRAMS

Master of Arts in Teaching**

Master of Distance Education and E-Learning

Master of Education in Instructional Technology

Master of Science in Learning Design and Technology

HEALTHCARE AND SCIENCE PROGRAMS

Master of Science in Biotechnology
- Bioinformatics
- Biosecurity and Biodefense
- Biotechnology Management
- Biotechnology Regulatory Affairs

Master of Science in Environmental Management

Master of Science in Healthcare Administration

Master of Science in Health Informatics Administration

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* Offered online with mandatory residencies or course meetings at UMUC headquarters in Adelphi, Maryland.

○ Not available to Maryland residents. Offered online with mandatory residencies or course meetings at UMUC headquarters in Adelphi, Maryland.

** On-site teaching field experiences and practicum required. See p. 44 for state-specific information.

INFORMATION TECHNOLOGY PROGRAMS

Master of Science in Cloud Computing Architecture

Master of Science in Data Analytics

Master of Science in Information Technology
- Database Systems Technology
- Informatics
- Project Management
- Software Engineering
- Systems Engineering
- Telecommunications Management

Master of Science in Management
- Information Systems and Services

MARKETING AND COMMUNICATIONS PROGRAMS

Master of Science in Management
- Marketing
- Public Relations

PUBLIC SAFETY AND INTELLIGENCE PROGRAMS

Master of Science in Information Technology
- Homeland Security Management

Master of Science in Management
- Criminal Justice Management
- Emergency Management
- Homeland Security Management
- Intelligence Management

CERTIFICATE PROGRAMS ✢

Acquisition and Supply Chain Management

Bioinformatics

Cybersecurity Management and Policy

Cybersecurity Technology

Foundations in Business Analytics

Foundations of Human Resources Management

Global Health Management ✧

Homeland Security Management

Information Assurance

Instructional Technology Integration

Leadership and Management

Learning Design and Technology

Project Management

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✢ More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

✧ Offered jointly with University of Maryland, Baltimore.

DOCTOR OF MANAGEMENT

Stand out with a Doctor of Management, a degree that defines accomplishment.

Designed for executive-level working professionals, the doctoral program emphasizes management theory and strategic thinking, organizational leadership and change, research and innovation, and sustainability in the global business environment. Through applied research and analysis of real-world management issues, you'll gain sophisticated knowledge for the executive level of management.

The cohort structure promotes close, interactive partnerships among students, faculty, and staff and a supportive network for lifelong learning. You'll also benefit from exposure to national and global perspectives and experiences with geographically diverse classmates and faculty.

What You'll Learn

Through your coursework, you will learn how to

- Conduct and evaluate management research for decision making
- Investigate the overall business intelligence environment in an organization
- Develop ethical solutions to complex organizational problems
- Initiate and lead successful change

Career Preparation

This program is designed to help prepare you for management and leadership roles in for-profit, nonprofit, governmental, and nongovernmental organizations; internal and external consulting; and higher education administration and teaching.

Your Coursework

The Doctor of Management program will help you gain the research and management competencies necessary to acquire, appraise, analyze, apply, and assess information for complex evidence-based decision making.

Coursework Examples

- Perform qualitative management research and effectively communicate findings to practitioners
- Assess management environments and develop problem concept models
- Design and implement evidence-based solutions aligned with organizational needs
- Assess an enterprise's analytic capabilities to develop recommendations for a stronger business intelligence climate
- Present innovative ideas at professional conferences and submit for publication

Program Overview

The DM program requires the completion of 48 credits of coursework, including 36 credits in academic content coursework and 12 credits of dissertation coursework. Attendance at a two-day residency on-site in Maryland each term is mandatory. DMG 600 (described on p. 109) is prerequisite to the program.

Admission Requirements

To enroll in the Doctor of Management program, you must have a master's degree in an appropriate field of study. Successful completion of the prerequisite course (i.e., with a grade of B or better) is required for full admission to the program. The complete admission file must be reviewed before you can enroll in DMG 600.

Application Procedures

To apply, you must submit

- A completed doctoral program admission application with the $100 application fee
- An official transcript indicating completion of a master's degree or higher from a regionally accredited university or college (Equivalent degrees from other accredited institutions may be considered on a case-by-case basis. If you were educated abroad, see *umuc.edu/internationalstudent* for additional requirements.)
- An up-to-date résumé indicating professional leadership and management experience

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

DOCTORAL PROGRAM

- Two letters of reference (professional or academic)
- A personal statement that outlines your interest in doctoral study and future goals
- Four reviews of scholarly, peer-reviewed, academic research-based articles that pertain to your area of interest in management research

Admission criteria are provided online and on p. 146.

Preparation Recommended for Success

Expectations

You are expected to have supervisory management experience and a management or business background.

Recommendations

UMUC's doctoral program is writing-intensive. To improve your writing skills, you should take the noncredit course ASC 601.

Degree Requirements

Doctor of Management

PREREQUISITE COURSE

DMG 600 Foundations of Doctoral Study (3)

REQUIRED CORE COURSES

DMG 800 Interpreting and Translating Management Theory in Practice (6)
DMG 810 Research as a Tool for Management Decision Making (6)
DMG 820 Evidence-Based Research Methods (6)
DMG 830 Data Analytics in Practice (6)
DMG 840 Designing Evidence-Based Management Solutions (6)
DMG 850 Producing Original Management Ideas that Influence: Publishing and Conferencing (6)
DMG 860 Producing Actionable Knowledge: Dissertation Problem Statement and Literature Review (4)
DMG 870 Producing Actionable Knowledge: Dissertation Methodology and Analysis (4)
DMG 880 Producing Actionable Knowledge: Management Implications from Dissertation Research (4)

COURSE SEQUENCING

Courses must be taken in the order listed.

Criteria for Program Progression

You must complete each course with a grade of B or better to advance to the next course. (The grade of C is not available for these courses.) Your course syllabus will explain options for and consequences of requesting an Incomplete.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

DOCTOR OF MANAGEMENT IN COMMUNITY COLLEGE POLICY AND ADMINISTRATION

Become a scholar-practitioner by pursuing a Doctor of Management in Community College Policy and Administration in a hybrid program that fits your life and can transform your potential to lead change in higher education.

Designed for college faculty and administrators who aspire to lead effectively and advance in administrative careers, the unique concentration in community college policy and administration offers exceptional scholarship, intimate cohorts, online courses, short residencies, distinguished faculty, and dissertation support in a program that can be completed within three years. Plus, you'll gain knowledge you can apply right away to your current professional environment.

You'll work together in the same group of 15–20 students throughout the entire program and build a virtual community, while benefiting from leadership assessments and executive coaching, developed and led by current and former community college presidents and senior executives.

With a highly respected credential, sophisticated knowledge, and an accomplished dissertation, you'll emerge from the program with the tools to transform student achievement and successfully guide community colleges into the essential role they will play in the future of higher education.

What You'll Learn

Through your coursework, you will learn how to

- Lead change in a rapidly changing sector of higher education
- Advocate for the needs of community colleges and students at local, state, and federal levels
- Apply indicators of institutional effectiveness to all sectors of community college operations

Career Preparation

This program is designed to help community college faculty and administrators and other professionals who are interested in leading and advancing careers in the upper administration of community colleges.

Your Coursework

The community college policy and administration curriculum was developed in conjunction with community college presidents and senior executives to help you pursue the highest level of leadership and management knowledge. Your courses and residencies will focus on building your leadership competencies, policy expertise, and the skills you need to support dissertation research.

Coursework Examples

In past projects, students have had the opportunity to

- Undergo guided dissertation development, exploring various research methods for the dissertation
- Explore topics in leadership and management theory, higher education policy, and community college advancement
- Interview current community college administrators to expand their understanding of key issues and management practice
- Perform a guided analysis of the budgets and alternative revenue sourcing of their own community college
- Prepare advocacy materials and engage in an advocacy visit to congressional offices in Washington, D.C.

Program Overview

The DM program with a concentration in community college policy and administration requires the completion of 48 credits of coursework, including a practitioner dissertation. A comprehensive leadership development program, which includes a battery of individual assessments and career coaching, is an integral part of the program. Attendance at a two-day residency on-site in Maryland each term is mandatory.

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More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

DOCTORAL PROGRAM

Admission Requirements

To enroll in the DM program in community college policy and administration, you must have a master's degree in an appropriate field of study and some familiarity with the American community college. The DM in Community College Policy and Administration is not available to Maryland residents.

Application Procedures

To apply, you must submit

- A completed doctoral program admission application and payment of the $100 application fee
- An official transcript indicating completion of a master's degree or higher from a regionally accredited university or college (Equivalent degrees from other accredited institutions may be considered on a case-by-case basis. If you were educated abroad, see *umuc.edu/internationalstudent* for additional requirements.)
- An up-to-date résumé indicating professional management experience in a community college environment or its equivalent
- Two letters of reference (professional or academic)
- A personal statement that outlines your interest in doctoral study (guidelines for the personal statement are available at *umuc.edu/applydmccpa*)

Admission criteria are provided online and on p. 146.

Preparation Recommended for Success

Expectations

Applicants are expected to have management experience in a community college.

Recommendations

UMUC's doctoral program is writing-intensive. To improve your writing skills, you should take the noncredit course UCSP 605.

Degree Requirements

DM in Community College Policy and Administration

REQUIRED CORE COURSES

DMCC 810 Leadership and Change (6)
DMCC 800 Foundations of Management Theory (6)
DMCC 830 Research Methods (6)
DMCC 890 Dissertation Part I (4)
DMCC 821 Higher Education Policy (6)
DMCC 891 Dissertation Part II (4)
DMCC 841 Institutional Assessment in the Community College Environment (6)
DMCC 851 Community College Advocacy, Advancement, and Entrepreneurism (6)
DMCC 892 Dissertation Part III (4)

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More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

ACCOUNTING AND FINANCE PROGRAMS

MASTER OF SCIENCE IN ACCOUNTING AND FINANCIAL MANAGEMENT

Prepare to rise to an executive level of responsibility and earning power by pursuing a master's degree in accounting and financial management.

The graduate program in accounting and financial management can help you move toward organizational leadership positions. This program, ideal for midcareer professionals, can give you the skills to make high-level decisions that can impact your organization's current operations and financial future.

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What You'll Learn

Through your coursework, you will learn how to

- Manage your organization's current financial operations (cash, inventory, accounts receivable, payables, short-term loans, etc.)
- Make long-term financial decisions (evaluating and selecting capital investments, financing capital requirements, taking a company public, navigating mergers and acquisitions, and assessing bankruptcy/liquidation)
- Manage costs and risks
- Evaluate investments using industry software
- Perform financial analysis and modeling
- Make strategic management decisions and solve operational problems
- Analyze financial reporting and its effect on financial markets
- Incorporate international environments and opportunities into your planning
- Handle ethical problems that arise in your field
- Assess the state of corporate governance and internal controls in your organization
- Use case studies of real organizations facing financial challenges to analyze their situations and propose a course of action
- Examine the sources of the 2008 global financial crisis and analyze how organizations acted to moderate its effects or recover
- Play the role of a new chief financial officer tasked with performing a comprehensive analysis of a new S&P 500 company
- Present a paper to a chief executive officer

Career Preparation

This program is designed to help you prepare for an organizational leadership position in accounting and/or financial management. See *umuc.edu/professional-licensure* for information about professional licensure in this field.

Your Coursework

Courses in the accounting and financial management curriculum feature projects for real companies, studies of real crises, and analysis of real-time data sets. Additionally, a board of industry leaders and employers advises our faculty to make sure our graduate accounting and financial management programs are covering emerging areas and those relevant to your career growth.

Industry Certification

This program can help prepare you for the following certification exams, listed in alphabetical order:

ACCOUNTING CERTIFICATION

- Certified Fraud Examiner (CFE)
- Certified Government Auditing Professional (CGAP)
- Certified Internal Auditor (CIA)
- Certified Management Accountant (CMA)
- Certified Public Accountant (CPA)*
- Chartered Global Management Accountant (CGMA)
- Enrolled Agent (EA)

* Requirements for CPA certification vary from state to state. See p. 164 or **umuc.edu/professional-licensure** for more information.

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

ACCOUNTING AND FINANCE PROGRAMS

FINANCIAL MANAGEMENT CERTIFICATION

- Certified Financial Examiner (CFE)
- Certified Financial Services Auditor (CFSA)
- Certified Government Financial Manager (CGFM)
- Certified Healthcare Financial Professional (CHFP)
- Certified in Financial Forensics (CFF)
- Certified Risk Professional (CRP)
- Certified Treasury Professional (CTP)
- Certified Valuation Analyst (CVA)
- Chartered Asset Manager (CAM)
- Chartered Economist/Economic Policy Analyst
- Chartered Financial Analyst (CFA)
- Chartered Market Analyst (CMA)
- Chartered Portfolio Manager (CPM)
- Chartered Trust and Estate Planner (CTEP)
- Chartered Wealth Manager (CWM)
- Financial Risk Manager (FRM)
- Master Analyst in Financial Forensics (MAFF)
- Master Financial Manager (MFM)
- Master Financial Professional (MFP)
- Registered Business Analyst (RBA)

OTHER CERTIFICATION

- Accredited Automated Clearing House Professional (AAP)

MS IN ACCOUNTING AND FINANCIAL MANAGEMENT

Accounting Courses	**15**
Financial Management Courses	**18**
Capstone Course	**3**
Total Credits	**36**

Academic Preparation

You must have completed 15 credits of undergraduate accounting coursework, with a grade of C or better in each course, before enrolling in any graduate accounting course.

Preparation Recommended for Success

Expectations

You are expected to have some familiarity with Microsoft Excel.

Recommendations

If you have not recently graduated with an undergraduate degree in accounting, finance, or financial management, we highly recommend that you take the noncredit course UCSP 620 before MGMT 640. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Accounting and Financial Management

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

ACCOUNTING COURSES

Complete the following three courses:

ACCT 610 Financial Accounting (3)
ACCT 613 Federal Income Taxation (3)
ACCT 628 Auditing (3)

Take two of the following for a total of 6 credits:

ACCT 625 Government and Not-for-Profit Accounting (3)
ACCT 630 Fraud Examination (3)
ACCT 635 Accounting Ethics (3)
ACCT 640 International Accounting (3)

REQUIRED FINANCIAL MANAGEMENT COURSES

MGMT 640 Financial Decision Making for Managers (3)
FIN 610 Financial Management in Organizations (3)
FIN 620 Long-Term Financial Management (3)
FIN 630 Investment Valuation (3)
FIN 645 Behavioral Finance (3)
FIN 660 Strategic Financial Management (3)

REQUIRED CAPSTONE COURSE

MSAF 670 Accounting and Financial Management Capstone (3)

COURSE SEQUENCING

- ACCT 610 is prerequisite to all graduate accounting courses.
- You are advised to take ACCT 628 before ACCT 630.
- MGMT 640 is prerequisite to FIN 610.

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

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- FIN 610 is prerequisite to all other FIN courses.
- FIN 620 and FIN 630 are prerequisite to FIN 660.
- FIN 630 is prerequisite to FIN 645.
- You must complete all program coursework except FIN 645 before enrolling in MSAF 670.

Academic Relationship

An articulation agreement between The Graduate School and UMUC's Undergraduate School allows students who completed their undergraduate degree at UMUC with a major in accounting to reduce their total coursework for the graduate degree by up to 6 credits (two courses).

The Graduate School will accept up to two of the following toward the completion of the MS in Accounting and Financial Management, Accounting and Information Systems, or Management with a specialization in accounting for a maximum of 6 credits:

- ACCT 438 Fraud and Forensic Accounting and ACCT 440 Forensic and Investigative Accounting instead of ACCT 630 Fraud Examination
- ACCT 422 Auditing Theory and Practice and ACCT 436 Internal Auditing instead of ACCT 628 Auditing
- ACCT 323 Federal Income Tax I and ACCT 417 Federal Income Tax II instead of ACCT 613 Federal Income Taxation

The substitutions listed above are the only ones possible. Note that a minimum grade of B must be earned in each undergraduate course for the credits to be accepted at the graduate level. Eligible credits must have been completed no earlier than two years before the beginning of graduate studies. Admission requirements and time limits for degree completion apply to all applicants.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

ACCOUNTING AND FINANCE PROGRAMS

MASTER OF SCIENCE IN ACCOUNTING AND INFORMATION SYSTEMS

Combine cutting-edge skill sets in accounting and information systems by earning a master's degree that blends content in state-of-the-art cyber accounting, accounting data analytics, and information assurance.

Secure your future with the stability and flexibility of an accounting career and seize the vast growth opportunities in information systems security, cybersecurity risk management, and information technology auditing. Suited to students at any career stage, this program can help you transition into either accounting or information systems by developing your professional knowledge and competencies.

What You'll Learn

Through your coursework, you will learn how to

- Design and build an accounting information system
- Manage the financial aspects of an accounting information system
- Apply the principles of information systems management and integration to private-sector organizations served by accounting professionals
- Apply administrative and technical security controls to prevent, detect, respond to, and recover from cyber attacks on accounting data
- Apply cyber accounting risk management techniques using the AICPA Cybersecurity Risk Management Reporting Framework
- Integrate tools, techniques, and technologies used in cyber forensic investigations, data analytics, and litigation involving accounting information
- Conduct a fraud investigation using tools and techniques typically recommended by Certified Fraud Examiners
- Perform financial analysis and modeling
- Audit financial statements and information systems using practitioner software, such as IDEA and ACL
- Create and analyze corporate financial statements using data analytics
- Apply information assurance techniques such as testing, validation, verification, and certification within given security evaluation contexts

Career Preparation

This program is designed to help you prepare for an organizational leadership position in accounting with specialized competencies in information systems, cyber accounting, information assurance, and cyber risk management. See *umuc.edu/professional-licensure* for information about professional licensure in this field.

Your Coursework

The accounting and information systems curriculum can help you develop practical skills in high-demand fields to make you an indispensable member of any team. The curriculum makes extensive use of case studies involving real business issues, so what you learn is immediately applicable in your career.

Coursework Examples

- Compare accounting systems for effectiveness and efficiency
- Design a system that meets needs within a budget
- Assess the effectiveness of AIS to detect fraud using ACL
- Integrate tools and techniques using ACL
- Develop cyber accounting initiatives
- Apply cyber accounting risk management in an accounting environment
- Conduct an information risk assessment report
- Use a formalized risk assessment methodology using the case study method
- Perform data analytics using Tableau, Power B1, or other industry-standard software for data analytics

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

ACCOUNTING AND FINANCE PROGRAMS

Industry Certification

This program can help prepare you for the following certification exams, listed in alphabetical order:

ACCOUNTING CERTIFICATION

- Certified Fraud Examiner (CFE)
- Certified in Financial Forensics (CFF)
- Certified Information Technology Professional (CITP)
- Certified Public Accountant (CPA)*

INFORMATION SYSTEMS CERTIFICATION

- Certification in Control Self-Assessment (CCSA)
- Certified Information Systems Auditor (CISA)
- Certified Information Security Manager (CISM)
- Certified in Risk and Information Systems Control (CRISC)

MS IN ACCOUNTING AND INFORMATION SYSTEMS

Accounting Courses	**12**
Information Systems Security Course	**3**
Integrated Accounting and Information Systems Security Courses	**12**
Capstone Course	**3**
Total Credits	**30**

Academic Preparation

You must have completed 15 credits of undergraduate accounting coursework, with a grade of C or better in each course, before enrolling in any graduate accounting course.

Preparation Recommended for Success

Expectations

You are expected to have some familiarity with Microsoft Excel.

Recommendations

If you lack a recent background in accounting, you should take UCSP 620 before ACCT 610. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Accounting and Information Systems

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED ACCOUNTING COURSES

ACCT 610 Financial Accounting (3)
ACCT 628 Auditing (3)
ACCT 630 Fraud Examination (3)
ACCT 635 Accounting Ethics (3)

REQUIRED INFORMATION SYSTEMS SECURITY COURSE

INFA 610 Foundations of Information Security and Assurance (3)

REQUIRED INTEGRATED ACCOUNTING AND INFORMATION SYSTEMS SECURITY COURSES

ACCT 618 Accounting Information Systems (3)
ACCT 620 Cyber Accounting: Management and Compliance (3)
ACCT 645 Cyber Forensics in Accounting (3)
ACCT 660 Information Technology Auditing (3)

REQUIRED CAPSTONE COURSE

ACCT 670 Capstone in Cyber Accounting: Risk Management (3)

ALTERNATE COURSES

If you have already earned 3 undergraduate credits in accounting ethics, you may replace ACCT 635 with INFA 660: The Law, Regulation, and Ethics of Information Assurance (3).

COURSE SEQUENCING

- ACCT 610 is prerequisite to all graduate accounting courses.
- You are advised to take all ACCT courses in sequence by course number.
- ACCT 628 should be completed before ACCT 630.
- You must complete all program coursework except INFA 660 or ACCT 635 before enrolling in ACCT 670.

Academic Relationship

An articulation agreement between The Graduate School and UMUC's Undergraduate School allows students who completed their undergraduate degree at UMUC with a major in accounting to reduce their total coursework for the graduate degree by up to 6 credits (two courses). Details are on p. 16.

* Requirements for CPA certification vary from state to state. See p. 164 or **umuc.edu/professional-licensure** for more information.

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

ACCOUNTING AND FINANCE PROGRAMS

MASTER OF SCIENCE IN MANAGEMENT

SPECIALIZATIONS IN

Accounting

Financial Management

Compete for today's—and tomorrow's—jobs with a career-focused master's degree in management.

The master's degree program in management allows you to combine a broad management education with specific knowledge for your field or industry. We design our graduate management degree program with input from today's top employers to provide you with decision-making skills, real-world experience, and a firm foundation for career advancement.

Degree Requirements

Specific course requirements are detailed under each specialization.

MS IN MANAGEMENT: ACCOUNTING SPECIALIZATION

Core Courses	12
Specialization Courses	21
Capstone Course	3
Total Credits	36

Prepare to rise to the executive level of responsibility and earning power by developing advanced skills in the career-focused master's degree program in management with a specialization in accounting.

The graduate accounting specialization can help you move toward a position as a comptroller, managing partner, or senior accountant or into another career with maximum flexibility. Ideal for midcareer professionals, the accounting specialization teaches you the skills to communicate with high-level decision makers, as well as the advanced accounting knowledge that every business needs.

What You'll Learn

Through your coursework, you will learn how to

- Assist in developing strategic plans
- Assist in the decision-making process required of top managers
- Communicate effectively with top-level executives and diverse populations
- Design and build an accounting information system
- Guide management in making effective decisions regarding financial planning
- Prepare and analyze financial statements
- Prepare individual and corporate income tax returns
- Serve in leadership roles
- Serve on a financial statement audit team

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

ACCOUNTING AND FINANCE PROGRAMS

Career Preparation

This program is designed to help you prepare for an organizational leadership position in accounting. See *umuc.edu/professional-licensure* for information about professional licensure in this field.

Your Coursework

The accounting curriculum features case studies of real accounting issues, so you'll build accounting and management skills you can apply immediately in the workplace.

Coursework Examples

In past projects, students have had the opportunity to

- Use SEC 10K reports to research and compare accounting disclosures for multiple organizations in the same and diverse industries
- Use the case-study method to research circumstances and consequences of corporate accounting misrepresentations to detect fraud
- Learn to use XBRL, an open-data standard for financial reporting required for many SEC filings
- Conduct tax research of Fortune 500 companies using the U.S. Internal Revenue Code, IRS tax regulations, issuances, rulings, and case law

Industry Certification

This program can help prepare you for the following certification exams, listed in alphabetical order:

- Accredited Tax Preparer (ATP)
- Certified Internal Auditor (CIA)
- Certified Management Accountant (CMA)
- Certified Public Accountant (CPA)*
- Chartered Global Management Accountant (CGMA)
- Enrolled Agent (EA)

Academic Preparation

You must have completed 15 credits of undergraduate accounting coursework, with a grade of C or better in each course, before enrolling in any graduate accounting course.

Preparation Recommended for Success

Expectations

You are expected to have some familiarity with Microsoft Excel.

Recommendations

If you lack a recent background in finance or accounting, you should take the noncredit course UCSP 620 before MGMT 640. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Management: Accounting Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

SPECIALIZATION COURSES

Complete the following five courses:

ACCT 610 Financial Accounting (3)
ACCT 611 Management Accounting (3)
ACCT 613 Federal Income Taxation (3)
ACCT 618 Accounting Information Systems (3)
ACCT 628 Auditing (3)

Take two of the following for a total of 6 credits:

ACCT 625 Government and Not-for-Profit Accounting (3)
ACCT 630 Fraud Examination (3)
ACCT 635 Accounting Ethics (3)
ACCT 640 International Accounting (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

ALTERNATE COURSES

MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.

* Requirements for CPA certification vary from state to state. See p. 164 or **umuc.edu/professional-licensure** for more information.

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

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ACCOUNTING AND FINANCE PROGRAMS

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- ACCT 610 is prerequisite to all other accounting courses.
- You are strongly advised to take ACCT 628 before ACCT 630.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.

Academic Relationship

An articulation agreement between The Graduate School and UMUC's Undergraduate School allows students who completed their undergraduate degree at UMUC with a major in accounting to reduce their total coursework for the graduate degree by up to 6 credits (two courses). Details are on p. 16.

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MS IN MANAGEMENT: FINANCIAL MANAGEMENT SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**21**
Required Capstone Course	**3**
Total Credits	**36**

Gain a strong foundation in management principles and specialized skills in financial decision making by pursuing a master's degree in management with a specialization in financial management.

The financial management specialization provides you with solid management skills that are essential to the core functions of every organization. This program offers you the tools to make high-level decisions that can impact an organization's current operations and financial future.

What You'll Learn

Through your coursework, you will learn how to

- Manage your organization's current financial operations (cash, inventory, accounts receivable policy, payables, short-term loans, etc.)
- Make long-term financial decisions, such as evaluating and selecting capital investments; financing capital requirements; taking a company public; and navigating mergers and acquisitions, as well as bankruptcy/liquidation
- Incorporate international environments and opportunities into your planning
- Manage costs and risks and evaluate investments using industry software
- Perform financial analysis and modeling
- Make strategic management decisions to solve operational problems

Career Preparation

This program is designed to help prepare you for a leadership position in financial management in areas such as financial planning, financial analysis, investments analysis, loans, and consulting.

Your Coursework

Courses in the financial management specialization feature projects for real companies, studies of real crises, and analysis of real-time data sets. You'll study financial management methods used by government agencies, nonprofit groups, and privately held companies, as well as behavioral finance, long-term financial management and investing, international finance, and strategic financial management, among other topics. A board of industry leaders and employers advises our faculty to make sure courses stay up-to-date with industry trends.

Coursework Examples

In past projects, students have had the opportunity to

- Use Harvard University's case studies on companies facing financial challenges to analyze their situation and propose solutions
- Examine the sources of the 2008 global financial crisis and analyze how companies acted to recover or moderate its effects

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

ACCOUNTING AND FINANCE PROGRAMS

- Play the role of a new CFO tasked with performing a comprehensive analysis of a hypothetical S&P 500 company and document findings in a paper for review by the company's CEO

Industry Certification

This program can help prepare you for the following certification exams, listed in alphabetical order:

- Accredited Valuation Analyst (AVA)
- Certified Financial Examiner (CFEx)
- Certified Government Financial Manager (CGFM)
- Certified Healthcare Financial Professional (CHFP)
- Certified Risk Professional (CRP)
- Certified Treasury Professional (CTP)
- Certified Valuation Analyst (CVA)
- Chartered Asset Manager (CAM)
- Chartered Economist–Economic Policy Analyst (ChE)
- Chartered Financial Analyst (CFA)
- Chartered Market Analyst (CMA)
- Chartered Portfolio Manager (CPM)
- Chartered Trust and Estate Planner (CTEP)
- Chartered Wealth Manager (CWM)
- Financial Risk Manager (FRM)
- Master Financial Manager (MFM)
- Master Financial Professional (MFP)
- Registered Business Analyst (RBA)

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to improve writing skills.

Degree Requirements

MS in Management: Financial Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 610 Organizational Theory (3)
MGMT 615 Intercultural Communication and Leadership (3)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

FIN 610 Financial Management in Organizations (3)
FIN 615 Financial Analysis and Modeling (3)
FIN 620 Long-Term Financial Management (3)
FIN 630 Investment Valuation (3)
FIN 640 Multinational Financial Management (3)
FIN 645 Behavioral Finance (3)
FIN 660 Strategic Financial Management (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

COURSE SEQUENCING

- MGMT 610 must be taken within the first 6 credits.
- MGMT 640 is prerequisite to FIN 610.
- FIN 610 is prerequisite to all other FIN courses.
- FIN 630 is prerequisite to FIN 645.
- FIN 620 and FIN 630 are prerequisite to FIN 660.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

BUSINESS AND MANAGEMENT PROGRAMS

MASTER OF BUSINESS ADMINISTRATION

Advance your career in an award-winning MBA program that can help you gain the skills and abilities desired by today's employers.

The MBA program can help you learn how to strategically manage an organization for growth and success. Develop and advance your competencies in finance, marketing, human resources, strategy, and leadership. Apply your learning from multiple disciplines and specializations to real-life business problems.

What You'll Learn

Through your coursework, you'll learn how to

- Create and implement a personal leadership development plan
- Foster mutual respect, trust, and high standards of ethics, performance, and teamwork
- Assess and manage critical knowledge and skill gaps related to core organizational functions and managerial responsibilities
- Complete a comprehensive analysis of the costs of operations, pricing options, financing, product mix, distribution channels, and supply chain relationships
- Evaluate your cultural intelligence, ethical values, and skills in decision making, and implement specific actions to leverage your strengths and further develop areas of relative weakness
- Evaluate your organization's policies for managing legal and ethical risks, with a focus on contracts, agency, and tort law
- Complete an audit of the technology and information systems and processes in your organization
- Design and develop a marketing plan for a new product or service in both domestic and international markets
- Prepare a detailed project management plan for an initiative in a new international location that presents business, language, cultural, legal, and other challenges for your organization
- Develop a comprehensive strategy for expanding your organization's products or services in a selected country
- Prepare a personal professional portfolio that includes your key achievements, a brief summary of your strategic leadership skills, and your plan for goal and career advancement

Career Preparation

This program is designed to help you prepare for management careers in business, government, or nonprofit organizations in areas such as team leadership, project supervision, and creation and implementation of business solutions.

Your Coursework

Courses in the MBA curriculum use high-quality online learning resources and emphasize teamwork, information literacy, technology fluency, ethics, communication, problem solving, and critical thinking. Additionally, the MBA offers you the opportunity to learn from highly qualified faculty with significant managerial and leadership experience in emerging areas relevant to your career growth.

Coursework Examples

- Analyze costs of operations for an organization using managerial finance techniques
- Determine optimal prices for goods and services by analyzing costs, revenues, and profitability
- Evaluate the opportunities and risks involved in an organization's decision to expand its operations to a global market by assessing issues of culture, business ethics, employment law, contracts, and criminal law in the context of a global business
- Design and present a marketing plan for a new product or service, including a comprehensive situation analysis, a strong value proposition, an effective marketing mix strategy, and a holistic marketing communications plan

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BUSINESS AND MANAGEMENT PROGRAMS

MBA

Required Core Courses	**36**
Total Credits	**36**

Preparation Recommended for Success

Recommendations

If you need to improve your computing skills, you should take the noncredit course ASC 605. Taking ASC 601 is recommended to improve writing and analytical skills.

Degree Requirements

MBA

REQUIRED CORE COURSES

PRO 600 Communicating, Problem Solving, and Leading in Professional Fields (6)
MBA 610 Leading Organizations and People (6)
MBA 620 Financial Decision Making (6)
MBA 630 Leading in the Multicultural Global Environment (6)
MBA 640 Innovation Through Marketing and Technology (6)
MBA 670 Strategic Decision Making (6)

COURSE SEQUENCING

Courses must be taken in the order listed.

Criteria for Program Progression

You must complete each course with a grade of B or better to advance to the next course. (The grade of C is not available for these courses.) Your course syllabus will explain options for and consequences of requesting an Incomplete.

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BUSINESS AND MANAGEMENT PROGRAMS

MASTER OF SCIENCE IN MANAGEMENT

SPECIALIZATIONS IN

Acquisition and Supply Chain Management
Human Resource Management
Interdisciplinary Studies in Management
Nonprofit and Association Management
Project Management

CERTIFICATES IN

Acquisition and Supply Chain Management
Foundations of Human Resource Management
Leadership and Management
Project Management

Compete for today's—and tomorrow's—jobs with a career-focused master's degree in management.

The master's degree program in management allows you to combine a broad management education with specific knowledge for your field or industry. We design our graduate management degree program with input from today's top employers to provide you with decision-making skills, real-world experience, and a firm foundation for career advancement.

Degree Requirements

Specific course requirements are detailed under each specialization.

MS IN MANAGEMENT: ACQUISITION AND SUPPLY CHAIN MANAGEMENT SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**21**
Required Capstone Course	**3**
Total Credits	**36**

Prepare for advancement in contracting, acquisition, supply chain management, or procurement.

The acquisition and supply chain management specialization is designed for midcareer professionals but is also suitable for newcomers. You'll build a foundation in the strategic and operational aspects of the end-to-end supply chain and procurement functions.

Learn best practices to use in your current role in this career-focused specialization.

What You'll Learn

Through your coursework, you will learn how to

- Apply the legal structure for public and private acquisition processes
- Use technology effectively to establish sustainable supply chains that support product and service delivery
- Apply knowledge of efficient contract management processes throughout the acquisition life cycle
- Explain how acquisition and supply chain management will evolve through the next decade
- Interpret the Federal Acquisitions Regulation Universal Commercial Code as it relates to acquisitions and American Bar Association model procurement codes for state and local governments
- Plan, conduct, and manage negotiated procurements

BUSINESS AND MANAGEMENT PROGRAMS

- Perform cost analysis preparations and understand all categories of costs, including profit
- Apply strategic purchasing and logistics methodologies
- Conduct supply chain management case studies and simulations of managing material flows to optimize supply chains for efficiency

Career Preparation

This program is designed to help prepare you for work in contracting, acquisition, supply chain management, or procurement.

Your Coursework

Our curriculum is designed with input from employers, industry experts, and scholars. You'll learn theories combined with real-world applications and practical skills you can apply on the job right away.

Coursework Examples

In past projects, students have had the opportunity to

- Serve as a supply chain manager in a simulation, analyzing critical supply chain problems by using a hands-on SCM Globe simulation tool
- Serve as a procurement manager to develop an acquisition plan and create contract solicitations based on real-world requirements
- Evaluate vendors and develop criteria for reward and performance management
- Analyze a collaborative supply chain case study for a real-world candy company
- Develop a strategic profit model for a company and determine how inventory should be handled for efficient production

Industry Certification

This program can help prepare you for certifications from the following organizations:

- APICS
- Council of Supply Chain Management Professionals (CSCMP)
- Defense Acquisition University
- National Contract Management Association (NCMA)

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to improve writing skills.

Degree Requirements

MS in Management: Acquisition and Supply Chain Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

ASCM 626 Purchasing and Materials Management (3)
ASCM 627 Legal Aspects of Contracting (3)
ASCM 628 Contract Pricing and Negotiations (3)
ASCM 629 Strategic Purchasing and Logistics (3)
ASCM 630 Commercial Transactions in a Technological Environment: Law, Management, and Technology (3)
ASCM 631 Integrative Supply Chain Management (3)
ASCM 632 Contemporary Logistics (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

ALTERNATE COURSES

- MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.
- ASCM 650 Legal Aspects of Contracting and Commercial Transactions (6) may be taken instead of ASCM 627 and ASCM 630.

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BUSINESS AND MANAGEMENT PROGRAMS

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- ASCM 626 should be taken as the first specialization course.
- ASCM 629 is prerequisite to ASCM 631.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.
- Specialization courses should be taken in the order listed.

Related Certificate Program

Acquisition and Supply Chain Management

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED COURSES

ASCM 626 Purchasing and Materials Management (3)
ASCM 627 Legal Aspects of Contracting (3)
ASCM 628 Contract Pricing and Negotiations (3)
ASCM 629 Strategic Purchasing and Logistics (3)
ASCM 630 Commercial Transactions in a Technological Environment: Law, Management, and Technology (3)

ALTERNATE COURSE

ASCM 650 Legal Aspects of Contracting and Commercial Transactions (6) may be taken instead of ASCM 627 and ASCM 630.

MS IN MANAGEMENT: HUMAN RESOURCE MANAGEMENT SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**21**
Required Capstone Course	**3**
Total Credits	**36**

Master management skills and the latest best practices by pursuing a master's degree in management with a specialization in human resource management.

The master's degree in management with a specialization in human resource management is designed to give you the knowledge and skills you need to move up the ranks in the HR field and is aligned with the Society for Human Resource Management guidelines for graduate education. Gain practical, management-level experience in the theory, research, knowledge, and procedures used by HR executives, generalists, and specialists—and develop a skill set you can take anywhere.

What You'll Learn

Through your coursework, you will learn how to

- Design human resources policies and processes to support changing environmental factors and organizational goals
- Evaluate employee relations in union and nonunion organizations
- Design efficient and effective recruitment and selection methods
- Evaluate strategies, procedures, and techniques of job analysis, design, and evaluation; performance appraisal; and compensation management
- Prescribe appropriate organizational development strategies and techniques
- Plan a training program
- Diagnose problems and identify solutions for managing virtual and global teams

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BUSINESS AND MANAGEMENT PROGRAMS

Career Preparation

This program is designed to help you prepare for a career in human resources management in the private or public sector.

Your Coursework

The curriculum for the specialization in human resource management can teach you practical skills to make you a strong decision maker and manager in any human resources setting. You'll explore topics in staffing, compensation, training, change management, labor relations, and more.

Coursework Examples

In past projects, students have had the opportunity to

- Plan a job analysis and develop a new position description to address an employee's claim of unfair treatment
- Create a proposal for an onboarding program for new consultants in a company experiencing high turnover
- Evaluate an organization's labor relations status and report findings in a five-page briefing paper

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to improve writing skills.

Degree Requirements

MS in Management: Human Resource Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

HRMD 610 Issues and Practices in Human Resource Management (3)
HRMD 620 Employee and Labor Relations (3)
HRMD 630 Recruitment and Selection (3)
HRMD 640 Job Analysis, Assessment, and Compensation (3)
HRMD 650 Organizational Development and Change (3)
HRMD 651 Current Perspectives in Training and Development (3)
HRMD 665 Managing Virtual and Global Teams (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

ALTERNATE COURSES

MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.
- Courses should be taken in the order listed.

Related Certificate Program

Foundations of Human Resource Management

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED COURSES

MGMT 615 Intercultural Communication and Leadership (3)
HRMD 610 Issues and Practices in Human Resource Management (3)
HRMD 620 Employee and Labor Relations (3)
HRMD 650 Organizational Development and Change (3)

COURSE SEQUENCING

Courses should be taken in the order listed.

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BUSINESS AND MANAGEMENT PROGRAMS

MS IN MANAGEMENT: INTERDISCIPLINARY STUDIES IN MANAGEMENT SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**21**
Required Capstone Course	**3**
Total Credits	**36**

Gain advanced skills and broad exposure to all the major areas in management for maximum career flexibility with a specialization in interdisciplinary studies in management.

The interdisciplinary studies in management specialization can provide you with the skills that are essential for managers in every organization. The curriculum covers fundamentals in human resources, project management, marketing, and information systems. Whether you are new to the field, changing careers, or looking to move up in your current organization, you need look no further for a respected credential that can boost your professional value and pave the way to management.

What You'll Learn

Through your coursework, you will learn how to

- Assess employee performance at the individual, group, and organization levels
- Market an organization's services through advertising and sales promotions
- Coach and mentor employees
- Manage culturally diverse work environments and work groups
- Motivate and incentivize employees

Career Preparation

This program helps you develop skills in human resources, project management, marketing, and information systems to prepare for a career managing any or all of these areas.

Your Coursework

The curriculum for the specialization in interdisciplinary studies in management has been crafted, reviewed, and updated by a team of advisors and industry experts to ensure that what you learn aligns with trends in today's workplace. Courses feature topics in leadership, managing change, decision making, employee relations, business law, ethics, and more.

Coursework Examples

In past projects, students have had the opportunity to

- Design change management training for managers using presentation software
- Participate in a group project to develop criteria and strategies to address performance deficiencies among employees
- Participate in a series of leadership questionnaires to identify leadership style and development needs

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to improve writing skills.

Degree Requirements

MS in Management: Interdisciplinary Studies in Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

HRMD 610 Issues and Practices in Human Resource Management (3)
HRMD 620 Employee and Labor Relations (3)
MRKT 600 Marketing Management (3)

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ISAS 600 Information Systems for Managers (3)
HRMD 650 Organizational Development and Change (3)
MRKT 601 Legal and Ethical Issues in Global Communications (3)
PMAN 634 Foundations of Project Management (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone

ALTERNATE COURSES

- MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.
- MRKT 620 Marketing Principles, Regulation, and Ethical Issues (6) may be taken instead of MRKT 600 and 601.

Related Certificate Program

Leadership and Management

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED COURSES

MGMT 630 Organizational Theory and Behavior (6)
HRMD 610 Issues and Practices in Human Resource Management (3)
HRMD 650 Organizational Development and Change (3)

ALTERNATE COURSES

MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.

MS IN MANAGEMENT: NONPROFIT AND ASSOCIATION MANAGEMENT SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**21**
Required Capstone Course	**3**
Total Credits	**36**

Put yourself on the path to an executive director position by pursuing a master's degree in management with a specialization in nonprofit and association management.

The specialization in nonprofit and association management can help you learn to successfully direct an organization in the nonprofit sector. Whether you're in an association, development organization, foundation, or political organization, you'll learn the latest governance strategies, as well as the fundamentals of solid financial management and leadership to help your organization fulfill its mission.

What You'll Learn

Through your coursework, you will learn how to

- Manage finances and generate revenue for a nonprofit organization
- Analyze legal and governance-related issues
- Recruit and manage volunteers
- Promote, market, and fundraise for a nonprofit organization
- Measure outcomes and processes
- Develop a leadership style and strategy

Career Preparation

This program is designed to help prepare you for organizational leadership in the nonprofit sector in associations, development organizations, foundations, or political organizations.

Your Coursework

Your courses in the nonprofit and association management specialization will provide you with a thorough understanding of the nonprofit sector, with courses in nonprofit management,

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financial management, revenue generation and cost control, and law and governance, as well as approaches to promotion, marketing, and fund-raising.

Industry Certification

This program can help prepare you for the Certified Associate Executive exam.

Preparation Recommended for Success

Expectations

You are expected to have some familiarity with Microsoft Excel.

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to improve writing skills.

Degree Requirements

MS in Management: Nonprofit and Association Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

NPMN 600 Nonprofit and Association Organizations and Issues (3)
NPMN 610 Nonprofit and Association Law and Governance (3)
NPMN 620 Nonprofit and Association Financial Management (3)
NPMN 640 Marketing, Development, and Public Relations in Nonprofit Organizations and Associations (3)
NPMN 650 Fundamentals of Association Management (3)
NPMN 655 Outcome and Process Evaluation Management (3)
NPMN 660 Strategic Management in Nonprofit Organizations and Associations (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

ALTERNATE COURSES

MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.
- NPMN 600 must be taken as the first specialization course.
- Taking NPMN 650 before NPMN 655 is strongly recommended.

MS IN MANAGEMENT: PROJECT MANAGEMENT SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**21**
Required Capstone Course	**3**
Total Credits	**36**

Learn to successfully lead large projects by pursuing a master's degree in management with a specialization in project management.

The specialization in project management allows you to develop advanced business management skills while building expertise for project management certification.

What You'll Learn

Through your coursework, you will learn how to

- Initiate, plan, track, and close projects
- Manage the schedule of a complex project and conflicts that arise
- Perform quantitative analyses and manage risks involved in complex projects

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

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BUSINESS AND MANAGEMENT PROGRAMS

- Coach and mentor employees
- Manage culturally diverse work environments
- Assess performance at the individual, group, and organization levels

Career Preparation

This program is designed to help prepare you for work in project coordination, project management, and potentially program management.

Your Coursework

Your courses will include project risk management, project procurement management, and quantitative methods in project management, while core management courses will give you the tools you need to take on leadership roles in today's workplace. You'll complete a comprehensive project in an industry you select to gain experience and learn relevant skills you can apply immediately in the workplace.

Industry Certification

This program can help prepare you for the following certification exams:

- PMI Certified Associate in Project Management (CAPM)
- PMI Project Management Professional (PMP)

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to improve writing skills.

Degree Requirements

MS in Management: Project Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

PMAN 634 Foundations of Project Management (3)
PMAN 635 Quantitative Methods in Project Management (3)
PMAN 637 Project Risk Management (3)
PMAN 638 Project Communications Management (3)
PMAN 639 Project Quality Management (3)
PMAN 641 Project Procurement Management (3)
PMAN 650 Financial and Strategic Management of Projects (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

ALTERNATE COURSES

MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.
- PMAN 634 is prerequisite to all other PMAN courses and must be taken as the first specialization course.
- MGMT 640 (or an approved course in finance) and MGMT 650 (or an approved course in statistics) must be taken before PMAN 635.
- PMAN 635 must be taken before PMAN 637, PMAN 639, and PMAN 650.

Program Recognition

UMUC's master's degree programs with project management specializations are recognized by the Global Accreditation Center (GAC) of the Project Management Institute (PMI).

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Academic Relationship

Completing this program earns you the project management education hours required to sit for the Project Management Professional (PMP) Credential Examination or the Certified Associate in Project Management (CAPM) Exam. If you are already certified as a Project Management Professional by the Project Management Institute, you may receive credit for PMAN 634 Foundations of Project Management if you begin study for the master's degree within five years of earning certification. Graduate advisors can provide more information.

Related Certificate Program

Project Management

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED COURSES

PMAN 634 Foundations of Project Management (3)
PMAN 635 Quantitative Methods in Project Management (3)
PMAN 637 Project Risk Management (3)
PMAN 638 Project Communication Management (3)
PMAN 639 Project Quality Management (3)

COURSE SEQUENCING

- PMAN 634 is prerequisite to all other PMAN courses and must be taken as the first certificate course.
- MGMT 640 or ITEC 640 (or an approved course in finance) and MGMT 650 (or an approved course in statistics) must be taken before PMAN 635.
- PMAN 635 must be taken before PMAN 637 and PMAN 639.

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MASTER OF SCIENCE IN CYBERSECURITY MANAGEMENT AND POLICY

Boost your career by gaining the skills and knowledge to address cybersecurity threats from a management perspective.

The graduate program in cybersecurity management and policy can help you gain the tools you need to join the management track in cybersecurity, so you can establish, implement, and oversee a cybersecurity structure for an organization. Learn how to create a security approach that combines technology, governance, and compliance perspectives. Gain advanced knowledge in organizational structures, communications, operational business processes, and the legal framework for cybersecurity policy.

What You'll Learn

Through your coursework, you will learn how to

- Understand multinational compliance requirements for cybersecurity
- Apply risk analysis concepts and models to a variety of organizations
- Incorporate cybersecurity into numerous organizations, including healthcare and financial services organizations
- Create and establish cybersecurity frameworks in both the public and private sectors
- Develop complete cybersecurity incident response plans

Career Preparation

This program is designed to help you prepare to join the management team in a public- or private-sector cybersecurity organization and develop and oversee cybersecurity policy. Potential career fields include cybersecurity and policy, data protection, and information security.

Your Coursework

Coursework in cybersecurity management and policy features emerging topics in the field. Additionally, a board of industry leaders and employers advises our faculty to make sure our cybersecurity programs are covering emerging areas that are relevant to your career growth.

Coursework Examples

- Develop a cybersecurity program for a government entity or private-sector organization
- Create cybersecurity policies for a government entity or private-sector organization
- Perform a cybersecurity threat analysis, including a vulnerability assessment, and develop a risk management approach for a government entity or private-sector organization
- Develop and determine cyber incident response procedures based on management best practices

Industry Certification

This program can help prepare you for the following certification exams:

- Certified Information Systems Security Professional (CISSP)
- CompTIA Security+
- Disaster Recovery Institute (DRI)
- Global Information Assurance Certification (GIAC)
- Project Management Professional (PMP)

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CYBERSECURITY PROGRAMS

MS IN CYBERSECURITY MANAGEMENT AND POLICY

Required Core Courses	**36**
Total Credits	**36**

Technology Requirements

The cybersecurity management and policy program requires that you use a computer with the following:

- Microphone and speakers or headset with microphone or equivalent device(s)
- 5 GB (gigabytes) of free hard drive space
- 2 GB RAM or higher
- A high-speed internet connection
- Computer processor (Intel Pentium 4 or AMD Athlon 64) running at speeds of at least 1GHz
- Windows 7 or Mac OS X 10.6 or higher for an operating system (Linux operating systems can also be used but require more technical knowledge from the user.)

Note: The higher the processor speed of your computer (e.g., 2.4G–3.4 GHz), the larger the amount of available memory (e.g., 4–12 GB), and the larger the amount of available hard drive space (e.g., 5–20 GB), the better your computer will perform and the smoother your experience will be.

Preparation Recommended for Success

Expectations

You are expected to have some background in information technology. This background may be acquired through noncredit preparatory coursework, listed below.

Recommendations

If you do not have previous coursework or experience in programming, you should first enroll in ASC 605, ASC 609, and ASC 611 to gain the appropriate foundation. Taking ASC 601 is recommended to help improve writing skills.

Degree Requirements

MS in Cybersecurity Management and Policy

REQUIRED CORE COURSES

CBR 600 Communicating, Problem Solving, and Leading in Cybersecurity (6)
CMP 610 Foundations in Cybersecurity Management (6)
CMP 620 Cybersecurity Governance (6)
CMP 630 Cybersecurity Risk Management and Organizational Resilience (6)
CMP 640 Cybersecurity Program Development (6)
CYB 670 Capstone in Cybersecurity (6)

COURSE SEQUENCING

Courses must be taken in the order listed.

Criteria for Program Progression

You must complete each course with a grade of B or better to advance to the next course. (The grade of C is not available for these courses.) Your course syllabus will explain options for and consequences of requesting an Incomplete.

Related Certificate Program

Cybersecurity Management and Policy

REQUIRED COURSES

CBR 600 Communicating, Problem Solving, and Leading in Cybersecurity (6)
CMP 610 Foundations in Cybersecurity Management (6)
CMP 620 Cybersecurity Governance (6)

COURSE SEQUENCING

Courses must be taken in the order listed.

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MASTER OF SCIENCE IN CYBERSECURITY TECHNOLOGY

Prepare for the future by developing the next generation of advanced cyber threat prevention skills in this nationally recognized program.

Cybersecurity technology underpins the success of organizations and national critical infrastructures. Modern executives need to be able to use that technology, as well as people and policy, to minimize risks while ensuring success for their organizations. They also need to balance risks and opportunities holistically through an interdisciplinary lens. This innovative graduate program offers that wide perspective, providing a blend of people, policy, and technology skills to prepare the modern digital strategists that organizations need.

What You'll Learn

Through your coursework, you will learn how to

- Tailor digital strategies to the mission of an organization
- Understand how to balance the use of people, policy, and technology
- Understand how to analyze, think critically, and improve perpetually
- Be a cybersecurity technology leader in the modern world
- Develop a cybersecurity technology strategy for an organization
- Build cybersecurity technology environments and operations
- Develop resilient and highly fault-tolerant technology environments
- Enable organizations to make better business decisions through reliable data analytics and intelligence
- Perform proactive business risk management and solve problems
- Develop strategies for mobile, cloud, and emerging environments such as the Internet of Things

Career Preparation

This program is designed to help prepare you to develop mission-focused digital strategies for organizations. Potential career fields include cybersecurity and technology architecture, information security, cybersecurity analysis and engineering, board advising, and cybersecurity consulting.

Your Coursework

The cybersecurity technology curriculum features emerging topics and projects that develop the skills and knowledge employers are seeking. It also provides the opportunity to interact with employers through conferences and recruitment and networking events. In your courses, you will also have access to a state-of-the-art technology lab to strengthen your practical understanding of the concepts discussed. Faculty with experience in the field guide your progress throughout your courses. Additionally, a board of industry leaders and employers advises our faculty to make sure our cybersecurity programs are covering emerging areas that are relevant to your career growth.

Coursework Examples

- Use protocol analyzers, intrusion detection and prevention systems, network mapping tools, network scanning tools, encryption/decryption tools, digital forensics tools, and password exploitation tools
- Perform ethical hacking, penetration testing, and vulnerability assessments

Industry Certification

This program can help prepare you for the following exams:

- Certified Information Systems Security Professional (CISSP)
- Global Information Assurance Certification (GIAC)
- Certified Ethical Hacker (CEH)

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CYBERSECURITY PROGRAMS

MS IN CYBERSECURITY TECHNOLOGY

Required Core Courses	**36**
Total Credits	**36**

Technology Requirements

The cybersecurity technology program requires that you use a computer with the following:

- Microphone and speakers or headset with microphone or equivalent device(s)
- 5 GB (gigabytes) of free hard drive space
- 2 GB RAM or higher
- A high-speed internet connection
- Computer processor (Intel Pentium 4 or AMD Athlon 64) running at speeds of at least 1GHz
- Windows 7 or Mac OS X 10.6 or higher for an operating system (Linux operating systems can also be used but require more technical knowledge from the user.)

Note: The higher the processor speed of your computer (e.g., 2.4G–3.4 GHz), the larger the amount of available memory (e.g., 4–12 GB), and the larger the amount of available hard drive space (e.g., 5–20 GB), the better your computer will perform and the smoother your experience will be.

Preparation Recommended for Success

Expectations

You are expected to have a strong understanding of information technology, computer networks, databases, and the internet. This background may be acquired through noncredit preparatory coursework, listed below.

Recommendations

If you do not have such IT knowledge or experience, you are strongly advised to take the noncredit course ASC 605 first. Taking ASC 601 is recommended to help improve writing skills.

Degree Requirements

MS in Cybersecurity Technology

REQUIRED CORE COURSES

CBR 600 Communicating, Problem Solving, and Leading in Cybersecurity (6)
CST 610 Cyberspace and Cybersecurity Foundations (6)
CST 620 Prevention of Cyber Attack Methodologies (6)
CST 630 Advanced Cyber Exploitation and Mitigation Methodologies (6)
CST 640 Digital Forensics Technology and Practices (6)
CYB 670 Capstone in Cybersecurity (6)

COURSE SEQUENCING

Courses must be taken in the order listed.

Criteria for Program Progression

You must complete each course with a grade of B or better to advance to the next course. (The grade of C is not available for these courses.) Your course syllabus will explain options for and consequences of requesting an Incomplete.

Related Certificate Program

Cybersecurity Technology

REQUIRED COURSES

CBR 600 Communicating, Problem Solving, and Leading in Cybersecurity (6)
CST 610 Cyberspace and Cybersecurity Foundations (6)
CST 620 Prevention of Cyber Attack Methodologies (6)

COURSE SEQUENCING

Courses must be taken in the order listed.

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MASTER OF SCIENCE IN DIGITAL FORENSICS AND CYBER INVESTIGATION

Develop the cutting-edge skills and knowledge you need to become a digital forensics expert.

The graduate program in digital forensics and cyber investigation is designed to prepare you to meet the growing demand for investigative, leadership, and executive skills in evaluating and managing complex cybersecurity incidents and threats. Learn how to determine whether a digital system has been attacked or compromised, and master reliable methods to identify, preserve, analyze, and present evidence for legal prosecution, administrative proceedings, and business purposes. In this program, you can develop investigative problem-solving skills, contribute to important team deliverables, analyze complex data scenarios, examine digital media for evidentiary artifacts, and write detailed digital forensic examination reports. The applied knowledge and skills you acquire can help government, business, and law enforcement organizations in detecting data breaches, mitigating cyber attacks, identifying responsible parties, and evaluating evidence of digital crime.

What You'll Learn

Through your coursework, you will learn how to

- Design procedures at a suspected crime scene to ensure that the digital evidence obtained is not corrupted
- Conduct hands-on forensic searches to identify intrusion methods
- Employ rigorous procedures to enable forensic results that can withstand scrutiny in a court of law
- Explain the operation of digital components
- Seize, image, deconstruct, and analyze digital media for evidence
- Prepare professional reports
- Present digital forensics results in a court of law as an expert witness

Career Preparation

This program is designed to help prepare you for work in government organizations, the private sector, and law enforcement agencies in the areas of computer and digital crime.

Your Coursework

Coursework in the digital forensics and cyber investigation program can help you gain the technical competencies and knowledge needed to investigate system security breaches and recover lost or compromised data. The curriculum features hands-on learning experiences that use the same evidence and scenarios encountered in real-world investigations.

Coursework Examples

- Create an investigation plan for a digital forensics incident
- Conduct a mobile incident response and investigation based on a classroom scenario
- Use appropriate tools and procedures to check for the use of anti-forensics techniques
- Conduct a Linux/Windows/Mac machine image investigation using FTK/EnCase
- Identify malicious software, network activity, suspect traffic, and intrusion artifacts through a review and analysis of artifacts
- Conduct a digital forensic investigation in a challenging environment

Industry Certification

This program can help prepare you for the following certification exams:

- AccessData Certified Examiner (ACE)
- Certified Cyber Forensics Professional
- EC-Council Certified Incident Handler
- EnCase Certified Examiner (EnCE)

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

CYBERSECURITY PROGRAMS

MS IN DIGITAL FORENSICS AND CYBER INVESTIGATION

Required Core Courses	**36**
Total Credits	**36**

Technology Requirements

The digital forensics and cyber investigation program requires that you use a computer with the following:

- Microphone and speakers or headset with microphone or equivalent device(s)
- 5 GB (gigabytes) of free hard drive space
- 2 GB RAM or higher
- A high-speed internet connection
- Computer processor (Intel Pentium 4 or AMD Athlon 64) running at speeds of at least 1GHz
- Windows 7 or Mac OS X 10.6 or higher for an operating system (Linux operating systems can also be used but require more technical knowledge from the user.)

Note: The higher the processor speed of your computer (e.g., 2.4G–3.4 GHz), the larger the amount of available memory (e.g., 4–12 GB), and the larger the amount of available hard drive space (e.g., 5–20 GB), the better your computer will perform and the smoother your experience will be.

Preparation Recommended for Success

Expectations

You are expected to have some background in computing and programming. This background may be acquired through noncredit preparatory coursework, listed below.

Recommendations

If you do not have experience in computing, you are strongly advised to take the noncredit course ASC 605. If you have not taken programming courses previously, you are strongly advised to take ASC 609. Taking ASC 601 is recommended to help improve writing skills.

Degree Requirements

MS in Digital Forensics and Cyber Investigation

REQUIRED CORE COURSES

CBR 600	Communicating, Problem Solving, and Leading in Cybersecurity (6)
DFC 610	Cyberspace and Cybersecurity Foundations (6)
DFC 620	Digital Forensics Technology and Practices (6)
DFC 630	Digital Forensic Response and Analysis (6)
DFC 640	Advanced Forensics (6)
CYB 670	Capstone in Cybersecurity (6)

COURSE SEQUENCING

Courses must be taken in the order listed.

Criteria for Program Progression

You must complete each course with a grade of B or better to advance to the next course. (The grade of C is not available for these courses.) Your course syllabus will explain options for and consequences of requesting an Incomplete.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY

Gain a competitive advantage in the IT marketplace and develop specialized skills in high-tech management by pursuing a master's degree in information technology.

In UMUC's comprehensive graduate information technology program, you'll combine technical know-how with business savvy to gain a powerful IT skill set and maximum career flexibility. Whether you are new to the field, changing careers, or looking to move up, you'll find that the information technology program can boost your professional value.

We designed our information technology program with input from today's top employers to help you prepare for career advancement.

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MS IN INFORMATION TECHNOLOGY: INFORMATION ASSURANCE SPECIALIZATION

Required Core Courses	**15**
Required Specialization Courses	**21**
Total Credits	**36**

Earn your master's degree in information technology with a specialization in information assurance while building skills to stand out in the fast-growing fields of information assurance and cybersecurity.

The graduate specialization in information assurance will provide you with a practical understanding of the principles of data protection, cybersecurity, and computer forensics. Perfect for midcareer professionals or career changers, the information assurance specialization offers sought-after skills in network and internet security, intrusion detection and prevention, and cryptology, while also strengthening your core IT knowledge and project management abilities.

What You'll Learn

Through your coursework, you will learn how to

- Secure information using knowledge of symmetric and asymmetric keys, protocols for exchanging secure data (including the Data Encryption Standard and the Advanced Encryption Standard), and other cryptographic methods and cryptanalysis tools
- Protect networks using risk analysis, defense models, security policy development, authentication and authorization controls, firewalls, packet filtering, virtual private networks (VPNs), and wireless network security
- Respond to attacks with damage assessments, data forensics, attack tracing, and system recovery processes for continuity of operation
- Identify system vulnerabilities and attack patterns and solve problems with intrusion detection tactics
- Navigate ethics, relevant laws, regulations, policies, and standards
- Lead successful teams with advanced project management skills

Career Preparation

This program is designed to help prepare you for a career in the cybersecurity and information assurance field in the areas of network and internet security, intrusion detection and prevention, cryptology, cyber law, and software assurance.

Your Coursework

The information assurance curriculum can help you gain real-world experience through interactions with actual organizations. You'll learn job-relevant skills from case studies of real information assurance crises.

Coursework Examples

In past projects, students have had the opportunity to study and experiment with real-world tools and techniques to perform

- Information risk analysis
- Network packet analysis

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

CYBERSECURITY PROGRAMS

- Forensic evidence collection and preservation
- Protocol analysis
- Intrusion detection and prevention
- Encryption/decryption of files and messages
- Vulnerability assessments

Industry Certification

This program can help prepare you for the following certification exams:

- CompTIA CertMaster for Security+
- (ISC)^2 Associate
- Systems Security Certified Practitioner (SSCP)
- Certified Information Systems Security Professional (CISSP)

Preparation Recommended for Success

Expectations

You are expected to have some background in information technology. This background may be acquired through noncredit preparatory coursework, listed below.

Recommendations

If you do not have previous coursework or experience in programming, you are strongly advised to first enroll in UCSP 635 and UCSP 636 to gain the appropriate foundation. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Information Technology: Information Assurance Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

ITEC 610 Information Technology Foundations (3)
ITEC 625 Computer Systems Architecture (3)
ITEC 626 Information Systems Infrastructure (3)
ITEC 630 Information Systems Analysis, Modeling, and Design (3)
ITEC 640 Information Technology Project Management (3)

REQUIRED SPECIALIZATION COURSES

INFA 610 Foundations of Information Security and Assurance (3)
INFA 620 Network and Internet Security (3)
INFA 630 Intrusion Detection and Intrusion Prevention (3)
INFA 640 Cryptology and Data Protection (3)
INFA 650 Computer Forensics (3)
INFA 660 The Law, Regulation, and Ethics of Information Assurance (3)
INFA 670 Information Assurance Capstone (3)

COURSE SEQUENCING

- ITEC 610 must be taken in the first term of coursework.
- INFA 610 must be taken as the first specialization course.
- You must complete all other specialization coursework before taking INFA 670. (One 3-credit course may be taken concurrently.)

Program Recognition

UMUC's MS in Information Technology with a specialization in information assurance has been designated a Professional Science Master's degree program through the Council of Graduate Schools.

Related Certificate Program

Information Assurance

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED COURSES

INFA 610 Foundations of Information Security and Assurance (3)
INFA 620 Network and Internet Security (3)
INFA 630 Intrusion Detection and Intrusion Prevention (3)
INFA 640 Cryptology and Data Protection (3)
INFA 650 Computer Forensics (3)

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

MASTER OF ARTS IN TEACHING

Start your career off right with a flexible teaching program that prepares you for classroom success and Maryland certification.

In the Master of Arts in Teaching program, you'll learn the latest teaching strategies and gain the experience you need to enter the field of secondary education with confidence. Develop skills in teaching to diverse student bodies, integrating technology in the classroom, and responding to varying learning styles in a wide range of secondary school environments.

This program is designed for students with a bachelor's degree who want to earn teaching certification in a specific subject area (available areas listed at *umuc.edu/MAT*). Whether you're new to teaching, retiring from a previous profession, relocating, returning to the workforce, teaching overseas, or simply seeking a second career that builds on previous study, we'll help you prepare for a rewarding career as an educator.

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What You'll Learn

Through your coursework, you will learn how to

- Design and deliver instructional plans
- Manage a middle or high school classroom
- Assess student learning
- Use technology to maximize student learning
- Differentiate teaching methods
- Teach secondary students in a variety of settings, including conventional and distance-learning classrooms; urban, suburban, and rural schools; and learning communities that have cultural, ethnic, language, and socioeconomic diversity

Career Preparation

This program is designed to help you achieve Maryland teaching certification in the field of secondary education. See *umuc.edu/professional-licensure* for information about professional licensure in this field.

Your Coursework

MAT courses, developed in conjunction with school districts, feature the latest theory in pedagogy and praxis and help you apply what you're learning right away on the job.

Every course in the MAT program includes field experience components in which you'll develop and practice your knowledge, skills, and dispositions for working effectively with diverse learners. This experience culminates in a full-time, on-site teaching internship of 80 in-school days (approximately 18 calendar weeks), which you complete under the supervision of a mentor teacher who is certified in your content area.

You will be responsible for following procedures for arranging field experiences and classroom observations within the school district of your choice. While UMUC is able to provide support and assistance in securing field placements, we cannot guarantee that all school districts will grant MAT students permission to enter the classroom. Also, states and local school districts have varying regulations and policies regarding field experiences and student teaching. We recommend you familiarize yourself with the student teaching requirements for your state and locality.

Coursework Examples

In past projects, students have had the opportunity to

- Collaborate with a mentor teacher in the field to determine a target outcome for a group of students, then develop a strategy for achieving the target, carry out the initiative, and measure the results
- Conduct an observation in an inclusion classroom (grades K–12) to identify and describe developmentally appropriate practices that work effectively with adolescent learners and identify and describe classroom management procedures that are effective with adolescent students

Program Accreditation

The graduate education department at University of Maryland University College has been accredited by the National Council for Accreditation of Teacher Education (now the Council for the Accreditation of Educator Preparation, *caepnet.org).* This accreditation covers the Master of Arts in Teaching program for initial

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

EDUCATION AND TEACHING PROGRAMS

teacher preparation and the Master of Education in instructional technology program at UMUC. However, the accreditation does not include individual education courses that the institution offers to P–12 educators for professional development, relicensure, or other purposes.

This program is also approved by the Maryland Higher Education Commission and by the Maryland State Department of Education as a professional education program leading to state teacher certification in the state of Maryland.

MASTER OF ARTS IN TEACHING

Required Core Courses	**24**
Required Professional Internship	**6**
Total Credits	**30**

Admission Requirements

In addition to the standard graduate admission criteria (listed on p. 146), all MAT students—including those entering the program from an articulated undergraduate program at UMUC—must have earned a bachelor's degree from a regionally accredited institution with a major in the content area for which certification will be sought; earned a GPA of 2.75 in the major; and presented Maryland-specified passing scores on the ACT, GRE, SAT, Praxis Core, or Praxis I exam. Alternatively, and subject to department approval, you may be admitted with completion of 30 credits in content-related coursework and a GPA of 2.75 in these courses. If your content area is computer science and your degree or coursework is more than five years old, you must take the Praxis II content exam for computer science and submit a qualifying test score, in addition to a qualifying test score on any one of the Maryland basic skills tests. If your content area is one of the foreign languages, you must submit qualifying scores on the ACTFL Oral Proficiency (OP) Interview and Written Proficiency Test (WPT). Qualifying scores for the aforementioned exams can be found on the Maryland State Department of Education website.

Residents of Kentucky may be admitted on a case-by-case basis only.

Note: The complete admission file must be reviewed before you can enroll in EDTP 600.

Technology Requirements

As a student in the MAT program, you are required to purchase a one-time $100 subscription (good for seven years) to Tk20 HigherEd before your first class. Tk20 is a comprehensive assessment and management system that supports all education students at UMUC. You may also need access to a webcam/microphone for certain assignments. More information is available online at *umuc.edu/tk20.*

Preparation Recommended for Success

Recommendations

Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MAT

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

EDTP 600 Foundations of Teaching for Learning (6)
EDTP 635 Adolescent Development and Learning Needs (6)
EDTP 639 Reading and Multiple Literacies (6)
EDTP 645 Subject Methods and Assessment (6)

REQUIRED PROFESSIONAL INTERNSHIP

EDTP 650 Professional Internship and Seminar (6)

COURSE SEQUENCING

- Courses should be taken in the order listed.
- EDTP 600 and EDTP 635 must be taken before EDTP 639 and may be taken together.
- EDTP 639 and EDTP 645 must be completed before EDTP 650 and may be taken together.

Criteria for Program Progression

In accordance with the standards of the Council for Accreditation of Educator Preparation (CAEP), the MAT program requires that you earn grades of 80 percent (B) or better on major assignments in certain courses—namely EDTP 635 and EDTP 639—which are offered before specific transition points in the program, to move forward in the program.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

EDUCATION AND TEACHING PROGRAMS

Graduation Requirements

Before beginning the professional internship, you must pass a content assessment. To graduate, you must also complete a performance-based teaching portfolio and student learning objectives project and register for the Praxis II pedagogy exam.

Professional Certification

Fulfilling the requirements of the MAT provides eligibility for the Maryland Standard Professional Certificate I (SPC I), which is granted by the Maryland State Department of Education. The Maryland certification enables you to teach in the state of Maryland once you graduate and provides enhanced opportunities for interstate reciprocity.

Please note that while Maryland state certification to teach world languages is valid for grades pre-K through 12, the MAT program focuses on teaching at the secondary school level.

Teacher certification requirements are constantly evolving in many states. You are responsible for remaining informed about the teacher certification requirements of the state in which you seek to become certified. You should also confirm requirements and any reciprocity arrangements with the state's certifying agency.

More information about professional licensure is available at *umuc.edu/professional-licensure.*

Academic Relationship

Undergraduate students who are pursuing a bachelor's degree from UMUC in an appropriate major (computer science, English, history, or social science, or a general studies degree with a minimum of a 30-credit specialization in social studies) and other students who have the appropriate coursework (including biology and mathematics coursework) can reduce the total coursework for the MAT degree by up to 12 credits (two 6-credit courses) and complete both degrees with a total of 138 credits of coursework. This accelerated program option allows you to take graduate-level coursework before you complete your undergraduate degree.

To be eligible for this accelerated MAT option, you must have completed the courses listed below before being accepted in The Graduate School. The 500-level courses listed below are the only courses eligible for the 12 articulated credits available through this agreement. If successfully completed with a grade of C, these credits apply toward the undergraduate degree only. If completed with a grade of B or above, the credits will be accepted by The Graduate School toward the completion of the MAT degree.

- EDTP 500 Professional Fundamentals of Teaching and Learning (6) instead of EDTP 600
- EDTP 535 Adolescent Development and Learning Needs (6) instead of EDTP 635

To be admitted to the MAT program, you must meet all MAT admission requirements, including content area GPA (2.75), and achieve qualifying scores on basic skills assessment(s). If you meet these requirements, you will need only 18 credits (three 6-credit courses) to complete the MAT degree. Time limits for degree completion apply to all applicants.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

MASTER OF DISTANCE EDUCATION AND E-LEARNING

Gain the practical knowledge needed to lead distance education programs in academic, business, government, and nonprofit organizations by pursuing a master's degree in distance education and e-learning.

In UMUC's award-winning Master of Distance Education and E-Learning (MDE) program, you'll learn management strategies and gain the practical experience needed to design and lead distance education programs with confidence. You'll develop essential skills in implementing distance learning technology, managing online faculty, and directing the business aspects of distance education programs. This program will help you acquire the unique skills and knowledge needed to maintain a successful enterprise in a technology-mediated learning environment. Although the MDE is not intended as a teacher preparation program, it provides the theory, best practices, and background that are relevant for teaching and administration. You can make a difference by expanding learning opportunities for others.

UMUC is an internationally recognized leader of distance education programming and policy. Whether you're new to the field, changing careers, or looking to move up, you'll enhance your credentials with a respected degree and prepare for a wide range of mid- and senior-level management roles in the rapidly growing field of distance education and e-learning.

What You'll Learn

Through your coursework, you will learn how to

- Apply education theory, learning models, and various teaching and learning frameworks in distance education
- Develop and manage distance education curricula
- Manage intellectual property and digital rights
- Select learning technologies
- Perform cost/benefit analyses for distance learning programs
- Work with various organizational and staffing models in distance education, as well as different leadership styles
- Apply distance learning programs in the workplace to drive professional development
- Manage change in organizations
- Perform quality assurance and project management of e-learning initiatives

Career Preparation

This program is designed to help prepare you to lead, manage, develop, evaluate, and implement distance learning programs in a wide range of academic and training contexts.

Your Coursework

Your courses will give you hands-on experience in the many aspects of distance learning. The curriculum covers instructional design, technology selection, business proposals, student support systems, and distance learning project management.

Coursework Examples

In past projects, students have had the opportunity to

- Create a personal learning environment to use throughout the course of the program
- Submit a project proposal for the introduction of multimedia learning in a corporate or academic setting, and prepare an audio or video presentation to convince the director of an e-learning department to provide the project funds
- Submit a proposal for improving enterprise learning based on a case study and needs analysis for a real organization
- Create a design and proposal for a new distance learning enterprise
- Create a prototype online course, including context analysis, learning design, a storyboard, and a project management plan
- Design a learner support model for a public or private educational institution or corporate or military training program

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

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EDUCATION AND TEACHING PROGRAMS

MDE

Required Core Courses	**33**
Required Capstone Course	**3**
Total Credits	**36**

Preparation Recommended for Success

Recommendations

Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MDE

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

OMDE 601 Foundations of Distance Education and E-Learning (3)

OMDE 610 Teaching and Learning in Online Distance Education (3)

OMDE 603 Technology in Distance Education and E-Learning (3)

OMDE 608 Learner Support in Distance Education and Training (3)

OMDE 606 Costs and Economics of Distance Education and E-Learning (3)

DETT 611 Library and Intellectual Property Issues in Distance Education and E-Learning (3)

DETT 607 Instructional Design and Course Development in Distance Education and E-Learning (3)

DETC 620 Training and Learning with Multimedia (3)

DEPM 604 Management and Leadership in Distance Education and E-Learning (3)

DETT 621 Online Learning and Development in the Workplace (3)

DEPM 622 The Business of Distance Education and E-Learning (3)

REQUIRED CAPSTONE COURSE

OMDE 670 Portfolio and Project in Distance Education and E-Learning (3)

COURSE SEQUENCING

Courses must be taken in the order listed. Sequential courses may be taken concurrently.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

MASTER OF EDUCATION IN INSTRUCTIONAL TECHNOLOGY

Enhance your credentials and bring your classroom into the digital age by pursuing a Master of Education degree in instructional technology.

In the instructional technology program, you'll learn advanced skills in curriculum and instruction, technology integration, and leadership in pre-K through grade 12 education. This program is designed to help you develop expertise in current and emerging instructional technologies; gain a deep understanding of the role of technology in the contemporary school; and lead change efforts at the classroom, school, and district levels to improve student achievement.

What You'll Learn

Through your coursework, you will learn how to

- Integrate current and emerging technologies into the curriculum to strengthen and transform teaching and learning
- Use technology to create and cultivate your personal learning network
- Extend your classroom with blended and online learning experiences
- Integrate and manage mobile learning environments
- Assess the effectiveness of technology to support student learning
- Create multimedia and web-based products that support instruction
- Develop standards-based (Common Core), technology-supported lessons
- Provide innovative professional development experiences for teachers and other educators
- Advocate for and lead technology initiatives

Career Preparation

This program is designed to help you prepare for work in curriculum development and instruction, technology integration, and leadership in P–12 learning environments. See *umuc.edu/professional-licensure* for information about professional licensure in this field.

Your Coursework

Your instructional technology courses, designed for P–12 teachers, technology integration specialists, staff developers, and administrators, will help you develop expertise in digital-age learning by using technology, mobile devices, and active learning techniques to transform the educational experience.

Coursework Examples

In past projects, students have had the opportunity to

- Develop a professional web presence with social media connections for their classroom
- Create and implement flipped classroom and other blended learning modules in their classroom
- Integrate mobile learning devices and BYOD projects into their curriculum
- Develop and implement blended professional development experiences for teachers in their schools
- Lead an action research project investigating a critical area of need in their school, and propose, implement, and evaluate a research-based solution

Program Accreditation

The graduate education department at University of Maryland University College has been accredited by the National Council for Accreditation of Teacher Education (now the Council for the Accreditation of Educator Preparation, *caepnet.org).* This accreditation covers the Master of Arts in Teaching program for initial teacher preparation and the Master of Education in instructional technology program at UMUC. With this accreditation, the Master of Education program has also earned national recogni-

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

EDUCATION AND TEACHING PROGRAMS

tion by its professional association, the International Society for Technology in Education (ISTE). However, the accreditation does not include individual education courses that the institution offers to P–12 educators for professional development, relicensure, or other purposes.

MEd IN INSTRUCTIONAL TECHNOLOGY

Required Core Courses	**30**
Required Capstone Course	**3**
Total Credits	**33**

Technology Requirements

As a student in the MEd degree or Instructional Technology Integration certificate program, you are required to purchase a one-time $100 subscription (good for seven years) to Tk20 HigherEd before your first class. Tk20 is a comprehensive assessment and management system that supports all education students at UMUC. You may also need access to a webcam/microphone for certain assignments. More information is available online at *umuc.edu/tk20.*

Preparation Recommended for Success

Expectations

The MEd in Instructional Technology is designed for students with professional experience teaching in P–12 schools. If you lack teaching experience, you may want to choose another of UMUC's education-related graduate programs.

Recommendations

Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

Master of Education in Instructional Technology

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

EDTC 600 Foundations of Technology in Teaching and Learning (3)

EDTC 605 Teaching Information and Media Literacies in the Digital World (3)

EDTC 610 Web-Based Teaching and Learning: Design and Pedagogy (3)

EDTC 615 Using Technology for Instructional Improvement: Research, Data, and Best Practices (3)

EDTC 620 Technology in K–12 Education: Synchronous, Asynchronous, and Multimedia Technologies (3)

EDTC 625 Hardware and Software in Instructional Development (3)

EDTC 630 Administration of Technology Initiatives: Planning, Budgeting, and Evaluation (3)

EDTC 640 Leading Technology Change in Schools (3)

EDTC 645 Integration of Technology: Global Perspectives (3)

EDTC 650 Teaching and Learning in K–12 Virtual Schools (3)

REQUIRED CAPSTONE COURSE

EDTC 670 Integrative Capstone Project (3)

COURSE SEQUENCING

- The first nine courses in the program must be taken in the order listed; sequential courses may be taken concurrently.
- You must have completed the first nine courses in the program before taking EDTC 670; availability of the capstone course is provided online at *umuc.edu/education.*

Criteria for Program Progression

In accordance with the standards of the Council for Accreditation of Educator Preparation (CAEP), the MEd program requires that students earn grades of 80 percent (B) or better on major assignments in certain courses—namely EDTC 600, EDTC 615, EDTC 630, EDTC 640, and EDTC 645, which are offered before specific transition points in the program. Performance of 80 percent (grade of B) or better on major assignments in these courses is required to move forward in the program. You must also earn a final grade of B in EDTC 600 to move forward in the program.

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More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

Related Certificate Program

Instructional Technology Integration

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED COURSES

EDTC 600 Foundations of Technology in Teaching and Learning (3)

EDTC 605 Teaching Information and Media Literacies in the Digital World (3)

EDTC 610 Web-Based Teaching and Learning: Design and Pedagogy (3)

EDTC 615 Using Technology for Instructional Improvement: Research, Data, and Best Practices (3)

COURSE SEQUENCING

Courses must be taken in the order listed; sequential courses may be taken at the same time.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

MASTER OF SCIENCE IN LEARNING DESIGN AND TECHNOLOGY

Boost your career by gaining skills and knowledge that can help you design and operate the learning platforms of the future.

The graduate program in learning design and technology can help you gain the skills and competencies you need to use emerging technologies, learning analytics, and learning theory to design adaptive and personalized online learning experiences. You can explore, develop, and integrate digital media, new pedagogical approaches, and online interactive resources to give students greater access to education and prepare them for success.

What You'll Learn

Through your coursework, you will learn how to

- Apply learning sciences to design and implement transformative, personalized online and hybrid learning experiences
- Identify and apply learning analytics, current research, and theory to optimize the online learning environment
- Analyze data and create visualization models to inform learning design
- Create authentic assessment strategies to evaluate online learning
- Select, evaluate, and design media and technologies to support learning online
- Communicate effectively online and in print using visual, oral, and written formats
- Initiate and lead learning design projects
- Evaluate legal and ethical issues and develop appropriate strategies for online learning projects
- Use social media tools to create a personal learning network for ongoing professional development

Career Preparation

This program is designed to help prepare you for work in learning environment design using digital pedagogy, emerging technologies, and data analytics.

Your Coursework

The learning design and technology curriculum is designed to give you the technical and leadership competencies you need to design personalized, adaptive learning experiences. In the culmination of your hands-on coursework, you will conduct an online internship in education or business, in which you will design real-world online learning programs.

Coursework Examples

In past projects, students have had the opportunity to

- Research, propose, and design an adaptive and personalized online course
- Create a scope and sequence document used to initiate and organize work of a design project
- Analyze a learning design project and create a risk management plan
- Collect and analyze online learner data to create a data visualization of results that influence curricular and instructional design changes
- Identify and incorporate adaptive learning elements to information course design
- Interview subject matter experts to initiate and develop the design specifications for an online learning project
- Identify, lead, and promote collaboration and relationships between stakeholders critical to the learning design process
- Develop interactive instructional materials
- Use social media tools to create a personal learning network for ongoing professional development

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

EDUCATION AND TEACHING PROGRAMS

MS IN LEARNING DESIGN AND TECHNOLOGY

Required Core Courses	**36**
Total Credits	**36**

Preparation Recommended for Success

Expectations

A background in teaching, education, or professional development and basic experience in word processing and G Suite is expected.

Recommendations

Taking ASC 601 is recommended to help improve writing skills.

Degree Requirements

Master of Science in Learning Design and Technology

REQUIRED CORE COURSES

DCL 600 Decisive Thinking, Communicating, and Leading (6)
LDT 610 Learning Design and Digital Pedagogy (6)
LDT 620 Learning Design, Media, and Emerging Technologies (6)
LDT 630 Learning Design and Data Analytics (6)
LDT 640 Advanced Practicum in Learning Design (6)
LDT 670 Learning Design Seminar (6)

COURSE SEQUENCING

Courses must be taken in the order listed.

Criteria for Program Progression

You must complete each course with a grade of B or better to advance to the next course. (The grade of C is not available for these courses.) Your course syllabus will explain options for and consequences of requesting an Incomplete.

Related Certificate Program

Learning Design and Technology

REQUIRED COURSES

DCL 600 Decisive Thinking, Communicating, and Leading (6)
LDT 610 Learning Design and Digital Pedagogy (6)
LDT 620 Learning Design, Media, and Emerging Technologies (6)

COURSE SEQUENCING

All courses must be taken in the order listed. You must complete each course with a grade of B or better to advance to the next course. The grade of C is not available for these courses.

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MASTER OF SCIENCE IN BIOTECHNOLOGY

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SPECIALIZATIONS IN

Bioinformatics
Biosecurity and Biodefense
Biotechnology Management
Biotechnology Regulatory Affairs

CERTIFICATE IN

Bioinformatics

Master the business side of science and technology to accelerate your career growth in UMUC's award-winning master's degree program in biotechnology.

In the graduate biotechnology program, you'll combine science and technology with business savvy to gain the ultimate skill set and maximum career flexibility. Whether you are new to the field, changing careers, or looking to move up in your current organization, this program can open doors for you on the cutting edge of biotechnology.

Featuring a hands-on project with a biotech company and symposia by industry leaders, our graduate biotechnology program has attracted national media attention and won awards for excellence in biotech education.

Academic Preparation

If you lack a molecular biology background, you are required to take a college-level molecular biology course before taking the required program core courses.

Degree Requirements

Specific course requirements are detailed under each specialization.

Recognition

UMUC's MS in Biotechnology has been designated a Professional Science Master's degree program through the Council of Graduate Schools.

Academic Relationship

If you are certified as a Project Management Professional by the Project Management Institute, you may receive credit for PMAN 634 Foundations of Project Management if you begin study for the master's degree within five years of earning certification. Graduate advisors can provide more information.

MS IN BIOTECHNOLOGY: BIOINFORMATICS SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**21**
Required Capstone Course	**3**
Total Credits	**36**

Learn the tools to unlock the next big discovery while gaining real-world industry experience by pursuing a master's degree in biotechnology with a specialization in bioinformatics.

Bioinformatics is a blend of biology, computer science, and mathematics. Modern biology generates massive quantities of big data. Hidden in this data might be the next blockbuster cancer therapy, the definitive proof that a certain gene is responsible for a disease, or the information needed to replicate a crucial biological process—and you could be on the team that discovers it.

A specialization in bioinformatics helps prepare you to become a qualified bioinformatics professional for public- or private-sector organizations. You'll gain cutting-edge knowledge, and you'll also develop experience in the field, which can give you an advantage in the job market.

What You'll Learn

Through your coursework, you will learn how to

- Code in Python and Java
- Analyze big data, next-generation sequencing data, and scientific data

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

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- Perform sequence alignments and phylogenetic analyses
- Use biostatistics, databases and data structures, algorithms, and mathematical modeling

Career Preparation

This program is designed to help prepare you for a high-demand job in bioinformatics in a public- or private-sector organization. Potential employers include corporate organizations and government agencies, as well as academic institutions.

Your Coursework

The bioinformatics curriculum covers a broad range of subjects at the interface of molecular biology and computational science. You'll gain real-world experience through interactions with biotechnology and learn from case studies of tackling real challenges.

Coursework Examples

In past projects, students have had the opportunity to

- Align and analyze DNA, RNA, and protein sequences, then perform phylogenetic analyses on them
- Write computer scripts to automate complex tasks and analyze biological data
- Work on a team for a sponsoring organization to tackle a real project

Preparation Recommended for Success

Expectations

You are expected to have completed undergraduate coursework in molecular biology, programming, and statistics. This background may be acquired through preparatory coursework, most of which is noncredit, listed below.

Requirements/Recommendations

If you lack previous coursework in molecular biology, you must take BIOT 601, which may be taken with BIOT 640. If you do not have demonstrated experience or prior coursework in software programming, you should take UCSP 635 and UCSP 636 (or equivalent) before beginning any BIFS classes. If you don't have recent statistics experience, you should take STAT 200 (or equivalent). Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Biotechnology: Bioinformatics Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

BIOT 640 Societal Issues in Biotechnology (3)
BIOT 630 Introduction to Bioinformatics (3)
BIOT 645 The Business of Biotechnology (3)
BIOT 643 Techniques of Biotechnology (3)

REQUIRED SPECIALIZATION COURSES

BIFS 613 Statistical Processes for Biotechnology (3)
BIFS 614 Data Structures and Algorithms (3)
BIFS 617 Advanced Bioinformatics (3)
DBST 651 Relational Database Systems (3)
BIFS 618 Java for Biotechnology Applications (3)
DBST 652 Advanced Relational/Object-Relational Database Systems (3)
BIFS 619 Systems-Level Approaches in Bioinformatics (3)

REQUIRED CAPSTONE COURSE

BIOT 670 Capstone in Biotechnology (3)

COURSE SEQUENCING

- BIOT 640 must be taken as the first program course.
- You must complete all core courses with the BIOT designator in the order listed before starting any specialization.
- STAT 200 or an equivalent statistics course (with a minimum grade of C for an undergraduate course, B for a graduate course) is prerequisite to BIFS 613.
- UCSP 635 and UCSP 636 or an equivalent programming course (with a minimum grade of C for an undergraduate course, B for a graduate course) is prerequisite to BIFS 617.
- BIFS 617 is prerequisite to BIFS 618 and BIFS 619.
- BIOT 670 must be taken after you complete 30 credits of program coursework; availability of the capstone course is provided online at *umuc.edu/biotech.*

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HEALTHCARE AND SCIENCE PROGRAMS

Related Certificate Program

Bioinformatics

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED COURSES

BIOT 630 Introduction to Bioinformatics (3)
BIFS 613 Statistical Processes for Biotechnology (3)
BIFS 617 Advanced Bioinformatics (3)
DBST 651 Relational Database Systems (3)
BIFS 614 Data Structures and Algorithms (3)

MS IN BIOTECHNOLOGY: BIOSECURITY AND BIODEFENSE SPECIALIZATION

Required Core Courses	**15**
Required Specialization Courses	**18**
Required Capstone Course	**3**
Total Credits	**36**

Prepare for the frontlines of homeland defense and bioterrorism response by pursuing a master's degree in biotechnology with a specialization in biosecurity and biodefense.

The potential dangers of biowarfare have created a new demand for professionals who can use technology to detect, analyze, and respond to biosecurity threats. A specialization in biosecurity and biodefense within the graduate program in biotechnology can help prepare you to meet that demand head-on.

You'll study the microbiology and epidemiology of biological agents that are potential threats, identify and propose countermeasures, and develop expertise in response and recovery strategies as well as policies related to biodefense and biosecurity.

What You'll Learn

Through your coursework, you will learn how to

- Develop preparedness and response strategies for bioterrorism simulations
- Analyze cases of real epidemics, biowarfare, and bioethical research problems
- Communicate current trends in biodefense policies, laws, and best practices for global, interagency responses
- Develop advanced project management skills to lead teams
- Perform risk assessments and potential impact analyses and select treatments to handle adverse events

Career Preparation

This program is designed to help you prepare for work apply-ing policy and using technology against biosecurity threats. Potential employers are in the government and public and private sectors.

Your Coursework

The biosecurity and biodefense curriculum is case-based and hands-on to help you build a strong foundation in the science of biotechnology and expertise in current issues and strategies in bioterrorism response.

Coursework Examples

In past projects, students have had the opportunity to

- Gain real-world experience through interactions with actual biodefense agencies and industries
- Work on a team for a sponsoring agency or organization to tackle a real project for that organization
- Participate in a simulation of a bioterrorist attack and prepare detection, response, and recovery plans
- Write a brief for policymakers on a current epidemic

Preparation Recommended for Success

Expectations

You are expected to have completed undergraduate coursework in molecular biology. This background may be acquired through preparatory coursework, listed below.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

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Requirements/Recommendations
If you lack previous coursework in molecular biology, you must take BIOT 601, which may be taken with BIOT 640. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Biotechnology: Biosecurity and Biodefense Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

BIOT 640 Societal Issues in Biotechnology (3)
BIOT 630 Introduction to Bioinformatics (3)
BIOT 645 The Business of Biotechnology (3)
BIOT 643 Techniques of Biotechnology (3)
PMAN 634 Foundations of Project Management (3)

REQUIRED SPECIALIZATION COURSES

BSBD 640 Agents of Bioterrorism (3)
BSBD 641 Biosecurity and Bioterrorism (3)
HSMN 630 Resilience Planning and Preparedness for Disaster Response and Recovery (3)
BSBD 642 Advanced Biosecurity and Bioterrorism (3)
BSBD 643 Strategies for Interagency Cooperation, Verification, and Global Countermeasures in Biodefense (6)

REQUIRED CAPSTONE COURSE

BIOT 670 Capstone in Biotechnology (3)

COURSE SEQUENCING

- BIOT 640 must be taken as the first program course.
- You must complete all core courses with the BIOT designator in the order listed before starting any specialization.
- BIOT 670 must be taken after you complete 30 credits of program coursework; availability of the capstone course is provided online at *umuc.edu/biotech.*

MS IN BIOTECHNOLOGY: BIOTECHNOLOGY MANAGEMENT SPECIALIZATION

Required Core Courses	**15**
Required Specialization Courses	**18**
Required Capstone Course	**3**
Total Credits	**36**

Sharpen your entrepreneurial and managerial skills for biotech business opportunities by pursuing a master's degree in biotechnology with a specialization in biotechnology management.

Specializing in biotechnology management within UMUC's graduate biotechnology program, you'll learn how to evaluate, launch, and manage biotechnology ventures, from life-saving biopharmaceuticals to environment-friendly biofuels. Build a powerful skill set in both business and biology to become a sought-after professional or a successful entrepreneur with a master's degree in biotechnology with a specialization in biotechnology management.

What You'll Learn

Through your coursework, you will learn how to

- Assess your organization's needs for capital, personnel, technology, and marketing
- Evaluate forecasts, cost effectiveness, and performance of biotech projects
- Weigh the advantages and disadvantages of forming international ventures
- Interpret bioinformatic data and understand the latest technical advances in biotechnology
- Comprehend the economics of bioprocessing, regulatory affairs, and different global business models used in biotechnology
- Implement advanced project management skills to lead a successful team

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HEALTHCARE AND SCIENCE PROGRAMS

Career Preparation

This program is designed to help prepare you for work in laboratory management, project management, instruction, and bioethics in both science- and business-focused biotechnology organizations.

Your Coursework

In the biotechnology management specialization, you'll develop a deep understanding of the molecular science behind biotechnology while also building an advanced skill set in business management, marketing, and financial analysis. You can gain actual management experience through your coursework by working on a team for an organization in the biotechnology sector.

Coursework Examples

In past projects, students have had the opportunity to

- Write a business plan for a new biotechnology venture
- Pick a technology and analyze its potential for success
- Work on a team for a sponsoring agency or organization to tackle a real biotechnology project to fit that organization's needs

Preparation Recommended for Success

Expectations

You are expected to have completed undergraduate coursework in molecular biology. This background may be acquired through preparatory coursework, listed below.

Requirements/Recommendations

If you lack previous coursework in molecular biology, you must take BIOT 601, which may be taken with BIOT 640. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Biotechnology: Biotechnology Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

BIOT 640 Societal Issues in Biotechnology (3)
BIOT 630 Introduction to Bioinformatics (3)
BIOT 645 The Business of Biotechnology (3)
BIOT 643 Techniques of Biotechnology (3)
PMAN 634 Foundations of Project Management (3)

REQUIRED SPECIALIZATION COURSES

BTMN 632 Commercializing Biotechnology in Early-Stage Ventures (3)
BTMN 634 Selection and Evaluation of Biotechnology Projects (3)
BTMN 636 Biotechnology and the Regulatory Environment (3)
ISAS 610 Information Systems and Integration (3)
MRKT 600 Marketing Management (3)
MGMT 640 Financial Decision Making (3)

REQUIRED CAPSTONE COURSE

BIOT 670 Capstone in Biotechnology (3)

COURSE SEQUENCING

- BIOT 640 must be taken as the first program course.
- You must complete all core courses with the BIOT designator in the order listed before starting any specialization.
- BIOT 670 must be taken after you complete 30 credits of program coursework; availability of the capstone course is provided online at *umuc.edu/biotech.*

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HEALTHCARE AND SCIENCE PROGRAMS

MS IN BIOTECHNOLOGY: BIOTECHNOLOGY REGULATORY AFFAIRS SPECIALIZATION

Required Core Courses	**15**
Required Specialization Courses	**18**
Required Capstone Course	**3**
Total Credits	**36**

Strengthen your marketability with specialized skills in the growing industry of international biotech business by pursuing a master's degree in biotechnology with a specialization in biotechnology regulatory affairs.

Specializing in biotechnology regulatory affairs, you'll develop expertise in the life cycle of biotechnology products and learn how to help businesses and regulators work together for safety and quality. This rare program, one of only a few in the nation, will give you a unique credential to help you stand out from the crowd.

Your biotechnology regulatory affairs specialization could prepare you to help bring a new medical technology to market, bring a life-saving drug to a new country, manage a top-quality research laboratory, or work for a regulating agency to improve drug and device safety for millions of people. You'll build strong skill sets in molecular biology, business, and policy to make yourself an indispensable asset to the public and private sectors of the biotech industry.

What You'll Learn

Through your coursework, you will learn how to

- Develop a management plan for a clinical trial
- Assemble packages for an investigational new drug, a new drug application, a new device exemption, or a Biological License Application
- Demonstrate your knowledge of Federal Drug Administration regulations, including Title 21
- Navigate the policies and procedures for gaining marketing approval for a medical product within the United States, European Union, Japan, Canada, Brazil, India, and China
- Comprehend the economics of bioprocessing, regulatory affairs, and global business models used in biotechnology
- Implement advanced project management skills to lead a successful team

Career Preparation

This program is designed to help prepare you for preclinical and clinical trial management, data interpretation, product safety work, and work with regulatory agencies. Potential employers include corporate organizations and government agencies.

Your Coursework

In your core courses, you'll study the science and techniques used in biotechnology, as well as the industries surrounding them. In your regulatory affairs specialization courses, you'll learn how regulations and policies impact domestic and global biotech business, clinical trials, and product life cycles. The biotechnology regulatory affairs curriculum also covers laboratory and manufacturing best practices, quality control and assurance, and bioethics.

Coursework Examples

In past projects, students have had the opportunity to

- Complete a group project simulating the development of a drug or device through the product life cycle
- Generate a management plan and outline a funding proposal for a clinical trial
- Write a review of a 510(k) submission for a medical device from the point of view of an FDA reviewer
- Assemble several types of applications for marketing approval using real-world data sets
- Work on a team for a sponsoring agency or organization to tackle a real biotechnology project to fit that organization's needs

Industry Certification

This program can help prepare you for the Regulatory Affairs Certification exam.

Preparation Recommended for Success

Expectations

You are expected to have completed undergraduate coursework in molecular biology. This background may be acquired through preparatory coursework, listed below.

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

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Requirements/Recommendations
If you lack previous coursework in molecular biology, you must take BIOT 601, which may be taken with BIOT 640. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Biotechnology: Biotechnology Regulatory Affairs Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

BIOT 640 Societal Issues in Biotechnology (3)
BIOT 630 Introduction to Bioinformatics (3)
BIOT 645 The Business of Biotechnology (3)
BIOT 643 Techniques of Biotechnology (3)
PMAN 634 Foundations of Project Management (3)

REQUIRED SPECIALIZATION COURSES

BTMN 636 Biotechnology and the Regulatory Environment (3)
BTRA 640 Preclinical and Clinical Research Design (3)
BTRA 641 Product Life-Cycle Approval, Production, and Marketing for Devices and Drugs (3)
BTRA 642 Global Biotechnology Business Issues (3)
BTRA 643 Practical Applications of Biotech Regulatory Affairs (6)

REQUIRED CAPSTONE COURSE

BIOT 670 Capstone in Biotechnology (3)

COURSE SEQUENCING

- BIOT 640 must be taken as the first program course.
- You must complete all core courses with the BIOT designator in the order listed before starting any specialization.
- BIOT 670 must be taken after you complete 30 credits of program coursework; availability of the capstone course is provided online at *umuc.edu/biotech.*

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MASTER OF SCIENCE IN ENVIRONMENTAL MANAGEMENT

Improve the environment while improving your career outlook in the graduate environmental management program.

In the environmental management program, you'll learn the business management skills, industry-standard technology, and environmental science needed to assume high-level management responsibilities for environmental programs in a wide range of organizations.

Almost every industrial, commercial, governmental, and military organization has to solve problems in pollution prevention and waste management. Perfect for midcareer professionals, the environmental management program will give you expert decision-making skills and practical experience that can boost your professional value and give you the confidence to lead.

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What You'll Learn

Through your coursework, you will learn how to

- Assess threats, hazards, and risks to the environment from an organization's operations
- Analyze and communicate health, safety, and environmental risks
- Manage, plan, and conduct comprehensive environmental compliance, managerial, and liability audits for various industrial and commercial facilities
- Develop a team and manage an environmental project/program for an organization or government agency
- Use key technologies and software tools, such as Crystal Ball and ARC GIS
- Develop planning documents for watershed management and air quality programs
- Use different methods of measurement and modeling to complete the four core parts of a risk assessment
- Lead projects involving hazardous and municipal solid waste, pollution prevention techniques, and waste minimization
- Apply environmental economic principles to property rights, pollution damage and abatement costs, and cost/benefit analyses
- Develop strategies for protecting workers in the context of organizational and budgetary constraints
- Understand U.S. environmental and energy law and policy, including its development, implementation, and enforcement
- Apply best practices in land use management, including where to build, where not to build, how to build, and when to build

Career Preparation

This program is designed to help you prepare for high-level environmental management in a wide range of organizations, including industrial, commercial, governmental, and military organizations. Possible career areas include environment and safety analysis, sustainability management, environmental policy analysis, and environmental management.

Your Coursework

The environmental management curriculum was designed with employers and industry experts to give you the qualifications, experience, and knowledge required of top professionals in the field. You'll gain real-world experience through interactions with actual organizations and use case studies to develop practical, applicable knowledge that you can apply right away on the job.

Coursework Examples

In past projects, students have had the opportunity to

- Select a disposal-facility site and implement a plan for waste collection, recycling, and environmental monitoring
- Analyze land use issues in the local community, using ARC GIS software, tools, and real data sets
- Use Crystal Ball, a risk assessment tool, to conduct an environmental and ecological risk assessment
- Work on a team for a sponsoring agency or organization to tackle a real environmental management project related to energy issues, siting of facilities, or sustainability

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

HEALTHCARE AND SCIENCE PROGRAMS

MS IN ENVIRONMENTAL MANAGEMENT

Required Core Courses	**33**
Required Capstone Course	**3**
Total Credits	**36**

Preparation Recommended for Success

Expectations

You should have completed at least one undergraduate course each in chemistry and biology. Prior experience in an environmental field is also helpful.

Recommendations

Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Environmental Management

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

ENVM 646 Environmental/Energy Law and Policy Development (3)
ENVM 648 Fundamentals of Environmental Systems (3)
ENVM 641 Environmental Auditing (3)
ENVM 643 Environmental Communications and Reporting (3)
ENVM 647 Environmental Risk Assessment (3)
ENVM 649 Principles of Waste Management and Pollution Control (3)
ENVM 644 Emerging Environmental Technologies (3)
ENVM 650 Environmental and Natural Resources Economics (3)
ENVM 651 Water Resources Management (3)
ENVM 652 Principles of Air Quality Management (3)
ENVM 653 Land Use Management (3)

REQUIRED CAPSTONE COURSE

ENVM 670 Capstone in Environmental Management (3)

COURSE SEQUENCING

- ENVM 646 and 648 must be taken within the first 9 credits of study.
- You must complete 27 credits of program coursework before enrolling in ENVM 670.

Program Recognition

UMUC's MS in Environmental Management has been designated a Professional Science Master's degree program through the Council of Graduate Schools.

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MASTER OF SCIENCE IN HEALTHCARE ADMINISTRATION

Develop advanced managerial skills in the graduate healthcare administration program to become an agile, adaptive leader.

Healthcare administrators manage complex organizations that serve diverse individual and community needs. The master's degree program in healthcare administration is designed to develop leaders in this dynamic field that touches all of us. In this program, you can gain the expert knowledge, management skills, and strong professional development you need to seize career opportunities and maximize your potential in this era of rapid healthcare transformation.

UMUC is nationally recognized as a leader in online graduate healthcare programs. By actively participating in national-level discussions that shape healthcare education, we help to ensure that your UMUC degree is recognized, relevant, and respected.

What You'll Learn

Through your coursework, you will learn how to

- Demonstrate knowledge of different models in healthcare administration, including contemporary theories, critical perspectives, and best practices for performance excellence in a highly competitive healthcare environment
- Apply strong financial management skills, including techniques for responding to uncompensated care, cost increases, increased competition, and increased regulation
- Use statistical tools to analyze health data and make effective business decisions
- Use decision-making skills for institutional management, organizational development, and intercultural work environments
- Strategically plan, implement, and evaluate information systems
- Evaluate regulatory constraints, provider liability, patient rights, employment law and labor relations, and administrative law for healthcare organizations
- Analyze public health issues and their impact on health care organizations
- Solve ongoing problems in healthcare financing and delivery

Career Preparation

This program is designed to help prepare you for a leadership role in a dynamic sector. Potential career opportunities include department management, health systems analysis, legislative work, and executive leadership in the private sector, professional societies, nonprofit organizations, the military, and all levels of government.

Your Coursework

The healthcare administration curriculum features emerging topics in the field. Our faculty lend their extensive field experience, and we build in opportunities for you to network with employers through your coursework.

Coursework Examples

In past projects, students have had the opportunity to

- Interview key healthcare professionals about current and future trends in the healthcare marketplace
- Develop a strategic plan and budget for improving the delivery of care
- Analyze the implications of evolving statutes and regulations on healthcare costs, access, and quality
- Contact a public health agency to analyze and give a presentation on a public health program or policy

Industry Certification

This program can help prepare you for the Board of Governors examination for certification as a Fellow of the American College of Healthcare Executives (FACHE).

Honor Society

Information on eligibility for membership in the UMUC chapter of Upsilon Phi Delta, the national academic honor society of the Association of University Programs in Health Administration, is available on p. 142.

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HEALTHCARE AND SCIENCE PROGRAMS

MS IN HEALTHCARE ADMINISTRATION

Required Management Foundation Courses	**6**
Required Healthcare Administration Courses	**33**
Required Capstone Course	**3**
Total Credits	**42**

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before HIMS 650. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Healthcare Administration

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED MANAGEMENT FOUNDATION COURSES

MGMT 615 Intercultural Communication and Leadership (3)
MGMT 640 Financial Decision Making for Managers (3)

REQUIRED HEALTHCARE ADMINISTRATION COURSES

HCAD 600 Introduction to Healthcare Administration (3)
HCAD 610 Information Technology for Healthcare Administration (3)
HCAD 620 The U.S. Healthcare System (3)
HCAD 625 The Business of Healthcare (3)
HCAD 630 Public Health Administration (3)
HCAD 635 Long-Term Care Administration (3)
HCAD 640 Financial Management for Healthcare Organizations (3)
HIMS 650 Research Methods for Healthcare Managers (3)
HCAD 650 Legal Aspects of Healthcare Administration (3)
HCAD 660 Healthcare Institutional Organization and Management (3)
HCAD 665 Strategic Issues in Healthcare Leadership (3)

REQUIRED CAPSTONE COURSE

HCAD 670 Healthcare Administration Capstone (3)

COURSE SEQUENCING

- You are strongly encouraged to take HCAD 600 and MGMT 615 as the first courses in the program.
- MGMT 615 is prerequisite to HCAD 660.
- MGMT 640 is prerequisite to HCAD 640.
- MGMT 640 and HIMS 650 should not be taken at the same time.
- You must complete 36 credits before enrolling in HCAD 670.

Related Certificate Program

Global Health Management

This program is offered jointly with the University of Maryland, Baltimore (UMB). The first two courses follow the UMB graduate academic calendar and use UMB's learning management system, while the initial requirement and final course follow the UMUC academic calendar and use UMUC's learning management system.

RECOMMENDED PREPARATION

Consult an advisor to determine whether you are academically or professionally prepared for this program.

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED COURSES

GHMT 610 Perspectives on Global Health (3)
GHMT 620 National and International Approaches to Healthcare Delivery (3)
GHMT 630 Strategic Management of Global Health Services (6)

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More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

MASTER OF SCIENCE IN HEALTH INFORMATICS ADMINISTRATION

Advance your healthcare career by building expertise and combining skills in three areas: healthcare, information systems and technology, and managerial and leadership sciences.

The cutting-edge health informatics administration program is taught by healthcare technology leaders and helps you develop the expertise to oversee the complex coordination of your organization's health informatics and administration needs.

If you are an experienced healthcare professional or an information technology professional working in a healthcare setting, or even if you are just looking to move into this exciting field, the health informatics administration program can help you obtain the practical knowledge needed to apply best practices in health informatics or information management within a dynamic healthcare environment.

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What You'll Learn

Through your coursework, you will learn how to

- Apply advanced knowledge of electronic health record systems, medical coding languages, and IT system security and interoperability
- Design, manage, and interpret health classification systems, healthcare databases, data warehouses, healthcare data sets, registries, electronic health records, and other mediums of health information systems
- Design and implement various health informatics and information management policies and procedures (e.g., those related to fraud and surveillance, data management, personnel management, data privacy, security and confidentiality, and clinical documentation improvement)
- Interpret and comply with various aspects of state and federal legal and regulatory standards (e.g., coding and revenue, privacy, security, federal employee labor laws, confidentiality, release of information, maintenance of health records, licensure, and accreditation)

Career Preparation

This program is designed to help prepare you for health informatics and information management within the dynamics of the healthcare environment. Career fields include clinical/health data analysis, clinical informatics, health information management, and health information/informatics consulting.

Your Coursework

Developed with input from employers, the courses in the graduate health informatics administration program feature projects with real data sets and guest speakers from the industry. Additionally, a board of industry leaders and employers advises our faculty to make sure our curriculum is covering emerging areas and staying relevant to you.

Coursework Examples

In past projects, students have had the opportunity to

- Construct a macro-level workflow process redesign depicting various positions conducive to a virtual enterprise information management landscape
- Develop a data quality management system assessment tool
- Design a comprehensive cultural competency training tool kit and business proposal to pitch the idea of developing an in-house language interpreter program
- Create a data breach notification letter to notify patients of a recent breach of data that affects a large integrated delivery system
- Create a project management plan to integrate the use of artificial intelligence
- Prepare a comprehensive healthcare finance fraud, abuse, and compliance program to establish a gateway between revenue and reimbursement practices and ensure ethical and professional adherence to applicable federal laws

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

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HEALTHCARE AND SCIENCE PROGRAMS

Industry Certification

This program can help prepare you for the following certification exams:

- Registered Health Information Administrator (RHIA)
- Certified Associate in Healthcare Information and Management (CAHIMS)
- Certified Professional in Healthcare Information and Management Systems (CPHIMS)

Program Accreditation

UMUC's MS in Health Informatics Administration is accredited by the Commission for Health Informatics and Information Management Education (CAHIIM). CAHIIM is an independent organization that accredits health informatics and health information management degree programs.

MS IN HEALTH INFORMATICS ADMINISTRATION	
Required Core Courses	**33**
Required Capstone Course	**3**
Total Credits	**36**

Preparation Recommended for Success

Expectations

Candidates for this program should have at least three years of professional work experience in a healthcare setting, preferably in information technology in a healthcare setting.

Recommendations

Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Health Informatics Administration

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

HCAD 600 Introduction to Healthcare Administration (3)
ITEC 610 Information Technology Foundations (3)
HIMS 655 Health Data Management (3)
INFA 610 Foundations of Information Security and Assurance (3)
HIMS 650 Research Methods for Healthcare Managers (3)
HCAD 640 Financial Management for Healthcare Organizations (3)
HCAD 650 Legal Aspects of Healthcare Administration (3)
HIMS 661 The Application of Information Technology in Healthcare Administration (3)
ITEC 640 Information Technology Project Management (3)
DBST 651 Relational Database Systems (3)
IMAT 637 IT Acquisitions Management (3)

REQUIRED CAPSTONE COURSE

HIMS 670 Health Informatics Administration Capstone (3)

COURSE SEQUENCING

- You are advised to take HCAD 600 and ITEC 610 first.
- You will benefit most by taking the courses in the order listed.
- You should have successfully completed a 3-credit course in financial decision making (with a minimum grade of C for an undergraduate course, B for a graduate course) before enrolling in HCAD 640.
- You must complete HIMS 655 before taking HIMS 650.
- You must have successfully completed 30 credits of program coursework, including HIMS 650, HIMS 655, and HIMS 661, before enrolling in HIMS 670.

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MASTER OF SCIENCE IN CLOUD COMPUTING ARCHITECTURE

Gain the skills and knowledge to design and operate the cloud computing platforms that will dominate the future.

The graduate program in cloud computing architecture is designed to equip you with the technical and management skills to effectively design, operate, and maintain cloud computing systems and help organizations transition to cloud-based solutions. You'll learn to strategically transform an organization's current infrastructure to one that efficiently delivers valuable services via the cloud. Through a broad understanding of cloud technology and its relationship to business processes, including financial management, procurement, and communications, you'll be able to design effective cloud environments—and ultimately become a strong asset in any organization.

What You'll Learn

Through your coursework, you will learn how to

- Explain cloud computing concepts and applicable benefits to business stakeholders
- Evaluate and assess the impact of cloud computing on service management
- Design effective cloud computing solutions that take into account an organization's structure, communications, and operational business processes, as well as financial management and cost model implications
- Manage the process of migrating and transitioning to a cloud environment
- Implement cloud computing architecture solutions that address cloud security and compliance fundamentals, deployment automation and elastic sizing of environments, and multitenant implications

Career Preparation

This program is designed to help prepare you for positions in cloud computing, computer network architecture, network and computer systems administration, information technology project management, and computer systems analysis.

Your Coursework

Courses in cloud computing architecture feature emerging topics in the field and offer opportunities to work with cloud technologies in hands-on applications.

Coursework Examples

In past projects, students have had the opportunity to

- Analyze the strengths and weaknesses of legacy IT systems and evaluate the value of transitioning to the cloud
- Determine the business requirements of an organization to guide the planning for a new cloud-based infrastructure
- Assess the capabilities of contractors and their services in the cloud ecosystem
- Design a new cloud-based network architecture for an organization
- Create and execute a project management plan to transition from the legacy system to the cloud-based system
- Manage the cloud-based system to keep it secure and operating at optimal capacity

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INFORMATION TECHNOLOGY PROGRAMS

MS IN CLOUD COMPUTING ARCHITECTURE

Required Core Courses	**36**
Total Credits	**36**

Preparation Recommended for Success

Expectations

The cloud computing architecture program is designed for students with academic or professional experience in information technology. This background may be acquired through noncredit preparatory coursework, listed below.

Recommendations

If you do not have any recent IT coursework or experience, you should take the noncredit course ASC 605 before taking any cloud computing courses. Taking ASC 601 is recommended to help improve writing skills.

Degree Requirements

MS in Cloud Computing Architecture

REQUIRED CORE COURSES

DCL 600	Decisive Thinking, Communicating, and Leading (6)
CCA 610	Cloud Services and Technologies (6)
CCA 620	Cloud Management (6)
CCA 630	Cloud Infrastructure Planning, Design, and Configurations (6)
CCA 640	Cloud Computing Implementations and Migrations (6)
CCA 670	Capstone: Cloud Computing Orchestration (6)

COURSE SEQUENCING

Courses must be taken in the order listed.

Criteria for Program Progression

You must complete each course with a grade of B or better to advance to the next course. (The grade of C is not available for these courses.) Your course syllabus will explain options for and consequences of requesting an Incomplete.

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MASTER OF SCIENCE IN DATA ANALYTICS

The state-of-the-art graduate data analytics program is designed with input from leading employers to give you a competitive advantage in the job market.

The master's degree program in data analytics is designed to meet the rising need for highly skilled professionals who can transform the growing amount of institutional data into valuable assets. You'll gain hands-on experience with a variety of analytical tools and learn how to manage and manipulate data, create data visualizations, and make strategic data-driven recommendations to influence business outcomes. By using industry knowledge and contextual understanding and questioning existing assumptions, you'll learn to uncover hidden solutions to business challenges, allowing your organization to build and sustain a long-term competitive advantage.

What You'll Learn

Through your coursework, you will learn how to

- Evaluate a business problem or opportunity to determine the extent to which data analytics can provide a viable solution and translate the business problem to a data analytics project
- Manage data analytics projects to ensure delivery of a successful data analytics initiative throughout its life cycle
- Create a data mining application specific to an individual domain or area (e.g., finance; cybersecurity; biological, medical, or scientific applications; or retail)
- Apply statistical and machine learning techniques for data analysis and interpret and communicate the results
- Transform large data sets into actionable information in an easy-to-understand format to support organizational decision making through the use of advanced analytical tools
- Apply big data analytics technology to a specific area such as healthcare; marketing; insurance; cybersecurity; or biological, medical, and scientific applications
- Evaluate the appropriate methods and tools for data analysis (including selecting a modeling approach, building a model using appropriate tools, validating the model, and deploying the model for prediction and analysis) in specific organizational contexts

Career Preparation

This program is designed to help prepare you for work in the high-demand field of data science and analysis in a public- or private-sector organization. Potential career fields include data mining, machine learning, and predictive modeling for large data sets.

Your Coursework

The curriculum for the master's degree in data analytics is crafted, reviewed, and updated by a team of advisors and industry experts to ensure that what you learn aligns with the trends and technologies in the workplace today. It covers advanced software tools and programming language, as well as the foundations and application of data mining, predictive modeling, and visual analytics using large data sets.

Coursework Examples

In past projects, students have had the opportunity to

- Plan, design, and implement the data mining process, including data extraction, data cleaning, data load, and transformation
- Identify and implement appropriate techniques for or approaches to a given situation for descriptive, predictive, and prescriptive analytics using wide a range of supervised and unsupervised data mining algorithms
- Evaluate the accuracy and performance of classifiers and predictors
- Integrate a data mining system with a database, distributed file system, or data warehouse system using emerging technology
- Identify and apply techniques for stream, time-series, social networks, and multirelational data mining
- Employ real-time analytics and business intelligence directly on massive-scale data, including stream data
- Identify and apply techniques for spatial, multimedia, text, web content, web structure, and web usage mining
- Apply modern technology for text processing, natural language processing, and cognitive computing

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

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INFORMATION TECHNOLOGY PROGRAMS

MS IN DATA ANALYTICS

Required Core Courses	**30**
Required Capstone Course	**6**
Total Credits	**36**

Admission Requirements

To be admitted to the program, you must meet the standard criteria for graduate admission (detailed on p. 146) and provide one of the following:

- Coursework (200-level or higher) in statistic and computer programming from a regionally accredited college or university (official transcript required) with a minimum grade of B. Coursework from other accredited universities will be considered on a case by-case basis.
- Industry certification such as IBM certification in Cognos, Risk Analytics, SPSS, SAS certification, Microsoft certification, Certified Analytics Professional, Certified Business Intelligence Professional, Certified Health Data Analyst

Note: The complete admission file must be reviewed before you can enroll in DATA 610.

Preparation Recommended for Success

Expectations

You are expected to have a background in software programming and statistics. This background may be acquired through noncredit preparatory coursework, listed below.

Recommendations

If you do not have recent coursework or experience in programming, you are strongly advised to take UCSP 635 and UCSP 636 (or their equivalent). If you don't have recent statistics experience, you should take UCSP 630. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Data Analytics

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

DATA 610 Decision Management Systems (6)
DATA 620 Data Management and Visualization (6)
DATA 630 Machine Learning (6)
DATA 640 Predictive Modeling (6)
DATA 650 Big Data Analytics (6)

REQUIRED CAPSTONE COURSE

DATA 670 Data Analytics Capstone (6)

COURSE SEQUENCING

Courses must be taken in the order listed.

Related Certificate Program

Foundations in Business Analytics

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED COURSES

DATA 610 Decision Management Systems (6)
DATA 620 Data Management and Visualization (6)

COURSE SEQUENCING

Courses must be taken in the order listed.

ADMISSION REQUIREMENTS

You must meet the same admission requirements as those for the degree in data analytics.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

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MASTER OF SCIENCE IN INFORMATION TECHNOLOGY

SPECIALIZATIONS IN

Database Systems Technology
Informatics
Project Management
Software Engineering
Systems Engineering
Telecommunications Management

CERTIFICATE IN

Project Management

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Gain a competitive advantage in the IT marketplace and develop specialized skills in high-tech management by pursuing a master's degree in information technology.

In UMUC's comprehensive graduate information technology program, you'll combine technical know-how with business savvy to gain a powerful IT skill set and maximum career flexibility. Whether you are new to the field, changing careers, or looking to move up, you'll find that the information technology program can boost your professional value.

We designed our information technology program with input from today's top employers to help you prepare for career advancement. Choose from specializations to tailor your education, prepare for certification, and develop highly marketable skills.

Degree Requirements

Specific course requirements are detailed under each specialization.

MS IN INFORMATION TECHNOLOGY: DATABASE SYSTEMS TECHNOLOGY SPECIALIZATION

Required Core Courses	12
Required Specialization Courses	24
Total Credits	36

Prepare to advance your career by learning the newest management methods and tools for today's data-driven world in the graduate database systems technology specialization.

A database systems technology specialization can prepare you to meet the demand for data professionals who can manage complex databases for large organizations. You'll develop expertise in relational and distributed databases and acquire the newest knowledge in data warehousing, mining, modeling, security, and other sought-after areas of database administration.

Prepare for a number of certifications and work on real-world projects in a respected graduate program as you build your professional value in this fast-growing field.

What You'll Learn

Through your coursework, you will learn how to

- Manage, mine, model, and warehouse data
- Utilize your database administration and security techniques and skills
- Use ETL for data warehousing
- Complete projects using Microsoft Project and Microsoft Visio
- Apply your skills in NoSQL, Oracle 12c, SQL, and UNIX to the professional environment

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

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INFORMATION TECHNOLOGY PROGRAMS

Career Preparation

This program is designed to help you prepare to manage complex databases for large organizations.

Your Coursework

The database systems technology specialization will give you thorough instruction on the design, development, and management of data technology and can help you develop the core competencies to conquer your career goals.

Coursework Examples

In past projects, students have had the opportunity to

- Create a distributed database solution
- Complete a database security project using Oracle 12c security features
- Create advanced databases using object-oriented modeling and NoSQL modeling for big data
- Create a database for a company to increase business proficiency; backup the database using Oracle tools; and monitor the database with different commands, including UNIX/Linux commands
- Mine industry data to solve real-world challenges, such as using census data or Amazon public data to extract useful patterns and predict events regarding society, nature, commerce, and the world economy

Industry Certification

This program can help prepare you for the following certification exams:

- ICCP Certified Data Management Professional (ICCP CDMP)
- Oracle Certified Professional (OCP)
- Oracle Database Administration (DBA)

Academic or Professional Preparation

If you do not have demonstrated experience or prior coursework in software programming, you may be required to complete additional coursework. Consult an advisor for more information.

Preparation Recommended for Success

Recommendation

Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Information Technology: Database Systems Technology Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

ITEC 625 Computer Systems Architecture (3)
ITEC 626 Information Systems Infrastructure (3)
ITEC 630 Information Systems Analysis, Modeling, and Design (3)
ITEC 640 Information Technology Project Management (3)

REQUIRED SPECIALIZATION COURSES

DBST 651 Relational Database Systems (3)
DBST 660 Advanced Data Modeling (3)
DBST 652 Advanced Relational/Object-Relational Database Systems (3)
DBST 663 Distributed Database Management Systems (3)
DBST 665 Data Warehouse Technologies (3)
DBST 667 Data Mining (3)
DBST 668 Database Security (3)
DBST 670 Database Systems Administration (3)

COURSE SEQUENCING

- ITEC 625 and ITEC 626 must be taken as the first two courses.
- You must complete 6 credits of core coursework before beginning specialization coursework.
- DBST 651 is prerequisite for all other specialization coursework and may not be taken concurrently with other specialization coursework.
- You must complete all other specialization coursework before taking DBST 670.

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INFORMATION TECHNOLOGY PROGRAMS

MS IN INFORMATION TECHNOLOGY: INFORMATICS SPECIALIZATION

Required Core Courses	**15**
Required Specialization Courses	**21**
Total Credits	**36**

Strengthen your technical skills as you learn the business of IT in an informatics specialization that can help accelerate your career growth.

The informatics specialization gives you a strong foundation in all major categories of IT management, so you can take your career in any direction you choose. Develop advanced skills in networking, security, software development, databases, web design, and IT acquisitions to become a valuable asset to any industry.

Whether you are new to the field, changing careers, or looking to move up in your current organization, you'll find that the informatics specialization can boost your professional value and open doors for you on the cutting edge of high tech.

What You'll Learn

Through your coursework, you will learn how to

- Design information systems, determine system requirements, understand modeling, make decisions, and develop and implement proposals
- Write system and software requirements, formal specification analyses, formal description reasonings, models of "standard" paradigms, and translations into formal notations
- Manage emerging technologies such as cloud computing, BYOD, and virtualization
- Write successful website development plans
- Design for the web using Java and CGI scripts, as well as usability best practices
- Develop web benchmarks, standards for representing common media formats, compression algorithms, file format translation tools, and hardware requirements and standards
- Ensure and manage information security, including risk and vulnerability analysis, security planning, and security architecture
- Apply legal, ethical, and privacy considerations to information assurance decisions
- Master techniques for relational database design, query optimization, concurrency control, recovery, and integrity
- Use a suite of development software, including rapid application development and agile development, Scrum, extreme programming, Evolutionary Project Management, lean software development, test-driven development, feature-driven development, Crystal solutions, Rational Unified Process, and other Unified Process methods
- Apply management practices related to the acquisition of IT systems, components, and services, including enterprise strategic planning, financial planning and budgeting, and integration

Career Preparation

This program is designed to help prepare you for work in all major areas of IT management, including networking, security, software development, databases, web design, and IT acquisitions.

Your Coursework

The specialization in informatics teaches you strong quantitative and managerial skills, as well as knowledge in information theory and best practices for developing a variety of systems and products.

Coursework Examples

In past projects, students have had the opportunity to

- Build a website that contains at least five different media/interactive components, including at least one video component adapted for a smartphone
- Execute an individual project based on templates and models related to the CMMI Acquisition Module from Carnegie Mellon's Software Engineering Institute

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INFORMATION TECHNOLOGY PROGRAMS

Preparation Recommended for Success

Recommendations

Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Information Technology: Informatics Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

ITEC 610 Information Technology Foundations (3)
ITEC 625 Computer Systems Architecture (3)
ITEC 626 Information Systems Infrastructure (3)
ITEC 630 Information Systems Analysis, Modeling, and Design (3)
ITEC 640 Information Technology Project Management (3)

REQUIRED SPECIALIZATION COURSES

SWEN 603 Modern Software Methodologies (3)
DBST 651 Relational Database Systems (3)
SWEN 645 Software Requirements (3)
INFA 610 Foundations of Information Security and Assurance (3)
IMAT 637 IT Acquisitions Management (3)
IMAT 639 Internet Multimedia Applications (3)
IMAT 670 Contemporary Topics in Informatics (3)

COURSE SEQUENCING

- ITEC 610 must be taken in the first term of coursework.
- You must complete 6 credits of core coursework before taking the first specialization course.

MS IN INFORMATION TECHNOLOGY: PROJECT MANAGEMENT SPECIALIZATION

Required Core Courses	**15**
Required Specialization Courses	**21**
Total Credits	**36**

Earn your master's degree in information technology with a specialization in project management to successfully lead large projects and grow your career advancement opportunities.

The project management specialization allows you to gain advanced IT management skills while building expertise for project management certification. Your specialization courses include project risk management, project procurement management, and advanced project methods, while your core IT courses give you the tools you need to take on leadership roles in today's technology-based work environments.

What You'll Learn

Through your coursework, you will learn how to

- Initiate, plan, track, and close projects
- Manage the schedule of a complex project on time and within budget, solving conflicts as they arise
- Perform quantitative analyses and manage risks involved in a complex project
- Apply advanced knowledge in computer systems architecture
- Analyze, design, and implement information systems
- Plan projects, build teams, and create and modify effective control mechanisms

Career Preparation

This program is designed to help prepare you for work in project coordination and management and, potentially, program management.

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INFORMATION TECHNOLOGY PROGRAMS

Your Coursework

The project management curriculum features a comprehensive project in an industry you select, so you can gain real-world experience. The curriculum covers project risk management, project procurement management, and quantitative methods in project management. You'll learn career-relevant skills you can apply immediately in the workplace.

Coursework Examples

In past projects, students have had the opportunity to

- Initiate, plan, track, and close projects
- Complete a team project using cash flow analysis, scheduling projects based on resource availability, resource leveling, expediting projects, quantitative risk analysis, and techniques for estimating actual versus expected project duration and cost
- Manage issues that adversely affect the successful scope, scheduling, control, and completion of a project

Industry Certification

This program can help prepare you for the following certification exams:

- Certified Associate in Project Management (CAPM)
- Project Management Professional (PMP)

Preparation Recommended for Success

Recommendations

Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Information Technology: Project Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

ITEC 610 Information Technology Foundations (3)
ITEC 625 Computer Systems Architecture (3)
ITEC 626 Information Systems Infrastructure (3)
ITEC 630 Information Systems Analysis, Modeling, and Design (3)
ITEC 640 Information Technology Project Management (3)

REQUIRED SPECIALIZATION COURSES

PMAN 634 Foundations of Project Management (3)
PMAN 635 Quantitative Methods in Project Management (3)
PMAN 637 Project Risk Management (3)
PMAN 638 Project Communication Management (3)
PMAN 639 Project Quality Management (3)
PMAN 641 Project Procurement Management (3)
PMAN 650 Financial and Strategic Management of Projects (3)

COURSE SEQUENCING

- ITEC 610 must be taken in the first term of coursework.
- You must complete 6 credits of core coursework before beginning specialization coursework.
- PMAN 634 is prerequisite to all other PMAN courses and must be taken as the first specialization course.
- ITEC 640 (or an approved course in finance) and MGMT 650 (or an approved course in statistics) must be taken before PMAN 635.
- PMAN 635 must be taken before PMAN 637, PMAN 639, and PMAN 650.

Program Recognition

UMUC's master's degree programs with project management specializations are recognized by the Global Accreditation Center (GAC) of the Project Management Institute (PMI).

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INFORMATION TECHNOLOGY PROGRAMS

Academic Relationship

Completing this program earns you the project management education hours required to sit for the Project Management Professional (PMP) Credential Examination or the Certified Associate in Project Management (CAPM) Exam. If you are already certified as a Project Management Professional by the Project Management Institute, you may receive credit for PMAN 634 Foundations of Project Management if you begin study for the master's degree within five years of earning certification. Graduate advisors can provide more information.

Related Certificate Program

Project Management

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED COURSES

PMAN 634 Foundations of Project Management (3)
PMAN 635 Quantitative Methods in Project Management (3)
PMAN 637 Project Risk Management (3)
PMAN 638 Project Communication Management (3)
PMAN 639 Project Quality Management (3)

COURSE SEQUENCING

- PMAN 634 is prerequisite to all other PMAN courses and must be taken as the first certificate course.
- MGMT 640 or ITEC 640 (or an approved course in finance) and MGMT 650 (or an approved course in statistics) must be taken before PMAN 635.
- PMAN 635 must be taken before PMAN 637 and PMAN 639.

MS IN INFORMATION TECHNOLOGY: SOFTWARE ENGINEERING SPECIALIZATION

Required Core Courses	**9**
Required Specialization Courses	**27**
Total Credits	**36**

Earn your master's degree in information technology with a specialization in software engineering to build large, complex systems—as well as an executive-track career.

The software engineering specialization provides software developers with advanced software methodology, design, and coding techniques. You'll learn aspect-oriented programming, object-oriented programming, and the principles and techniques to lead a software development team.

Gain hands-on experience performing all functions of building software and develop job-relevant expertise in implementing large software engineering projects within cost and on schedule. The software engineering courses include usability engineering, software design and implementation, software verification and validation, and more.

What You'll Learn

Through your coursework, you will learn how to

- Write a software requirements document
- Design software using UML models
- Develop and test software
- Apply advanced knowledge in computer systems architecture
- Manage the schedule of a complex project on time and within budget, solving conflicts as they arise
- Analyze, design, and implement information systems
- Plan projects, build teams, and create and modify effective control mechanisms

Career Preparation

This program is designed to help you prepare for work in the implementation of large software engineering projects.

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INFORMATION TECHNOLOGY PROGRAMS

Your Coursework

The software engineering curriculum features projects sponsored by real clients, so you can build software engineering skills to apply immediately on the job.

Coursework Examples

In past projects, students have had the opportunity to

- Complete the development of a corporate-sponsored project through its entire life cycle
- Build software products using object-oriented programming and aspect-oriented programming
- Evaluate user interfaces using contextual inquiry, task analysis, and usability testing

Preparation Recommended for Success

Expectations

The software engineering specialization is designed for students with a degree and/or professional experience in software development and programming languages. This background may be acquired through noncredit preparatory coursework, listed below.

Recommendations

If you have not had any recent programming coursework or have experience in old programming languages such as COBOL or RPG, you are strongly encouraged to take UCSP 635 and UCSP 636 before taking any SWEN courses. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Information Technology: Software Engineering Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

ITEC 625 Computer Systems Architecture (3)
ITEC 630 Information Systems Analysis, Modeling, and Design (3)
ITEC 640 Information Technology Project Management (3)

REQUIRED SPECIALIZATION COURSES

SWEN 603 Modern Software Methodologies (3)
DBST 651 Relational Database Systems (3)
SWEN 646 Software Design and Implementation (3)
SWEN 656 Advanced Software Design and Implementation (3)
SWEN 645 Software Requirements (3)
SWEN 647 Software Verification and Validation (3)
SWEN 651 Usability Engineering (3)
SWEN 661 User Interface Implementation (3)
SWEN 670 Software Engineering Project (3)

COURSE SEQUENCING

SWEN 670 must be taken in the last term of enrollment.

Program Recognition

UMUC's MS in Information Technology with a specialization in software engineering has been designated a Professional Science Master's degree program through the Council of Graduate Schools.

MS IN INFORMATION TECHNOLOGY: SYSTEMS ENGINEERING SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**24**
Total Credits	**36**

Earn your master's degree in information technology with a specialization in systems engineering to learn the design, development, and deployment of complex systems—and prepare for broader responsibility in a range of industries.

The systems engineering specialization can help you apply traditional and modern life-cycle models, techniques, and tools in the specification, design, development, and deployment of complex systems. The specialization is designed for midcareer professionals with a technical background who are seeking to enhance their skills in systems engineering theory and practice.

You'll study a variety of cases across different application domains to learn the wide scope of systems concepts. Courses

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

INFORMATION TECHNOLOGY PROGRAMS

include requirements engineering, system design and development, model-based systems engineering, system integration and testing, system engineering management, and more.

What You'll Learn

Through your coursework, you will learn how to

- Organize and manage a systems engineering team
- Apply a wide variety of domestic and international standards to systems engineering practice
- Use various computer-aided design and testing tools

Career Preparation

This program is designed to help prepare you for work in systems engineering theory and practice.

Your Coursework

The systems engineering specialization within the master's degree in information technology features projects involving real clients, so you'll learn systems engineering skills you can apply immediately on the job.

Coursework Examples

In past projects, students have had the opportunity to

- Develop a system requirements document
- Break down a complex system into manageable subsystems
- Specify strategies for verifying and validating that the overall system meets requirements

Industry Certification

This program can help prepare you for the International Council on Systems Engineering (INCOSE) certification exams.

Preparation Recommended for Success

Expectations

The systems engineering specialization is designed for students with a degree and/or professional experience in a technical discipline such as engineering or computer science.

Recommendations

Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Information Technology: Systems Engineering Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

ITEC 610 Information Technology Foundations (3)
ITEC 625 Computer Systems Architecture (3)
ITEC 626 Information Systems Infrastructure (3)
ITEC 630 Information Systems Analysis, Modeling, and Design (3)

REQUIRED SPECIALIZATION COURSES

SYSE 610 Systems Engineering Overview (3)
SYSE 620 Requirements Engineering (3)
SYSE 625 Model-Based Systems Engineering (3)
SYSE 630 System Design and Development (3)
SYSE 640 System Integration and Test (3)
SYSE 650 Design Considerations (3)
SYSE 660 Systems Engineering Management (3)
SYSE 670 Systems Engineering Capstone (3)

COURSE SEQUENCING

- ITEC 610 must be taken in the first term of coursework.
- You must complete 6 credits of core coursework before beginning specialization coursework.
- Specialization courses must be taken in the order listed.
- You must take SYSE 670 in your final term.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

INFORMATION TECHNOLOGY PROGRAMS

MS IN INFORMATION TECHNOLOGY: TELECOMMUNICATIONS MANAGEMENT SPECIALIZATION

Required Core Courses	**15**
Required Specialization Courses	**21**
Total Credits	**36**

Advance your IT career in a master's degree program in information technology with a telecommunications management specialization that combines business savvy and technical skills essential for managing telecommunication systems.

The telecommunications management specialization is designed to provide you not only with technical knowledge and understanding of the structure and environment of the telecommunications industry but also with critical management concepts, such as strategic planning, financial management, and quality improvement.

Courses in the telecommunications management specialization cover telecommunications networks, satellite communication systems, network management and design, wireless telecommunication systems, and more. The specialization includes instruction on network technologies, network design, satellite communications, wireless telecommunications, mobile cloud, and other job-relevant topics.

What You'll Learn

Through your coursework, you will learn how to

- Manage networks using strategies for network planning, implementation, management, and security
- Manage the schedule of a complex telecommunications project, including conflicts that arise
- Speak fluently about the market trends, regulations, and standards in telecommunications
- Become fluent in cellular communication principles, coding, antenna and propagation effects, channel access schemes, traffic engineering, and wireless network design
- Apply advanced knowledge in computer systems architecture
- Manage the schedule of a complex project on time and within budget, solving conflicts as they arise
- Analyze, design, and implement information systems
- Plan projects, build teams, and create and modify effective control mechanisms

Career Preparation

This program is designed to help you prepare for work in network architecture design and management in areas such as telecommunications/sensor networks, satellite communication systems, and optical and wireless telecommunication systems.

Your Coursework

The telecommunications management specialization features guest speakers from telecommunications industries and projects sponsored by real clients, so you'll build telecommunications management skills you can apply immediately in the workplace.

Coursework Examples

In past projects, students have had the opportunity to

- Craft a global Cisco strategy for the Washington, D.C., Metrorail system
- Analyze Cisco productivity returns, cost savings, and green implications of virtualization technologies in government
- Build a business case for Cisco for delivering IPv6 connectivity and services to the consumer market
- Build a business case and conduct market research on network/WAN management tools for GTSI
- Assess the information security of a non-LAN network for GTSI and make recommendations
- Create a smart grid for Maravedis with a new utility and new carrier
- Work on an unmanned aerial systems maintenance certification process for the Federal Aviation Administration (FAA)
- Analyze mobile object technology for the FAA's SWIM Team
- Perform an FAA SWIM cloud suitability assessment
- Conduct a survey for the National Institute of Standards and Technology on commercial AC products to see how those products support NIST SP 800-162

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- Analyze standards or schemes (such as XACML and SMAL) for their capabilities to support enterprise ABAC implementation
- Create complex AC policies to test ACPT functions for the ABAC model

Preparation Recommended for Success

Expectations

You are expected to have some background in information technology.

Recommendations

Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Information Technology: Telecommunications Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

ITEC 610 Information Technology Foundations (3)
ITEC 625 Computer Systems Architecture (3)
ITEC 626 Information Systems Infrastructure (3)
ITEC 630 Information Systems Analysis, Modeling, and Design (3)
ITEC 640 Information Technology Project Management (3)

REQUIRED SPECIALIZATION COURSES

TLMN 602 Telecommunications Industry: Structure and Environment (3)
TLMN 623 Telecommunications Networks (3)
TLMN 630 Satellite Communication Systems (3)
TLMN 641 Network Management and Design (3)
TLMN 645 Wireless Telecommunications Systems (3)
INFA 620 Network and Internet Security (3)
TLMN 670 Capstone Course in Telecommunications Management (3)

COURSE SEQUENCING

- ITEC 610 must be taken in the first term of coursework.
- You must complete 6 credits of core coursework before beginning specialization coursework.
- ITEC 626 should be taken before any specialization courses.
- You must complete 27 credits of program coursework before taking TLMN 670; availability of the capstone course is provided online at *umuc.edu/telecom.*

Program Recognition

UMUC's MS in Information Technology with a specialization in telecommunications management has been designated a Professional Science Master's degree program through the Council of Graduate Schools.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

MASTER OF SCIENCE IN MANAGEMENT

Compete for today's—and tomorrow's—jobs with a career-focused master's degree in management.

The master's degree program in management allows you to combine a broad management education with specific knowledge for your field or industry. We design our graduate management degree program with input from today's top employers to provide you with decision-making skills, real-world experience, and a firm foundation for career advancement.

MS IN MANAGEMENT: INFORMATION SYSTEMS AND SERVICES SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**21**
Required Capstone Course	**3**
Total Credits	**36**

Learn how to integrate and use information systems to create value within your organization by pursuing a master's degree in management with a specialization in information systems and services.

The information systems and services specialization teaches you how to procure and use computer-based information systems for decision making and organizational effectiveness. This specialization is designed for professionals who have little or no experience with computers, as well as those with advanced computer skills.

What You'll Learn

Through your coursework, you will learn how to

- Make IT decisions using statistics and financial information
- Use organizational theory, effectiveness measurement, and systems thinking to solve problems
- Manage intercultural environments
- Use advanced project management skills
- Develop databases
- Analyze systems
- Outsource appropriate tasks

Career Preparation

This program is designed to help you prepare to move into management positions that include responsibility for information systems.

Your Coursework

The curriculum in information systems and services uses case studies of companies in real situations, so you're learning practical skills and knowledge that you can immediately apply at work. In addition to building a strong technological foundation, you'll learn about the interaction of technology, organizational behavior, strategic planning, project management, and systems analysis methods used to support an organization through its information systems.

Coursework Examples

In past projects, students have had the opportunity to

- Create an IT database based on real-world circumstances
- Review case studies for analysis and evaluation
- Use decision support tools to assist in decision making
- Design web pages using standards for representing common media formats, compression algorithms, file format translation tools, hardware requirements and standards, system constraints, Java, CGI scripts, and virtual reality

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to help improve writing skills.

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

INFORMATION TECHNOLOGY PROGRAMS

Degree Requirements

MS in Management: Information Systems and Services Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

ISAS 600 Information Systems for Managers (3)
ISAS 610 Information Systems Management and Integration (3)
ISAS 620 Information Systems Sourcing Management (3)
ISAS 630 Systems Analysis and Design (3)
ISAS 640 Decision Support Systems and Expert Systems (3)
ISAS 650 Information Technology, the CIO, and Organizational Transformation (3)
IMAT 639 Internet Multimedia Applications (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

ALTERNATE COURSES

MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- ISAS 600 should be taken before any other ISAS courses.
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

MARKETING AND COMMUNICATION PROGRAMS

MASTER OF SCIENCE IN MANAGEMENT

SPECIALIZATIONS IN

Marketing

Public Relations

Compete for today's—and tomorrow's—jobs with a career-focused master's degree in management.

The master's degree program in management allows you to combine a broad management education with specific knowledge for your field or industry. We design our graduate management degree program with input from today's top employers to provide you with decision-making skills, real-world experience, and a firm foundation for career advancement.

Degree Requirements

Specific course requirements are detailed under each specialization.

MS IN MANAGEMENT: MARKETING SPECIALIZATION

Required Core Courses	12
Required Specialization Courses	21
Required Capstone Course	3
Total Credits	36

Develop your marketing expertise and gain leading-edge management skills by pursuing a master's degree in management with a specialization in marketing.

The specialization in marketing can help you move toward a senior position with leadership skills essential to the core function of every organization, public or private. Whether you're new to marketing, looking to move up, or changing careers, you'll learn the latest marketing strategies, as well as the foundations of solid management practice, to gain an edge in the job market.

What You'll Learn

Through your coursework, you will learn how to

- Develop marketing strategies and plans effectively
- Develop creative strategies that communicate successfully with prospects
- Assess the effectiveness of a marketing program and develop recommendations for improvement
- Choose between many media options and use media effectively to achieve results
- Understand and implement research design
- Apply ethical principles in business situations

Career Preparation

This program is designed to help prepare you for a senior-level marketing position in the private and public sectors, leading consumer-focused and business-to-business organizations.

Your Coursework

The curriculum for the marketing specialization includes courses in brand management, consumer behavior, direct marketing, international marketing, legal and ethical issues in global communication, marketing management, and marketing research. Coursework also covers data mining, data analysis, digital marketing, and elements of marketing analytics.

Coursework Examples

In past projects, students have had the opportunity to

- Prepare a marketing plan for a real-world product or solution
- Complete a consumer experience project focused on ethical marketing tactics
- Perform consumer market research with real consumers to collect primary data and make strategic recommendations for a company
- Calculate direct marketing metrics such as response rate, profit, ROI, and break-even for a direct marketing program

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

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MARKETING AND COMMUNICATION PROGRAMS

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Management: Marketing Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

MRKT 600 Marketing Management (3)
MRKT 601 Legal and Ethical Issues in Global Communications (3)
MRKT 602 Consumer Behavior (3)
MRKT 603 Brand Management (3)
MRKT 604 Marketing Intelligence and Research Systems (3)
MRKT 605 International Marketing Management (3)
MRKT 606 Integrated Direct Marketing (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

ALTERNATE COURSES

- MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.
- MRKT 620 Marketing Principles, Regulation, and Ethical Issues (6) may be taken instead of MRKT 600 and MRKT 601.

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- You must complete MRKT 600 and MRKT 601 (or MRKT 620) as your first specialization course(s).
- MGMT 650 must be completed before MRKT 604 and MRKT 606.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.

MS IN MANAGEMENT: PUBLIC RELATIONS SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**21**
Required Capstone Course	**3**
Total Credits	**36**

Develop your expertise as a strategic communications professional and organizational leader in a master's degree program in management with a specialization in public relations.

The public relations specialization helps you build your expertise in public relations and develop advanced business management and organizational leadership skills, helping you prepare for PR certification. You'll gain a solid grounding in PR theory, campaign strategies, legal and ethical PR issues, and the analytic and creative skills necessary to excel in the profession. Combine this with your core management courses, and you'll develop all the right tools to take on leadership roles in today's strategic communications workplace.

What You'll Learn

Through your coursework, you will learn how to

- Assess public relations performance at the individual, group, and organization levels
- Develop, launch, and lead public relations campaigns featuring a variety of messages custom designed for various channels
- Understand the ethical and legal issues in public relations management
- Write effectively and persuasively

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

MARKETING AND COMMUNICATION PROGRAMS

Career Preparation

This program is designed to help prepare you for a leadership role in communications campaigns, global communications, strategy, ethical practice and issues, and crisis communication management.

Your Coursework

The curriculum for the specialization in public relations has been developed in conjunction with industry executives to ensure you are training for the highest level of PR strategy. In your courses, you'll learn about public relations strategy development, tactical planning and execution, social media monitoring, and crisis communications.

Coursework Examples

In past projects, students have had the opportunity to

- Prepare public relations content
- Develop a crisis communication plan in response to a real-world issue
- Develop a proposal for a public relations campaign for a client organization

Industry Certification

This program can help prepare you for the Accredited in Public Relations (APR) panel presentation and written exam.

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Management: Public Relations Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

PRPA 600 Public Relations Writing (3)
MRKT 600 Marketing Management (3)
PRPA 601 Public Relations Theory and Practice (3)
PRPA 602 Public Relations Techniques (3)
PRPA 610 Crisis Communication Management (3)
PRPA 620 Global Public Relations (3)
PRPA 650 Public Relations Campaigns (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

ALTERNATE COURSES

MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- PRPA 600 is prerequisite to all other specialization courses and must be taken first.
- PRPA 601 is prerequisite to PRPA 602.
- PRPA 602 is prerequisite to PRPA 610 and PRPA 620.
- You must complete all program coursework (except MGMT 670) before taking PRPA 650.
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.

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MASTER OF SCIENCE IN INFORMATION TECHNOLOGY

Gain a competitive advantage in the IT marketplace and develop specialized skills in high-tech management by pursuing a master's degree in information technology.

In UMUC's comprehensive graduate information technology program, you'll combine technical know-how with business savvy to gain a powerful IT skill set and maximum career flexibility. Whether you are new to the field, changing careers, or looking to move up, you'll find the information technology program can boost your professional value.

The information technology program was designed with input from today's top employers to help you prepare for career advancement. Choose from specializations to tailor your education, prepare for certification, and develop highly marketable skills.

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MS IN INFORMATION TECHNOLOGY: HOMELAND SECURITY MANAGEMENT SPECIALIZATION

Required Core Courses	**15**
Required Specialization Courses	**21**
Total Credits	**36**

Combine advanced IT skills with leading-edge tactics in a homeland security management specialization that prepares you to protect critical infrastructure.

The graduate specialization in homeland security management can help prepare you to take a leadership role in protecting against natural and human-made threats to national security. Gain practical, management-level experience in performing security risk assessments; planning for and managing operational recovery; and developing strategies to protect people, facilities, and information-dependent critical infrastructure.

Perfect for midcareer professionals, the homeland security management specialization features courses in finance for technology managers, cybersecurity, emergency management, and bioterrorism, as well as courses that strengthen your core knowledge of IT systems and project management.

What You'll Learn

Through your coursework, you will learn how to

- Tackle the five mission areas in homeland security as defined by the U.S. Department of Homeland Security
- Perform risk assessments
- Spot ethical and legal issues and navigate the complex legal and regulatory environment related to computer systems, applications, and networks
- Protect telecommunications and information technology networks
- Analyze infrastructure protection, jurisdiction, and issues in technical areas such as interconnectivity and interoperability
- Plan and prepare for disaster response and recovery
- Apply knowledge about energy pipeline security, electrical grid security, cyber dependence, and SCADA systems, as well as risk methodologies applied to the energy industry
- Use high-tech management styles, including project planning, organizational structure, team building, and control mechanisms
- Manage each phase of the IT project life cycle, working within organizational and cost constraints, setting goals linked directly to stakeholder needs, and using proven management tools

Career Preparation

This program is designed to help prepare you to take a leadership role in protecting against natural and human-induced threats to homeland security.

Your Coursework

The curriculum in the homeland security management specialization can help you build practical skills to make you an indispensable member of any team. You'll use real data from real

Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

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PUBLIC SAFETY AND INTELLIGENCE PROGRAMS

crises in your assignments and projects and practice making executive-level decisions, so your coursework is always preparing you for the real world of homeland security management.

Coursework Examples

In past projects, students have had the opportunity to

- Use one of the Department of Homeland Security's daily summaries of current critical infrastructure issues to write a post highlighting the more significant items for a "What Keeps DHS Officials Awake at Night" discussion
- Write a job description for a chief risk officer that includes the resilience, response, and recovery skills required for the job
- Analyze one of the critical infrastructures designated by DHS and make recommendations on ways to protect and ensure the continued availability of services from this infrastructure

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620. If you lack a recent background in statistics, you should take UCSP 630. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Information Technology: Homeland Security Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

ITEC 610 Information Technology Foundations (3)
ITEC 625 Computer Systems Architecture (3)
ITEC 626 Information Systems Infrastructure (3)
ITEC 630 Information Systems Analysis, Modeling, and Design (3)
ITEC 640 Information Technology Project Management (3)

REQUIRED SPECIALIZATION COURSES

HSMN 610 Concepts in Homeland Security (3)
HSMN 625 Critical Infrastructures (3)
HSMN 630 Resilience Planning and Preparedness for Disaster Response and Recovery (3)
INFA 660 The Law, Regulation, and Ethics of Information Assurance (3)
BSBD 641 Biosecurity and Bioterrorism (3)
EMAN 620 Information Technology in Emergency Management (3)
HSMN 670 Seminar in Homeland Security (3)

COURSE SEQUENCING

- ITEC 610 must be taken in the first term of coursework.
- HSMN 610 must be taken as one of the first two specialization courses.
- HSMN 670 must be taken in your last semester.

Academic Relationship

An articulation agreement between The Graduate School and UMUC's Undergraduate School allows students who completed their undergraduate degree at UMUC with a major in homeland security to reduce their total coursework for the graduate degree by up to 6 credits (two courses). Details are on p. 91.

Related Certificate Program

Homeland Security Management

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED COURSES

HSMN 610 Concepts in Homeland Security (3)
HSMN 625 Critical Infrastructures (3)
HSMN 630 Resilience Planning and Preparedness for Disaster Response and Recovery (3)
INFA 660 The Law, Regulation, and Ethics of Information Assurance (3)
EMAN 620 Information Technology in Emergency Management (3)

COURSE SEQUENCING

HSMN 610 must be taken as one of the first two courses in the program.

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PUBLIC SAFETY AND INTELLIGENCE PROGRAMS

MASTER OF SCIENCE IN MANAGEMENT

SPECIALIZATIONS IN

Criminal Justice Management
Emergency Management
Homeland Security Management
Intelligence Management

CERTIFICATE IN

Homeland Security Management

Compete for today's—and tomorrow's—jobs with a career-focused master's degree in management.

The master's degree program in management allows you to combine a broad management education with specific knowledge for your field or industry. We design our graduate management degree program with input from today's top employers to provide you with decision-making skills, real-world experience, and a firm foundation for career advancement.

Degree Requirements

Specific course requirements are detailed under each specialization.

MS IN MANAGEMENT: CRIMINAL JUSTICE MANAGEMENT SPECIALIZATION

Required Core Courses	12
Required Specialization Courses	21
Required Capstone Course	3
Total Credits	**36**

The award-winning criminal justice management specialization can teach you advanced skills in administration, leadership, and collaboration to boost your career.

In the criminal justice management specialization, you'll obtain advanced knowledge of crime prevention, law enforcement, investigative forensics, and crisis management—as well as strong skills in business management. This specialization can help you learn to effectively manage large teams, departments, and bureaus across the criminal justice profession.

What You'll Learn

Through your coursework, you will learn how to

- Design criminal justice programs
- Analyze threats and assess risks
- Conduct vulnerability studies
- Apply legal knowledge to criminal justice management
- Lead and manage organizations
- Communicate, report, and write professionally and effectively

Career Preparation

This program is designed to help prepare you to apply broad management principles to work in areas such as crime prevention, law enforcement, investigative forensics, and crisis management.

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Course descriptions are found on pp. 95–134. Before enrolling, check **umuc.edu/catalogs** for possible updates to program offerings.

More information about certificates, including gainful employment disclosures, is available at **umuc.edu/gradcertificates.**

PUBLIC SAFETY AND INTELLIGENCE PROGRAMS

Your Coursework

The criminal justice management curriculum features case studies of real criminal justice management issues to help you build skills you can apply immediately in the workplace.

Coursework Examples

In past projects, students have had the opportunity to

- Design a police department and corrections facility
- Write a variety of reports at varying levels of detail
- Address ethical situations in the workplace

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Management: Criminal Justice Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

CJMS 600 Critical Analysis of the Criminal Justice System (3)
CJMS 610 Perspectives in Law Enforcement Management (3)
CJMS 620 Issues in Correctional Administration (3)
CJMS 630 Seminar in Security Management (3)
CJMS 640 Criminal Justice Intelligence Systems and Approaches (3)
CJMS 650 Legal Aspects Within the Criminal Justice System (3)
CJMS 660 Issues in Criminal Justice Leadership (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

ALTERNATE COURSES

MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- Specialization courses should be taken in the order listed.
- CJMS 600 must be taken as the first specialization course.
- CJMS 660 must be taken after all specialization and core courses (except MGMT 670).
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.

Academic Relationship

An articulation agreement between The Graduate School and UMUC's Undergraduate School allows students who completed their undergraduate degree at UMUC with a major in criminal justice to reduce their total coursework for the graduate degree by up to 6 credits (two courses) and complete both degrees with a total of 150 credits of coursework.

The Graduate School will accept the following toward the completion of the MS in Management with a specialization in criminal justice management for a maximum of 6 credits:

- CCJS 495 Issues in Criminal Justice instead of CJMS 600 Critical Analysis of the Criminal Justice System
- CCJS 497 Correctional Administration instead of CJMS 620 Issues in Correctional Administration

The substitutions listed above are the only ones possible. Note that a minimum grade of B must be earned in each undergraduate course for the credits to be accepted at the graduate level. Eligible credits must have been completed no earlier than two years before the beginning of graduate studies. Admission requirements and time limits for degree completion apply to all applicants.

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PUBLIC SAFETY AND INTELLIGENCE PROGRAMS

MS IN MANAGEMENT: EMERGENCY MANAGEMENT SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**21**
Required Capstone Course	**3**
Total Credits	**36**

Combine advanced leadership skills with leading-edge operational tactics in the dynamic master's degree program in management with a specialization in emergency management.

The emergency management specialization helps you master the five mission areas of the National Preparedness Goal (prevention, protection, mitigation, response, and recovery) and take a leadership role in protecting organizations against major crises and disasters. Gain practical, management-level experience in performing security risk assessments; planning and managing prevention, deterrence, protection, response, and operational recovery; and developing strategies to secure people and critical assets from natural or human-made threats.

Perfect for midcareer professionals, the emergency management specialization features coursework in financial analysis for managers, organizational theory, vulnerability assessments, IT in emergency management, and crisis communication, as well as courses that strengthen your core knowledge of management skills. Previous field experience in emergency management is not required for the program.

What You'll Learn

Through your coursework, you will learn how to

- Communicate clearly, both orally and in writing
- Apply logical processes to formulate clear, defensible ideas and draw conclusions based on ethical implications
- Use mathematical information, operations, and quantitative analyses to solve problems and inform decision making
- Lead, facilitate, and collaborate with a variety of individuals and diverse teams to achieve organizational objectives
- Describe current and emerging threats, including terrorism and technological and natural disasters; the social, cultural, psychological, political, and operational dynamics of threats; and the evolution and basic principles of critical infrastructure protection, processes, and techniques
- Trace the history of various incidents and threats and assess the risks and vulnerabilities associated with each
- Assess threats and risks for facilities, entities, and communities and perform impact analysis
- Define types of incidents and threats, the historical phases and dimensions of technical systems, and standards that frame the operating environment
- Demonstrate a range of project management skills, from program to human resource management to financial, data, and information management
- Write, communicate, and implement emergency operations plans
- Construct discussion-based and operations-based exer-cises, based on national, state, or local requirements and the principles of the Homeland Security Exercise and Evaluation Program and the National Standard Exercise Curriculum, in response to an after-action review or as a test of core capabilities
- Discover and use specific applications of advanced technologies, systems, and services for protection, response, recovery, and resilience, as well as disaster preparedness exercises and developmental and operational scenarios
- Understand the laws, authorities, regulations, policies, and ethical concerns related to emergency management issues and operations and the importance of public stewardship and science-based approaches
- Interpret data and determine solutions based on data; resources; and the legal, organizational, and social operating environment
- Understand the principles of leading, motivating, and managing others within an organization to establish and achieve strategic and operational goals

Career Preparation

This program is designed to help prepare you for work in hazard risk assessment; prevention, response, recovery, and mitigation planning and management; and strategy development to secure people, communities, and the built environment from natural or human-induced threats.

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PUBLIC SAFETY AND INTELLIGENCE PROGRAMS

Your Coursework

The curriculum in the emergency management specialization helps teach you practical skills that can make you an asset to organizations planning for emergencies. You'll use data from real crises in assignments and projects and practice making executive-level decisions, so you can apply what you're learning to the field of crisis management right away.

Coursework Examples

In past projects, students have had the opportunity to

- Complete a risk assessment of an urban area
- Identify property and people at risk during a disaster scenario in a large population area
- Determine pre-loss activity and resources to reduce loss to specific critical infrastructures
- Design a plan for a specific ethnic or economically disadvantaged group within the community requiring special assistance during a disaster scenario

Industry Certification

This program can help prepare you for the Certified Emergency Manager (CEM) exam.

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Management: Emergency Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

EMAN 600 Comprehensive Crisis and Emergency Management (3)
EMAN 610 Hazard Risk and Vulnerability Assessment (3)
EMAN 620 Information Technology in Emergency Management (3)
HSMN 610 Concepts in Homeland Security (3)
HSMN 630 Resilience Planning and Preparedness for Disaster Response and Recovery (3)
EMAN 630 Crisis Communication for Emergency Managers (3)
EMAN 670 Seminar in Emergency Management Leadership (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

ALTERNATE COURSES

MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- EMAN 600 must be taken as one of the first two specialization courses.
- EMAN 670 must be taken in your last semester.
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.

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PUBLIC SAFETY AND INTELLIGENCE PROGRAMS

Academic Relationship

An articulation agreement between the Graduate School and UMUC's Undergraduate School allows students who completed their undergraduate degree at UMUC with courses in emergency management to reduce their total coursework for the graduate degree by up to 6 credits (two courses) and complete both degrees with a total of 150 credits of coursework.

The Graduate School will accept the following courses toward the completion of a specialization in emergency management within the MS in Management for a maximum of 6 credits:

- EMGT 302 Concepts in Emergency Management instead of EMAN 600 Comprehensive Crisis and Emergency Management
- EMGT 304 Emergency Response Preparedness and Planning instead of HSMN 630 Resilience Planning and Preparedness for Disaster Response and Recovery (3)

The substitutions listed above are the only ones possible. Note that a minimum grade of B must be earned in each undergraduate course for the credits to be accepted at the graduate level. Eligible credits must have been completed no earlier than two years before the beginning of graduate studies. Admission requirements and time limits for degree completion apply to all applicants.

MS IN MANAGEMENT: HOMELAND SECURITY MANAGEMENT SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**21**
Required Capstone Course	**3**
Total Credits	**36**

Prepare for a dynamic career protecting critical infrastructure by pursuing a master's degree in management with a specialization in homeland security management.

The specialization in homeland security management helps prepare you to take a leadership role in protecting against natural and human-made threats to U.S. security. Gain practical, management-level experience in performing security risk assessments; planning for and managing operational recovery; and developing strategies to protect people, facilities, and critical infrastructure.

What You'll Learn

Through your coursework, you will learn how to

- Tackle the five mission areas in homeland security as defined by the Department of Homeland Security
- Perform risk assessments
- Conduct resilience planning and preparedness for disaster response and recovery
- Apply risk methodologies to critical infrastructure sectors, including the energy industry
- Make decisions using statistics and financial information
- Use organizational theory, effectiveness measurement, and systems thinking
- Manage intercultural environments

Career Preparation

This program is designed to help prepare you to take a leadership role in protecting against natural and human-induced threats to homeland security.

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PUBLIC SAFETY AND INTELLIGENCE PROGRAMS

Your Coursework

Perfect for midcareer professionals, the specialization in homeland security management includes coursework in issues in emergency management, cybersecurity, bioterrorism, and energy security, as well as core courses in business management. You'll use real data from real crises in assignments and projects and practice making executive-level decisions.

Coursework Examples

In past projects, students have had the opportunity to

- Use one of the Department of Homeland Security's daily summaries of current critical infrastructure issues to write a hypothetical article
- Write a job description for a chief risk officer, including the resilience, response, and recovery skills required for the job
- Analyze one of the critical infrastructures designated by DHS and make recommendations on ways to protect and ensure continued availability of services from this infrastructure, providing your judgments together with experts' opinions

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to improve writing skills.

Degree Requirements

MS in Management: Homeland Security Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

HSMN 610 Concepts in Homeland Security (3)
HSMN 625 Critical Infrastructures (3)
HSMN 630 Resilience Planning and Preparedness for Disaster Response and Recovery (3)
INFA 660 The Law, Regulation, and Ethics of Information Assurance (3)
BSBD 641 Biosecurity and Bioterrorism (3)
EMAN 620 Information Technology in Emergency Management (3)
HSMN 670 Seminar in Homeland Security (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

ALTERNATE COURSES

MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- HSMN 610 must be taken as one of the first two specialization courses.
- HSMN 670 must be taken in your last semester.
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.

Academic Relationship

An articulation agreement between the Graduate School and UMUC's Undergraduate School allows students who completed their undergraduate degree at UMUC with a major in homeland security to reduce their total coursework for the graduate degree by up to 6 credits (two courses) and complete both degrees with a total of 150 credits of coursework.

The Graduate School will accept the following courses toward the completion of a specialization in homeland security within the MS in Management for a maximum of 6 credits:

- HMLS 302 Introduction to Homeland Security instead of HSMN 610 Concepts in Homeland Security
- HMLS 408 Infrastructure Security Issues instead of HSMN 625 Critical Infrastructures

The substitutions listed above are the only ones possible. Note that a minimum grade of B must be earned in each under-

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graduate course for the credits to be accepted at the graduate level. Eligible credits must have been completed no earlier than two years before the beginning of graduate studies. Admission requirements and time limits for degree completion apply to all applicants.

Related Certificate Program

Homeland Security Management

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED COURSES

HSMN 610 Concepts in Homeland Security (3)

HSMN 625 Critical Infrastructures (3)

HSMN 630 Resilience Planning and Preparedness for Disaster Response and Recovery (3)

INFA 660 The Law, Regulation, and Ethics of Information Assurance (3)

EMAN 620 Information Technology in Emergency Management (3)

COURSE SEQUENCING

HSMN 610 must be taken as one of the first two courses in the program.

MS IN MANAGEMENT: INTELLIGENCE MANAGEMENT SPECIALIZATION

Required Core Courses	**12**
Required Specialization Courses	**21**
Required Capstone Course	**3**
Total Credits	**36**

Position yourself for career growth in the Intelligence Community by pursuing a master's degree in management with a specialization in intelligence management.

The intelligence management specialization prepares you to take on management roles in intelligence collection, analysis, counterintelligence, counterterrorism, cyber espionage, resource management, and intelligence policy and oversight for national security, law enforcement, and business purposes. Designed for early- to midcareer intelligence professionals, the specialization will improve your professional qualifications and teach you to apply solid management theories and principles, engage in intelligence-related research, and assess intelligence-related data for decision making. It will also prepare you to gain an essential understanding of the organization, priorities, processes, roles, and responsibilities of the Intelligence Community.

What You'll Learn

Through your coursework, you will learn how to

- Employ holistic solutions and strategies to leverage human, open source, signals, geospatial, technical, and cyber intelligence collection against a wide spectrum of target sets
- Apply analytical theories, methodologies, and techniques to gain a broad understanding of the challenges of analysis and its role in providing warning and situational awareness and supporting policy makers and decision makers
- Assess counterintelligence, foreign espionage, violent extremism, and emerging asymmetric threats to national security
- Apply leadership principles, risk assessments, and threat-mitigation strategies to the unique challenges facing Intelligence Community leaders

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PUBLIC SAFETY AND INTELLIGENCE PROGRAMS

Career Preparation

This program is designed to help prepare you for positions of greater responsibility in areas such as intelligence collection, analysis, counterintelligence, counterterrorism, intelligence-led law enforcement, oversight, policy, acquisition, budget, and human capital management in the public and private sectors.

Your Coursework

In your intelligence management courses, you'll incorporate scenarios and data from actual events into class discussions, assignments, and exercises to practice making executive-level decisions that will better prepare you for the real world of intelligence management. You'll gain an analytical understanding of legal and ethical principles that guide the intelligence community and learn how to manage intelligence processes, integrate emerging technological advances, and govern human resources. The curriculum is designed to increase your core knowledge and understanding of national security and intelligence policy issues.

Coursework Examples

In past projects, students have had the opportunity to

- Conduct a scholarly study of a problem or issue related to intelligence composed of purposeful research, a literature review, writing, analysis, and the defense of conclusions and proposals
- Discuss the latest issues in national intelligence, such as intelligence reform and reorganization, information sharing, strategic partnerships, adaptive planning processes, workforce management, collection and persistent surveillance, asymmetric threat mitigation, and the emergence of cyber espionage
- Analyze studies of various laws and executive orders related to insider threats, the debate over national security and civil liberties, legal authorities, judicial authorization, and intelligence oversight

Preparation Recommended for Success

Recommendations

If you lack a recent background in finance or accounting, you should take UCSP 620 before MGMT 640. If you lack a recent background in statistics, you should take UCSP 630 before MGMT 650. Taking UCSP 605 is recommended to help improve writing skills.

Degree Requirements

MS in Management: Intelligence Management Specialization

INITIAL REQUIREMENT

(to be taken within the first 6 credits of study)

UCSP 615 Orientation to Graduate Studies at UMUC (0)

REQUIRED CORE COURSES

MGMT 630 Organizational Theory and Behavior (6)
MGMT 640 Financial Decision Making for Managers (3)
MGMT 650 Statistics for Managerial Decision Making (3)

REQUIRED SPECIALIZATION COURSES

INMS 600 Managing Intelligence Activities (3)
INMS 610 Intelligence Collection: Sources and Challenges (3)
INMS 620 Intelligence Analysis: Consumers, Uses, and Issues (3)
INMS 630 Counterintelligence (3)
INMS 640 Intelligence-Led Enforcement (3)
INMS 650 Intelligence Management and Oversight (3)
INMS 660 Leadership Seminar (3)

REQUIRED CAPSTONE COURSE

MGMT 670 Strategic Management Capstone (3)

ALTERNATE COURSES

MGMT 610 Organizational Theory (3) and MGMT 615 Intercultural Communication and Leadership (3) may be taken instead of MGMT 630.

COURSE SEQUENCING

- MGMT 630 (or MGMT 610) must be taken within the first 6 credits.
- MGMT 640 should not be attempted simultaneously with MGMT 650.
- Specialization courses should be taken in the order listed.
- INMS 600 and INMS 610 must be taken as the first two specialization courses.
- INMS 660 must be taken after all specialization and core courses (except MGMT 670).
- You must complete 24 credits of program coursework, including all core courses, before enrolling in MGMT 670.

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COURSE DESCRIPTIONS

ACCT (Accounting)

ACCT 610 Financial Accounting (3)
Prerequisite: 15 credits of undergraduate accounting. A study of accounting theory in a strategic framework. An overview of relevant theory provides a foundation for further study. Focus is on developing skills in critical thinking and applying accounting concepts and principles. Topics include the preparation and interpretation of corporate financial statements in accordance with generally accepted accounting practices (GAAP); accounting standards and the standard setting process; the use of electronic technology in financial accounting; effective communication; professional ethics; and current issues, debates, and research in accounting.

ACCT 611 Management Accounting (3)
Prerequisite: ACCT 610. An examination of the control and decision-making methodologies used by management accountants in solving strategic problems for business. Methodologies covered include break-even analysis, regression analysis, the balanced scorecard, activity-based costing/management, value chain analysis, total quality management, and performance evaluation/assessment. Business problems examined range from ethical issues to product costing.

ACCT 613 Federal Income Taxation (3)
Prerequisite: ACCT 610. A case study–based, problem-oriented examination of fundamental federal tax concepts. Tax issues and controversies are explored in depth. Emphasis is on applying tax laws, as opposed to learning individual tax rules. Methods of case analysis and research that are typically involved in tax planning and litigation are covered. Important definitions, judicially created rules, and other tax conventions are explored in great detail through the study of each one's genesis and purpose. Topics include tax issues that concern gross income, identification of the proper taxpayer, deductions, timing, income and deduction characterization, and deferral and capital gains and losses.

THE UNIT OF CREDIT

The unit of credit defines the amount of university-level credit to be awarded for course completion, transfer of coursework from another institution, or evaluation of college-level prior learning. One credit is awarded on the basis of one of the following, according to the Code of Maryland Regulations:

- At least 15 hours (50 minutes each) of actual class meeting or the equivalent in guided learning activity (exclusive of registration and study days, holidays, and final examinations)
- At least 30 hours (50 minutes each) of supervised laboratory or studio work (exclusive of registration and study days, holidays, and final examinations)
- At least 45 hours (50 minutes each) of instructional situations, such as practica, internships, and cooperative education placements, when supervision is ensured and learning is documented
- Instruction delivered by electronic media based on the equivalent outcomes in student learning, including telelessons, classroom instruction, student consultation with instructors, and readings, when supervision is ensured and learning is documented

PREREQUISITES

Prerequisites, normally stated in terms of numbered courses, represent the level of knowledge you should have acquired before enrolling in a given course. You will not be able to register for courses for which prerequisites have not been met.

ACCT 618 Accounting Information Systems (3)
Prerequisite: ACCT 610. A study of the use of information systems in the accounting process, with an emphasis on computer systems and internal controls. Focus is on the analytical tools necessary to evaluate users' accounting information needs and to design, implement, and maintain an accounting information system to support business processes and cycles. Topics include the components of contemporary accounting information systems; security and internal controls, particularly within internet and e-commerce environments; traditional flow charts and data-flow diagrams; computer networks; theory and application of relational databases; and relational database management systems. Assignments include designing an accounting information system using a commercial database software package. Students may receive credit for only one of the following courses: ACCT 614 or ACCT 618.

COURSE DESCRIPTIONS

ACCT 620 Cyber Accounting: Management and Compliance (3)
Prerequisite: ACCT 618. An applied study of the principles of information systems management and their integration within private-sector organizations served by accounting professionals. Emphasis is on developing strategic cyber accounting initiatives to increase cybersecurity awareness inside organizations, with organizations in its supply chain, and with other stakeholders. Topics include cybersecurity compliance requirements issued by federal and state regulatory agencies and voluntary cybersecurity standards, such as the G-7 Fundamentals of Cybersecurity for the Financial Sector and the AICPA Cybersecurity Risk Management Framework.

ACCT 625 Government and Not-for-Profit Accounting (3)
Prerequisite: ACCT 610. A study of the financial accounting standards applicable to public-sector and not-for-profit organizations in the United States and their unique reporting requirements. Emphasis is on similarities and differences among accounting rules for different types of entities and the rationale for the accounting standards governing each type. Students may receive credit for only one of the following courses: ACCT 625 or ACCT 665.

ACCT 628 Auditing (3)
Prerequisite: ACCT 610. An in-depth examination of Generally Accepted Auditing Standards (GAAS), as well as standards for attestation and other services. Alternative audit models are evaluated for both their practical relevance and their theoretical justification as informed by current research and emerging information technology. The use of computer-assisted auditing techniques (CAAT) and other computer-related technology for obtaining evidence is evaluated in terms of its effectiveness and suitability in diverse audit environments. Methods of evaluating internal control are considered in light of the risks encountered in new ways of conducting business, such as e-commerce. Professional ethical and legal responsibilities, as shaped by the contemporary professional, legal, and regulatory environments, are examined as they relate to audit risk, risk assessment, and audit program planning. The use of audit reports and other services as tools to support management control and decision making are considered. Students may receive credit for only one of the following courses: ACCT 612 or ACCT 628.

ACCT 630 Fraud Examination (3)
Prerequisite: ACCT 610. A study of the nature and elements of fraud. Topics include fraud prevention, fraud detection, fraud investigation, use of controls to prevent fraud, and methods of fraud resolution. Emphasis is on the use of forensic accounting techniques to analyze what is behind the data being generated by the accounting system, detect internal control weaknesses, and map out a fraud investigation program. Students may receive credit for only one of the following courses: ACCT 608 or ACCT 630.

ACCT 635 Accounting Ethics (3)
Prerequisite: ACCT 610. A study of ethics as a critical foundation for the accounting professional. Topics include the theories and bases of ethical reasoning, development of ethical standards, codes of professional conduct, professional responsibilities and judgment calls in accounting, and the evolution of ethics in the accounting profession. Students may receive credit for only one of the following courses: ACCT 608 or ACCT 635.

ACCT 640 International Accounting (3)
Prerequisite: ACCT 610. An exploration of international accounting and financial reporting. Focus is on evolving reporting requirements under International Financial Reporting Standards (IFRS). Accounting practices, as influenced by business operations, culture, and the inherent risk in international accounting environments, are compared. Students may receive credit for only one of the following courses: ACCT 640 or ACCT 665.

ACCT 645 Cyber Forensics in Accounting (3)
Prerequisites: ACCT 618, ACCT 628, and ACCT 630. An applied study of the tools, techniques, and technologies used in forensic accounting investigations, data analytics, and litigation. Focus is on disentangling obscure evidence discovered during fraud investigations using data analytics. Activities include conducting a forensic accounting investigation, performing analytical tests on financial data, preparing written forensic accounting reports for legal proceedings, and serving as an expert witness providing testimony supported by evidence and analytical tests.

ACCT 660 Information Technology Auditing (3)
(Formerly MSAS 670.) Prerequisite: ACCT 618, ACCT 628, ACCT 630, and INFA 610. A study of accounting and information systems that integrates content from both disciplines. Advanced principles, techniques, and theories are applied through the analysis and presentation of case studies by student teams. Assignments include a research paper that comprehensively assesses an important current issue or emerging trend in the fields of accounting and information systems.

COURSE DESCRIPTIONS

ACCT 670 Capstone: Cyber Accounting: Risk Management (3)
Prerequisites: All other program courses (may be taken with ACCT 635 or INFA 660). A capstone exploration of the principles of risk management as practiced by federal, state, and local entities. Discussion examines cyber accounting risk management as promulgated by professional accounting organizations such as the AICPA. Risk management techniques are applied to cybersecurity issues confronting professional accounting service providers. Focus is on developing skills in assessing client risks, designing and developing cybersecurity controls to mitigate cyber attacks on client data, and conducting penetration tests to identify potential cyber accounting vulnerabilities.

ASC (Academic Success)

ASC 601 Graduate Writing Skills (0)
(Recommended preparation for students who want to improve their writing skills.) Improve your academic writing skills and become a better communicator. Enhance your grammar and punctuation skills through individualized exercises. Prepare for academic writing by summarizing and synthesizing texts, developing well-organized essays, and integrating sources into your work. Employ APA style for formatting and correct citation. Learn the steps of writing, from prewriting through proofreading, to produce clear, concise documents appropriate to your audience and purpose.

ASC 603 Introduction to Accounting and Financial Management (0)
(Recommended preparation for students who want a foundational background in accounting and finance.) Engage in a basic study of accounting and financial management concepts and their use in analyzing financial statements and estimating the value of long-term capital projects and investments. Analyze the financial statements of actual companies using financial ratios. Apply time value of money concepts to determine the current and future value of financial and real assets/investments. Develop an appreciation for how financial management and accounting information can be used to support financial assessment analysis, valuation, and decision making in various contexts.

ASC 605 Basic Information Technology (0)
(Recommended preparation for students who want a background in the basic configurations of computer hardware and operating systems software, especially those pursuing a degree in a cybersecurity field.) Explore concepts of computing. Discuss computer systems (including computer hardware and hardware components, computer software, and networks) and the internet. Develop your understanding of the privacy and security issues related to computing and the internet.

ASC 607 Introduction to Statistics (0)
(Recommended preparation for students who require knowledge of statistics to progress in their coursework.) Learn to derive meaning from quantitative analysis of data by employing fundamental concepts and methods of statistics. Explore approaches and develop skills necessary to evaluate research methods and their application to solving problems, including the reliability and validity of sources and types of data and portraying data in tables, graphs, and charts. Use inferential statistics to draw conclusions, calculate correlation and regression, and apply other statistical methods to inform decisions.

ASC 609 Essentials of Computer Programming (0)
(Recommended preparation for students with little or no programming experience, especially those pursuing a degree in a cybersecurity field. Students with no technical experience should take ASC 605 before or with ASC 609.) Gain hands-on experience in creating computer programs. Explore all aspects of basic programming, including variables, arrays, conditions, and input/output. Build a foundation for more advanced work in computer programming.

ASC 611 Structure of Computer Programming (0)
(Recommended preparation for students with some programming experience, typically with older languages such as PRG and COBOL, especially those pursuing a degree in a cybersecurity field, bioinformatics, data analytics, database technology, or software engineering.) Prerequisite: ASC 609. Gain hands-on experience in creating computer programs. Explore aspects of programming related to the structure of the program, including loops, procedures/functions, and leveraging other software libraries/packages.

ASCM (Acquisition and Supply Chain Management)

ASCM 626 Purchasing and Materials Management (3)
(Formerly PCMS 626.) An overview of the procurement and contracting cycle, along with other organizational functions. Discussion covers methods of purchasing and source selection, with a focus on receipt, inspection, and quality assurance. Documentation and reporting specifics are examined, as are surplus, salvage, and disposal issues. Inventory, physical distribution, and logistics are considered. Students may receive credit for only one of the following courses: ASCM 626 or PCMS 626.

COURSE DESCRIPTIONS

ASCM 627 Legal Aspects of Contracting (3)
(Formerly PMAN 636 and PCMS 627.) A study of the law of commercial purchasing, including the law of agency, contracts, sales, torts, and antitrust. The Federal Acquisition Regulation and American Bar Association model procurement codes for state and local governments are examined. Topics include purchasing authority, unauthorized purchases, rights and duties of sellers and buyers under a contract, buyer rights upon receipt of nonconforming goods, ability to terminate a sales contract, formation of government contracts, and formal dispute resolution. Students may receive credit for only one of the following courses: ASCM 627, ASCM 650, PCMS 627, or PCMS 650.

ASCM 628 Contract Pricing and Negotiations (3)
(Formerly PCMS 628.) A study of techniques for planning, conducting, and managing negotiated procurement. Focus is on analytical techniques for conducting price and cost analysis in preparation for negotiations. Techniques for critically examining all categories of costs, including profit, are examined. The theory and practice of negotiations are studied, and opportunities to practice negotiation techniques to achieve a fair and reasonable contract price are given. Emphasis is on practice in preparing negotiation positions through analysis of cases containing detailed cost and pricing data. Ethical decision making throughout these processes is addressed. Students may receive credit for only one of the following courses: ASCM 628 or PCMS 628.

ASCM 629 Strategic Purchasing and Logistics (3)
(Formerly PCMS 629.) An investigation of issues and methodologies related to strategic purchasing and logistics. Topics include the ethics, social responsibility, and accountability considerations in procurement, logistics, and contract management. Discussion also covers the professional development of staff, just-in-time management, electronic data interchange, vendor assessment and development, pricing and negotiation, and international procurement issues. Students may receive credit for only one of the following courses: ASCM 629 or PCMS 629.

ASCM 630 Commercial Transactions in a Technological Environment: Law, Management, and Technology (3)
(Formerly PCMS 630.) Recommended: ASCM 627, PCMS 627, or ADMN 627. A presentation of the legal issues and management methodologies related to commercial transactions in a technological environment. Topics include the law, ethics, accountability, and contract management considerations in the procurement of technology products and services. Discussion also covers commercial sales transactions, government commercial item acquisition, private and government contracts for services, assignment and protection of proprietary rights in technology products, technology transfers, and international contractual issues in the procurement of products and services. Students may receive credit for only one of the following courses: ASCM 630, ASCM 650, PCMS 630, or PCMS 650.

ASCM 631 Integrative Supply Chain Management (3)
(Formerly PCMS 631.) A study of supply chain issues, techniques, methodologies, and strategies designed to enhance organizational procurement efficiency. Integrated supply chain management is explored as a core competitive strategy that affects the organization's bottom line. Topics include the integration of information, supplies, and materials flows across multiple supply chain channels and how these flows can be streamlined and optimized for more efficient procurement. Discussion also covers the role of information systems and technology in supply chain management, e-commerce strategies, managing the flow of materials across the supply chain, developing and maintaining supply chain partnerships and other relationships, and future challenges in integrative supply chain management. Students may receive credit for only one of the following courses: ASCM 631 or PCMS 631.

ASCM 632 Contemporary Logistics (3)
(Formerly PCMS 632.) A study of logistical issues, techniques, methodologies, and strategies designed to enhance organizational efficiency. Topics include the total cost approach to logistics; logistical planning and implementation; logistical concepts; systems relationships and integration; demand forecasting; interplant movement; inventory management and control; order management and processing; packaging; plant and warehouse selection; production scheduling; traffic and transportation management; warehouse and distribution management; recycling; and other logistical strategies, techniques, and methodologies. Students may receive credit for only one of the following courses: ASCM 632 or PCMS 632.

COURSE DESCRIPTIONS

ASCM 650 Legal Aspects of Contracting and Commercial Transactions (6)

(Formerly PCMS 650.) A study of the law relevant to commercial, governmental, and international purchasing, contracting, and other legal transactions. Focus is on agency law, contracts, sales, torts, antitrust, ethics, and accountability. Discussion covers contract management considerations in the procurement of products and services. Topics include commercial sales transactions, government commercial item acquisition, private and government contracts for services, assigning and protecting propriety rights in technology products, technology transfers, and international contractual issues in the procurement of products and services. The Federal Acquisition Regulation (FAR) and American Bar Association Model Procurement Code for state and local governments are investigated. Purchasing authority, unauthorized purchases, rights and duties of sellers and buyers under a contract, buyer rights upon receipt of nonconforming goods, ability to terminate a sales contract, formation of government contracts, and formal dispute resolution are also addressed. Students may receive credit for only one of the following courses: ASCM 627, ASCM 630, ASCM 650, PCMS 627, PCMS 630, or PCMS 650.

BIFS (Bioinformatics)

BIFS 613 Statistical Processes for Biotechnology (3)

Prerequisite: STAT 200. A study of statistical tools such as Bayesian statistics, Markov processes, and information theoric indices and how they can be used to analyze sequence homology, the presence of motifs in sequences, gene expression, and gene regulation. Topics include information content, mutual information, long-range correlation, repeats, Fourier analysis, and linguistic methods.

BIFS 614 Data Structures and Algorithms (3)

An introduction to the definitions, implementations, and applications of the most basic data structures used in bioinformatics. Basic formalism and concepts used in algorithm design and the analysis of algorithms are also introduced. The relative efficiency of the algorithms is estimated by application of these concepts to biological data analysis. Algorithms and data structures discussed include those for database searches, motif finding, sequence alignment, gene prediction, and microarray analysis.

BIFS 617 Advanced Bioinformatics (3)

Prerequisites: USCP 635 and UCSP 636, or equivalent. An overview of basic programming concepts for performing analyses of biological data. Concepts include software development life cycle, data types and data representation, arithmetic and logical operations, conditional execution, iteration, functions, and arrays. An overview of basic data structures is also provided. Emphasis is on bioinformatics pipeline development, automation of data analysis, and building bioinformatics applications using a high-level programming language.

BIFS 618 Java for Biotechnology Applications (3)

Prerequisite: BIFS 617. A study of basic concepts in Java and object-oriented programming in bioinformatics application development. Emphasis is on web-based, graphical, and database-driven application design. Review covers the function and design of some Java-based bioinformatics tools. Some commonly used libraries in the BioJava project are introduced, and developments of reusable modular application objects are examined. Basic problem-solving skills in the field of biotechnology using Java programming are developed through practical projects.

BIFS 619 Systems Level Approaches in Bioinformatics (3)

Prerequisite: BIFS 617. A study of the bioinformatic techniques used in "omics" (genomics, proteomics, etc.) experiments. Focus is on analyzing experiment protocols, comparing the tools used for these experiments, and interpreting the data resulting from the experiments.

BIOT (Biotechnology Studies)

BIOT 601 Introduction to Molecular Biology (3)

A thorough grounding in the fundamentals of biology, including a broad review of the life sciences with emphasis on molecular biology. Topics include the basic concepts and processes of cell biology, molecular biology, and immunology. The components of a cell, the processes occurring in a single cell, and the functioning of a multicellular organism are explained. Discussion also covers the use of model organisms to understand basic and applied biology.

COURSE DESCRIPTIONS

BIOT 630 Introduction to Bioinformatics (3)
An introduction to bioinformatics. Emphasis is on the interpretation of data. Topics include new, sophisticated DNA, RNA, and protein sequence analyses and pattern recognition and DNA computing, as well as more traditional mathematical modeling (using Bayesian probability and basic algorithms, machine learning and neural networks, and Markov models and dynamic programming). Discussion also covers the analysis of tridimensional structures, phylogenic relationships, and genomic and proteomic data.

BIOT 640 Societal Issues in Biotechnology (3)
An examination of current societal issues in biotechnology from several perspectives. Topics include the commercialization of biotechnology; biohazards; managerial views of legal issues and bioethics; the need for public scrutiny; environmental and cultural issues; and the role of governmental regulatory agencies in researching, developing, and commercializing biotechnology. An overview of the early history and modern developments of biotechnology is provided.

BIOT 643 Techniques of Biotechnology (3)
A comprehensive review of current techniques in biotechnology research and applications. The development and use of some of the techniques are placed in historical context. Discussion covers techniques used in genomics, transcriptomics, and proteomics and the applications of these techniques. Current plant and animal transformation methods are explained. High-throughput technologies, including sequencing, real-time RT-PCR, SAGE, and microarrays, are also explored. Topics also include therapeutic applications of biotechnology, such as gene therapy, stem cell technology, and RNA interference. Emerging technologies in this field are introduced.

BIOT 645 Bioprocessing and the Business of Biotechnology (3)
A detailed exploration of the business of biotechnology, its structure and operation, and the science upon which this relatively new global industry sector was founded. Discussion covers a wide range of biotechnology applications, from biopharmaceuticals to biofuels, and the technical advances behind them. Focus is on methods and economics of bioprocessing and unique aspects of the funding, alliances, and global models used in the business of biotechnology.

BIOT 670 Capstone in Biotechnology (3)
Prerequisite: 30 credits of program coursework, including all core courses. The application of knowledge gained throughout the program to projects focused on specific aspects of biotechnology: management, biodefense, regulation, and bioinformatics. The projects, solicited from industry, academia, and government, address current problems faced by the organization. Focus is on demonstrating research, analytical, oral and written communication, teamwork, and leadership skills, as well as developing new skills through a semester-long project that culminates in the development of a strategic product.

BSBD (Biosecurity and Biodefense)

BSBD 640 Agents of Bioterrorism (3)
An examination of the probable weapons of biowarfare, including biological, chemical, and nuclear weapons, from several perspectives. Topics include their mechanism of action, biological impact, detection and recognition, epidemiology, and treatment. Their potential dangers and effectiveness are evaluated, and strategies for defense against attacks by such weapons are investigated. Discussion covers the bioethical challenges of antibioterror research.

BSBD 641 Biosecurity and Bioterrorism (3)
A review of bioterrorism, biosecurity, and government biodefense strategy, including the history and science of biological agents in agriculture and society. Discussion covers surveillance; public health preparedness; response; and recovery at the community, state, and federal government levels. Various aspects of the law, including the Posse Comitatus Act and federal and state quarantine powers, are introduced. The mental health consequences of bioterrorism are also discussed. A case study of a hypothetical biological attack is analyzed in detail.

BSBD 642 Advanced Biosecurity and Bioterrorism (3)
Prerequisite: BSBD 641. A thorough examination of special and advanced topics in bioterroism and biosecurity issues. Topics include the hidden biological warfare programs of the 20th century; advances in biotechnology and molecular microbiology and the dilemma of dual-use research; domestic and foreign terrorist groups, including rogue states; state-of-the-art microbial forensics; ethics and civil rights; and current trends in policy development, consequence management, and public health responses to new threats to homeland security. Discussion also addresses special topics of the students' choice. Future challenges in biosecurity are also discussed as part of a comprehensive bioterrorism exercise and the analysis of case studies of hypothetical threats.

COURSE DESCRIPTIONS

BSBD 643 Strategies for Interagency Cooperation, Verification, and Global Countermeasures in Biodefense (6)

An in-depth study of the verification procedures used in global countermeasures and strategies. Global biosecurity and oversight is examined using real-world examples. Discussion covers the epidemiology of emerging infectious diseases as they relate to defense against threats from nonconventional sources. Topics also include the evolution and current status of the Biological Weapons Convention; the integration of responses from local, state, and multiple federal agencies; and other challenges facing public health departments, including the potential economic, political, and social impacts of bioterrorism.

BTMN (Biotechnology Management)

BTMN 632 Commercializing Biotechnology in Early-Stage Ventures (3)

(Formerly BIOT 641.) An overview of the methods for planning and organizing biotechnology ventures. The elements of a business plan are considered, as are methods for assessing various needs, such as capital, personnel, technology, and marketing. Emphasis is on approaches to marketing technology and developing joint ventures. The advantages and disadvantages of forming international ventures are weighed. Discussion also covers the importance of maintaining relations with external constituents and the need for managing public awareness. Students may receive credit for only one of the following courses: BIOT 641 or BTMN 632.

BTMN 634 Selection and Evaluation of Biotechnology Projects (3)

A study of how methodologies of technology forecasting, technology assessment, project management, and data auditing are applied to the selection and evaluation of biotechnology projects. The underlying rationale, principles, procedures, and cost effectiveness of data auditing are examined. A systems approach to performance evaluation is presented.

BTMN 636 Biotechnology and the Regulatory Environment (3)

A comprehensive review of the role of regulation in the development and commercialization of biotechnology products and services. Emphasis is on the roles of the federal government, state government agencies, international bodies, and professional groups, especially the regulatory roles of the U.S. Environmental Protection Agency, Department of Agriculture, and Food and Drug Administration. Discussion covers human subject protection, good laboratory practices, and good manufacturing practices.

BTRA (Biotechnology Regulatory Affairs)

BTRA 640 Preclinical and Clinical Research Design (3)

An examination of preclinical and clinical research designs. Emphasis is on identifying and addressing challenges associated with elements of good laboratory and clinical practice and qualifying and managing a laboratory for a clinical trial. Discussion covers best practices for planning research and collecting, analyzing, and reporting data from drug/device development studies.

BTRA 641 Product Life-Cycle Approval, Production, and Marketing for Devices and Drugs (3)

An in-depth study of the product life cycle for medical devices and implants and pharmaceuticals. Focus is on the various stages within the life cycle from conceptualization of a product pipeline in research and development through postmarket surveillance and production. Topics include regulatory submission, approval, production, and the postmarket environment for both drugs and devices. Challenges surrounding the approval and naming of follow-on biologics are addressed. Discussion also covers combination medicines, the stages of a drug pipeline and risk assessment at each stage, and the decreasing productivity of the drug pipeline. The role of a contract research organization in testing and approval is explained, and the nature of the support services they provide to the biotechnology and devices industry is explored.

BTRA 642 Global Biotechnology Business Issues (3)

An exploration of different aspects of international pharmaceutical regulation, as outlined in the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use. Topics include international biotechnology issues, global harmonization efforts, and the cultural impact of biotechnologies. Discussion also covers domestic and international business considerations and international regulatory requirements.

BTRA 643 Practical Applications of Biotech Regulatory Affairs (6)

A capstone study of regulatory affairs related to the biotechnology industry that integrates knowledge and skills gained from previous study. Emphasis is on completion of a group project simulating the development of a drug or device through the product life cycle. The project is designed to demonstrate knowledge of international biotech business, ethics, and production issues and skills in making decisions regarding a wide range of regulatory issues and to provide a transition for applying these skills to applications in the biotechnology environment.

COURSE DESCRIPTIONS

CBR (Cyber Communication and Leadership)

CBR 600 Communicating, Problem Solving, and Leading in Cybersecurity (6)
Make yourself more valuable to an employer by gaining and improving skills in communication and problem solving. Explore the field of cybersecurity by developing connections to your career aspirations, creating a professional social network presence, and using critical thinking to inform decisions. Improve and refine your skills in communication, critical thinking, quantitative reasoning, and team leadership. Hone your professional writing and oral communication skills to produce effective presentations and become proficient with current technology.

CCA (Cloud Computing Architecture)

CCA 610 Cloud Services and Technologies (6)
Prerequisite: DCL 600. Master the concepts underlying cloud computing, cloud services, and cloud applications. Investigate and analyze the technologies and services of the cloud services industry, and distinguish between different cloud development environments. Evaluate the risk and the legal and regulatory compliance issues associated with cloud adoption while identifying the benefits of cloud infrastructure for the organization.

CCA 620 Cloud Management (6)
Prerequisite: CCA 610. Explore the shift that cloud computing has created in internal business processes. Analyze the business and management processes associated with implementing a cloud infrastructure. Address implementation issues such as accounting and budgeting, corporate buy-in, procurement and contracting, negotiating service-level agreements, and vendor management. Prepare a proposal for cloud migration and a Request for Proposal to vendors. Analyze vendor responses and prepare a cloud service contract.

CCA 630 Cloud Infrastructure Planning, Design, and Configurations (6)
Prerequisite: CCA 620. Apply the underlying concepts, standards, and technologies of cloud computing (including virtualization, containers, cloud data management, cloud programming models, cloud analytics applications, interoperability, and portability) to the planning, design, and configuration of a cloud infrastructure. Prepare policies and documents to plan and design a cloud infrastructure successfully, including policy document, architecture plan, cloud deployment runbook, and user training plan. Perform baseline configurations on the cloud environment to satisfy business requirements.

CCA 640 Cloud Computing Implementations and Migrations (6)
Prerequisite: CCA 630. Implement and configure a cloud environment based on specifications. Analyze current workloads, migrate existing IT systems to the cloud, and configure new systems or services to enhance business operations. Manage the implementation of the cloud to ensure successful deployment. Configure features for elasticity, availability, and scalability using industry-standard techniques, best practices, and tools.

CCA 670 Capstone: Cloud Computing Orchestration (6)
Prerequisite: CCA 640. Assume the role of a cloud computing architect. Implement advanced features of the cloud platform, including auditing and logging, cloud orchestration, service catalog, and cloud metering and billing. Investigate, plan, and implement these features on a specific cloud platform.

CJMS (Criminal Justice Management)

CJMS 600 Critical Analysis of the Criminal Justice System (3)
An analysis of the U.S. criminal justice system. Topics include the role of criminal justice agencies and personnel in the prevention and response to crime, as well as interagency cooperation and coalition building from a manager's perspective.

CJMS 610 Perspectives in Law Enforcement Management (3)
A study of law-enforcement philosophies and techniques to reduce crime commonly applied at the organizational level. Topics include the politics of policing, police/community relations, police research, professionalization of personnel, and emerging problems in policing from a domestic and international perspective.

CJMS 620 Issues in Correctional Administration (3)
Prerequisites: CJMS 600 and CJMS 610. An in-depth study of current challenges for managers in correctional environments. Topics include the privatization of corrections, intelligence sharing, re-entry and community corrections, security threat groups, assessment techniques and empirical evaluations of treatment methods, special populations, growth rates, the political environment, and interagency and community cooperation.

CJMS 630 Seminar in Security Management (3)
Prerequisites: CJMS 600 and CJMS 610. A study of the management of security operations within a private setting. Discussion covers vulnerability assessment; emergency planning; interagency cooperation; threat assessment; use of technology; and information gathering, sharing, and storing. Topics also include personnel management, budgeting, reporting requirements, and current trends.

COURSE DESCRIPTIONS

CJMS 640 Criminal Justice Intelligence Systems and Approaches (3)
Prerequisites: CJMS 600 and CJMS 610. An in-depth examination of the principles that guide the gathering and sharing of intelligence in the United States. Emphasis is on the interoperability between crime-fighting agencies within the criminal justice system. Topics include analytic methodologies, interview and interrogation techniques, open-source and proprietary data sources, criminal organization analysis, criminal conspiracy, enterprise theory, trial testimony, and witness protection.

CJMS 650 Legal Aspects within the Criminal Justice System (3)
Prerequisites: CJMS 600 and CJMS 610. An introduction to the impact of constitutional and criminal law on managerial responsibilities within the criminal justice system. Topics include pivotal historic and current legal cases and their application to methods of prevention, as well as reaction to crime in the United States.

CJMS 660 Issues in Criminal Justice Leadership (3)
Prerequisite: 30 credits of coursework, including all core and specialization courses except MGMT 670. A discussion of case studies involving successful leaders in the criminal justice system. Analysis covers the various characteristics and leadership styles that have proven most effective in the profession. Various theories, models, historical examples, and practical applications are reviewed. Senior criminal justice leaders discuss issues via videoconferencing. Topics include ethics and virtue in criminal justice; navigating the political environment (e.g., being politically savvy without being political); staff development; and labor relations, media relations, and working effectively with various advocacy groups.

CMP (Cybersecurity Management and Policy)

CMP 610 Foundations in Cybersecurity Management (6)
Prerequisite: CBR 600. Apply the principles of cybersecurity management. Analyze and draft cybersecurity policies; create practical approaches to risk analysis; practice techniques to prevent intrusions and attacks that threaten organizational data; and participate in exercises in cryptography, ethical hacking, and crisis management.

CMP 620 Cybersecurity Governance (6)
Prerequisite: CMP 610. Examine important human aspects of cybersecurity, such as the motivations for cybercrimes, including hacker psychology and hacker culture. Explore the legal and regulatory environments related to local, state, national, and international cybersecurity concerns. Formulate policy and conduct analysis for the prevention of intrusions, attacks, and threats to organizational data.

CMP 630 Risk Management and Organizational Resilience (6)
Prerequisite: CMP 620. Apply critical thinking and analysis to determine potential risks to the enterprise. Investigate the application of systems, tools, and concepts to minimize risk in an organization's cyberspace initiatives. Explore how to identify threats, conduct vulnerability assessments, and perform risk assessment and management. Examine system development and application assurance from a holistic viewpoint that spans the cyberspace landscapes. Gain an understanding of the value provided by regulatory, policy, and compliance guidelines in addition to pure technology options.

CMP 640 Cybersecurity Program Development (6)
Prerequisite: CMP 630. Create a cybersecurity program using the enterprise as a framework. Examine the role of architectural methodology as part of the complete cybersecurity program. Consider the cyber threat landscape and the strategies related to incident response, awareness, and the mobile environment and its impact on government and industry. Explore identity theft, network security, cyber strategy development, and mobile device management.

CST (Cybersecurity Technology)

CST 610 Cyberspace and Cybersecurity Foundations (6)
Prerequisite: CBR 600. Gain knowledge of the foundations of cybersecurity, and apply cyber methodologies to cyber architectures, services, protocols, algorithms, hardware and software components, and programming language. Become familiar with the important role that business continuity planning, security management practices, security architecture, operations security, and physical security play in cybersecurity. Explore the impact of cyberterrorism and national security on cybersecurity. Gain hands-on, real-world experience with state-of-the-art tools and technologies in a lab-intensive environment. Students may receive credit for only one of the following courses: CST 610 or DFC 610.

COURSE DESCRIPTIONS

CST 620 Prevention of Cyber Attack Methodologies (6)
Prerequisite: CYB 610. Explore the theories and practices related to the prevention of cyber attacks. Design, apply, and analyze technological solutions that address countermeasures, encryption, network access control methods, firewalls, intrusion detection/prevention, and secure systems development. Practice techniques such as software assurance, verification, and validation; virtual network and cloud computing security techniques; and physical security techniques. Examine the nation's complex critical infrastructure industries. Use state-of-the-art tools and technologies in a lab-intensive environment that provides hands-on, real-world experience.

CST 630 Advanced Cyber Exploitation and Mitigation Methodologies (6)
Prerequisite: CST 620. Practice intrusion detection and prevention, exploitation, and mitigation in cyberspace. Employ technological solutions that identify, resolve, prevent, and mitigate cyber attacks. Utilize network security techniques, monitoring, auditing, intrusion detection and prevention, and ethical penetration testing. Use state-of-the-art tools and technologies in a lab-intensive environment that provide hands-on, real-world experience.

CST 640 Digital Forensics Technology and Practices (6)
Prerequisite: CST 630. Gain proficiency with the tools and technologies commonly used in forensic examinations, and utilize best practices. Explore procedures for securing and validating evidence, including digital media and physical memory, as well as for recovering artifacts and analyzing, reporting, and presenting results in both criminal and civil situations. Gain experience with mobile forensic analysis. Students may receive credit for only one of the following courses: CST 640 or DFC 620.

CYB (Cybersecurity)

CYB 670 Capstone in Cybersecurity (6)
Prerequisite: CST 640, DFC 640, or CMP 640. Assume the role of a cybersecurity professional by examining current issues in cybersecurity management, including enterprise risk management, vulnerability assessment, threat analysis, crisis management, security architecture, security models, security policy development and implementation, security compliance, information privacy, identity management, incident response, disaster recovery, and business continuity planning, particularly in the health, banking, and finance sectors.

DATA (Data Analytics)

DATA 610 Decision Management Systems (6)
An examination of the process of decision making in large organizations and the technologies that can be used to enhance data-driven decision making. Focus is on the underlying framework of good decision making. Operational decisions are examined as reusable assets that can be automated through the creation of business rules. Discussion covers how data can add analytic insight to improve decisions. Best practices for long-term success of an analytics project (in terms of project management and communications) are also explored with an emphasis on the Cross-Industry Standard Process for Data Mining (CRISP-DM) methodology.

DATA 620 Data Management and Visualization (6)
Prerequisite: DATA 610. A presentation of the fundamental concepts and techniques in managing and presenting data for effective data-driven decision making. Topics in data management and design include data design approaches for performance and availability, such as data storage and indexing strategies; data warehousing, such as requirement analysis, dimensional modeling, and ETL (extract, transform, load) processing; and metadata management. Topics in data visualization include understanding data types; data dimensionalities, such as time-series and geospatial data; forms of data visualization to include heat maps and infographs; and best practices for usable, consumable, and actionable data/results presentation.

DATA 630 Machine Learning (6)
Prerequisite: DATA 620. A practical survey of several modern machine-learning techniques that can be applied to make informed business decisions. Discussion covers supervised and unsupervised learning techniques (including naïve Bayes, regression, decision trees, neural networks, nearest neighbor, and cluster analysis) and how each of these techniques learns from past data to find underlying patterns useful for prediction, classification, and exploratory data analysis. Significant tasks are addressed in real-world applications, including handling of missing data, evaluating classifiers, and measuring precision. Major software tools are used to apply machine-learning methods in a wide range of domains, such as healthcare, finance, marketing, and government.

COURSE DESCRIPTIONS

DATA 640 Predictive Modeling (6)
Prerequisite: DATA 630. An introduction to advanced concepts in predictive modeling and techniques to discover patterns in data, identify variables with the most predictive power, and develop predictive models. Advanced statistical and machine learning algorithms such as support vector machines (SVM), regression, deep learning, and ensemble models are used to develop, assess, compare, and explain complex predictive models. Topics include high-performance modeling, genetic algorithms, and best practices for selecting methods and tools to build predictive models. Major software tools are used to apply predictive modeling in a wide range of domains for improved decision making in real business situations.

DATA 650 Big Data Analytics (6)
Prerequisite: DATA 640. An introduction to concepts, approaches, and techniques in managing and analyzing large data sets for improved decision making in real business situations. Topics include text analytics, sentiment analysis, stream analytics, artificial intelligence, and cognitive computing. Discussion also covers how to identify the kinds of analyses to use with big data and how to interpret the results. Advanced tools and basic approaches are used to query and explore data using Hadoop Platform and in-memory analytical tools like Spark ML.

DATA 670 Data Analytics Capstone (6)
Prerequisite: DATA 650. Completion of a major analytics project designed to integrate knowledge and skills gained from previous coursework and provide a complete analytics experience, including problem scoping ("framing"), data set preparation, comprehensive data analysis and visualization, and predictive model development. Several peer-reviewed presentations are included to enhance ability to "tell the story" and explain project approach and results. Projects are selected from students' organizations, special government agency requests, or other faculty-approved sources. Culmination of the project is a complete analytics report and presentation.

DBST (Database Systems Technology)

DBST 651 Relational Database Systems (3)
An introduction to relational databases, one of the most pervasive technologies today. Presentation covers fundamental concepts necessary for the design, use, and implementation of relational database systems. Focus is on basic concepts of database modeling and design, the languages and facilities provided by database management systems, and techniques for implementing relational database systems. Topics include implementation concepts and techniques for database design, query optimization, concurrency control, recovery, and integrity. A foundation for managing databases in important environments is provided. Assignments require use of a remote-access laboratory.

DBST 652 Advanced Relational/Object-Relational Database Systems (3)
Prerequisite: CSMN 661 or DBST 651. A continuation of the study of relational database systems, exploring advanced concepts. Topics include logical design, physical design, performance, architecture, data distribution, and data sharing in relational databases. The concepts of object-relational design and implementation are introduced and developed. Assignments require the use of a remote-access laboratory.

DBST 660 Advanced Data Modeling (3)
Prerequisite: DBST 651. An introduction to fundamental concepts and techniques for successfully designing databases for structured and unstructured data. Topics include database quality techniques and relational, dimensional, and NoSQL modeling, as well as best practices on selecting methods and modeling tools to design the database models (relational, dimensional, wide column, document, and graph/RDF). Assignments require the use of a remote-access laboratory.

DBST 663 Distributed Database Management Systems (3)
Prerequisite: CSMN 661 or DBST 651. An introduction to the development of distributed database management, focusing on concepts and technical issues. Survey covers distributed database management systems, including architecture, distributed database design, query processing and optimization, distributed transaction management and concurrency control, distributed and heterogeneous object management systems, and database inoperability.

COURSE DESCRIPTIONS

DBST 665 Data Warehouse Technologies (3)
Prerequisite: CSMN 661 or DBST 651. An introduction to technological approaches for successfully designing and implementing a data warehouse for structured and unstructured data. Topics include data modeling techniques; extraction, transformation, and loading of data; performance challenges; and system tradeoffs in the development of the warehouse environment. Assignments require use of a remote-access laboratory.

DBST 667 Data Mining (3)
Prerequisite: CSMN 661 or DBST 651. An overview of the data mining component of the knowledge discovery process. Data mining applications are introduced, and algorithms and techniques useful for solving different problems are identified. Topics include the application of well-known statistical, machine-learning, and database algorithms, including decision trees, similarity measures, regression, Bayes theorem, nearest neighbor, neural networks, and genetic algorithms. Discussion also covers researching data mining applications and integrating data mining with data warehouses.

DBST 668 Database Security (3)
Prerequisite: CSMN 661 or DBST 651. An overview of both the theory of and applications for providing effective security in database management systems. Topics include conceptual frameworks for discretionary and mandatory access control, data integrity, availability and performance, secure database design, data aggregation, data inference, secure concurrency control, and secure transactions processing. Models for multilevel secure databases for both relational and object-relational databases are analyzed. Assignments focus on database security concepts and require use of a remote-access laboratory.

DBST 670 Database Systems Administration (3)
Prerequisites: DBST 652, DBST 663, DBST 665, DBST 667, and DBST 668. An introduction to the knowledge, skills, and tools needed to successfully administer operational database systems. The conceptual and operational tools for analysis and resolution of problems such as performance, recovery, design, and technical issues are provided. Tools used to assist in the administration process are also included.

DCL (Decisive Communication and Leadership)

DCL 600 Decisive Thinking, Communicating, and Leading (6)
Prepare for academic and professional success by developing skills that employers want in their employees. Explore your area of study to learn how it connects with your career aspirations, create a professional social network presence, and use critical thinking to inform decisions. Improve and refine your skills in communication, critical thinking, quantitative reasoning, and team leadership. Hone your professional writing and oral communication skills to produce effective presentations and become proficient with spreadsheets, collaboration tools, and other professional software.

DEPM (Distance Education Policy and Management)

DEPM 604 Management and Leadership in Distance Education and E-Learning (3)
Prerequisite or corequisite: DETC 620. An introduction to the organization, management, and administration of distance education and e-learning training programs and systems. Topics include management theory and practice, organizational behavior and change, leadership roles and styles, and planning and policy. Discussion covers education and training in academic and corporate settings and the knowledge and skills necessary for a distance education practitioner to function effectively in either type of organizational environment. Assignments include individual and group case-study analyses, brief essays, and literature searches related to distance education and e-learning leadership.

DEPM 622 The Business of Distance Education and E-Learning (3)
Prerequisite or corequisite: DETT 621. An examination of the highly competitive global business environment for distance education and training. Topics include the supply and demand of education services in emerging and existing markets, the competitive positioning of organizations, and increasing reliance on collaborations. Emphasis is on the skills distance education managers need in planning and developing cost-effective programs, products, and services that are targeted to specific markets.

COURSE DESCRIPTIONS

DETC (Distance Education Technology)

DETC 620 Training and Learning with Multimedia (3)
Prerequisite or corequisite: DETT 607. An overview of the use of digital media in a variety of educational settings that is designed to identify properties, strengths, and weaknesses of multimedia in different learning contexts. The basic psychological processes of perception, understanding, and learning with multimedia are introduced. Focus is on multimedia and instructional design for online learning systems, such as learning management systems or stand-alone learning objects. Hands-on experience with several multimedia applications is provided. Topics include collaborative learning technologies, open educational resources, the impact of multimedia on learning outcomes, methods of multimedia evaluation, quality assurance, and project management of e-learning initiatives.

DETT (Distance Education in Teaching and Training)

DETT 607 Instructional Design and Course Development in Distance Education and E-Learning (3)
Prerequisite or corequisite: DETT 611. An examination of the instructional design process, its history and place in today's course development efforts, and the use of instructional design components in practice. Emphasis is on the nature of learning and the requirements for effective instructional design in online and blended environments. The theoretical underpinnings of learning are explored and applied to the design of a prototype classroom. Management issues surrounding course and curriculum development efforts are discussed, and a comprehensive project plan is developed for design implementation.

DETT 611 Library and Intellectual Property Issues in Distance Education and E-Learning (3)
Prerequisite or corequisite: OMDE 606. An overview of the development and delivery of digital resources for distance education. Discussion covers the intellectual property issues affecting the use of copyrighted works in distance education, developing and delivering library resources online to a faculty and student population, and the future of digital information delivery and the impact of digital rights management (DRM) technologies and social networking.

DETT 621 Online Learning and Development in the Workplace (3)
Prerequisite or corequisite: DEPM 604. An examination of distance learning and professional development in the business sector. Discussion covers various issues, problems, and solutions related to distance learning and professional development in the workplace. Topics include knowledge management, performance improvement, delivery of learning and development, and evaluating learning and development.

DFC (Digital Forensics and Cyber Investigations)

DFC 610 Cyberspace and Cybersecurity Foundations (6)
Prerequisite: CBR 600. Gain knowledge of the foundations of cybersecurity, and apply cyber methodologies to cyber architectures, services, protocols, algorithms, hardware and software components, and programming language. Become familiar with the important role that business continuity planning, security management practices, security architecture, operations security, and physical security play in cybersecurity. Explore the impact of cyberterrorism and national security on cybersecurity. Gain hands-on, real-world experience with state-of-the-art tools and technologies in a lab-intensive environment. Students may receive credit for only one of the following courses: DFC 610 or CST 610.

DFC 620 Digital Forensics Technology and Practices (6)
Prerequisite: CYB 610. Gain proficiency with the tools and technologies commonly used in forensic examinations, and utilize best practices. Explore procedures for securing and validating evidence, including digital media and physical memory, as well as recovering artifacts and analyzing, reporting, and presenting results in both criminal and civil situations. Gain experience with mobile forensic analysis. Students may receive credit for only one of the following courses: CST 640 or DFC 620.

DFC 630 Digital Forensic Response and Analysis (6)
Prerequisite: DFC 620. Utilize tools and techniques in digital forensic investigations involving workstation and mobile platforms. Practice forensic artifact reconstruction and recovery from the file systems of different operating systems, including Windows, Linux, and Macintosh.

DFC 640 Advanced Forensics (6)
Prerequisite: DFC 630. Assume the role of a digital forensics professional. Collect and preserve network, server, and cloud-based evidence, and apply analysis techniques. Solve technical challenges such as evidentiary volume and encryption, as well as nontechnical challenges such as jurisdiction and distance in situation-based response scenarios and activities.

COURSE DESCRIPTIONS

DMCC (Doctoral Studies in Community College Policy and Administration)

DMCC 800 Foundations of Management Theory (6)
A comprehensive foundation in the history of management and the structure and function of organizations. A new way of understanding and managing operational and strategic issues in public and private organizations in the face of accelerating social, economic, and technological changes is provided. Topics include organizational theory, strategic thinking and strategic management, theories of decision making, leadership, organizational culture, and management in a postindustrial society. Problem-solving, application, and evaluation skills are used to analyze the theories and practices of current and emerging organizational challenges and opportunities. The goal is to be able to critically assess the ideas of others and defend one's own ideas through the application of scholarship. Students who complete DMCC 800 cannot receive credit for DMGT 800.

DMCC 810 Leadership and Change (6)
A study of leadership—not just for survival but for sustainability—in environments where external pressure for change is the dominant feature. Discussion examines change and leadership issues in varied industries, as well as one's own organization, by identifying and analyzing theories and concepts, assessing the applicability of classic works and current perspectives, testing ideas using case studies, and developing various scenarios and strategies. Topics include the knowledge and abilities needed for managing change, such as improvisation and reinvention; the roles and skills needed at all levels for leading in new organizational models involving virtual teams; and the impact of change (particularly frequent change) on individuals and organizations. The goal is to recognize the link between leadership, change, and organizational resilience and apply the lessons learned. Students who complete DMCC 810 cannot receive credit for DMGT 810.

DMCC 821 Higher Education Policy (6)
An examination of national, state, and local education policy formation, as well as an analysis of the educational policy process, including antecedents, framing of problems and solutions within policies, policy implementation, and policy consequences in the context of the community college environment. Topics include issues of financial stewardship, enrollment management, external stakeholder relationships, educational outcomes, market-driven innovation and change, organizational development, student-centric culture, and technology leadership. Key leadership competencies, including strategic planning, decision making, resource management, communication, collaboration, and advocacy, are considered as they support effective policy development.

DMCC 830 Research Methods (6)
An applied study of how to design, interpret, and critique both quantitative and qualitative research. Methods are grounded in the philosophy of science to provide a solid foundation that will support the identification and analysis of researchable questions. At least one qualitative and one quantitative methodology is studied. Assignments include short analyses representative of the different methodological traditions. Students who complete DMCC 830 cannot receive credit for DMGT 830.

DMCC 841 Institutional Assessment in the Community College Environment (6)
An exploration of the criteria, indicators, and processes by which institutions define and evaluate their effectiveness and use data to improve the quality of programs and services. Emphasis is on the assessment of student learning outcomes, measuring student success (e.g., progress through developmental courses, persistence, transfer, and graduation), program evaluations, and the role of regional accreditation. Ways in which community college leaders can engage in a broad array of organizational and administrative activities to build cultures of evidence are also examined.

DMCC 851 Community College Advocacy, Advancement, and Entrepreneurship (6)
An exploration of the process by which community college leaders advocate for their students and organizations in the face of the challenges and opportunities in higher education today and the skills needed for successful advocacy. Topics include the use of argumentation, data, and presentation skills to develop and effectively present cases for support at the local, state, and federal levels. Discussion also covers the world of community college fund-raising and the potential of entrepreneurial ventures to help close the funding gap. Focus is on developing the skills to advocate and find support for equity and student success.

DMCC 890 Dissertation Part I (4)
The identification and refinement of the dissertation topic. Focus is on identifying research questions relevant to the chosen topic, conducting a review of the literature on that topic, and developing a conceptual model and associated hypotheses.

DMCC 891 Dissertation Part II (4)
The selection of the dissertation's research methodology to evaluate the conceptual model and hypotheses. Focus is on identifying appropriate sources of data, collecting and analyzing the data in the context of the chosen methodology, and drawing conclusions regarding the conceptual model and associated hypotheses.

COURSE DESCRIPTIONS

DMCC 892 Dissertation Part III (4)
Revision and completion of the dissertation. Steps covered include developing all necessary supplemental materials, proofing and formatting the dissertation, and gaining faculty approval for final submission.

DMG (Doctoral Studies in Management)

DMG 600 Foundations of Doctoral Study (3)
Prepare for doctoral studies by developing foundational skills in evidence-based research and analytical writing. Engage in critical thinking, in-depth analysis, evaluation of published scholarship, and research synthesis. Assess personal readiness for doctoral study.

DMG 800 Interpreting and Translating Management Theory in Practice (6)
Evaluate management theories to explain organizational operations in relation to forces that act at the level of the individual, group, and society. Connect these explanations within practitioner systems, and analyze and associate management theories with practical management strategies.

DMG 810 Research as a Tool for Management Decision Making (6)
Develop the capability to review, evaluate, and perform management research for decision making, and critically interpret both qualitative and quantitative research methodologies. Apply tools of business research to advise an organization in decision making. Refine skills to effectively communicate management research findings to practitioners.

DMG 820 Evidence-Based Research Methods (6)
Acquire and appraise evidence using sophisticated bibliographic search strategies to inform management decision making. Defend qualitative data analysis research choices. Apply evidence-based solutions to an organization, and assess their effectiveness. Develop a plan to use assessments to iteratively improve solutions.

DMG 830 Data Analytics in Practice (6)
Review and refine quantitative skills essential for analytical leadership. Explore methods of data mining, forecasting, and predictive models to inform and enable evidence-based decision making, and investigate the data environment in an organization. Assess an enterprise's current capabilities to develop recommendations for a stronger business intelligence climate.

DMG 840 Designing Evidence-Based Management Solutions (6)
Prepare advice for an organization seeking management solutions to a specific problem. Analyze and evaluate organizational context, select appropriate management tools, and develop solutions. Employ project management methods, and collaborate effectively with the team face-to-face and online. Produce written and oral presentations of results and recommendations to organizational stakeholders.

DMG 850 Producing Original Management Ideas That Influence: Publishing and Conferencing (6)
Identify a management problem, create an evidence-based research approach to solve the problem, and execute it. Present results at a scholarly or practice conference, and submit written results in the form of a professional quality article to a scholarly or practice journal.

DMG 860 Producing Actionable Knowledge: Dissertation Problem Statement and Literature Review (4)
Construct a framework for investigating a relevant management problem. Identify the scope of the problem, construct a suitable research question, and examine the scholarly literature that provides a credible and insightful explanation of the primary concepts and relationships surrounding the problem. Produce the dissertation problem statement and literature review chapter.

DMG 870 Producing Actionable Knowledge: Dissertation Methodology and Analysis (4)
Design an evidence-based research approach to investigate the dissertation management problem. Collect relevant data to answer the research question, and analyze and interpret the data to consider how they inform the research question. Produce the dissertation methods and results chapters.

DMG 880 Producing Actionable Knowledge: Management Implications from Dissertation Research (4)
Complete the dissertation process. Formulate and explain the implications and value of the research findings for management practice, and make specific recommendations to improve management practice. Present and defend the dissertation research successfully, and publish it.

DMG 899 Continuing Doctoral Matriculation (1)
Continue dissertation work.

COURSE DESCRIPTIONS

EDTC (Education: Instructional Technology)

EDTC 600 Foundations of Technology in Teaching and Learning (3)

An introduction to the integration of technology in schools, focusing on how instructional technology affects and advances K–12 learning. Topics include principles of integrating technology to strengthen standards-based curricula, instruction, and assessment; selection of software and other technological materials; uses of technology for collaboration with school-related audiences; issues of digital equity and ethics; and strategies for using digital technology with special needs populations.

EDTC 605 Teaching Information and Media Literacies in the Digital World (3)

Prerequisite or corequisite: EDTC 600. A study of the expanding types of literacies required for teaching and learning in K–12 schools, with a concentration on digital information and media literacies. Analysis of core information literacy skills serves as the foundation for a discussion of the effects of current and emerging media on the evaluation and creation of knowledge. Topics include the effective use of online databases and search engines to access information and media resources; application of the research process; information and media literacy skills needed for reading and navigating the web environment and creating new content; options for age-appropriate, subject-specific research assignments that involve K–12 students in project-based learning; and issues related to ethical uses of information and digital citizenship across literacies.

EDTC 610 Web-Based Teaching and Learning: Design and Pedagogy (3)

Prerequisite or corequisite: EDTC 605. An examination of the theory that informs web-based education and the implementation of best pedagogical practices. Challenges related to the original design and/or adaptation of effective web-based instruction are explored. Focus is on developing the knowledge and skills to create multiple types of web-based assignments and units for K–12 students using web authoring software. Topics also include constructing evaluation tools to assess K–12 student learning outcomes across different content areas and grade levels. Strategies for effective online group collaboration are discussed and implemented.

EDTC 615 Using Technology for Instructional Improvement: Research, Data, and Best Practices (3)

Prerequisite or corequisite: EDTC 610. Overview of systematic planning, development, and evaluation of media-rich classroom instruction. Research and assessment data are analyzed for their use in promoting student learning and technology integration. Collecting, summarizing, analyzing, and applying assessment data to classroom improvement with techniques for organization and participation in a grade-level or school-wide collaborative team are included.

EDTC 620 Technology in K–12 Education: Synchronous, Asynchronous, and Multimedia Technologies (3)

Prerequisite or corequisite: EDTC 615. A study of various technologies to assist teachers in strengthening content delivery and K–12 student learning. Focus is on designing and developing instructionally effective visual materials and multimedia for incorporation into the classroom. Examples include presentations, graphics, and a classroom website with instructional and administrative components. Knowledge and skills are also developed in the educational applications of real-time technologies that enable video- and audio-conferencing in classroom and schools.

EDTC 625 Hardware and Software in Instructional Development (3)

Prerequisite or corequisite: EDTC 620. A study of the application of hardware and software programs in K–12 classroom and school settings. Various operating systems and network issues commonly found in schools are examined. Topics include a wide range of instructional software packages related to specific subjects and grade levels, assistive technologies appropriate for different student needs, and free Web 2. 0 tools for classroom instruction and professional growth. Discussion also covers hardware and software choices compatible with curricular goals and troubleshooting strategies—both technical and instructional—for teachers and students. Research on specific hardware and software is analyzed. Emerging technology-enabled curricular innovations are also examined.

EDTC 630 Administration of Technology Initiatives: Planning, Budgeting, and Evaluation (3)

Prerequisite or corequisite: EDTC 625. An overview of the administration of technology in K–12 school systems. The impact of technology in schools is explored from a variety of perspectives, including access, planning, budgeting, maintenance, and life-cycle management at the classroom, school, and district levels. Criteria for making financial and instructional decisions about technology are developed and evaluated. Emphasis is on knowledge and skills teachers can use to acquire classroom technology, including grant writing and public-/private-sector partnerships.

COURSE DESCRIPTIONS

EDTC 640 Leading Technology Change in Schools (3)
Prerequisite or corequisite: EDTC 630. An overview of the theories, approaches, and strategies that help teachers assume leadership roles in implementing technology change in K–12 schools. Topics include the role of change agents in K–12 schools, strategies to meet the needs of technologically unskilled teachers, tools and techniques to respond to diverse competency levels, and various training models and approaches for adult learners. Structured observation is employed to critically assess the effectiveness of various technology training formats. In a guided project, a technology-training seminar is designed, developed, and implemented for delivery to colleagues.

EDTC 645 Integration of Technology: Global Perspectives (3)
Prerequisite or corequisite: EDTC 640. Exploration of global perspectives on advancing K–12 student learning through technology. Investigation covers how schools design innovative units and programs that take full advantage of technology's ability to reach beyond national borders and promote global understanding and how various nations approach the challenge of technology integration in schools. Focus is on evaluating best practices in the United States and other nations and on analyzing the role of policy in shaping the way resources are deployed to advance effective technology integration. Projects include designing models for integrating global understanding into curriculum and instruction, developing case studies of technology integration in various countries, and evaluating relevant research.

EDTC 650 Teaching and Learning in K–12 Virtual Schools (3)
Prerequisite: EDTC 640 or DETC 620. An introduction to K–12 distance education, including the policies and structures of K–12 virtual schools, teaching and course development strategies appropriate for K–12 online courses, and current issues involved in the K–12 virtual enterprise. Emphasis is on K–12 schools that offer courses over the internet. Discussion covers principles that apply to other forms of K–12 distance education, such as television and correspondence courses. Topics include different models of current K–12 virtual schools; district, state, and national regulations governing these schools; the role of parental involvement and student support systems; social and collaborative aspects of learning at a distance; and training and mentoring of online K–12 teachers. Trends in international K–12 virtual schools are compared with those in the United States. The effectiveness of virtual schools and courses at the elementary and secondary school levels is explored.

EDTC 670 Integrative Capstone Project (3)
(Intended as the final course in the MEd program.) Prerequisite: First nine courses in the program; may be taken with EDTC 645 or EDTC 650. A self-directed project, in which teachers collaborate with colleagues within or across grade levels or departments to incorporate innovations into their curricula. A portfolio is built to demonstrate the development, implementation, and outcomes of the project. Study is designed to provide teachers the opportunity to apply previous knowledge and skills gained from previous coursework.

EDTP (Education: Teacher Preparation)

EDTP 600 Foundations of Teaching for Learning (6)
Preparation for effective entry into the classroom as a teacher. Topics include teaching in the contemporary school; human development; approaches to learning, diversity, and collaboration beyond the classroom; learners with exceptional needs; curriculum, instruction, and assessment; teaching in the content area; and synthesis and application. Course materials and assignments focus on documents created and/or typically utilized by school systems and incorporate current school district initiatives. School district personnel may participate as guests.

EDTP 635 Adolescent Development and Learning Needs (6)
Prerequisite or corequisite EDTP 600. Preparation to support the unique development of adolescents from various backgrounds, with varying beliefs and abilities. Learners are examined from the standpoint of developmental characteristics; social, cultural, racial, and gender affiliation; socioeconomic status; religious influences; learning styles; special needs; and exceptionality. Adolescents are also examined from biological, psychological, cognitive, and social perspectives; within the tapestry of their family and community; and through the influences of societal and cultural norms. Discussion covers theories and concepts associated with human growth and development across the lifespan, focusing on the typical and atypical development of the adolescent.

COURSE DESCRIPTIONS

EDTP 639 Reading and Multiple Literacies (6)
(Formerly EDRS 610.) Prerequisite: EDTP 635. A study of the essentials of literacy for middle and high school classrooms, including design principles for guided inquiry, self-directed learning, collaboration, and effective use of media to meet the needs of diverse learners in the 21st century. Discussion covers purposes and types of reading, assessment, cognitive strategies in reading, reading strategy instruction for constructing meaning from text, and intrinsic and extrinsic motivational strategies. Topics include essential competencies for teaching and learning content area reading and the new literacies and for applying and adapting them to diverse learners and learners with exceptionalities. Competencies developed include use of evidence-based instructional strategies, formative and summative assessment, critical thinking, technology as a tool for learning, and literate environments. Focus is on the importance of research, collaboration, and self-assessment for the professional development of teachers. Students may receive credit for only one of the following courses: EDRS 610 or EDTP 639.

EDTP 645 Subject Methods and Assessment (6)
Prerequisite or corequisite: EDTP 639. An introduction to instructional strategies and curricula for teaching secondary content that emphasizes effective instruction based on understanding assessment and how assessment informs effective instruction. Topics include development of comprehensive assessment strategies and their interrelationships with creation of learning objectives, selection of instructional techniques, and preparation of instructional plans. Current trends in secondary school structures, issues of traditional and authentic assessments, and teacher effect on student achievement are explored. Focus is on meeting individual needs and using content knowledge to inform instructional practice by drawing on knowledge gained through previous study and knowledge bases that reflect current research and best practices in secondary content areas.

EDTP 650 Professional Internship and Seminar (6)
Prerequisite: EDTP 645. An opportunity to apply the concepts, techniques, methods, and theories learned in previous coursework and field-based experiences through a professional internship. Internship activities require completing observations, activities, and clinical practice in an approved secondary classroom appropriate for the selected content area certification, under the supervision of a school-based mentor teacher and university field supervisor. An ongoing seminar establishes a learning community that assures a continuing support system and provides a forum for feedback and discussion of common readings, experiences, questions, and issues. An electronic portfolio is completed.

EMAN (Emergency Management)

EMAN 600 Comprehensive Crisis and Emergency Management (3)
An analysis of all hazards, phases (mitigation, preparedness, response, and recovery), and actors involved in crisis and emergency management. Discussion covers the definition of crises, emergencies, and disasters and concepts and issues in crisis and emergency management. Focus is on developing crisis, contingency, and incident management plans. Current frameworks, management systems, and command systems for organizing a response, deploying resources, managing the response organization, supporting crisis communication, and making decisions in a turbulent environment are examined. Topics are discussed from U.S. and international perspectives.

EMAN 610 Hazard Risk and Vulnerability Assessment (3)
An examination of risk, hazard, and vulnerability. Topics include systematic hazard risk assessment, risk mitigation (reduction), risk transfer, and risk analysis. Discussion covers contemporary approaches to risk assessment and management of naturally or technologically induced hazards. Environmental hazard assessment is also examined. Seminal works published in the area are reviewed.

EMAN 620 Information Technology in Emergency Management (3)
An overview of the role of information in crisis and response management. Discussion covers disaster and crisis information requirements; information technologies and decision support tools applied to crisis, disaster, and emergency management; and information problems encountered during emergencies. Tools used include the global positioning system (GPS), geographical information systems (GIS), UAS (unmanned aircraft systems, i.e., drones), and hazard and emergency management–related software packages, as well as decision analysis methods. Assignments include practical case studies.

EMAN 630 Crisis Communication for Emergency Managers (3)
An exploration of current strategies and tactics for managing the range of communication responsibilities and issues that arise during a variety of crisis situations. Traditional and new media methods for analyzing crisis and communications management issues (including the use of current technologies) are applied using relevant public relations research, theory, and case examples. A strategic approach is used to better identify issues, goals, stakeholders, messaging, and other aspects involved in developing community-specific public responses to crisis situations.

EMAN 670 Seminar in Emergency Management Leadership (3)
An examination of the role, mission, and functional skills of the emergency manager that compares and contrasts current aspects with evolving trends. Factors that affect successful leadership in emergency management such as managing crises, disasters, and emergencies are explored through discussion of key issues and analysis of selected case studies. Discussion covers the evolving multidisciplinary nature of the emergency manager's job and characteristics and leadership styles most effective in emergency management. Summary reviews of various theories, models, historical examples, and practical applications are used to reflect the central activities of emergency managers and gain a better perspective on the emergency manager's job. Topics include planning, risk assessment, crisis communications, organizational and operational issues, problem solving, overcoming bureaucratic barriers to effective performance, promoting a culture of disaster prevention and preparedness, advising on business continuity strategies, acquiring resources, staff training, and emergency exercises. Ethics and legal issues in emergency management, the procurement of facilities, staff management, and controversies are also examined.

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ENVM (Environmental Management)

ENVM 641 Environmental Auditing (3)
An examination of methods for attaining statutory, regulatory, and permitting compliance. The protection of workers and other stakeholders is also examined in the context of organizational, budgetary, and other constraints. Emphasis is on methods of defining auditing objectives to meet organizational goals and of designing auditing programs for effective compliance under each of the 12 major environmental statutes, including air, water, solid, and hazardous waste management laws and pollution prevention initiatives.

ENVM 643 Environmental Communications and Reporting (3)
An overview of U.S. environmental regulations and the reporting requirements of these regulations, an understanding of which is critical to success in the environmental field. Topics include toxic release inventories, risk management plans, environmental management systems, and radiation. Discussion also covers communicating with a wide range of stakeholders and the news media, public speaking, and corporate social responsibility. Focus is on the skills and knowledge needed for a career in environmental management.

ENVM 644 Emerging Environmental Technologies (3)
An overview of the role technology plays in environmental management from the perspective of environmental scientists, regulatory agencies, the regulated community, and organizations committed to environmental protection and sustainability. Review covers new areas of environmental management such as informatics. Examples of the application of emerging remediation technologies in traditional, "end-of-pipe" locations, such as Superfund and brownfield sites, are explored. Discussion examines the distinctions between pollution prevention and pollution remediation and between urban planning and governance technologies. Topics also include ISO 14001; environmental management systems; energy efficiency; environmental monitoring technology for air, land, and groundwater contaminants (including real-time web-based solutions); and obstacles related to the adoption of innovative technology.

ENVM 646 Environmental/Energy Law and Policy Development (3)
An examination of U.S. environmental and energy law and policy, including its development, implementation, and enforcement; legislative, executive, and judicial perspectives; and the roles and impact these government institutions have made on environmental and energy law and policy. Leading laws and their ensuing policies, such as the National Environmental Policy Act, the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the 1992 National Energy Policy Act, the FDR-Era Federal Policy Act, the Public Utility Holding Company Act, and the Carter-Era Public Utility Regulatory Policy Act, are examined.

ENVM 647 Environmental Risk Assessment (3)
An overview of the basic concepts of risk assessment. Topics include the four core parts of a risk assessment, as denoted by the National Academy of Sciences: hazard assessment, dose-response assessment, exposure assessment, and risk characterization. Methods of measurement and modeling are discussed, along with key questions concerning uncertainty. Differences in the risk characterizations of substances under different use conditions and legal requirements are studied. Significant case studies serve to illustrate the assessment process.

COURSE DESCRIPTIONS

ENVM 648 Fundamentals of Environmental Systems (3)
(For students lacking a strong science background or experience in the environmental field.) An introduction to the basic concepts of environmental chemistry, physics, geology, and risk. Topics include the gaseous, liquid, and solid effluents from various industrial activities, as well as management methods and the statutory and regulatory requirements of major federal environmental laws affecting this management. Discussion also covers fundamental principles relating to the transport and fate of contaminants and industrial wastes and the basic vocabulary of the field.

ENVM 649 Principles of Waste Management and Pollution Control (3)
An introduction to the management of the waste generated by communities worldwide, including solid wastes, hazardous wastes, and low- and high-level radioactive wastes. Review covers state-of-the-art pollution prevention methods and waste minimization technologies. Key steps in the waste management cycle, including waste collection, transportation, the use of long-term and permanent disposal facilities, diversion methods (e.g., recycling and treatment), and permanent environmental monitoring, are examined. Discussion covers the benefits of integrated solid waste management planning; the critical role of environmental laws and regulations (e.g., the Resource Recovery and Conservation Act); long-standing global waste management practices; "design for the environment" methods; institutional and economic barriers to recycling and composting; traditional and advanced landfills; and new methods for treating waste, controlling pollution, and recovering contaminated land through brownfields remediation.

ENVM 650 Environmental and Natural Resources Economics (3)
An introduction to microeconomic principles as they relate to the efficient use of environmental resources and their impact on local, national, and global environmental policies. Topics include an overview of microeconomic principles and economic efficiencies, market failures, externalities, property rights, pollution damage and abatement costs, benefit and cost analysis, valuation methods, environmental policy analysis, federal control policies, and international issues.

ENVM 651 Water Resources Management (3)
An in-depth examination of the dynamics and challenges of integrated water resources planning, development, distribution, and management in the 21st century. Focus is on river basins and watersheds, such as the Chesapeake Bay Watershed or the Upper and Lower Colorado River Basins. Discussion covers the quality, quantity, optimum uses, and governance of water resources, as well as the role of paradigms in affecting water policy–making behaviors, institutions, and systems. Topics also include the impact of climate change and global warming on water resources management and planning; determinants of climate change resilience, especially the role of adaptive technologies; and the use of market-driven mechanisms to meet water quantity and quality management challenges under climate change.

ENVM 652 Principles of Air Quality Management (3)
An overview of management techniques for addressing air quality issues and managing air quality programs. Topics include air pollution law; air pollutants and their sources; effects of air pollution on health and welfare; sampling and analysis of air pollutants; standards, regulations, and enforcement systems; and quality assurance principles.

ENVM 653 Land Use Management (3)
An introduction to the powers, process, and practice of managing the patterns and land use implications of human settlement and the built environment. Topics include where to build, where not to build, how to build, and when to build. Discussion also covers the settlement history of the United States, as well as the constitutional and legislative mandates for government, private-sector participants, and institutions that shape land use policy. Emphasis is on the role of local government. Land use and environmental community planning, as well as best practices in land use management, are examined.

ENVM 670 Capstone Study in Environmental Management (3)
Prerequisite: 27 credits of program coursework. An intensive hands-on study of environmental management that integrates knowledge gained from previous coursework and applies that knowledge to projects with external sponsors on environmental problems. Review covers issues such as environmental management systems, sustainability, environmental policy, the role of senior management, activity-based costing, and life-cycle analysis. A specific environmental problem (e.g., sustainability, wastewater management, hazardous waste disposal, need for alternative energy), defined by an external sponsor, is addressed by small teams. Projects involve organizing and planning the work, conferring regularly with sponsors, developing an outline for the final work product, collecting data and information, preparing a final report, and presenting a briefing to the sponsor organization.

COURSE DESCRIPTIONS

FIN (Financial Management)

FIN 610 Financial Management in Organizations (3)
(For students in an accounting or financial management specialization or program.) Prerequisite: MGMT 640. An investigation of financial management theory and applications in organizations. Discounted cash flow and rate-of-return analysis are used to evaluate projects and financial instruments. Discussion covers the role of the cost of capital and the capital asset pricing model (CAPM) in capital investment analysis and selection. Capital budgeting, stock and bond valuation, break-even analysis, capital market efficiency, real options, short-term financial management, and international finance are introduced.

FIN 615 Financial Analysis and Modeling (3)
Prerequisite: FIN 610. An exploration of how financial managers use financial modeling, analysis, and research to build forecasts and projections, evaluate financial alternatives, and support financial decision making in both operational and strategic contexts. Models are developed using Microsoft Excel; exercises and extended case studies are utilized to interpret and employ results. Topics include financial statements and ratio analysis, cash flow forecasting, operations budgeting, breakeven and leverage analysis, time value of money applications, and capital budgeting and risk assessment.

FIN 620 Long-Term Financial Management (3)
Prerequisite: FIN 610. An exploration of the long-term financial needs of an organization and the roles of the capital markets. Topics include the financial environment of organizations, options and futures instruments, long-term financing, the capital budgeting decision process, capital structure management, dividend and share repurchase policy, and investment banking and restructuring. Various types of long-term funding sources—including term loans, derivatives, debt and equity securities, and leasing—are analyzed. Alternate policies with regard to financial leverage, capital structure, dividends, and the issuance of preferred stock are evaluated. Mergers, leveraged buyouts, and divestitures are examined as special situations to create value.

FIN 630 Investment Valuation (3)
Prerequisite: FIN 610. An in-depth exploration and application of valuation models to support managerial decision making in a strategic framework. The theory, concepts, and principles underlying the valuation of firms, business/product lines, and mergers and acquisitions are addressed using extended exercises and applications. The discounted cash flow model is used as a tool. Discussion covers the financial drivers of value, including assessing and determining risk, competitive advantage period, and sales and earnings growth estimates. Other valuation techniques using earnings, revenues, and price/earnings multiples are also discussed and applied in selected examples.

FIN 640 Multinational Financial Management (3)
Prerequisite: FIN 610. A study of financial management issues in multinational organizations. Topics include the environment of international financial management, foreign exchange markets, risk management, multinational working capital management, and foreign investment analysis. The financing of foreign operations, international banking, and the role of financial management in maintaining global competitiveness are also considered.

FIN 645 Behavioral Finance (3)
Prerequisite: FIN 630. A study of the key psychological obstacles to value-maximizing behavior and steps that managers can take to mitigate their effects, using the traditional tools of corporate finance. Focus is on understanding the underlying factors and processes that result in nonoptimal decision making by financial managers. Topics include perceptions about risk and reward and financial decision making in the areas of investing, trading, valuation, capital budgeting, capital structure, dividend policy, agency conflicts, corporate governance, and mergers and acquisitions. The key role played by emotions and recent findings from neuroscience are explored.

FIN 660 Strategic Financial Management (3)
Prerequisites: FIN 620 and FIN 630. An integrative study of financial management through applied problems and case studies. Topics reflect the changing environment of financial management in organizations and include capital investment decision making, the role of intangibles in value creation, financial performance metrics, strategic financial planning and control, strategic valuation decisions, growth strategies for increasing value, the restructuring of financial processes, corporate governance and ethics, value-based management, strategic cost management, and the impact of information technology on the organization's financial systems. A finance simulation is used as an integrating mechanism.

COURSE DESCRIPTIONS

GHMT (Global Health Management)

GHMT 610 Perspectives on Global Health (3)
(Offered jointly with University of Maryland, Baltimore.) An overview of the field of global health. Focus is on analyzing and responding to major global health challenges and international policies. Analysis covers national and transnational health trends, including major communicable and noncommunicable disease burdens. The World Health Organization (WHO) and other international health interventions that address the determinants of health and disease and current and emerging global health priorities, such as disaster relief and infectious diseases, are assessed. Topics include key legal issues, ethics, and models of reform to global health programming and their applications. Skills are developed in analysis, leadership, teamwork, and communication in a global context.

GHMT 620 National and International Approaches to Healthcare Delivery (3)
(Offered jointly with University of Maryland, Baltimore.) A project-based application of global health concepts, theories, and principles to the practical challenges facing global health professionals. Assignments focus on a specific, individually chosen global health priority for a given national or geopolitically defined population. Needs assessment methodologies are applied; these include gathering and analyzing epidemiological data; mapping local, national, and global policy processes; identifying strategies for building infrastructure and workforce capacity; analyzing financial opportunities and limitations; and assessing the impact of macro changes in the global economy, political environment, and human rights and legal systems. Findings regarding the scope, options, and outcomes of these needs assessments, as well as a recommended action plan for improving the health status of the population group of interest, are summarized in the final project.

GHMT 630 Strategic Management of Global Health Services (6)
(Open to students in the joint UMUC-UMB program only.) The development of strategic management skills for growing and operating health organizations and health systems in low- and middle-resourced countries. Focus is on building strategies for organizing global health prevention, treatment, care, and capacity-building initiatives. Strategic management skills are applied to create global health missions and goals, core functions and organizational structures, clinical and administrative workforces, budgets and financing, and communication messages.

HCAD (Healthcare Administration)

HCAD 600 Introduction to Healthcare Administration (3)
An introduction to the principles of management and leadership as the foundations for the administration of healthcare products and service delivery. The evolution of management principles and practices are traced and the bases for healthcare administration are analyzed. Emphasis is on the management of global healthcare systems in technological societies and the need for innovation and creativity in healthcare administration. Focus is on mastering graduate-level critical thinking, writing, and ethical decision-making skills.

HCAD 610 Information Technology for Healthcare Administration (3)
An overview of the management perspective of information technology (IT) and how healthcare administrators can use IT to maximize organizational performance. Fundamental principles of IT and data management and their implications for healthcare administrators are reviewed. Discussion explores the use of technology, databases, and other analytical tools to structure, analyze, and present information related to healthcare management and problem solving. Topics also include strategic information systems planning; systems analysis; and system design, evaluation, and selection. Current applications, such as patient care, administrative and strategic decision support, managed health, health information networks, and the internet are examined to determine how they may be used to meet the challenges facing healthcare administrators today and in the future. Focus is on the legal and ethical issues related to IT and their practical implications for the healthcare administrator.

HCAD 620 The U.S. Healthcare System (3)
A comprehensive examination of the complex, dynamic, rapidly changing healthcare system in the United States. The healthcare system's major components and their characteristics are identified. Emphasis is on current problems in healthcare financing and delivery. Social, economic, and political forces that have shaped and continue to influence the system are traced. The healthcare system in the United States is compared with systems in industrialized and developing nations. Analysis covers current trends in healthcare and prospects for the future.

HCAD 625 The Business of Healthcare (3)
Prerequisite: HCAD 620. A detailed exploration of operational issues unique to the dynamic and highly regulated realm of healthcare. Discussion covers challenges presented by regulatory mandates, market forces, and multiple interconnected matrix organizations, as well as defining and meeting the needs of the community.

COURSE DESCRIPTIONS

HCAD 630 Public Health Administration (3)
An in-depth study of the field of public health, emphasizing leadership and management. The current U.S. public health system is analyzed, focusing on federal, state, and local public health entities and their management issues. Connections and relationships between the system of public health and the private personal health services market are also analyzed. Topics include the history and current status of public health, core functions, legislation, ethics, accountability (including assessment and evaluation), and the politics and financing of public health, particularly in light of the increased utilization of evidence-based budgeting. Contact with a public health agency in order to analyze a public health program or policy may augment text and lecture presentation.

HCAD 635 Long-Term Care Administration (3)
A study of the different components of the long-term-care service delivery system. Topics include residential settings (such as skilled nursing facilities, assisted living facilities, and continuing care retirement communities), home care services, community-based service programs, and hospice care. The goal is to apply contemporary management theory, concepts, and models to the entities that make up the long-term-care service delivery system. Specialized case studies are used to supplement course materials and examine best practices for fostering performance excellence.

HCAD 640 Financial Management for Healthcare Organizations (3)
Prerequisite: MGMT 640. An in-depth study of healthcare economics and the financial management of healthcare organizations. The economic principles underlying the American healthcare market and the financial management of health services organizations within that market are examined. Analysis covers free market and mixed market economies; barriers to free market economies; healthcare industry regulation, licensure, and certification; and various coverage and healthcare payment mechanisms. Topics also include reimbursement mechanisms and their effect on healthcare provider organizations, managed care, capitation, and per case or per diagnosis payment, as well as how these financial strategies are utilized by third-party payers. Focus is on financial challenges such as uncompensated care, cost increases, increased competition, and increased regulation and how healthcare providers should respond to them. Ratio analysis, cost analysis, working capital, capital budgeting and investment in relation to net present value and value added to the organization, and other financial management techniques are also discussed.

HCAD 650 Legal Aspects of Healthcare Administration (3)
A comprehensive analysis of the more significant legal issues encountered by healthcare administrators and the ramifications of those issues. Both theoretical and practical applications of law are addressed with an analytical focus on the prompt identification of legal and bioethical issues arising from and affecting various healthcare employment settings. The intersection of law, ethics, and bioethics is scrutinized in various contexts. The principles of healthcare law in a complex constitutional system are examined in relation to current proposals and policy developments in areas such as privacy, contracts, tort reform, and the regulation of the healthcare marketplace. Topics include legal and regulatory constraints imposed on the healthcare industry, the liability of healthcare providers, the rights of patients, employment law and labor relations, and administrative law for healthcare organizations.

HCAD 660 Healthcare Institutional Organization and Management (3)
A study of the nature of management and how it is applied in various healthcare settings. Contemporary theories, critical perspectives, models, and best practices designed to foster performance excellence in the highly competitive healthcare environment are examined. Discussion also addresses the complexities and challenges of health systems.

HCAD 665 Strategic Issues in Healthcare Leadership (3)
Prerequisite: HCAD 660. An examination of strategic issues driving the future of healthcare. Focus is on identifying and preparing to meet the needs of changing communities, integrating rapid technological and scientific advances, and ensuring institutional viability. Topics include development and dissemination of strategic goals and shaping organizational values.

HCAD 670 Healthcare Administration Capstone (3)
Prerequisite: 36 credits of program coursework. A capstone study of healthcare administration that integrates knowledge and skills gained from previous study in the development of a systems approach to healthcare administration. Focus is on public and private healthcare delivery systems, alliances with internal and external environments, and strategic decision making and implementation in the rapidly evolving global arena of healthcare administration.

COURSE DESCRIPTIONS

HIMS (Health Informatics Administration)

HIMS 650 Research Methods for Healthcare Managers (3)
(Formerly HAIN 650.) Prerequisite (for MS Health Informatics Administration students only): HIMS 655. The application of basic statistics and research methods from the health informatics/information and healthcare administration perspective. Emphasis is on the analysis of clinical and administrative data to assist in decision making; healthcare planning; research; reporting to local, state, and national entities; and policy development. Topics include institutional review boards, ethics in research, the research process, epidemiology, case mix, vital statistics, registries, interpretation and presentation of data, data collection, and quality outcomes and measures. Students may receive credit for only one of the following courses: HAIN 650 or HIMS 650.

HIMS 655 Health Data Management (3)
(Formerly HAIN 655.) A foundational overview of health informatics/information management as a profession and as a subset of the healthcare delivery system. Health informatics/information principles and practices are explored as they relate to the application, analysis, management, and architecture of health data. Topics include data mapping, data structures, clinical terminology, and classification systems. Discussion also covers ICD-10, health record content, documentation standards, data management policies and procedures, meaningful use, data sources, and information governance. Students may receive credit for only one of the following courses: HAIN 655 or HIMS 655.

HIMS 661 The Application of Information Technology in Healthcare Administration (3)
(Formerly HAIN 661.) Prerequisite: HIMS 655. An overview of historical, current, and emerging health information systems and technologies. Focus is on applying a system life-cycle process to the adoption of an electronic health record system. Discussion covers various ways that information technology can aid in operations management and the strategic decision-making process. Topics include project management, clinical and decision support systems, report generation, data analytics, workflow processes, health information exchange, enterprise information management, training and development, data quality, user interfaces, data capturing technologies, personal health records, population health, data safeguards, business intelligence, and artificial intelligence. Students may receive credit for only one of the following courses: HAIN 661 or HIMS 661.

HIMS 670 Health Informatics Administration Capstone (3)
(Formerly HAIN 670.) Prerequisites: 30 credits of program coursework, including HIMS 650, HIMS 655, and HIMS 661. Review of the proficiencies and competencies of a registered health information administrator (RHIA) as preparation for taking the RHIA certification exam. Emphasis is on professional development and test-taking strategies. An evidence-based capstone project on a topic related to health informatics or health information requires the integration and application of knowledge and skills acquired through previous coursework and experience. Discussion covers informatics issues, challenges for U.S. and global healthcare systems, potential new healthcare delivery models, approaches to strategically shaping local and national informatics policy, and the role of information technology in supporting the full continuum of care in health organizations. Tools and methods for strategic planning, implementing, using, and evaluating the efficacy of information systems are explored. Students may receive credit for only one of the following courses: HAIN 670 or HIMS 670.

HRMD (Human Resource Management)

HRMD 610 Issues and Practices in Human Resource Management (3)
(To be taken as the first specialization course.) An overview of the human resource management profession, including the theories, research, and issues related to human resource management within modern organizations. The roles, responsibilities, relationships, functions, and processes of human resource management are discussed from a systems perspective. Expectations of various stakeholders, such as government, employees, labor organizations, staff/line management, and executive management, are explored. Emphasis is on the general legal principles and provisions that govern human resource activities. The specialty areas of employee relations, staffing, human resource development, compensation, and organizational development are described. Current topics, such as human resource information systems and globalization, are addressed.

HRMD 620 Employee and Labor Relations (3)
An investigation of the rights and responsibilities of employees and organizations in union and nonunion environments in the United States. The federal legal framework for collective bargaining is reviewed. Topics include common employment contract trends, topics, and issues, as well as all phases of unionization, from organizing through contract maintenance. Emphasis is on conflict management, negotiation, and alternate dispute resolution.

COURSE DESCRIPTIONS

HRMD 630 Recruitment and Selection (3)
An examination of the initial phases of staffing, focusing on the hiring process. The contemporary roles, relationships, and processes of recruitment and selection in the human resource management system are investigated. Emphasis is on productivity factors (such as the use of technology) and quality factors (such as legal, ethical, and validity issues). Topics include international as well as domestic concerns and consideration of multiple staffing levels (such as executive managers and temporary employees). Current issues in private, not-for-profit, and/or public sectors are discussed.

HRMD 640 Job Analysis, Assessment, and Compensation (3)
A study of the interrelated aspects of human resource management, including job design, job analysis, job evaluation, employee compensation, incentives to productivity, employee motivation, and performance appraisal. A variety of approaches for analyzing, weighing, and specifying the detailed elements of positions within modern organizations are presented. Discussion covers techniques for identifying and classifying the critical components of a job, defining the observable standards and measures, preparing and determining the job description and job worth, establishing equitable compensation for job performance, and developing an executive compensation program. The interaction of compensation, worker motivation, performance appraisal, and level of worker performance within the organization is examined.

HRMD 650 Organizational Development and Change (3)
A study of the issues, theories, and methodologies associated with organizational development and the management of change, with a major emphasis on organizational culture and organizational change processes. Topics include the diagnostic process, intervention strategies, and overcoming resistance to change. Techniques such as goal setting, team-development procedures, productivity and strategy interventions, and interpersonal-change models are examined.

HRMD 651 Current Perspectives in Training and Development (3)
An examination of the theories, research, skills, and issues related to one major aspect of human resource development, the management of organizational training services. The role of training in the workplace and adult learning models are investigated. Topics include curriculum management, program development, and operation management with an emphasis on design and delivery issues. The impact of technology, the global environment, and modern organizational structures are considered. Ethical issues are also discussed. Assignments include the development of training proposals or programs.

HRMD 665 Managing Virtual and Global Teams (3)
An investigation of the foundations of team development and performance from a human resource management and organizational behavior perspective. Focus is on maximizing the effectiveness and efficiency of global and virtual teams in organizations. Topics include the impact of global diversity and use of technology on intergroup development, communication, and outcomes. Scholarly research and field literature are examined and the implications of the findings for applied management are discussed.

HSMN (Homeland Security Management)

HSMN 610 Concepts in Homeland Security (3)
An overview of the basic concepts of homeland security, including infrastructure protection, jurisdiction, and issues in technical areas such as interconnectivity and interoperability. The nation's telecommunications and information technology networks are examined as both vulnerable assets and critical solutions.

HSMN 620 Physical Security (3)
A comprehensive study of the many interdependent elements involved in protecting human-made structures from direct or indirect physical and cyber attacks. Various factors that affect physical security (including construction materials, architectural design, location, function, occupancy, and life-cycle management) are examined. Accessibility, access control, traffic patterns, and internal and external communications are analyzed. Review covers methods for protecting critical infrastructure support systems, such as electric power, water supply, airflow, and information systems. Typical security policies and procedures for various categories of physical facilities (such as those involved in power generation, finance, and telecommunications) are also evaluated.

HSMN 625 Critical Infrastructures (3)
Prerequisite: HSMN 610. An introduction to critical infrastructure assurance as a policy field. Review covers the concept of critical infrastructures and their interdependencies. Topics include the development of modern critical infrastructures, the reasons why they have become central elements of 21st-century societies, efforts being made to safeguard them, and potential threats to their continued effective operation.

COURSE DESCRIPTIONS

HSMN 630 Resilience Planning and Preparedness for Disaster Response and Recovery (3)

An in-depth examination of managerial strategies for developing and maintaining resilience in communities, the private sector, and the nation in the face of human-made, natural, and technological disruptions or catastrophes. Emphasis is on the importance of advanced planning. Techniques for performing risk assessment and potential impact analysis and for selecting appropriate risk treatments are explored. Discussion covers preparing to handle adverse events, responding to them, and recovering from them. Resilience management is explored within the context of a life cycle that includes programmatic review and continuous improvement planning. Actual and hypothetical cases are analyzed.

HSMN 670 Seminar in Homeland Security (3)

(To be taken during the last semester of the program.) Prerequisites: 24 credits of program coursework, including HSMN 610, HSMN 620, HSMN 630, EMAN 620, INFA 660, and BSBD 641. An up-to-date evaluation of vulnerabilities and protective countermeasures regarding various aspects of the nation's critical infrastructure, with particular emphasis on the food and water supply. Topics include various threat profiles and actions by government, industry, independent institutions, and private citizens that might prevent attack from domestic or foreign sources and mitigate harmful consequences should such an attack occur. Discussion reviews the federal government's organization and management of food and water security and explores what further efforts might be made, building upon the nation's health system and engaging government at all levels. The singularly important roles of first responders are also analyzed.

IMAT (Informatics)

IMAT 637 IT Acquisitions Management (3)

A study of management practices related to the acquisition of IT systems, components, and services. Emphasis is on the importance of enterprise strategic planning and the concomitant IT strategic planning. Issues related to the development of the IT acquisition plan, financial planning and budgeting, integration of the proposed acquisition within the overall goals of the enterprise, and related IT program management are examined in the context of overarching management challenges. Federal IT systems, contract and procurement policies, and procedures provide examples for analysis of concepts with wider relevance.

IMAT 639 Internet Multimedia Applications (3)

A study of multimedia presentations as essential, strategic components of an organization's competitive web presence. Established principles of software development, aesthetics of typography and layout, benchmarking, and usability engineering are used to analyze websites and write successful site development plans. Emphasis is on basic web page design techniques. Topics include standards for representing common media formats, compression algorithms, file format translation tools, hardware requirements and standards, system constraints, Java, CGI scripts, and virtual reality. Assignments require building a portfolio of rich media content.

IMAT 670 Contemporary Topics in Informatics (3)

A capstone study of emerging and current technologies, as well as some eternal verities in IT management, that integrates and augments concepts previously studied. Topics vary and may include aligning IT with the strategic goals of the enterprise, leadership in IT, software psychology in the design of user interfaces, geographical information systems, building and managing internet communities, technology to ameliorate the digital divide, managing an enterprise's IT portfolio, and the social impact of information policy decisions.

INFA (Information Assurance)

INFA 610 Foundations of Information Security and Assurance (3)

(To be taken as the first course in the program.) An overview of techniques for ensuring and managing information security. Topics include administrative and technical security controls to prevent, detect, respond to, and recover from cyber attacks; risk and vulnerability analysis to select security controls; security planning; security architecture; security evaluation and assessment; and legal, ethical, and privacy aspects of information assurance. Discussion also covers information security fundamentals, such as cryptography, authentication, and access control techniques, and their use in network, operating system, database, and application layers. Security issues of current importance are stressed.

INFA 620 Network and Internet Security (3)
An introduction to the security concepts needed for the design, use, and implementation of secure voice and data communications networks, including the internet. A brief review of networking technology and standards (including an introduction to internet communication protocols) is provided. Security subjects addressed include defense models, security policy development, authentication and authorization controls, firewalls, packet filtering, virtual private networks (VPNs), and wireless network security. A specific project on network security in a hypothetical scenario based on the inputs from government agencies and commercial organizations is assessed by a team of experts who are working in the field.

INFA 630 Intrusion Detection and Intrusion Prevention (3)
An exploration of the theory and implementation of intrusion detection and intrusion prevention. Topics include network-based, host-based, and hybrid intrusion detection; intrusion prevention; attack pattern identification; deployment; response; surveillance; damage assessment; data forensics; data mining; attack tracing; system recovery; and continuity of operation. A specific project on intrusion detection and intrusion prevention in a hypothetical scenario based on the inputs from government agencies and commercial organizations is assessed by a team of experts who are working in the field.

INFA 640 Cryptology and Data Protection (3)
An overview of the theory of encryption using symmetric and asymmetric keys, current protocols for exchanging secure data (including the Data Encryption Standard and the Advanced Encryption Standard), and secure communication techniques. A review of the historical development of cryptographic methods and cryptanalysis tools is provided. Public Key Infrastructure and the use of digital signatures and certificates for protecting and validating data are examined. Strategies for the physical protection of information assets are explored.

INFA 650 Computer Forensics (3)
An introduction to the fundamental concepts behind the collection and analysis of the digital evidence left behind in a digital crime scene. Topics include the identification, preservation, collection, examination, analysis, and presentation of evidence for prosecution purposes. Discussion also covers the laws and ethics related to computer forensics and challenges in computer forensics. Network forensics is briefly explored. A specific project on computer forensics or network forensics in a hypothetical scenario based on the inputs from government agencies and commercial organizations is assessed by a team of experts who are working in the field.

INFA 660 The Law, Regulation, and Ethics of Information Assurance (3)
An overview of the legal, regulatory, and ethical issues related to cyberspace. Emphasis is on developing skills in spotting ethical and legal issues and navigating through the complex and changing legal and regulatory environment as it applies to behavior in cyberspace. Various resources and materials about the ethical and legal operation of modern computer systems, applications, and networks are presented.

INFA 670 Information Assurance Capstone (3)
Prerequisites: INFA 610, INFA 620, INFA 630, INFA 640, INFA 650, and INFA 660 (3 credits may be taken concurrently). A study of information assurance that integrates and applies concepts previously studied. Best practices and appropriate technologies to design, implement, manage, evaluate, and further improve information security are explored. Emerging trends are analyzed to understand their potential effect on information security and assurance.

INMS (Intelligence Management)

INMS 600 Managing Intelligence Activities (3)
An introduction to management issues associated with intelligence activities in national and homeland security, law enforcement, and the private sector. Intelligence is evaluated from the perspectives of its consumers in government and business. Topics include the historical issues that led to extensive oversight of intelligence agencies and laws restricting their activities. Discussion also covers recent changes in national intelligence and current issues, such as the debate over security versus civil liberties and how to protect America from foreign espionage and exploitation.

INMS 610 Intelligence Collection: Sources and Challenges (3)
A study of the management challenges related to collecting intelligence for national security, law enforcement, and business purposes through case study analysis and planning exercises. Various problems with human source intelligence; open source intelligence; signals intelligence; imagery; technical intelligence; and the military's intelligence, surveillance, and reconnaissance (ISR) approach are assessed. Discussion covers law enforcement and correctional sources and the integration of multisourced intelligence. Topics include how requirements drive collection efforts, the relationship between collection and analysis, and the costs associated with collection of intelligence.

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INMS 620 Intelligence Analysis: Consumers, Uses, and Issues (3)
Prerequisites: INMS 600 and INMS 610. An examination of the intelligence requirements of various clients in government and the private sector. The various purposes of analysis such as warning, policy planning, research and development, systems or product planning, support for law enforcement and correctional agencies, support for operational activities, and investment are examined. Discussion covers managing analytical methodologies and techniques, as well as dissent in analyses, and understanding the reasons for failures. Case studies illustrate issues in analysis management. The conflict between intelligence analysts and decision makers at national and local levels is explored.

INMS 630 Counterintelligence (3)
An examination of the vulnerabilities of the United States, allied countries, and private businesses to espionage and how counterintelligence can reduce the threat. Discussion covers case studies of espionage against America, including economic espionage against U.S. technology and business. Topics include the roles, missions, and espionage activities of foreign intelligence services. Major threat groups are assessed, and management issues related to countering these threats are evaluated. U.S. policy issues and the management challenges of interagency cooperation among local, state, and international sources and public/private partnerships are explored.

INMS 640 Intelligence-Led Enforcement (3)
An evaluation of management approaches and assessment of issues associated with intelligence support for crime prevention and law and regulation enforcement. Topics include the issue of public/private cooperation, domestic counterterrorism, drug law enforcement, and actions to counter financial crimes. Interagency cooperation and intelligence sharing with state, local, and tribal agencies and laws and executive orders related to intelligence promulgated since 9/11 are examined. The roles of intelligence in fighting transnational crime and cybercrime are also covered in this course. Assignments include case-study analysis and original research.

INMS 650 Intelligence Management and Oversight (3)
Prerequisites: INMS 600 and INMS 610. An examination of the relationships among intelligence organizations at the federal, state, and local levels, as well as with private corporations. Strategies for the management and control of intelligence activities establishing policies, setting budgets, and conducting reviews are examined. Discussion covers how intelligence oversight (including the roles and responsibilities of the executive, legislative, and judicial branches of government) works and how business intelligence activities are managed and overseen in the private sector.

INMS 660 Leadership Seminar (3)
Prerequisite: 30 credits of program coursework, including all core and specialization courses (except MGMT 670). An analysis and assessment of leadership challenges within intelligence environments. Topics include ethical dilemmas of managing intelligence operations and how leaders assert their own style. Assignments include a leadership profile, case study, and final group project.

ISAS (Information Systems and Services)

ISAS 600 Information Systems for Managers (3)
(Designed for managers without a technical background in computers and information systems.) Prerequisite: Basic microcomputer skills. An investigation of different types of hardware and software and their application in organizations from a systems perspective. Case studies are used to reveal technical and organizational issues, along with operational considerations. Emphasis is on determining managers' needs for information and procuring and using appropriate computer systems.

ISAS 610 Information Systems Management and Integration (3)
A study of the life cycle of the information system, from inception, through systems development and integration, to system operation and maintenance. Emphasis is on the integration of information systems with management systems of an organization. Major phases, procedures, policies, and techniques in the information system life cycle are discussed in detail.

ISAS 620 Information Systems Sourcing Management (3)
A study of how best to make and implement appropriate decisions in providing information systems to an organization, as well as how to manage the outcomes of such decisions. Focus is on the frameworks, tools, and techniques for making sourcing decisions. Topics include "make or buy" decisions, the use of off-the-shelf package software (including enterprise resource planning software), various models of outsourcing, and the outsourcing of entire business processes. The implications of whether to source domestically or offshore are evaluated. Discussion also covers contemporary issues related to cloud computing and the options it offers.

ISAS 630 Systems Analysis and Design (3)
A study of current techniques and practices in requirements specification, software application selection, project management, and analysis and design of information system applications. Emphasis is on a management perspective in the specification of the information system's logical and physical analysis and design.

COURSE DESCRIPTIONS

ISAS 640 Decision Support Systems and Expert Systems (3)
An investigation of computer applications for management support. The technologies of decision support systems and expert systems and the organizational factors leading to the success or failure of such systems are introduced. Topics also include group decision support systems, integration and implementation issues, and related advanced technologies such as neural networks.

ISAS 650 Information Technology, the CIO, and Organizational Transformation (3)
An examination of how information technology can affect the strategic direction of an organization, how IT enables new ways of operating, and how the chief information officer can serve as a trusted member of the organization's top management team to help it exploit information technology effectively.

ITEC (Information Technology)

ITEC 610 Information Technology Foundations (3)
A fundamental study of technology and its applications, as well as the economic and social issues they have raised. Topics include computers, peripherals, databases, and networks; operations (of business, government, and other enterprises), decision support systems, and acquisition of information technology resources; and information security, productivity, equitable access by users, intellectual property rights, and global reach. Discussion also covers current and future developments in the field and their implications.

ITEC 625 Computer Systems Architecture (3)
An introduction to the evolution of computer systems design and hardware and software architectures. Focus is on computer organization (classical and advanced architectures), operating systems, and applications development. Emerging developments in computer systems architecture are also examined.

ITEC 626 Information Systems Infrastructure (3)
An introduction to information systems infrastructure. Focus is on data communications and networks. Discussion covers layered network architectures and communication hardware. Emerging technologies such as social media, mobile computing, cloud computing, big data, and the Internet of Things are also examined.

ITEC 630 Information Systems Analysis, Modeling, and Design (3)
(Formerly CSMN 635.) A study of systems analysis and design, using selected engineering and management science techniques and practices. Topics include requirements determination, modeling, decision making, and proposal development. The System Development Life-Cycle Model, including system implementation and postimplementation activities, is examined. Emphasis is on the specification of the information system's logical and physical analysis and design from a management perspective. Research and project assignments related to information systems analysis, design, implementation, and/or project planning and control require individual and group work. Students may receive credit for only one of the following courses: CSMN 635 or ITEC 630.

ITEC 640 Information Technology Project Management (3)
An examination of the fundamental principles and practice of managing programs and projects in an information processing and high-tech environment. The dynamic nature of IT and the effect of life cycles are explored. The fundamental building blocks of high-tech management styles (including project planning, organizational structure, team building, and effective control mechanisms) are addressed. Discussion covers the effect of product and project life cycles in delivering a successful IT project, considering the obsolescence factors in procurement/stakeholder contracts. The goal is to gain a solid foundation to successfully manage each phase of the project life cycle, work within organizational and cost constraints, set goals linked directly to stakeholder needs, and utilize proven management tools to execute a dynamic project on time and within budget. Emphasis is on how to apply the essential concepts, processes, and techniques in the management of large-scale governmental or commercial programs. Topics also include the need for global vision, strong planning techniques, appropriate training before introducing any IT product into the market, and discipline in executing tasks.

LDT (Learning Design and Technology)

LDT 610 Learning Design and Digital Pedagogy (6)
Prerequisite: DCL 600. Gain the foundational knowledge, skills, and dispositions needed in the field of learning design. Explore the history of online learning and design; current learning design models; foundational theories and principles of distance learning, adult learning, collaborative and social learning, and computer-mediated learning; and technology tools and applications to support online interactions.

COURSE DESCRIPTIONS

LDT 620 Learning Design, Media, and Emerging Technologies (6)
Prerequisite: LDT 610. Develop skills in the design, development, and integration of digital media to enhance the learning experience. Investigate how media, emerging and mobile tools, and online applications impact technology-mediated learning environments. Explore media and visual literacy, graphic design for online and mobile environments, the use and design of open educational resources, emerging technologies, and trends in technology such as mobile learning environments, gaming, and augmented reality.

LDT 630 Learning Design and Data Analytics (6)
Prerequisite: LDT 620. Investigate advanced learning design concepts, and apply data analytics to assess the impact of design and technology on learning. Implement a systems-thinking approach and digital tools to evaluate and support online learners and learning programs. Explore the assessment of online learning and interactions, data analytic tools and techniques, ways to support user experiences, human/computer interface design, and data visualization.

LDT 640 Advanced Practicum in Learning Design (6)
Prerequisite: LDT 630. Examine and evaluate leadership and change models to advance learning design projects. Identify and research legal issues associated with online teaching and learning. Examine leadership and project management techniques associated with learning design projects, evaluate learning management systems, and identify a project and develop a learning design seminar proposal.

LDT 670 Learning Design Seminar (6)
Prerequisite: LDT 640. Assume the role of an instructional designer and apply learning design knowledge, skills, and dispositions to create and assess an authentic online learning program. Complete the design, implementation, and analysis of a learning design project. Develop a professional portfolio and present the project and reflective analysis online.

MBA (Business Administration)

MBA 610 Leading Organizations and People (6)
Prerequisite: PRO 600. Assess and develop your leadership skills by creating a personal leadership and professional development plan that you will refine during the program. Develop a strategic understanding of your organization by analyzing its mission, vision, goals, and values. Evaluate your organization's culture, climate, and approach to decision making and assess leadership effectiveness, governance structure, and processes. Explore how high-performing work teams can be a source of competitive advantage.

MBA 620 Financial Decision Making (6)
Prerequisite: MBA 610. Conduct financial analysis to accomplish strategic goals for an organization. Analyze financial statements to estimate the financial risks faced by the organization. Make effective operational decisions related to pricing, product mix, and distribution channels by analyzing costs, revenues, and profitability. Use capital budgeting techniques to determine the suitability of candidate projects and determine long-term capital requirements needed to support an organization.

MBA 630 Leading in the Multicultural Global Environment (6)
Prerequisite: MBA 620. Enhance your cultural competence and evaluate opportunities and risks for operations in a global market. Expand your ability to apply ethical decision-making models. Assess issues of culture, business ethics, employment law, contracts, and criminal law in the context of a global business. Analyze political, legal, economic, and cultural forces that impact multinational businesses. Recommend the legal form and organizational structure of a business.

MBA 640 Innovation Through Marketing and Technology (6)
Prerequisite: MBA 630. Critically examine technology systems and business processes in the organization. Complete a situation analysis of the organization, the environment, and customers. Organize tasks in a marketing plan, assess market risk and opportunity, and collect data required to implement the marketing plan. Develop revenues, cost projections, and suitable metrics, as well as a balanced scorecard for tracking the marketing plan.

MBA 670 Strategic Decision Making (6)
Prerequisite: MBA 640. Assume the role of a strategy officer who reports to the CEO. Identify activities in the value chain of your organization and propose a plan to relocate one or more activities to another geographical region. Prepare a project management plan for the opening of a facility in a new country. Develop a business plan that includes an entry strategy, operational plan, competitive strategy, and financial statements.

COURSE DESCRIPTIONS

MGMT (Management)

MGMT 610 Organizational Theory (3)
An overview of the fundamental concepts of organizational theory and design in the context of a postindustrial and increasingly global society. The study of organizations encompasses several key knowledge areas essential to today's manager: the impact of technological and workforce changes on society, organizational ethics and social responsibility, global issues, history of management thought and its relevance for managers today, and systems thinking and the challenges of managing in today's complex and rapidly changing environment. Discussion addresses essential concepts in organizational theory and design, including measuring effectiveness, organizational life cycles, options for organizational structure, and becoming the learning organization.

MGMT 615 Intercultural Communication and Leadership (3)
(Not open to students who have completed MGMT 620 or MGMT 625.) A study of organizational communication, leadership, and decision-making skills essential for all managers in intercultural environments. Theories of culture are examined and applied in relation to leadership style and practices as well as to organizational communication across cultural groups. Team development and leadership are explored in an intercultural environment.

MGMT 630 Organizational Theory and Behavior (6)
(Not open to students who have completed MGMT 610, MGMT 615, MGMT 620, MGMT 625, or MGMT 635.) An overview of the fundamental concepts of organizational theory and organizational behavior in the context of a postindustrial and increasingly global society. Topics include the impact of technological and workforce changes on society, organizational ethics and social responsibility, organizational communication, leadership and decision-making skills in intercultural environments, the history of management thought and its relevance for managers today, and systems thinking and the challenges of managing in today's complex and rapidly changing environment.

MGMT 640 Financial Decision Making for Managers (3)
Prerequisite: Knowledge of the fundamental concepts of financial accounting and economics, including opportunity cost, the time value of money, and financial analysis. An investigation of financial decision making in business, government, and not-for-profit organizations. Emphasis is on the application of financial and nonfinancial information to a wide range of management decisions, from product pricing and budgeting to project analysis and performance measurement. A variety of decision-making tools (such as break-even analysis, activity-based costing procedures, and discounted cash flow techniques) are studied. Contemporary managerial practices are explored.

MGMT 650 Statistics for Managerial Decision Making (3)
Prerequisite: Knowledge of the fundamentals of statistical methods, techniques, and tools. An examination of how managers organize, analyze, and interpret data for decision making. Focus is on developing skills in using statistical tools to make effective business decisions in all areas of public- and private-sector decision making, including accounting, finance, marketing, production management, and human resource management. Topics include collecting data; describing, sampling, and presenting data; probability; statistical inference; regression analysis; forecasting; and risk analysis. Microsoft Excel is used extensively for organizing, analyzing, and presenting data.

MGMT 670 Strategic Management Capstone (3)
Prerequisite: 24 credits of program coursework, including all core courses. A capstone investigation of how strategy interacts with and guides an organization within its internal and external environments. Focus is on corporate- and business unit–level strategy, strategy development, strategy implementation, and the overall strategic management process. Topics include organizational mission, vision, goal setting, environmental assessment, and strategic decision making. Techniques such as industry analysis, competitive analysis, and portfolio analysis are presented. Discussion covers strategic implementation as it relates to organizational structure, policy, leadership, and evaluation issues. The ability to "think strategically" and to weigh things from the perspective of the total enterprise operating in an increasingly global market environment is emphasized. Case analyses and text material are used to integrate knowledge and skills gained through previous study.

COURSE DESCRIPTIONS

MTKT (Marketing)

MRKT 600 Marketing Management (3)
A study of the theory and practices related to the management of the marketing function as applied by managers and administrators in organizations. Analyses of case studies are used to demonstrate the necessity of incorporating marketing with other business functions. Emphasis is on the planning and implementation activities required to attain the organization's marketing goals. Topics include the product/service mix, pricing, marketing communications such as advertising and sales promotion, and channels of distribution. Control techniques for the overall marketing mix are also introduced.

MRKT 601 Legal and Ethical Issues in Global Communications (3)
A survey of the ethical and legal constraints on marketing and public relations practitioners. Topics include ethical models, First Amendment issues, libel, privacy, and confidentiality. The integration of public relations with advertising and marketing efforts is discussed, with emphasis on the ethical and legal issues inherent in this integration.

MRKT 602 Consumer Behavior (3)
A study of the cognitive and behavioral bases underlying consumers' buying preferences and decision processes, intended for managers and administrators who have to evaluate the efficacy of the firm's marketing plan. Emphasis is on the role of the communications strategy (for example, advertising, promotion, public relations) in achieving the overall marketing objectives.

MRKT 603 Brand Management (3)
A presentation of the concepts and techniques for creating and selecting marketing strategies for an organizational unit that survives on its ability to provide products and services to other organizations. Discussion covers trends toward a "marketing culture" in both public and private institutions and the implications that this change has for all managers and administrators. Emphasis is on the role of brand equity in achieving a sustainable competitive advantage.

MRKT 604 Marketing Intelligence and Research Systems (3)
Prerequisite: MGMT 650. A study of marketing research methods and techniques useful to managers and administrators with responsibility for assessing or increasing the demand for their organization's product, programs, and services. Methodologies and issues related to the design and completion of marketing research projects (including the survey, observational, and experimental methods used in assessing and segmenting markets) are presented. Discussion covers data analysis that is especially useful for marketing research (that is, focus groups, customer visits, conjoint analysis, and multidimensional scaling).

MRKT 605 International Marketing Management (3)
An overview of the fundamentals of marketing and marketing management, presented in the context of competitive global environments and diverse national economies. Topics include demand analysis, product development, product pricing, marketing organization, foreign representation and distribution systems, promotion, advertising, and sales and service. Review also covers regulatory issues as they relate to international marketing.

MRKT 606 Integrated Direct Marketing (3)
Prerequisite: MGMT 650. A systematic approach to integrated direct marketing and the process of precision deployment of multiple media and sales channels to maintain contact with the customer. Traditional direct marketing techniques—such as database marketing, direct mail, and telemarketing, as well as digital techniques, including e-mail and websites—are explored. Topics include lifetime value, performance measurement, cost per thousand (CPM), and cost per response.

MRKT 620 Marketing Principles, Regulation, and Ethical Issues (6)
An examination of the pivotal role of marketing in organizations and the ethical and legal constraints on marketing practitioners. Topics include competitive strategy, market segmentation, e-commerce issues, the product/service mix, pricing strategies, channels of distribution, customer service, and marketing communications (e.g., advertising, public relations, and sales promotions). Ethical and legal issues surrounding the practices of marketing, advertising, and public relations are examined in depth. The practical aspects of marketing management are analyzed through discussion of current marketing activities, emerging trends, problems, and cases. Students who receive credit for MRKT 620 may not receive credit for MRKT 600 or MRKT 601.

COURSE DESCRIPTIONS

MSAF (Accounting and Financial Management)

MSAF 670 Accounting and Financial Management Capstone (3)
Prerequisite: Completion of all MS in Accounting and Financial Management program courses except FIN 645. A capstone study of accounting and financial management that integrates subject matter from both disciplines. Advanced principles, techniques, and theories are applied through the analysis and presentation of case studies by student teams. Assignments include a research paper that comprehensively assesses an important current issue or emerging trend in the fields of financial management and accounting.

NPMN (Nonprofit and Association Management)

NPMN 600 Nonprofit and Association Organizations and Issues (3)
A presentation of a framework outlining the roles and functions of the principal types of nonprofit organizations. Characteristics that distinguish nonprofit organizations from their counterparts in the private and public sectors are introduced. The challenges, opportunities, and common issues facing managers of nonprofit organizations are explored. These issues include administrative cost control, preserving the organization's legal status and revenue base, staffing and organizing in response to client needs, and ethical considerations. Specific laws, regulations, policies, and court rulings that affect the nonprofit sector are examined.

NPMN 610 Nonprofit and Association Law and Governance (3)
A study of current ideas and approaches related to nonprofit law, governance, and mission. Discussion covers distinctions between nonprofit, educational, charitable, social action, membership, cultural, scientific, environmental, and trade associations as they relate to incorporation, legal standing, tax-exempt status, and governance. Topics include nonprofit governance and trustee issues, as well as lobbying and advocacy, nonprofit liability, personnel, and unrelated business income tax. Emphasis is on the relationship of governance and ethics in nonprofit management.

NPMN 620 Nonprofit and Association Financial Management (3)
A detailed study of theories and practices of nonprofit financial management and decision making, including budgeting, reporting requirements, nonprofit accounting, and financial standards. Focus is on the role of financial management in maintaining the fiscal health and legal status of the nonprofit organization. Topics include budgeting, fund accounting, cash flow analysis, expenditure control, long-range financial planning, audits, and grant and contract management. Discussion also covers compliance with nonprofit accounting and financial management principles in reference to maintaining public access and ethical standards.

NPMN 640 Marketing, Development, and Public Relations in Nonprofit Organizations and Associations (3)
A study of the principles and practices required to develop and promote the products, services, positions, and image of nonprofit organizations. Focus is on fund-raising and membership recruitment issues. Topics include the design of a marketing strategy and marketing mix, pricing issues, alternative revenue-generating mechanisms, and customer service. Discussion also explores use of the media, advertising and promotion methods, and relationships with business, government, and the community. The integration of sponsors, members, and chapters in the total marketing effort is examined.

NPMN 650 Fundamentals of Association Management (3)
A study of the unique and important niche of associations within the nonprofit sector. Analysis covers the history of associations, political groups, trade lobbying groups, and foundations in relation to their varying missions, internal capacity, shifting environments, and legal status. Associations also are assessed in terms of their wider environment, including the extent of their labor force and command of capital resources. Discussion also covers the wider influence of associations on U.S. economy and policy.

NPMN 655 Process and Outcome Evaluation for Nonprofit Organizations (3)
An examination of the growing importance of process and outcome evaluation to nonprofit organizations in supporting their missions. Various quantitative and qualitative evaluation strategies, as well as quality and process-improvement methodologies, are explored. Topics include important evaluation concepts such as validity and reliability of various data collection tools, various approaches to sampling, and precision of results.

COURSE DESCRIPTIONS

NPMN 660 Strategic Management in Nonprofit Organizations and Associations (3)

A study of the integration and application of strategic management principles, concepts, and practices in nonprofit organizations. Topics include the development of mission statements, goal-setting concepts, and strategy formulation and implementation approaches. Assignments focus on designing organizational plans and strategies relevant to the specific needs of organizations.

OMDE (Distance Education)

OMDE 601 Foundations of Distance Education and E-Learning (3)

A study of the history and evolution of distance education. Social, political, and economic factors, theories, learning and teaching models, technology and media innovations, institutions and systems, and major writers that have shaped the development of the field are critically examined. A variety of technologies are used to support the development of foundational skills that are integral to current practice.

OMDE 603 Technology in Distance Education and E-Learning (3)

Prerequisite or corequisite: OMDE 610. A review of the history and the terminology of technology used in distance education. The basic technology building blocks of hardware, networks, and software are identified. Analysis covers the characteristics of asynchronous and synchronous technologies and tools used in the teaching and learning, as well as the administration of distance education. The relationship between technology and the goals of the educational/training organization are critically examined. The relationship between information technology (especially online technology) and distance education is explored. Topics include the criteria and guidelines for selecting technologies for distance education and the future directions of technology in distance education.

OMDE 606 Costs and Economics of Distance Education and E-Learning (3)

Prerequisite or corequisite: OMDE 608. A study of the economics of distance education in the larger context of the economics of education. A variety of methodological approaches (including cost/benefit and cost/effectiveness analyses) are applied to the distance education context. A variety of costing techniques and economic models are explored and applied to different institutional forms and levels of distance education.

OMDE 608 Learner Support in Distance Education and Training (3)

Prerequisite or corequisite: OMDE 603. An introduction to the theories and concepts of support for learners in distance education and training. Various types of learner support, including tutoring and teaching; advising and counseling; and library, registrar, and other administrative services, are examined. Discussion addresses management issues, such as planning, organizational models, staffing and staff development, designing services to meet learner needs, serving special groups, and evaluation and applied research.

OMDE 610 Teaching and Learning in Online Distance Education (3)

Prerequisite or corequisite: OMDE 601. An exploration of the online teaching and learning dynamic, including its theoretical foundation and best practices. The themes that shape the online teaching/learning relationship are addressed through individual and collaborative projects. Topics include philosophical frameworks; instructional, social, and cognitive presence; interaction, collaboration, and participation; community and engagement; and administration and management.

OMDE 670 Portfolio and Research Project in Distance Education and E-Learning (3)

Prerequisite or corequisite: DEPM 622. A capstone study of distance education and training designed to demonstrate cumulative knowledge and skills through two major projects: an electronic portfolio and a case study. The personal e-portfolio documents credentials and accomplishments to date and also serves as an ongoing resource and record of continuing professional development. The case study, which focuses on a distance education/training program or organization, involves in-depth analysis of the setting and application of concepts and strategies to enhance practice and performance in distance education and training. Students may receive credit for only one of the following courses: OMDE 670 or OMDE 690.

COURSE DESCRIPTIONS

PMAN (Project Management)

PMAN 634 Foundations of Project Management (3)
An overview of the theory and practice of managing projects in any industry. Emphasis is on leadership in project management: managing projects or tasks in a team environment; building teams; and utilizing communication, organization, and conflict management skills. Discussion covers project management process groups and how these process groups (initiating, planning, executing, monitoring and controlling, and closing the project or project phase) interact throughout the life cycle of the project. Project management knowledge areas are examined and linked to industry practices for successful management of projects. The goal is to gain a solid understanding of how to successfully manage multiphase projects, work within organizational constraints, set goals linked directly to stakeholder needs, and utilize proven project management tools to complete projects on time and within budget while meeting specifications. Essential concepts, processes, and techniques are applied through management of a team project, which requires regular progress reports and reviews.

PMAN 635 Quantitative Methods in Project Management (3)
Prerequisites: PMAN 634; MGMT 640, TMAN 625, or ITEC 640 (or an approved course in finance); and MGMT 650 (or an approved course in statistics). An overview of quantitative aspects of managing projects, applying widely used statistical techniques and software tools for project management and risk analysis. Topics include analytical approaches and quantitative methods in project management, such as cash flow analysis, scheduling projects based on resource availability, resource leveling, expediting projects, quantitative risk analysis, and techniques for estimating actual vs. expected project duration and cost. Simulation tools and statistical techniques are used to analyze uncertainty in estimating project cost and duration. Discussion also covers project portfolio management and how multiple projects and programs fit into the strategic direction of an organization. The processes, tools, and techniques of project management are applied to a team project with emphasis on quantitative and analytical methods.

PMAN 637 Project Risk Management (3)
Prerequisite(s): PMAN 600 (or PMAN 634 and PMAN 635). An in-depth analysis of risk management methods and cases and project management risk monitoring from strategic, applied perspectives. State-of-the art tools and techniques for identifying, ranking, and monitoring risks in the project management environment are examined and utilized. Both qualitative and quantitative risk analyses are conducted, and strategies for proactive risk mitigation are developed. Focus is on how a comprehensive risk management approach can enable a project team to proactively manage issues that adversely impact the successful scope, scheduling, control, and completion of a project.

PMAN 638 Project Communications Management (3)
Prerequisite: PMAN 600 or PMAN 634. An overview of conflict resolution processes and methods and the skills needed to manage the human elements within project management, a task as challenging as managing the technical aspects. Topics include critical communication and conflict resolution issues faced by project workers in today's global corporate environment. Innovative approaches to successfully negotiating and resolving conflicts among team members, colleagues, managers, and stakeholders are introduced and practiced. Proven techniques to make conflict a constructive rather than a destructive experience are analyzed. Emphasis is on case study analysis, effective communication behaviors, negotiation skills, and virtual team processes to successfully lead both domestic and global projects.

PMAN 639 Project Quality Management (3)
Prerequisite(s): PMAN 600 (or PMAN 634 and PMAN 635). A study of the policies, processes, and procedures involved in ensuring that projects will satisfy the objectives for which they were undertaken. Emphasis is on quality planning, quality assurance, quality control, and process improvement. Discussion covers all the activities that determine quality objectives, policies, and responsibilities. The importance of customer satisfaction, prevention over inspection, management responsibility, and continuous improvement is recognized. Topics include control charts, cause and effect diagrams, Pareto charts, failure mode and effect analysis, design reviews, and cost of quality. Course content and approach are compatible with the International Organization for Standardization.

COURSE DESCRIPTIONS

PMAN 641 Project Procurement Management (3)
Prerequisite: PMAN 600 or PMAN 634. An examination of the tools needed for project procurement management. Focus is on determining what needs to be purchased or acquired and determining when and how to acquire it. Topics include planning the contracting efforts (documenting products and services and identifying potential sellers); requesting sellers' responses (obtaining information, quotation, bids, offers, or proposals); selecting the seller (receiving and reviewing offers, selecting among those potential offers, and negotiating a contract); administering contracts (managing the relationship between buyers and sellers, including documentation, corrective actions, and contract changes); and closing contracts (completing the contract and settling all open issues).

PMAN 650 Financial and Strategic Management of Projects (3)
Prerequisite(s): PMAN 600 (or PMAN 634 and PMAN 635). An investigation of financial and strategic decision making in the management of projects. Topics include estimating project costs from work breakdown structure; formulating, monitoring, and controlling project budgets; monitoring, evaluating, and forecasting project costs, schedule, results, and performance using earned-value management; and deriving project cash flows. Discussion also covers the impact of project scope, schedule, and changes; management reserves to cover risks and contingencies; top-down and bottom-up budgeting; investment project analysis; discounted cash flow, internal rate of return, and net present value methodologies; cost of capital; and capital budgeting. Broader issues (such as links between project and corporate financial performance, business ethics, corporate social responsibility, project and organizational culture, information flow, and project sustainability) are also examined.

PRO (Professional Communication and Leadership)

PRO 600 Communicating, Problem Solving, and Leading in Professional Fields (6)
Make yourself more valuable to an employer by gaining and improving skills in communication and problem solving. Explore your field by developing connections to your career path, creating a professional social network presence, and using critical thinking to inform decisions. Improve and refine your skills in communication, critical thinking, quantitative reasoning, and team leadership as you hone your professional writing and oral communication skills and proficiency with analytical software programs, collaboration tools, and other professional software.

PRPA (Public Relations)

PRPA 600 Public Relations Writing (3)
Writing-intensive practice of the fundamental skills expected of public relations professionals. Topics include the essentials of effective writing; persuasive, informative, and educational writing; and the adaptation of writing styles for specific media and targeted publics. Emphasis is on the use of Associated Press (AP) style.

PRPA 601 Public Relations Theory and Practice (3)
Prerequisite: PRPA 600. A study of the relationship between the management function of policy formulation and the communication process of disseminating ideas and information to the organization's public. The process of planning and executing public information and public relations programs to address the concerns of the organization's various publics are examined. Topics include message formation, media selection, and audience differentiation. The impact of the internet on public relations practices is explored in depth.

PRPA 602 Public Relations Techniques (3)
Prerequisite: PRPA 601. A presentation of advanced writing techniques designed to improve skills in the writing of specialized public relations materials. Emphasis is on audience, message, and channel identification. Topics include special communication techniques necessary for broadcast and electronic media.

PRPA 610 Crisis Communication Management (3)
Prerequisite: PRPA 602. An examination of current approaches to crisis definition, issue management, and crisis communications management. Traditional and web-based approaches to analyzing crisis and communications management issues are applied using appropriate public relations research, theory, and case examples to better identify issues and audience segmentation requirements and develop strategic public responses to crisis situations.

PRPA 620 Global Public Relations (3)
Prerequisite: PRPA 602. A study of the role, function, and influence of public relations in a global environment. Topics include global trends, multicultural communication knowledge and skills, multiple cultures and diversity within nations, national media structures and public policy, and international legal and ethical codes in public relations. Global case studies are used to develop and implement strategic and creative communications plans.

COURSE DESCRIPTIONS

PRPA 650 Public Relations Campaigns (3)
Prerequisite: 30 credits of program coursework, including all core and specialization courses (except MGMT 670); approval of program director required for internship option. A study of public relations campaigns that integrates content from previous coursework. Focus is on creating a public relations strategy and a plan to execute that strategy for an existing organization. Critical principles of public relations are reviewed and applied in real-world settings.

SWEN (Software Engineering)

SWEN 603 Modern Software Methodologies (3)
An in-depth overview of widely used modern software development methodologies. Historical software development methods are introduced. Topics include rapid application development and agile development, Scrum, Extreme Programming (XP), Unified Process, EVO (Evolutionary Project Management), lean software development, test-driven development, feature-driven development, Crystal solutions, Rational Unified Process, and other Unified Process methods. Discussion also covers advantages and drawbacks of using each method.

SWEN 645 Software Requirements (3)
An examination of major models of software requirements and specifications, existing software standards and practices, and formal methods of software development. Topics include writing system and software requirements, formal specification analysis, formal description reasoning, models of "standard" paradigms, and translations of such models into formal notations.

SWEN 646 Software Design and Implementation (3)
An exploration of modern software development techniques, tools, and technologies for building large, complex systems. Topics include software development processes and the role of design in those processes. Discussion also covers major design methods, available computer-aided software engineering (CASE) tools, the proper application of design methods, and techniques for estimating the magnitude of the development effort. Object-oriented programming is presented. Focus is on building software products using these technologies.

SWEN 647 Software Verification and Validation (3)
A study of methods for evaluating software for correctness, efficiency, performance, and reliability. Skills covered include program proving, code inspection, unit-level testing, and system-level analysis. The difficulty and cost of some types of analysis and the need for automation of tedious tasks are examined. Emphasis is on problem-solving skills, especially in analyzing code.

SWEN 651 Usability Engineering (3)
A study of the theory and practice of designing user interfaces for interactive systems. Topics include the principles of usability engineering and basic rules for usable design. User interfaces are evaluated using techniques such as contextual inquiry, task analysis, and usability testing. Discussion also covers when these techniques are most appropriate.

SWEN 656 Advanced Software Design and Implementation (3)
Prerequisite: SWEN 646. An exploration of software design and implementation for reducing complexity of systems. Topics include software design patterns, object-oriented programming, and aspect-oriented programming design. Focus is on building software products using these technologies.

SWEN 661 User Interface Implementation (3)
Prerequisite: SWEN 651. An examination of all types of user interfaces. Topics include developing user interfaces using mobile, desktop, and web technologies. Focus is on building user interfaces using these technologies.

SWEN 670 Software Engineering Project (3)
Prerequisites: SWEN 603, SWEN 645, SWEN 656, and SWEN 661. A comprehensive examination of the tools, skills, and techniques of software engineering and their application. Completion of a major team project is designed to integrate knowledge and skills gained through previous study and provide experience of the constraints commonly experienced in industry (scheduling, vagueness of clients). Project requires forming teams (organization) and scheduling work to meet the deadlines imposed by the contract (syllabus).

COURSE DESCRIPTIONS

SYSE (Systems Engineering)

SYSE 610 Systems Engineering Overview (3)
An introduction to systems engineering using examples of manufacturing, information, and mechanical systems that involve the integration of different technologies. Emphasis is on the role of the systems engineer. Systems thinking principles and complex systems and system-of-systems theory are reviewed. Discussion covers various approaches to system dynamics modeling. An overview of the system life cycle through conception, design and development, integration and testing, and deployment and support is provided.

SYSE 620 Requirements Engineering (3)
An in-depth examination of the various techniques used in establishing and specifying system requirements, both physical and functional. Topics include system decomposition, requirements traceability, configuration management, and requirements validation. Several U.S. and international standards are examined as examples of requirements specification.

SYSE 625 Model-Based Systems Engineering (3)
Prerequisite: SYSE 610. An introduction to formal system modeling and simulation methods using software-based approaches, which are replacing more traditional document-based descriptive modeling methods. Discussion covers the trend in industry toward standardized modeling techniques using software, especially SysML (Systems Modeling Language) computer packages, allowing greater consistency in system model representations between technologies, across industries, and even across language barriers. Topics include ways that computers can represent system models in detail and provide complex system simulations with minimum effort using several different system modeling and simulation software platforms. The objective is to be able to determine when and how model-based systems engineering (MBSE) approaches are useful, which tools to use, which data to use as input to the MBSE tools, and how to use the results from the tools in decision making.

SYSE 630 System Design and Development (3)
Prerequisites: SYSE 610 and SYSE 620. A detailed exploration of the design and development phases of the system life cycle. Discussion covers several tools used for systems simulation and computer-aided design. Topics also include methods and policies for change control and the principles of quality assurance as an underlying concept in systems design.

SYSE 640 System Integration and Test (3)
Prerequisites: SYSE 610 and SYSE 620. A review of various strategies used to integrate system components and verify satisfaction of requirements at both subsystem and overall system levels. The concept of formal verification, validation, and accreditation (VV&A) is discussed. Examples of automated software testing tools are also examined.

SYSE 650 Design Considerations (3)
Prerequisites: SYSE 610 and SYSE 620. An introduction to system engineering subdisciplines that are critical in system design and deployment. Discussion covers reliability, availability, and maintainability (RAM) factors. Concepts in human factors engineering, system safety, and quality assurance are also reviewed.

SYSE 660 Systems Engineering Management (3)
Prerequisites: SYSE 630 and SYSE 640. An examination of the role played by the systems engineer as a liaison between technical specialists, business managers, and internal users or external customers. Discussion covers the traditional systems development life cycle, domestic and internal standards, and the evolving emphasis on agile methods and adaptive processes. Topics also include risk management and organizational considerations in outsourcing.

SYSE 670 Systems Engineering Capstone (3)
Prerequisites: SYSE 640 and SYSE 650. A project-based capstone study of systems engineering designed to integrate knowledge and skills gained in previous study. Both in individual projects and a group project, focus is on demonstrating the ability to construct a system design and develop a plan for a system's development and support.

TLMN (Telecommunications Management)

TLMN 602 Telecommunications Industry: Structure and Environment (3)
A study of major technological, legal, and regulatory developments (national and international) that have molded the structure of the current telecommunications industry. Topics include early legislation, the regulated monopoly, antitrust, divestiture, and recent legislation that has led to the current industry environment of competition and incipient integration of different industry segments. The roles of various national and international institutions in shaping the telecommunications industry are discussed.

TLMN 623 Telecommunications Networks (3)
A study of computer networks and telecommunications functionality, characteristics, and configurations. Recent advances in standardization; internetworking; and deployment of LANs (local area networks), MANs (metropolitan area networks), and WANs (wide area networks) are examined. Topics include network topologies; protocols; architectures; and current and emerging protocols such as asynchronous transfer mode (ATM), 10 gigabit Ethernet, and the Open Systems Interconnect (OSI) Reference Model. Emphasis is on emerging trends in telecommunications, network technologies, and services. Discussion also covers strategies for network planning, implementation, management, and security.

TLMN 630 Satellite Communication Systems (3)
An analysis of issues surrounding the design and use of satellite communications systems. Topics include satellite system characteristics such as type, class (bandwidth, standards, and availability), applications, interfaces, traffic patterns, network installation, performance criteria, hardware, and cost. Current and planned satellite communications are examined and compared to future needs and technologies.

TLMN 641 Network Management and Design (3)
A study of techniques that network managers can utilize to maintain and improve the performance of a telecommunications network. Network management systems are defined and explained. A description of how software package programs can monitor real-time performance of a network to identify problems is provided. Emphasis is on the five tasks traditionally involved with network management (fault management, configuration management, performance management, security management, and accounting management). Examples of current specific network management products are reviewed. Discussion also covers how the performance data gathered from monitoring can be archived and used later as an input when decisions are made on changes in the network architecture. Network design is studied for the development of a new network architecture when only user requirements are known.

TLMN 645 Wireless Telecommunications Systems (3)
A review of wireless telecommunications systems from microcell to global infrastructures. Emphasis is on the technology, applications, and limitations of these systems, which have become an essential element of the world information infrastructure. Topics include cellular communication principles, coding, antenna and propagation effects, channel access schemes, traffic engineering, and wireless network design, as well as terrestrial systems such as cellular, personal communication services (PCS), dispatch, wireless local-area networks (LANs), and wireless data systems. Discussion also covers market trends, regulations, and standards. The use of wireless systems is assessed and compared with other telecommunications alternatives available to organizations.

TLMN 670 Capstone Course in Telecommunications (3)
Prerequisite: 27 credits of program coursework. The application of knowledge and skills gained from previous study in telecommunications to real-world projects and to related business, technical, and ethical issues. Topics include entrepreneurship and venture creation, emerging telecommunications technologies and their applications, future trends, ethical development, and management. Focus is on demonstrating analytical, entrepreneurial, leadership, planning, managerial, and communication skills through a strategic research and development project for a telecommunications company.

UCSP (Special Topics)

UCSP 605 Effective Graduate Writing (0)
(Recommended preparation for students who want to improve their writing skills.) An introduction to the writing skills needed for effective academic writing. Skills addressed include using accurate grammar and punctuation; summarizing and synthesizing texts; developing well-organized, well-supported informative essays; integrating sources into writing and formatting academic papers using APA guidelines; and revising writing to produce clear, concise documents.

UCSP 615 Orientation to Graduate Studies at UMUC (0)
(Required within the first 6 credits of graduate study for all new graduate students, except those in programs requiring CBR, DCL, or PRO 600.) An overview of the skills needed for academic and professional success. Focus is on enhancing communication and critical thinking skills. Assignments provide familiarity with tools such as social media and library and information resources. APA style and resources are also addressed.

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COURSE DESCRIPTIONS

UCSP 620 Introduction to Accounting and Financial Management (0)

(Recommended as preparation for MGMT 640 or ACCT 610 for students with little or no background in accounting and finance.) A basic study of accounting and financial management concepts and their application in analyzing financial statements and estimating the value of long-lived capital projects and investments. The financial statements of actual companies are analyzed using financial ratios. Future and present value of financial and real assets/investments are calculated based on the time value of money. Emphasis is on gaining an appreciation for how financial management and accounting information can be used to support financial analysis, valuation, and decision making in various contexts.

UCSP 630 Introduction to Research Methods (0)

(Recommended as preparation for MGMT 650 or HIMS 650 for students who lack a background in statistics.) A presentation of basic research techniques and methodologies used in organizational research and evaluation studies to make business decisions. Focus is on applying basic research techniques to assess the performance of individuals, work groups, and organizations. Topics include principles of good data collection, presentation of data in tables and charts, summary and description of numerical data, basic probability and discrete estimation, the fundamentals of hypothesis testing, and the use of existing research-based materials to solve business problems. Discussion emphasizes basic approaches and beginning skills necessary to evaluate research materials and their use in decision making.

UCSP 635 Essentials of Computer Programming (0)

(Recommended preparation for bioinformatics, data analytics, database technology, and software engineering students with little or no programming experience.) An applied approach to creating computer programs. Discussion covers all aspects of basic programming, including variables, arrays, conditions, and input/output.

UCSP 636 Structure of Computer Programming (0)

(Recommended preparation for bioinformatics, data analytics, database technology, and software engineering students with some programming experience, typically with older languages such as PRG and COBOL.) Prerequisite: UCSP 635. An applied approach to creating computer programs. Discussion covers aspects of programming related to the structure of the program, including loops, procedures/functions, and leveraging other software libraries/packages.

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The Graduate School

Graduate Leadership Council

The Graduate Leadership Council serves in an advisory capacity to the dean of The Graduate School. The council is responsible for advisement on academic affairs, including curriculum development, program initiatives, policies, and standards. The council meets monthly or more frequently, at the dean's request, and comprises the following members:

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Vice Provost and Dean

Douglas Harrison
Associate Dean

Alexis Hill White
Assistant Vice Provost, Administration

Bryan Booth
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Emma Garrison-Alexander
Vice Dean, Cybersecurity and Information Assurance

Kathleen Hogan
Vice Dean, Graduate Learning Initiatives

Rana Khan
Vice Dean, Information and Technology Systems

Virginia H. Pilato
Vice Dean, Education

Anna Seferian
Vice Dean, Business and Management

Faculty

The Graduate School has a large and distinguished faculty. UMUC faculty consistently win awards, publish scholarly works, and contribute to the intellectual understanding of their fields. They are well respected by both practitioner and academic peers. In keeping with UMUC's mission, UMUC faculty are as nontraditional as their students, bringing practical as well as academic experience in their fields of expertise. Because of this, they are uniquely qualified to teach and guide students toward a richer and more robust understanding of how their academic learning translates into practice.

The full list of graduate faculty, including their academic rank and credentials as well as any administrative title, is available online at *umuc.edu/gradfacultylist.*

CONTACT INFORMATION

The Graduate School
University of Maryland University College
3501 University Boulevard East
Adelphi, MD 20783

800-888-UMUC (8682), ext.2-2400,
or 240-684-2400

Note: For the most up-to-date contact information for Graduate School staff, visit *umuc.edu/grad/contact.cfm.*

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Graduate School General Contact Information

If you need assistance or information, call 800-888-UMUC (8682) for all your student needs. Graduate academic advisors are available to help you make decisions about courses and programs. You also may call a number of UMUC locations (listed on p. 151) to schedule in-person academic advising.

Instructional Sites

Adelphi (UMUC Headquarters) and UMCP Campus
3501 University Boulevard East
Adelphi, MD 20783

800-888-UMUC (8682)

Dorsey Station
6865 Deerpath Road
Elkridge, MD 21075

888-335-8682

Largo
1616 McCormick Drive
Largo, MD 20774

800-888-UMUC

Norfolk Naval Station
1680 Gilbert Street
Building IE
Norfolk, VA 23511

301-892-2342

Shady Grove
9640 Gudelsky Drive
Rockville, MD 20850

888-835-8682

Southern Maryland Higher Education Center
44219 Airport Rd.
California, MD 20619

800-888-UMUC

UMUC at Quantico
525 Corporate Drive
Stafford, VA 2554

888-835-8682

Waldorf Center for Higher Education
3261 Old Washington Road
Waldorf, MD 20602

301-632-2900

ACADEMIC AND ADMINISTRATIVE REQUIREMENTS

Grading Methods

The Graduate School has four grading methods: standard, satisfactory/unsatisfactory, satisfactory/fail, and audit. The most commonly used is the standard method. The satisfactory/unsatisfactory method is available only for noncredit courses. The satisfactory/fail method is restricted to certain specified courses. Any course may be audited. Regulations for each grading method are provided in the following paragraphs.

GRADE OR MARK	INTERPRETATION	QUALITY POINTS
A	Excellent	4
B	Good	3
C	Below standards	2
F	Failure	0
FN	Failure for nonattendance	0
G	Grade pending	0
S	Satisfactory	0
I	Incomplete	0
AU	Audit	0
U	Unsatisfactory	0
W	Withdrawal	0

Standard

Unless you choose the audit option at the time of registration, you will be graded according to the standard method. Under the standard grading method, you earn a grade of A, B, C (for courses in which the grade of C is available), F, or FN on the basis of your performance in meeting the requirements of each course. All grades received under the standard grading method are included in calculating the grade point average (GPA).

Satisfactory/Unsatisfactory

Noncredit courses, currently designated UCSP or ASC, are graded on a satisfactory/unsatisfactory basis. You may not choose to take other graduate courses on a satisfactory/unsatisfactory basis. This grading method does not include an option for requesting a mark of Incomplete.

Satisfactory/Fail

This grading method is available only on a limited basis. Although a grade of satisfactory (S) earns credit toward graduation, it is not included in calculating your grade point average (GPA). While a failing grade (F) earns no credit, it is included in computing your GPA.

Audit

If you do not wish to receive credit, you may register for courses as an auditor once you are admitted. You must indicate this intention when you register and must still fulfill all prerequisites. You may request a change from credit to audit status anytime before the end of the second week of classes.

Audited courses are listed on the permanent record, with the notation AU. No letter grade is given for audited courses, nor are credits earned. If you receive financial aid, you should check with a financial aid advisor before selecting audit as a grading option as this may affect financial aid.

Grades and Marks

The Grade of A: Excellent

Only students who demonstrate exceptional comprehension and application of the course subject matter merit an A.

The Grade of B: Good

The grade of B represents the benchmark for The Graduate School. It indicates that you have demonstrated competency in the subject matter of the course: you have fulfilled all course requirements on time, have a clear grasp of the full range of course materials and concepts, and are able to present and apply these materials and concepts in clear, reasoned, well-organized, and grammatically correct responses, whether written or oral.

The Grade of C: Below Standards

The grade of C indicates that your work was not considered sufficient to meet overall standards for work at the graduate level. Note that the grade of C is not available for all courses. Please refer to Academic Standards (p. 142) for further information on the implications of a grade of C.

The Grade of F: Failure

The grade of F means you failed to satisfy the minimum requirements of a course. Although it carries no credit, it is included in calculating the GPA. If you earn a grade of F, you must register again for the course, pay the applicable fees, repeat the course, and earn a passing grade to receive credit for that course.

The Grade of FN: Failure for Nonattendance

The grade of FN is assigned if you never attend or participate in a course or if you cease to attend or participate within the first 60 percent of the course and do not officially drop or withdraw

from the course. An FN grade results in zero quality points and no credit earned. It is included in calculating your GPA and may affect your academic standing. If you receive a grade of FN, you must register again for the course, pay the applicable fees, repeat the course, and earn a passing grade to receive credit for that course.

The Mark of G: Grade Pending

The mark of G is an exceptional and temporary administrative mark given only when the final grade in the course is under review. It is not the same as a mark of Incomplete.

The Mark of I: Incomplete

The mark of I (Incomplete) is an exceptional mark, given only if your completed coursework has been qualitatively satisfactory, but you have been unable to complete all course requirements because of extenuating academic or personal circumstances beyond your control. To be eligible for an I, you must have completed 60 percent or more of the course requirements with an overall grade of B or better. You must request an I from your faculty member before the class ends. Faculty, however, are not required to approve the request. If your request for a mark of I is approved, you must arrange fulfillment of course responsibilities with your teachers by the assigned deadline to receive credit.

The mark of I is not available for noncredit courses. The doctoral program and master's degree programs requiring DCL 600, PRO 600, and CBR 600 have additional parameters for the mark of I. Consult your course syllabus for detailed information.

Refer to UMUC Policy 170.71 Policy on Grade of Incomplete at *umuc.edu/incomplete* and your course syllabus for more information, particularly on deadlines.

The Grade of S: Satisfactory

The grade of S is awarded only for select courses. Although the grade of S confers credit and appears on the permanent record, it is not included in calculating the GPA.

The Grade of U: Unsatisfactory

The grade of U indicates that work for the course was not completed at a satisfactory level. Although it appears on the permanent record, it carries no credit and is not included in calculating the GPA.

The Mark of W: Withdrawal

The mark of W is assigned when you withdraw from a course. This mark will appear on your transcript, but will not be included in calculating your GPA. For purposes of financial aid, the mark of W is counted as attempted hours.

The mark of W can be posted only when you withdraw from the course through MyUMUC before the deadline for withdrawal.

The withdrawal process is described on p. 148.

Computing the Grade Point Average

The GPA is calculated using the quality points assigned to each grade or mark (chart on p. 140). First, the quality-point value of each grade or mark is multiplied by the number of credits; then the sum of these quality points is divided by the total number of credits attempted for which a grade of A, B, C, F, or FN was earned.

Changes in Grade

In accordance with relevant policies, faculty members may revise a grade previously assigned only if your grade was miscalculated or a mark of I was submitted and must be changed. Any revision must be made no later than four months after the original grade was awarded.

Repeated Courses

If you failed or withdrew from a course, you must repeat the course to establish credit in it. You must also repeat coursework if, after completing one program, you choose to enter a new program that requires one or more of the courses you completed for the first program, unless a course substitution is granted. In these cases, you must register, pay the full tuition and fees, and repeat the entire course successfully.

When you repeat a course, only the grade earned in the last attempt is included in the calculation of your GPA. For purposes of financial aid, both attempts are counted toward your completion rate. Both grades are entered on the permanent record, with a notation indicating that the course was repeated. You cannot increase the total hours earned toward a degree by repeating a course for which you already earned a passing grade.

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ACADEMIC AND ADMINISTRATIVE REQUIREMENTS

Scholastic Recognition

Academic Honor Societies

PHI KAPPA PHI

As the nation's oldest, largest, and most selective collegiate honor society for all academic disciplines, Phi Kappa Phi promotes the pursuit of excellence in all fields of higher education. It recognizes the outstanding achievements of students, faculty, and others through election to membership and through awards for distinguished scholarly achievement. To qualify, you must be in the final term of your graduate degree coursework and in the upper 10 percent of your graduating class. For more information on the Phi Kappa Phi chapter, visit *polaris.umuc.edu/phikappaphi.*

UPSILON PHI DELTA

Upsilon Phi Delta is a national academic honor society founded by the Association of University Programs in Health Administration for students in healthcare management and policy. It recognizes, rewards, and encourages academic excellence in the study of health administration. To be eligible for graduate student membership, you must have a cumulative GPA of 3.5 or higher and at least 18 credits of graduate coursework, and you must provide evidence of outstanding scholarship. You may obtain more information about the UMUC chapter, including membership criteria, by sending an e-mail to *HonorsHCAD@umuc.edu.*

Presidential Management Fellows Program

If you are seeking a graduate degree at UMUC, you may apply to the Presidential Management Fellows Program, a prestigious leadership development program that is a pathway to a senior-level career with an agency of the federal government. This highly selective program operates under the auspices of the federal Office of Personnel Management. To learn about the application process, contact Student Relations at 800-888-UMUC, ext. 2-2400, or *graduateschool@umuc.edu*. More information is available at *pmf.gov*.

Academic Standards

Grade Point Average

As a graduate student, you must maintain a cumulative and term GPA of 3.0 or higher at all times to remain in good academic standing.

Academic Standing for Master's Degree and Certificate Programs

The Graduate School assesses your academic standing at the end of every term. Your GPA is computed for all UMUC graduate-level graded coursework to make a determination of academic standing as described below. For details, see UMUC Policy 158.01 Academic Standing Status for Graduate Students *(umuc.edu/policies/academicpolicies/aa15801.cfm).*

GOOD ACADEMIC STANDING

If you have a term and cumulative GPA of 3.0 or higher, you are in good academic standing.

ACADEMIC PROBATION

If you have a term or cumulative GPA below 3.0, you will be placed on academic probation in your next term of enrollment. Academic probation is a temporary status. If you are placed on academic probation, you have up to two terms of enrollment in which to restore your GPA to 3.0. During that time, you must enroll only in the course(s) for which you received a grade that caused your cumulative or term GPA to drop below 3.0; you may not attempt any other coursework until you earn a grade of B or better in the repeated course(s).

Failing to restore your GPA to 3.0 or higher or earning any grade below B while on probation will result in academic dismissal. If you restore your GPA to 3.0 or higher, you will be returned to good academic standing. You should seek guidance and advice from an academic advisor if you are placed on academic probation.

DISMISSAL

If you are on academic probation and you fail to raise your GPA to 3.0 or higher or if you earn a grade below B during the probationary period, you will be dismissed. Once dismissed, you are ineligible to enroll in UMUC graduate courses and may be readmitted to The Graduate School only under the conditions for Reinstatement or Restart described in the following paragraphs.

Reinstatement After Dismissal

If you were academically dismissed from UMUC, you can submit one request for reinstatement. Contact The Graduate School at *graduateschool@umuc.edu* and request a Reinstatement Request Form, then submit the completed form and documentation to The Graduate School Reinstatement Review Committee for consideration. You will be required to show that you have improved your academic skills and made changes in your academic strategies that increase your likelihood for success in graduate studies, should you be approved for reinstatement.

If you are approved for reinstatement, you will be admitted for one term and placed on academic probation. You may also be required to meet additional conditions, such as working with a coach or tutor or enrolling in specific courses. By the conclusion of this term, you must be in good academic standing to remain enrolled.

If you are reinstated to the same program in which you were last enrolled, you must immediately repeat the course(s) for which you received the grades that caused your cumulative GPA to drop below 3.0. If you are reinstated to a different program, your previous coursework and credits will not apply.

If you fail to attain a cumulative GPA of 3.0 or higher or if you earn a term GPA below 3.0, you will be academically dismissed, and you will not be eligible to apply for reinstatement or a restart again.

Restart After Dismissal or Academic Probation

If you were academically dismissed from The Graduate School, have not been approved for reinstatement (as described in the preceding section), and have not attended Graduate School classes for a period of at least five consecutive years, you may request a one-time restart. You may also request a one-time restart if you were on academic probation when you last attended The Graduate School and have not attended Graduate School classes for a period of at least five consecutive years. Grades and credits previously earned will not apply toward any program you pursue upon your return, and you must fulfill the program requirements in effect at the time you restart.

Program Completion Requirements

You are responsible for applying for graduation by completing and submitting the appropriate graduation application and fees by the deadlines published on the UMUC website (*umuc.edu*). The award of degrees and certificates is conditional upon *satisfactory* completion of all program requirements, compliance with all UMUC policies, and good academic standing (described on the previous page). Graduation clearance will not be granted if you are not in good academic standing, have outstanding debt to UMUC, or have any outstanding misconduct charges or unsatisfied sanction restrictions. Individual programs may have additional requirements that must be met before graduation clearance can be granted.

Time Limit for Degrees and Certificates

All requirements established for the completion of a master's degree or certificate program listed in this publication must be fulfilled within five consecutive years. The time limit is calculated from the term in which you successfully complete the first credit course that applies to the program. It does not include the introductory courses DCL 600, CBR 600, and PRO 600 but does include courses transferred from other institutions and courses transferred from the UMUC Undergraduate School as part of an articulation agreement.

All requirements established for the completion of a doctoral degree program listed in this publication must be fulfilled within seven consecutive years. The time limit is calculated from the term in which you successfully complete the first credit course that applies to the program, except for the prerequisite course DMG 600.

Doctoral Program Standards

The Doctor of Management (DM) program requires more than maintaining a GPA of 3.0 to remain in good standing. If you receive a grade below B in a course, including a dissertation course, you must repeat that course in the next term of enrollment and earn a grade of B or better. The option to repeat a course may be exercised only once. If you receive a second grade below B, you will be dismissed from the DM program, regardless of your GPA.

Further information is available in section III. D. of UMUC policy 158. 01 Academic Standing Status for Graduate Students *(umuc.edu/policies/academicpolicies/aa15801.cfm)*.

Degree Requirements and Continuous Enrollment

The UMUC degree and certificate requirements that apply to you are those that were in effect when you completed the first credit course that applied to your program, that is, when you began continuous enrollment.

To be considered continuously enrolled, you must be or have been enrolled at UMUC, and you must have had no more than two years of nonattendance. After two years of nonattendance, you must reapply for admission to resume enrollment.

If you have not been continuously enrolled, the requirements that apply are those in effect at UMUC when you completed the first credit course that applied to your program after you resumed continuous enrollment. If you choose to change your program or add a new one, you are subject to the requirements in effect at the time of the change or addition. In both cases, previously completed coursework may not apply to new requirements.

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ACADEMIC AND ADMINISTRATIVE REQUIREMENTS

Responsibilities of the Student

Attendance

You are expected to attend all on-site and online classes and any related activities regularly and punctually.*

If you are absent from class, you are responsible for completing any missed coursework, as indicated in the course syllabus. You also are responsible for obtaining information about each class session, including any announcements and assignments you missed. Failure to complete any required coursework as scheduled may adversely affect your grade. Faculty members are not expected to repeat material that you missed because of absence.

You may not give permission to another person to accompany you to an on-site class meeting, to attend an on-site class meeting in your place, or to access or attend your online class.

Academic Integrity

Integrity in teaching and learning is a fundamental principle of a university. As a member of the International Center for Academic Integrity *(academicintegrity.org),* UMUC subscribes to the center's definition of academic integrity as "a commitment, even in the face of adversity, to six fundamental values: honesty, trust, fairness, respect, responsibility, and courage." UMUC believes that all members of the university community share the responsibility for academic integrity.

As a UMUC student, you are expected to conduct yourself in a manner that will contribute to the maintenance of academic Integrity. You are responsible for understanding and avoiding academic dishonesty and plagiarism, whether it be intentional or unintentional. Attempts to engage in academic misconduct or to assist others in doing so are prohibited. Resources to help you uphold the highest standards of academic integrity are available at *umuc.edu/academicintegrity*. UMUC's complete policy on Academic Dishonesty and Plagiarism is available at *umuc.edu/policies/academicpolicies/aa15025.cfm.*

Intellectual Property

The primary mission of universities is to create, preserve, and disseminate knowledge. When that knowledge takes the form of intellectual property, a university must establish a clear and explicit policy that will protect the interests of the creators and the university while ensuring that society benefits from the fair and full dissemination of that knowledge. UMUC's policy on intellectual property is available online at *umuc.edu/policies /researchpolicies/research19000.cfm.*

Academic Load

FOR MASTER'S DEGREE PROGRAMS

If you are enrolled in a program that operates on a thee-term calendar for the academic year, you are considered a full-time graduate student if you are registered for at least 9 credits per term and half-time if you are enrolled for 6 credits of graduate coursework.

If you are enrolled in a program that operates on a four-term calendar for the academic year, you are considered a full-time graduate student if you are registered for 6 credits per term.

Given the time commitment required for graduate study, the normal academic load is 6 credits per term. The Graduate School strongly recommends that you limit your academic load to conform with the demands of your employment and the time you have to prepare for class.

Taking more than 6 credits per term is not allowed in any programs that operate on a four-term calendar or in the MS in Data Analytics program but may be allowed in most programs that operate on a three-term calendar, if certain conditions are met.

If you have a compelling need to take more than 6 credits per term (and are enrolled in a program that allows course overloads), you may submit to your advisor a written request to take 3 additional credits of coursework (i.e., one additional course). You must have fulfilled the prerequisites for the additional course you wish to take. In the request, you must indicate your acceptance of the academic risk entailed in adopting the course overload. All requests for exceptions to the maximum recommended course load must be made at least one month before the beginning of a term and are subject to approval by the Office of the Dean for The Graduate School.

To be considered for a course overload, you must

- Be a degree- or certificate-seeking student.
- Have no previous grades of C, F, or FN.
- Have no current marks of I.
- Have never been on academic probation.

See UMUC's Policy 215.00 on Student Academic Load and Enrollment Status at *umuc.edu/policies/academicpolicies /aa215.00.cfm* for more information.

* The UMUC policy on religious holidays is available online at **umuc.edu/policies/academicpolicies/aa05100.cfm**.

ACADEMIC AND ADMINISTRATIVE REQUIREMENTS

FOR THE DOCTORAL PROGRAM

If you are enrolled in the doctoral program, you are considered full-time if you are registered for 6 credits.

Given the time commitment required for graduate study, the maximum course load for the doctoral program is 6 credits per term.

Because courses in the DM program follow a defined sequence and build on competencies developed in previous coursework, course overloads are not allowed in this program.

Grievance/Appeal Procedure

If you have legitimate complaints about Graduate School faculty, staff members, academic departments, or administrative units, contact your program chair. The most up-to-date contact information is provided online at *umuc.edu/complaint-resolution*. For information on the procedure to file a formal appeal or grievance about the actions of a faculty or administrative staff member, contact Student Relations, The Graduate School, at 800-888-UMUC, ext. 2-2400, or *graduateschool@umuc.edu*. More information is available online at *umuc.edu/policies/academicpolicies/aa13070.cfm* and *umuc.edu/policies/academicpolicies/aa13080.cfm.*

Connectivity and Technical Fluency

As a student in The Graduate School, you must own or have access to a personal computer and the internet. In some classes, you may participate in synchronous computer-based class discussions and study group activities.

As a graduate student, you must also be able to reach fellow students, faculty, and the university via e-mail. You will be assigned a UMUC Google account, which includes e-mail, as soon as you register. While you are not required to use the UMUC e-mail address, you must provide and maintain a current e-mail address through MyUMUC *(my.umuc.edu)*. More information is available at *umuc.edu/umucgmail*.

In addition, you are expected to have a working knowledge of, and access to, a basic word processing program, such as Microsoft Word; a spreadsheet program, such as Microsoft Excel; internet e-mail services; Microsoft Windows; and the World Wide Web.

If you require further training in the use of internet services and basic software packages, you may wish to consult the UMUC undergraduate schedule of classes or speak with an undergraduate advisor regarding appropriate classes. You can access the online schedule at *umuc.edu/schedule,* and you may reach advisors at 800-888-UMUC, ext. 2-2100.

Transfer of Credits from UMUC

To have credits earned through UMUC transferred, you must obtain authoritative guidance from the institution to which you intend to transfer—even if it is another institution in the University System of Maryland. The transferability of credits earned is always at the discretion of the receiving institution. Only that institution can answer specific questions about whether it will accept it will accept transfer credit, as well as whether any credits may satisfy its admission, residency, and degree requirements or apply to its curricula.

Code of Civility

To encourage the development and growth of a supportive and respectful academic environment for all students, faculty, and staff, UMUC has created the Code of Civility, which is available at *umuc.edu/civility* and in UMUC publications.

Code of Student Conduct

UMUC Policy 151.00 Code of Student Conduct outlines prohibited conduct and the procedures by which such conduct is addressed. The university reserves the right to take appropriate action to protect the safety and well-being of the UMUC community.

You may be accountable to both civil authorities and to UMUC for acts that constitute violations of law and of this code. Disciplinary action at UMUC normally will go forward pending criminal proceedings and will not be subject to challenge on the grounds that criminal charges involving the same incident have been dismissed or reduced.

In every case of alleged Code of Conduct violation, the burden of proof rests with the complainant, who must establish the responsibility of the person accused by a preponderance of evidence. In cases where the complainant wishes to remain anonymous, the burden of proof rests with the administrator.

See *umuc.edu/policies/studentpolicies/stud15100.cfm* for additional information about the UMUC Code of Student Conduct.

ADMISSION AND ENROLLMENT

General Information

Before the beginning of each academic term, UMUC holds various events online, as well as open houses in the Maryland area, for new and prospective students. These events offer an opportunity to learn about UMUC and its programs, student services, academic and career options, faculty members, and fellow students. You can apply for admission and enroll in courses during the on-site open houses.

For general information or to be directed to specific offices, call 800-888-UMUC (8682). Phone representatives are available for general information from 6 a.m. to 10 p.m., Monday through Saturday. Most UMUC offices are open weekdays from 8:30 a.m. to 5 p.m. eastern time.

Admission

Admission Requirements

UMUC's graduate admissions policy is available online at *umuc.edu/policies/academicpolicies/aa17010.cfm*.

For virtually all master's degree and graduate certificate programs, most applicants who have graduated from a regionally accredited degree-granting university or college are eligible for admission. Graduates from other accredited institutions may be considered on a case-by-case basis. Official transcripts are required, but Graduate Record Examination (GRE) or Graduate Management Admission Test (GMAT) scores are not. **Applicants who are not seeking a degree or certificate** must meet the same criteria and upon admission are limited to taking a maximum of 12 credits.

Some graduate programs recommend or require specific preparation; more details are provided under individual program descriptions in this catalog and online *(umuc.edu/grad)*. You must receive notice of eligibility to enroll before registering in the following programs.

For admission to the **Master of Arts in Teaching** program, you must submit standardized test scores, usually Praxis Core scores. (More information on MAT admission criteria may be found on p. 43.)

If you are applying to the **Master of Science in Data Analytics** program, you may need to send standardized test scores or proof of certification if your transcript does not provide evidence of appropriate coursework. See p. 68 for details.

To be eligible for the doctoral program, you must have a master's degree from a regionally accredited college or university and you must apply before the application deadline (or secure permission of the department). Graduates from other accredited institutions may be considered on a case-by-case basis. Application deadlines are listed on the program web page. Applicants are required to complete DMG 600 with a grade of A or B for full admission to the program.

Admission to UMUC may also be limited to comply with U.S. federal law.

READMISSION AFTER BEING DISMISSED

If you were academically dismissed from The Graduate School, you may be considered for a one-time reinstatement (if you reapply within five years) or a restart (if you reapply after five years). Readmission does not apply to the doctoral program. See pp. 142–143 for more information on these two options.

READMISSION AFTER BEING ON ACADEMIC PROBATION

If you ceased study while you were on academic probation and wait five years before reapplying for admission, you are eligible for readmission to restart your program from the beginning. The grades and credits you earned five or more years before will not count toward your new program or toward your academic progress status.

Admission Procedures

To be admitted to a master's degree or graduate certificate program or to take graduate courses without pursuing a degree, you must complete and submit the graduate admission application, pay the nonrefundable fee, and provide an official transcript indicating completion of a bachelor's (or higher) degree from a regionally accredited degree-granting university or college. Graduates from other accredited institutions may be considered on a case-by-case basis. Applications for admission are accepted throughout the year.

You should refer to the individual program page to determine if any other documentation is required.

Information about documentation required for admission to the **doctoral program** is provided on pp. 10–13. Visit *umuc.edu/dm* for further details and application deadlines.

You may apply to all UMUC graduate programs online via MyUMUC at *umuc.edu/apply.*

STUDENTS FROM OTHER USM INSTITUTIONS

If you are a degree-seeking student in good academic standing in an approved graduate program at another USM institution and wish to take courses at UMUC, you need not apply for admission to UMUC. Instead you must obtain an interinstitutional enrollment form from your home institution, complete it, and submit it to UMUC Graduate Admissions.

Your previous coursework will be reviewed by the appropriate Graduate School department to see if course prerequisites have been met.

DETERMINATION OF RESIDENCY FOR TUITION PURPOSES

An initial determination of in-state or out-of-state status for tuition purposes is made when you apply for admission. The determination made at that time remains in effect unless it is successfully challenged. You are responsible for providing the information necessary to establish eligibility for in-state status. Official criteria for determining residency are detailed in USM Policy VIII-2.70 Policy on Student Classification for Admission and Tuition Purposes at *usmd.edu/regents/bylaws/SectionVIII/* and UMUC Policy 210.20 Student Residency Classification for Admission, Tuition, and Charge-Differential Purposes at *umuc.edu/policies*. Information about tuition and fees may be found on p. 149.

REENROLLMENT

If you have not enrolled in graduate classes at UMUC for a period of two years (six or eight terms, depending on the program) or more, you must complete a new application for admission, but you are not required to pay the application fee. Since you have not been continuously enrolled, you must now fulfill the program requirements in place at the time you reenroll. Coursework you completed previously may no longer apply to new requirements. Consult an advisor to find out how your program is affected.

CHANGING DEGREE PROGRAMS

If you are considering a change from one degree program or specialization to another, you must first consult an advisor. The advisor can determine whether another application is required and whether any previous credit is likely to apply, as well as when you may begin to take classes in the second program.

INTERNATIONAL APPLICANTS TO ALL GRADUATE PROGRAMS

If you were educated abroad, you must submit the following to be considered for admission:

- **Official documents indicating successful completion of the equivalent of a regionally accredited U.S. bachelor's degree.**

  If you were educated outside the United States, you must have your official transcripts evaluated by an independent evaluation service. The evaluating organization will send a copy of the evaluation both to you and to The Graduate School. UMUC accepts credit evaluations from any National Association of Credential Evaluation Services (NACES)–approved organization, including World Education Services (WES) and the International Education Research Foundation (IERF). A list of NACES-approved agencies is available at *naces.org/members.htm*.

- **Evidence of English language proficiency**.

  If you did not earn a bachelor's or master's degree from an accredited university in the United States or another English-speaking country (listed online at *umuc.edu /internationalstudent),* you must demonstrate English-language proficiency to be eligible for admission. The following are accepted as proof of English proficiency:

  - A minimum TOEFL (Test of English as a Foreign Language) score of 79 on the internet version *or* both a minimum TOEFL score of 550 on the paper-based version and a minimum Test of Written English (TWE) score of 4
  - A minimum overall score of 6. 5 on the IELTS (International English Language Testing System), including the academic writing and academic reading modules
  - A minimum grade of Pre-1 on the Eiken Test in Practical English Proficiency
  - A transcript indicating completion of at least 12 credits of graduate coursework at a regionally accredited U.S. degree-granting institution. Graduate coursework from other accredited institutions may be considered on a case-by-case basis. You must have earned the credits in the past two years with a grade of B or higher. All credit is subject to review before being accepted as evidence of English proficiency.

  You must arrange to have official score reports sent directly from the testing agency to The Graduate School. The TOEFL score recovery code for UMUC is 5804. Test scores must be less than two years old.

  Alternative evidence may be accepted as demonstrating English proficiency. Contact Graduate Admissions at *admissions@umuc.edu* for more information.

Note: UMUC does not issue Form I-20 A-B Certificate of Eligibility for F-1 student status.

INTERNATIONAL APPLICANTS TO THE DOCTORAL PROGRAM

The doctoral program requires a brief residency at UMUC in Adelphi each semester. It is your responsibility to ensure that you can enter the United States each term to complete the on-site residencies. UMUC cannot advise you on the process or the requirements for entering the United States. If you have questions, you must contact the U.S. embassy in your home country or visit *state.gov* for information.

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ADMISSION AND ENROLLMENT

Restrictions on Admission

You may be admitted either as a graduate student or as an undergraduate student, but you may not hold both classifications simultaneously. As a graduate student, you may be enrolled in only one master's degree program at a time, and you may not enroll in courses outside your degree program.

Registration

Ways to Register

Registration begins each session as soon as the course schedule becomes available on the web and continues until the deadline listed. Check the current graduate schedule of classes *(umuc.edu/schedule)* and the online academic calendar *(umuc.edu/calendar)* for registration information.

UMUC offers a number of ways to register for most courses, including online (via MyUMUC) and on-site registration. Detailed information and instructions are available each session online at *umuc.edu/register*.

Adjustments to Registrations

The university reserves the right to make changes to class sections to ensure that such sections are adequately sized to create an appropriate learning environment. Such class section changes include changing faculty members and moving students between course sections to balance enrollments.

Waiting List

If a hybrid class is already full at the time of registration, you can place your name on a waiting list for that class. The option of putting your name on a waiting list is not available for online classes. To check on class availability, visit MyUMUC at *my.umuc.edu*.

The following conditions apply to the waiting list:

- If a space becomes available, the first student on the waiting list automatically will be registered for it, and the charge will appear on his or her account. An e-mail notification of the enrollment from the waiting list will be sent. If a space becomes available but the first student is ineligible to enroll in the class (for reasons such as failing to meet the prerequisites, being enrolled in another section of the same class, or being enrolled in a class that conflicts in time), the space will go to the next person on the waiting list.
- If you no longer want to enroll in a class, you should remove your name from the waiting list to prevent the possibility of being automatically enrolled.
- If you are already enrolled in the maximum number of allowable credits (6 credits) and you are on a waiting list for a third course, you will not be registered in the third course even if space becomes available in the class.
- If you are already enrolled in a different section of the same class for which you are waitlisted, you will not be enrolled in the waitlisted section even if space becomes available.
- Faculty members and academic advisors are not authorized to add students to a full class.

Priority Enrollment for Veterans

If you have a past due balance, you may be disenrolled from one or all of your UMUC courses. Some exceptions may apply if you are receiving veterans education benefits. Once you have completed the steps to request certification of your enrollments for veterans benefits, and if your benefit type pays directly to the school, you will be excluded from disenrollment.

Dropping or Withdrawing from Classes

PROCEDURES

To cancel your enrollment in a class without any mark on your transcript (dropping a class), you must access the MyUMUC portal and follow the steps for dropping a class before the end of the drop period. The dates for the drop period are available on the UMUC website at *umuc.edu/calendar.*

When you drop a class, all tuition charges for that course are removed from your student account and no mark or record of the course will appear on your transcript.

If you wish to cancel enrollment in a class after the drop period ends (withdrawing from a class), you must access the MyUMUC portal and follow the steps for withdrawing from a class before the end of the withdrawal period. (GoArmyEd students must withdraw through the GoArmyEd portal.) The dates for the withdrawal period are also available at *umuc.edu/calendar*.

Withdrawing from a class will result in a mark of W (described on p. 141) on your academic transcript. You may be refunded a portion of your tuition based on the withdraw date and the refund schedule posted at *umuc.edu/refunds*. You will be responsible for any remaining tuition due.

You should be careful to note deadlines according to your class format (online or hybrid).

Failure to drop or withdraw from a class in the appropriate manner or by the posted deadlines may result in your receiving a failing grade and forfeiting any refund. The following actions do *not* constitute dropping or withdrawing from a course:

- Stopping payment on checks
- Non-payment of tuition charges
- Never attending or participating in a class
- Ceasing to attend or participate in a class

EFFECT ON STUDENT AID

If you are using financial aid and/or veterans benefits, you are strongly encouraged to contact the Financial Aid Office or Veterans Affairs Office before you drop or withdraw from a class to fully understand the impact of such an action on your current and future financial aid awards and/or veterans benefits.

If you are using military assistance benefits, you should contact your military education counselor or education services officer before you drop or withdraw from a class for guidance on withdrawals related to emergencies or official duty requirements and to fully understand the impact of such an action on your current and future military tuition assistance benefits.

Enrollment Across Programs

In general, you are not allowed to enroll in coursework that does not fulfill prerequisites or requirements for your specified program. If you wish to change your degree program or specialization, you should first contact a graduate advisor, and you must wait until the next standard term before enrolling in classes. In no case may you take coursework for different programs in the same session or term or in overlapping sessions or terms (e.g., when the winter term overlaps the standard spring term).

If you are interested in taking courses outside your academic program, you should first consult Graduate Advising. Information on advising is provided on p. 152. The complete text of UMUC Policy 211.00 Cross-Enrollment is available at *umuc.edu/policies.*

Financial Information

Tuition and Fees

Tuition rates and fees are available online at *umuc.edu/tuition*. You should review the fee schedule carefully to see which ones apply. Information on student classification and residency is provided at *usmd.edu/regents/bylaws/SectionVIII.*

You are expected to make payment at the time of registration. If your payment is not received by the due date, you may be penalized by being disenrolled from courses or by having your account balance transferred to the State Central Collections Unit.

If you are unable to make payment at the time of registration, several payment options are available. To find out more about payment options, visit *umuc.edu/payoptions.*

Payment may be made by cash, check, money order, or American Express, Discover, MasterCard, or Visa credit cards. Checks should be payable to University of Maryland University College. If you qualify for tuition assistance, financial aid, or veterans benefits, you should consult the appropriate sections of this catalog. If you are interested in the monthly payment plan, visit *umuc.edu/payoptions* or call 800-888-UMUC (8682).

CURRENT TUITION AND FEES

Tuition rates and fees are published each term in the graduate schedule of classes and are available at *umuc.edu/tuition*. You should review the fee schedule carefully to see which ones apply. Fees are commonly charged for admission and graduation applications, makeup testing, technology, and transcripts. Site-specific fees may apply for courses taken at certain locations. There also is a service charge for dishonored checks.

Refunds

If you drop a course during the drop period, you will qualify for a full refund of tuition and fees, except for the admission application fee.

If you withdraw during the withdrawal period, you may be refunded a portion of the tuition, as determined by the date of withdrawal and the refund schedule posted online at *umuc.edu/refunds*. All refunds are computed from the date the withdrawal is formally initiated, not from the date of the last class you attended or the last participation date. Refunds are applicable for tuition only. Fees are not refundable.

If your tuition was paid by employer contract, the refund is returned to the employer. If the tuition assistance was a partial payment, it is returned to the employer, and excess payment is refunded to you.

More information about refunds can be found on the UMUC website for your division.

See p. 157 for information on the federal return of funds policy for financial aid students.

Dishonored Checks

For each paper or electronic check returned to UMUC by the payer's bank (whether because of insufficient funds, stopped payment, postdating, or drawing against uncollected items), UMUC assesses a service charge of $30 (over and above any service charges levied by the financial institution).

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If you stop payment on a check for tuition, you will be neither disenrolled nor relieved of responsibility for paying tuition and fees. Anyone whose checks for tuition or fees remain dishonored may be barred from classes.

Indebtedness to the University

If you incur debts to UMUC, you must clear them to be permitted to register. Requests for transcripts and diplomas will be denied until all debts have been paid. Outstanding debts are collected against refunds due to you. After a reasonable period, uncollected debts are forwarded to the Central Collection Unit of the State Attorney General's Office.

The Board of Regents has authorized UMUC to charge students' delinquent accounts for all collection costs incurred by UMUC. The normal collection fee is 17 percent plus attorney and/or court costs. Delinquent accounts are reported to a credit bureau.

Employer-Provided Tuition Assistance

If an employer is going to pay for part or all of your tuition, at the time of registration you must submit two copies of a document (purchase order, tuition assistance form, or contract on company letterhead) containing the following information:

- A specific description of types of fees and charges (such as tuition, application fee, or books) and the amount to be assumed by the employer
- Your full name and student identification number
- The session covered by the document
- The billing address
- The signature and phone number of the authorizing official

If you do not have an authorizing document at the time of registration, you must pay the bill in full and arrange for direct reimbursement from your employer. UMUC cannot issue refunds for authorizing documents submitted after registration.

Documents that restrict payment or are in any way conditional will not be accepted. If the employer does not pay UMUC, you are responsible for payment.

Monthly Tuition Payment Plan

UMUC offers a cost-effective alternative for students who are budgeting for college tuition: an interest-free, monthly tuition-payment plan. This plan allows you to spread all or part of your tuition bills into monthly installments on an academic session basis. All UMUC students are eligible to participate in the payment plan, regardless of financial need. If you are interested in the monthly payment plan, visit *umuc.edu/payoptions* or call 800-888-UMUC (8682).

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SERVICES AND RESOURCES

Availability of Services

UMUC provides services and resources to help you complete your educational program—through online resources; by e-mail and telephone communication; and in person at various sites, primarily in Maryland and the national capital area. A number of offices are responsible for the delivery of these services, including Career Services, the UMUC Library, and the offices of Admissions, Advising, Financial Aid, and Information Technology.

Among these, the Office of the Registrar and the Office of Advising respond to most of your academic needs throughout your college career, providing general information; admission assistance; academic advising; registration, graduation, and transcript services; and veterans benefits assistance.

All regional sites offer graduate services. In the Maryland and national capital area, services are available at the following locations. A complete list of stateside class locations is available in the appendices.

Aberdeen Proving Ground

Phone 410-272-8269

Arundel Mills

Phone 888-335-8682

Dorsey Station

Phone 888-335-8682

Fort Belvoir

Phone 703-781-0059

Fort Meade

Phone 410-551-0431 or 301-621-9882

Joint Base Anacostia-Bolling

Phone 202-563-3611

Joint Base Andrews Naval Air Facility Washington

Phone 301-981-3123

Joint Base Myer-Henderson Hall

Phone 703-527-4952 (Fort Myer)
703-232-9752 (Henderson Hall)

Joint Expeditionary Base Little Creek-Fort Story

Phone 757-646-1530

Largo (UMUC Academic Center)

Phone 888-335-8682
E-mail gradinfo@umuc.edu

Laurel College Center

Phone 866-228-6110

Norfolk Naval Station

Phone 301-892-2342

Patuxent River Naval Air Station

Phone 301-737-3228

Quantico

Phone 703-630-1543 (Marine Corps Base)
888-335-8682 (UMUC at Quantico)

Shady Grove

Phone 888-335-8682

Southern Maryland Higher Education Center

Phone 888-335-8682

USM at Hagerstown

Phone 888-335-8682

Waldorf Center for Higher Education

Phone 301-632-2900

Walter Reed National Military Medical Center (Bethesda)

Phone 301-654-1377

SERVICES AND RESOURCES

General Information

UMUC representatives are available 24 hours a day, seven days a week, at 800-888-UMUC (8682) to answer general questions and help you navigate UMUC's website. Representatives also can make sure you are signed up to receive upcoming class schedules and other important announcements.

Admission Assistance

Admissions counselors serve individuals who are inquiring about becoming UMUC students or those who are admitted but have not yet registered. Counselors can help you select the right program, apply for admission, identify the right payment option, plan your curriculum, and register for your first term of classes.

Admissions counselors also can help qualified senior citizens apply for Golden Identification benefits. More information is on p. 153.

You may contact an admissions counselor by phone at 800-888-UMUC or by e-mail at *studentsfirst@umuc.edu*. More detailed information on admission is available on p. 146.

Advising

Once you have enrolled in your first course, advisors will help guide you through all the steps that lead to a graduate-level degree. They also will recommend ways for you to complete academic requirements quickly and efficiently.

Advisors will check in with you throughout the term, but you are also encouraged to keep track of your program requirements and seek advising. You should retain and refer to the catalog of the year you entered your program, as it contains all the degree requirements for which you will be held accountable as long as you maintain continuous enrollment. Archived catalogs are also available online at *umuc.edu/catalogs.*

If you have not attended UMUC for a year or more, contact an advisor for assistance in getting back on track. If it has been more than two years since your last enrollment, you must first reapply for admission. Once readmitted, you are required to fulfill the degree requirements detailed in the catalog of the year in which you resume study. More information on continuous enrollment is provided on p. 143.

Whenever possible, you should get advising information in writing to help with future degree planning. You must meet all degree requirements to be cleared for graduation.

You may contact advisors by phone at 800-888-UMUC or by e-mail at *grad.advisor@umuc.edu*. In the Washington, D.C., metropolitan area, you also have the option of scheduling an appointment with an advisor in person at the sites listed on the previous page.

Evaluation of Transfer Credit

FOR MOST GRADUATE DEGREE PROGRAMS

Up to 6 credits of graduate coursework may be considered for transfer to graduate degree programs at UMUC that do not require CBR, DCL, or PRO 600, if the credits were earned at an approved institution and if they are applicable to your program of study. The Graduate School may accept up to 3 graduate credits in transfer for a certificate program. The DM and MS in Data Analytics programs do not accept transfer credit.

UMUC may accept more than the usual maximum of 6 credits toward a degree program (or 3 credits for a certificate program) under approved articulation agreements. Decisions regarding your eligibility to enter a graduate program and receive transfer credit under an existing articulation agreement are made at the time of admission and may not be made retroactive after enrollment.

All graduate credits offered for transfer credit must meet the following criteria:

- The credits must have been earned as graduate credit.
- The credits must have been awarded within the time limit for the degree or certificate.
- You must have earned a grade of B or better in the courses considered for transfer. (However, these grades are not included in the calculation of your grade point average.)
- The department advisor and the program chair must have determined that the transfer courses are relevant to your program of study.
- The credits must have been earned at an approved institution (defined on the next page) and be equivalent to graduate-level coursework or recommended for graduate-level credit by the American Council on Education (ACE) or other nationally recognized bodies or as part of an approved articulation agreement.

FOR PROGRAMS THAT REQUIRE CBR, DCL, OR PRO 600

Up to 6 credits of graduate coursework may be considered for transfer as replacement for CBR, DCL, or PRO 600, if earned at an approved institution.

If you have previously earned a master's degree from an approved institution, you are eligible to receive transfer credit for CBR, DCL, or PRO 600 in recognition of the fundamental

competencies essential for successful completion of a graduate degree program.

If you have earned graduate credit but have not earned a master's degree, you may request a review of transfer credit for CBR, DCL, or PRO 600.

All graduate credits offered for transfer credit must meet the following criteria and will be reviewed for approval:

- Credits must have been earned as graduate credit.
- A grade of B or better must have been earned in the courses considered for transfer. These grades, however, will not be included in the calculation of the grade point average at UMUC.
- Credits must have been earned at an approved institution and be equivalent to graduate-level coursework or recommended for graduate-level credit by the American Council on Education.

APPROVED INSTITUTIONS

Approved institutions include those accredited by the following regional associations:

- Middle States Association of Colleges and Schools Commission on Higher Education
- Northwest Commission of Colleges and Universities
- North Central Association of Colleges and Schools, The Higher Learning Commission
- New England Association of Schools and Colleges Commission on Institutions of Higher Education
- Southern Association of Colleges and Schools Commission on Colleges
- Western Association of Schools and Colleges Accrediting Commission for Senior Colleges and Universities

Credits from other accredited institutions may be approved on a case-by-case basis.

Accessibility Services

Reasonable accommodations are available to help you if you have a disability and are enrolled in any program offered at UMUC.

You should make your request for accommodations as early as possible to allow sufficient time for requests and documentation to be reviewed and proper arrangements made. Such requests must be made every semester for each course in which you wish accommodation.

If you wish to receive accommodation because of a disability, you must officially register with Accessibility Services. To do so, you must first submit documentation of your disability. Depending on the disability, documentation may include secondary school records; medical, psychiatric, or psychological reports and diagnoses; or a psychoeducational evaluation. The documentation must provide clear and specific evidence of a disability and recommended accommodations from a qualified licensed professional.

Once documentation is received, Accessibility Services will notify you of the status of your file and schedule an intake appointment, which may be held by phone, via e-mail, or in person. During the appointment, an intake form is completed and services and procedures are discussed.

Note: All UMUC students are required to comply with university policies and procedures and meet the academic requirements of all graduate certificate and degree programs listed in this catalog. You should not apply to a UMUC certificate or degree program with the expectation that any academic requirement will be waived or that substitutions will be allowed.

Visit *umuc.edu/accessibility* or contact Accessibility Services by phone at 800-888-UMUC, ext. 2-2287, or 240-684-2277 (TTY) or by e-mail at *accessibilityservices@umuc.edu* for more information.

Golden ID Program

Senior citizens may qualify for participation in the Golden Identification program, which allows participants to register for up to 6 credits per semester without paying tuition. All other fees continue to apply. You must be classified as in-state for tuition purposes; a U.S. citizen or documented permanent resident; 60 years old by the beginning date of the term for which you are applying; and not employed more than 20 hours per week to qualify for this program. Golden ID students may register two weeks before classes begin on a space-available basis. Benefits do not apply to MBA, MS in Cybersecurity Management and Policy, MS in Cybersecurity Technology, MS in Data Analytics, and MS in Digital Forensics and Cyber Investigation program courses; 800-level courses; or noncredit courses. To request an application, contact Graduate Advising at 800-888-UMUC. More information on this program is available online at *umuc.edu/goldenid.*

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SERVICES AND RESOURCES

Transcript Services

Official transcripts are maintained by the Office of the Registrar. These transcripts show all coursework taken at UMUC; if graduate credit from another university has been accepted in transfer, that also is noted.

Your records are considered confidential. Therefore, UMUC releases transcripts only upon receiving an online transcript request from you and payment of the appropriate fee. Online requests are authenticated through your login credentials. An electronic release form is provided during the ordering process and serves as an official signature.

Various procedures for requesting transcripts are provided online at *umuc.edu/transcripts*. A fee is charged for each UMUC transcript issued; additional fees are charged for rush processing. You should allow at least two weeks for transcript requests to be processed. All financial obligations to the university must be satisfied before a transcript may be released.

Graduation Clearance and Services

Application Deadlines

You are responsible for filing a graduation application (available online at *my.umuc.edu*) and paying the appropriate fee (currently $50) if you expect to complete the requirements for a degree or certificate program. A separate application—with fee—is required for each program you are completing. Applications for diploma may be submitted up to a year in advance of the term in which you expect to complete your program or by the following deadlines:

December graduation	October 15
May graduation	February 15
August graduation	June 15

If you are a doctoral student or are enrolled in a program that requires CBR, DCL, or PRO 600, you may submit your application for graduation at the time you register for your final term or up to the following deadlines:

December graduation	October 15
March graduation	February 15
June graduation	April 1
September graduation	July 15

Graduation applications that are received after the deadlines will be evaluated for the next graduation term.

The application form must be completed through MyUMUC at *my.umuc.edu*.

Clearance Process for Graduation

Once you have applied for graduation, Graduation Services reviews your academic requirements and determines whether you are cleared for graduation. If you do not complete degree requirements in the term in which you first applied for graduation, your application will automatically roll over into the next term. You will not have to pay another application fee.

Transcripts are not updated to show program completion, nor are diplomas mailed out, until the degree has been awarded.

Graduation Services then certifies degree completion, awards the degrees, and orders diplomas. Graduation Services also processes requests for letters of completion and embassy letters.

Advisors are available to answer any questions about requirements for graduation and the application for diploma at 800-888-UMUC, ext. 2-2100, or *grad.advisor@umuc.edu.*

For more information on graduation services and support, go to *umuc.edu/graduationservices.*

Commencement

Commencement is held annually in May and December in Adelphi, Maryland. You will be invited to participate in commencement if you apply to graduate in the same term as the ceremony (or have graduated since the last spring commencement). Visit *umuc.edu/commencement* for more information about eligibility and details about the stateside commencements.

If you invite guests from outside the United States, you may request up to 10 embassy letters for the term you plan to graduate. You must have a graduation application submitted for that term in order for your request to be processed.

MyUMUC

Through MyUMUC (available online at *my.umuc.edu*), you may access many of your personal UMUC records. MyUMUC enables you to change personal information (such as home address, e-mail address, or phone numbers); register and pay for courses; pay bills; check grades, financial aid, and student account status; apply for graduation; request certification for VA educational benefits and check the status of the request; and view and print reports (such as your class schedule, grade report, statement of account, and unofficial transcript). To access services, you must enter your UMUC login credentials.

A glossary of terms frequently used in MyUMUC may be found in the appendices.

SERVICES AND RESOURCES

Verification Services

Enrollment Verification

UMUC participates in the National Student Clearinghouse, which, in turn, supplies verification of enrollment to lending agencies. UMUC reports student enrollment data to the clearinghouse two times each month. Enrollment data are provided for all students who are enrolled in classes, whether they are attending full-time, half-time, or less than half-time, as well as for students who are considered to have withdrawn from the university. UMUC also reports degree information, including graduation date, for students who have completed an academic program.

If you are a current student, you may request enrollment verification through MyUMUC free of charge. If you are no longer enrolled at UMUC, you may request a transcript of your academic record to verify past enrollment.

All enrollment verifications requested via MyUMUC are processed in real time and available to print on the same day. An enrollment verification will not be processed until all financial obligations to the university have been satisfied.

Loan Deferment Form Certification

UMUC does not grant or deny deferment requests; any deferments are at the sole discretion of the lender. UMUC processes deferment forms, certifying your official dates of enrollment. If you are not enrolled in the current term, you are reported as having withdrawn, regardless of whether you plan to enroll or have already enrolled in a future term.

If you have a William D. Ford Federal Direct Loan and wish to apply for a deferment, you must complete the In-School Deferment Request (available at *umuc.edu/finaidforms)* and submit it to the Office of the Registrar by mail for certification. Forms should be mailed to Registrar Student Services, Student Records—Outgoing Transcripts, 3501 University Boulevard East, Adelphi, MD 20783.

You should be aware both of your lender's deadlines for receiving deferment requests and UMUC's reporting schedule to avoid having deferment forms processed and forwarded to the lenders before enrollment data have been reported.

Degree Verification

UMUC has authorized the National Student Clearinghouse to provide degree verification. A degree verification will not be released until all financial obligations to the university have been satisfied.

Employers and background screening firms must contact the clearinghouse directly for this information, for which a fee is charged. For more information about this service, visit *studentclearinghouse.org*.

Financial Aid

UMUC's Financial Aid Office administers a variety of financial assistance programs—including grants, scholarships, and loans—to help you meet the costs of your educational goals. Aid is available for students who can demonstrate financial need, academic merit, or both. You are encouraged to apply for assistance regardless of your income level; many financing alternatives are available.

General Eligibility Requirements

To be eligible for UMUC need-based assistance, you must

- Be admitted to UMUC as a degree-seeking or eligible certificate-seeking student.
- Be a U.S. citizen or an eligible noncitizen.
- Be enrolled half-time for federal loan programs. (**Note:** Audited courses do not count.)
- Demonstrate satisfactory academic progress toward a degree or certificate according to UMUC policy.
- Have a high school or GED diploma.
- Possess a valid Social Security number.
- Register with Selective Service, if required to do so.
- Not be in default on any federal student loans, nor have borrowed in excess of loan limits, nor owe a refund on any grant under Title IV federal student aid programs.
- Not be ineligible based on a drug conviction.

Financial Aid Programs

Most aid programs are available to both full- and part-time students. UMUC may offer the following types of financial aid: grants, scholarships, and loans. In most cases, at least half-time enrollment is required. (Full- and part-time status is explained on p. 144.)

Amounts and eligibility for financial aid vary from year to year. Following is a description of programs available for the upcoming award year.

GRANTS AND SCHOLARSHIPS

Gift assistance, for which no repayment is required, is offered by the state of Maryland and UMUC. The UMUC Financial Aid Office administers several types of gift assistance: UMUC scholarships and grants and Maryland state scholarships and grants.

SERVICES AND RESOURCES

UMUC scholarship programs, which include the UMUC President's Scholarship, offer a number of institutional scholarships as well as scholarships from corporate donors and foundations. Typical awards range from $200 to $1,500 per semester. Requirements vary according to the individual scholarship programs. Most scholarships require a minimum GPA and completion of a minimum number of credits at UMUC for consideration.

If you meet eligibility requirements, you are automatically prompted to complete the scholarship application through MyUMUC. Scholarships are awarded for the academic year on a first-come, first-served basis, so it is essential that you submit scholarship applications as early as possible. More information is available online at *umuc.edu/scholarships.*

The UMUC President's Grant program offers grants to students who demonstrate financial need and are enrolled for at least 3 credits. If funds are available, typical awards range from $100 to $700 per semester, based on need.

Maryland state grant and scholarship programs provide financial assistance to Maryland residents based primarily on financial need. Awards to graduate students typically require enrollment of at least 6 credits per semester. Award amounts range from $400 to $10,000 annually. Senatorial and Delegate Scholarship awards are based on criteria established by the elected official. For more information, contact the Maryland Higher Education Office of Student Financial Assistance at 410-767-3300 or 800-974-0203 or visit *mhec.state.md.us.*

Many UMUC students receive private scholarships offered by corporations, associations, foundations, and other organizations. These private scholarships offer awards on a competitive basis to students who meet specific criteria. Scholarship links and search tools are available online at *umuc.edu/financialaid*.

LOANS

Loan programs are available to students enrolled at least half-time per semester. If you take loans to pay for college expenses, you must repay the principal and interest in accordance with the terms of the promissory note.

The William D. Ford Federal Direct Loan program offers low-interest federal loans to students. Repayment begins six months after you leave school or your attendance drops below half-time. For information about annual award amounts and general repayment terms, visit *umuc.edu/financialaid.*

Graduate PLUS and alternative student loan programs are also options to consider. If your financial aid awards do not meet your financial need, you may be able to borrow up to the cost of attendance through the graduate PLUS program offered by the U.S. Department of Education. You also may borrow additional funds through alternative loan programs offered by many banks and other lenders. Both programs require applicants to be credit-worthy. More information on graduate PLUS loans and alternative loan programs is available online at *umuc.edu/financialaid.*

UMUC Financial Aid Standards for Satisfactory Academic Progress

If you receive financial aid, federal regulations require you to maintain satisfactory academic progress toward your degree or certificate. If you fail to meet the minimum academic standard, you are not eligible to receive financial aid. Details of the appeal process are provided in the complete Satisfactory Academic Progress policy for financial aid students, located at *umuc.edu/gradsap.*

The Financial Aid Application Process

You must complete the Free Application for Federal Student Aid (FAFSA) to be considered for any type of federal, state, or institutional financial aid at UMUC. The FAFSA (which may be completed online at *fafsa.gov*) must also be completed if you wish to be considered for need-based Maryland state scholarships. UMUC's school code is 011644.

UMUC FINANCIAL AID PRIORITY DEADLINES

One of the most important aspects of the financial aid process is applying for assistance as early as possible. Priority deadlines are listed below. Students who apply by the priority deadlines may be considered for additional grant and scholarship programs with limited funds.

If you apply late, you may still receive aid, depending on your eligibility and the availability of funds. Late applications are still processed and considered. You are always encouraged to apply for financial aid.

PROGRAM OR PERIOD BEING APPLIED FOR	PRIORITY DEADLINE FOR FILING FINANCIAL AID FORMS
Maryland State Scholarships	March 1
Full Academic Year or Fall Semester Only	June 1
Winter and Spring Semesters	November 1
Summer Semester	April 1

SERVICES AND RESOURCES

Federal Return of Funds Policy

Federal (Title IV) financial aid is awarded under the assumption that you will attend and participate in classes for the entire period for which the aid has been awarded. If you receive Title IV funds and do not attend or participate for the entire period for which you have been awarded aid, the university is required by federal regulation (34 CFR 668.22) to perform a Return of Title IV Funds calculation. The requirement to perform such a calculation is triggered by any of the following actions occurring on or before the 60% point of your enrollment period:

- Course cancellation
- Disenrollment
- Assignment of a grade of FN
- Dropping a course
- Withdrawing from a course

If you certify your intent to return later within the same term in which you dropped or withdrew from class, then the Financial Aid Office will not perform a return of funds calculation—unless you do not return as scheduled.

When the Financial Aid Office performs a return of funds calculation, unearned funds are returned to the Department of Education. This can result in a balance owed to UMUC. You are then responsible for repaying the outstanding debt, or it will be transferred to the State Central Collections Unit.

If you are using federal financial aid, you are strongly encouraged to contact the Financial Aid Office before dropping or withdrawing to fully understand the impact on your current and future financial aid awards.

Visit *umuc.edu/enrollmentchanges* for further information.

For Further Information

If you need additional information, visit the Financial Aid Online Support Center at *umuc.edu/help* to e-mail, chat, request a call, or view the extensive list of frequently asked questions in the Knowledge Base.

Veterans Benefits

Veterans Benefits Programs

The following educational assistance programs administered by the U.S. Department of Veterans Affairs are available for active-duty military personnel, reservists, veterans, and their dependents who are attending UMUC:

- Montgomery GI Bill®–Active Duty Educational Assistance Program (Chapter 30)
- Vocational Rehabilitation (Chapter 31)
- Post–Vietnam Era Educational Assistance Program (Chapter 32)
- Survivors' and Dependents' Educational Assistance Programs (Chapter 35)
- Montgomery GI Bill–Selected Reserve Educational Assistance Program (Chapter 1606)
- Educational Assistance for Reserve Component Members Supporting Contingency Operations and Certain Other Operations (Chapter 1607)
- Post-9/11 Veterans Educational Assistance Program (Chapter 33)
- Transfer of Post-9/11 GI Bill Benefits to Dependents
- Yellow Ribbon Program
- Marine Gunnery Sergeant John David Fry Scholarship

Detailed information on these programs is available online at *umuc.edu/vabenefits* and *gibill.va.gov.*

Application Procedures

Every educational assistance program requires different paperwork and documentation to process a claim. You may submit initial applications for benefits online directly to the U.S. Department of Veterans Affairs. You also must complete a UMUC Request for Certification form (available online via MyUMUC) each session you wish to receive benefits. The U.S. Department of Veterans Affairs processes claims and issues payment six to eight weeks after receiving completed paperwork.

Amounts and Methods of Payment

The amount of money you may receive from the U.S. Department of Veterans Affairs depends on the educational assistance program for which you are eligible, the number of credits for

GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government website at *benefits.va.gov/gibill*.

which you are registered, the length of the session, and (for certain programs) the number of dependents you have. The current monthly payment for each educational assistance program is available online at *gibill.va.gov.*

Evaluation of Prior Training

When you file a claim for educational benefits, the U.S. Department of Veterans Affairs requires prior training to be evaluated for transfer credit. If you have earned graduate credit from a regionally accredited institution, you must have an evaluation completed during the first session of attendance. (Equivalent credit from other accredited institutions may be considered on a case-by-case basis. If you were educated abroad, see *umuc.edu/internationalstudent* for additional requirements.) Not complying with this evaluation may delay future benefits. For information on evaluation procedures, visit *umuc.edu/internationalcredit.*

Students' Responsibilities

If you receive benefits, you are expected to follow all regulations and procedures of the U.S. Department of Veterans Affairs while attending UMUC.

At UMUC, all regulations of the U.S. Department of Veterans Affairs are enforced. You should be aware of the following requirements and consequences:

- You are expected to make satisfactory progress toward a degree or certificate; everyone must comply with the academic standards of UMUC.
- You must report all changes in enrollment—including drops, adds, withdrawals, changes to audit, and changes in degree objective.
- Registering for a course and then not attending, or ceasing to attend without officially withdrawing, is a misuse of federal funds that is punishable by law.
- Payment of benefits will be disallowed for any course in which a grade of FN is assigned.
- Payment of benefits will be disallowed for repeating a course for which transfer credit has been granted or for which a passing grade was assigned.
- Payment of benefits will be disallowed for any course that is not a requirement of your degree or certificate program.
- Payment of tuition and fees is required at time of registration, unless you are applying for Chapter 31 Vocational Rehabilitation or Chapter 33 Post-9/11 benefits.
- You are responsible for paying the balance of any tuition fees remaining after payment of Post-9/11 benefits.
- If you are in a program that involves any internship, practicum, or work study, you are required to provide documentation to the Veterans Certification Office verifying the physical location and zip code where the work takes place.

Noncredit Graduate Courses

The U.S. Department of Veterans Affairs does not pay benefits for noncredit graduate courses.

Tutorial Assistance

Veterans, active-duty military personnel, and reservists receiving funding assistance from the U.S. Department of Veterans Affairs may qualify for tutorial assistance. If you are enrolled at least half-time, you may qualify. Payments are allowed when you demonstrate deficiency in courses that are required for your degree programs.

For Further Information

Information and applications are available from your advisor or at *umuc.edu/vabenefits* on the UMUC website. For information on qualifying for the in-state tuition rate as a veteran or eligible dependent, see Determination of Residency for Tuition Purposes on p. 147.

Veterans Resources

UMUC offers dedicated military and veterans advisors and a range of resources targeted specifically for veterans. These include VetSuccess on Campus and the Veterans Resource Center, a one-stop shop designed to give you the support you need to succeed in school and in your career. Learn more at *umuc.edu/vetresources.*

Student Advisory Council

The Student Advisory Council provides advice to the university administration, and thus serves as an avenue for UMUC students to provide feedback about UMUC's mission and overall direction. The council consists of 12 members, elected by their fellow students, who act in an advisory capacity to the university president, provost, deans, and other officials on behalf of all students.

SERVICES AND RESOURCES

If you would like to see certain issues addressed or have questions, contact your council representative by e-mail at *stac@umuc.edu.*

More information on shared governance is available online at *umuc.edu/gov.*

Other Resources

Bookstores

Most courses include online electronic resources and do not require that you purchase textbooks. For those few courses that still require additional resources, you may order textbooks and software from MBS Direct online through the UMUC online bookstore *(umuc.edu/bookstore)* or by mail. MBS guarantees the quality of new and used inventory and has an easy return and buyback program. Orders are shipped via UPS within 24 hours of receipt, Monday through Friday. Overnight and two-day delivery are available for an additional fee. Payment by personal check, MasterCard, Visa, American Express, and Discover is accepted. Some employer contracts may be accepted.

Career Services

Career Services provides resources and services to inform, prepare, and connect UMUC students and alumni worldwide with their career and job search needs. To access Career Services, you should activate your account on CareerQuest, UMUC's online career portal, at *careerquest.umuc.edu* using your UMUC login credentials.

TOOLS AND RESOURCES

Career Services offers a variety of online tools and resources, available 24 hours a day, that can be useful in career planning and the job-search process. Resources include résumé builders and templates, automated résumé reviews, online mock interviews, video job-search tips, mentor matching, occupational information, employer and graduate school directories, job hunting guides, and career resource literature.

JOB-SEARCH SERVICES

UMUC offers several services designed to fulfill the employment needs of UMUC students and alumni, including employer recruitment sessions and job fairs (held online and on-site); job-search skills workshops, such as résumé writing and interview preparation; and tutorials. CareerQuest enables you to search job listings and post résumés for prospective employers.

CAREER DEVELOPMENT AND PLANNING

Career Services staff are available to provide personalized attention to help you clarify your skills, interests, and work-related values; make career/life-related decisions; research career options; plan for further study; and search for employment, whether you are new to your career field, making a career transition, or looking for guidance on how to climb the corporate ladder as an experienced professional.

Career advising services are available by appointment (on-site and by phone, video chat, and e-mail) and can be scheduled via CareerQuest. Limited appointments are available on a walk-in basis at Largo during specified times. Call 800-888-UMUC (8682), ext. 2-2720, or visit *umuc.edu/careerservices* for more information.

Computer Labs and Services

Computer labs are available at many UMUC sites (including Dorsey Station, Largo, Shady Grove, and Waldorf). These labs are available primarily for the use of students completing coursework but also are open to faculty members, staff, and alumni on a first-come, first-served basis on presentation of a valid library bar code. You must bring a flash drive to save data or documents.

Lab assistants are available during scheduled hours to help you with resident software programs but cannot provide tutoring.

You also may access host computers at UMUC via the internet using Telnet. Two host systems are accessible: Nova and Polaris. You must have an account for the particular system you wish to use. For most students taking courses in computing, accounts are set up automatically as part of the coursework and are valid for the duration of the class.

Technical support for MyUMUC, the learning management system, and other learning applications is available 24 hours a day, seven days a week, through Help@UMUC online at *umuc.edu/help* or by phone at 888-360-UMUC (8682).

The UMUC Library

The UMUC Library *(umuc.edu/library)* serves to educate students, faculty, and staff in the use of library and information services, emphasizing the critical importance of information literacy knowledge and skills for success in today's information-rich world. The office also develops and manages extensive online research resources and user-centered services for UMUC students, faculty, and staff worldwide.

SERVICES AND RESOURCES

LIBRARY RESOURCES

The UMUC Library provides access to a rich collection of research materials on a wide variety of topics (business, social science, science, arts and humanities, computer and information systems). You can access an extensive array of subscription research databases containing tens of thousands of full-text articles, as well as thousands of electronic books, through the UMUC Library home page at *umuc.edu/library* or through the learning management system. UMUC Library OneSearch allows you to search for scholarly articles, books, and other research resources via a single search engine that includes most of the databases to which the UMUC Library subscribes. The UMUC Library has also created subject-specific resource guides to serve as a starting point for research. Each guide includes subject-relevant research databases, books, websites, and other resources.

LIBRARY SERVICES

Currently enrolled students in the continental United States have borrowing privileges at the 17 University System of Maryland and Affiliated Institutions member libraries. The library collections can be searched and books can be requested through the online library catalog, available via the library home page. All UMUC students may use the DocumentExpress service to request that journal articles or book chapters not available online in full text be sent to them electronically.

LIBRARY INSTRUCTION AND RESEARCH ASSISTANCE

To help you gain the in-depth research skills needed to locate, evaluate, and use the rich research resources available to you, the UMUC Library provides many self-help tutorials and resources on its web pages and offers library instruction in selected online and on-site classes.

Reference and research assistance is available daily (except holidays), during regularly scheduled hours, through the office's web page under "Ask a Librarian." For a complete list of library services, visit *umuc.edu/library* or call the UMUC Library at 240-684-2020 or 800-888-UMUC, ext. 2-2020, during regularly scheduled office hours.

UNIVERSITY POLICIES

The information contained in this catalog reflects the policies of both UMUC and the University System of Maryland (USM). The complete list and text of UMUC's policies can be found at *umuc.edu/policies*. USM policies can be found at *usmd.edu /regents/bylaws.*

Student Classification for Admission and Tuition Purposes

For information on student classification and residency, review USM Policy VIII-2.70 at *usmd.edu/regents/bylaws/SectionVIII*. Also see UMUC Policy 210.20 Student Residency Classification for Admission, Tuition, and Charge-Differential Purposes at *umuc.edu/policies.*

Disclosure of Student Records

UMUC complies with the Family Educational Rights and Privacy Act (FERPA), a federal law that protects the privacy of students' education records. In accordance with FERPA, you have the right to inspect and review your education records; seek an amendment of your education records, where appropriate; limit disclosure to third parties of directory information (student information which may be released without your prior written consent); and file formal complaints alleging a violation of FERPA with the Department of Education. In addition, FERPA provides that most of your student information may not be released to third parties without your prior consent. UMUC's Policy 210.14 Disclosure of Student Records contains an explanation of information that may be disclosed with and without prior consent, as well as procedures for requesting amendments to records, requests for nondisclosure, and filing of complaints. Requests for inspection of your student records may be sent to *exception.request @umuc.edu*. For another person to act on your behalf, a power of attorney is required. More information on FERPA, including disclosures to third parties, can be found at *umuc.edu/current-students/finances/financial-aid/financial-aid-policies/ferpa.cfm*.

Student Drug and Alcohol Awareness

UMUC complies with all federal, state, and local laws that regulate or prohibit the possession, use, or distribution of alcohol or illicit drugs. Violations of such laws that come to the attention of UMUC officials will be addressed through UMUC procedures, through prosecution in the courts, or both.

All UMUC students are prohibited by UMUC from unlawfully possessing, using, manufacturing, distributing, or dispensing alcohol or any controlled substance on UMUC premises or at UMUC-sponsored activities. UMUC expects all students to comply with applicable federal, state, and local laws and regulations pertaining to possession, use, manufacture, distribution, or dispensation of alcohol and/or controlled substances.

Any student who violates any of the applicable standards of conduct is subject to corrective disciplinary actions and penalties up to and including expulsion from UMUC academic programs and referral to the appropriate federal, state, and/or local authorities for prosecution in the courts. Students should see the drug prevention program section of the most current annual safety and security report *(umuc.edu/inform)* for additional information.

Smoking

In accordance with USM policy, UMUC seeks to promote a healthy, smoke-free environment for the UMUC community. More information on Policy 640.00 UMUC Policy on Smoking may be found at *umuc.edu/policies/adminpolicies /admin64000.cfm.*

Intellectual Property

The primary mission of universities is to create, preserve, and disseminate knowledge. When that knowledge takes the form of intellectual property, a university must establish a clear and explicit policy that will protect the interests of the creators and the university while ensuring that society benefits from the fair and full dissemination of that knowledge. More information about UMUC's policy on intellectual property is available online at *umuc.edu/policies/researchpolicies/research19000.cfm.*

Peer-to-Peer File Sharing

Unauthorized use of copyrighted materials may bring civil and criminal penalties to the user. UMUC is committed to combating the unauthorized use of copyrighted materials on UMUC's network (including within online classrooms), and, therefore, has established a written plan to achieve this goal. The intent of this plan is to inform UMUC students, faculty, and staff members of the appropriate use of copyrighted material on the network and to deter, detect, and discipline prohibited use while reasonably maintaining the educational use of UMUC's network.

Summary of Civil and Criminal Penalties for Violation of Federal Copyright Laws

Copyright infringement is the act of exercising, without permission or legal authority, one or more of the exclusive rights granted to the copyright owner under section 106 of the Copyright Act (Title 17 of the United States Code). These rights include the right to reproduce or distribute a copyrighted work. In the file-sharing context, downloading or uploading substan-

tial parts of a copyrighted work without authority constitutes an infringement.

Penalties for copyright infringement include civil and criminal penalties. In general, anyone found liable for civil copyright infringement may be ordered to pay either actual damages or "statutory" damages affixed at not less than $750 and not more than $30,000 per work infringed. For "willful" infringement, a court may award up to $150,000 per work infringed. A court can, in its discretion, also assess costs and attorneys' fees. For details, see Title 17, United States Code, Sections 504, 505.

Willful copyright infringement can also result in criminal penalties, including imprisonment of up to five years and fines of up to $250,000 per offense.

More information is available on the U.S. Copyright Office website at *copyright.gov*.

UMUC Procedures for Handling Unauthorized Distribution

UMUC implements an active protocol to respond to copyright infringement allegations. In accordance with the Digital Millennium Copyright Act (DMCA), UMUC has designated the following individual to receive and respond to reports of alleged copyright infringement on UMUC's website:

Maureen Walsh David
Senior Vice President and General Counsel
University of Maryland University College
3501 University Boulevard East
Adelphi, MD 20783

301-985-7080
legal-affairs@umuc.edu

To be effective under the DMCA, a notification of claimed infringement must be in writing and include the following information:

1. A physical or electronic signature of a person authorized to act on behalf of the owner of an exclusive right that is allegedly infringed;
2. Identification of the copyrighted work claimed to have been infringed, or, if multiple copyrighted works at a single online site are covered by a single notification, a representative list of such works at that site;
3. Identification of the material that is claimed to be infringing or to be the subject of infringing activity and that is to be removed or access to which is to be disabled, and information reasonably sufficient to permit the service provider to locate the material;
4. Information reasonably sufficient to permit the service provider to contact the complaining party, such as an address, telephone number, and, if available, an electronic mail address at which the complaining party may be contacted;
5. A statement that the complaining party has a good faith belief that use of the material in the manner complained of is not authorized by the copyright owner, its agent, or the law; and
6. A statement that the information in the notification is accurate, and, under penalty of perjury, that the complaining party is authorized to act on behalf of the owner of an exclusive right that is allegedly infringed.

Once an effective DMCA takedown request is submitted, UMUC will act expeditiously to remove or block access to the infringing material.

Nondiscrimination

University of Maryland University College (UMUC) is committed to ensuring that all individuals have equal access to programs, facilities, admission, and employment and that no person shall be excluded from participation in, be denied the benefit of, or otherwise be subjected to unlawful discrimination in this institution's programs and activities. In accordance with federal, state, and local laws and regulations, UMUC does not discriminate against any person on the basis of race, religion, color, creed, sex, gender, gender identity or expression, marital status, sexual orientation, age, national origin, ancestry, political affiliation, mental or physical disability, genetic information, veteran status (including Vietnam-Era veterans), or any other legally protected characteristic. Specifically, under Title IX of the Education Amendments of 1972, UMUC prohibits discrimination on the basis of sex in its programs and activities. UMUC will take steps to eliminate prohibited conduct, prevent its recurrence, and remedy its effects.

All inquiries regarding UMUC's Nondiscrimination Statement or compliance with applicable statutes and regulations regarding equal opportunity should be directed to the fair practices and equal opportunity officer, Office of Diversity and Equity, 3501 University Boulevard East, Adelphi, MD 20783-8000 (phone 301-985-7940 or e-mail *fairpractices@umuc.edu).*

For UMUC Policy 040.30 Affirmative Action and Equal Opportunity, see *umuc.edu/policies/adminpolicies/admin04030.cfm.*

Inquiries regarding Title IX/sexual misconduct may be directed to the Title IX coordinator, Office of Diversity and Equity, 3501 University Boulevard East, Adelphi, MD 20783-8000 (phone 301-985-7021 or e-mail *titleixcoordinator@umuc.edu)* or a member of UMUC's Title IX Compliance Team.

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UNIVERSITY POLICIES

See *umuc.edu/diversity/title-ix-sexual-misconduct/index.cfm.* For UMUC Policy 041.00 Sexual Misconduct, see *umuc.edu/policies/adminpolicies/admin04100.cfm.*

For external inquiries regarding the notice of nondiscrimination, including Title IX information, contact the Office for Civil Rights, U.S. Department of Education, Wanamaker Building, Suite 515, 100 Penn Square East, Philadelphia, PA 19107, or call 800-421-3481.

Sexual Misconduct Awareness

UMUC is committed to providing an education and work environment that is free from sexual misconduct. Sexual misconduct is a form of discrimination based on sex or gender that includes dating violence, domestic violence, sexual exploitation, sexual harassment, sexual intimidation, sexual violence, and stalking. UMUC promotes awareness and addresses sexual misconduct issues through educational programs, training, and complaint resolution. All administrators, supervisors, and faculty members are required to promptly and appropriately report allegations of sexual misconduct that are brought to their attention.

If you have any questions regarding sexual misconduct or you need to report a complaint, contact Steven Alfred, Title IX coordinator, by phone at 301-985-7930 (voice) or 301-887-7295 (text only) or via e-mail at *titleixcoordinator@umuc.edu*.

Religious Observance

So that academic programs and services of UMUC shall be available to all qualified students who have been admitted to its programs, regardless of their religious beliefs, students shall not be penalized because of observances of their religious holidays. More information on Policy 051.00 Religious Observances may be found at *umuc.edu/policies/academicpolicies/aa05100.cfm.*

Annual Security Information Report and Consumer Disclosures

In accordance with U.S. Department of Education regulations, University of Maryland University College distributes an Annual Safety and Security Report to all current students, staff, and faculty. It is also available to prospective students, staff, and faculty, upon request. The annual report provides important information about rights and responsibilities on the following topics:

- Campus safety and security policies and services
- Sexual misconduct policy
- Emergency procedures
- Notification of rights under FERPA for postsecondary institutions
- Peer-to-peer file sharing
- Drug prevention program
- Clery act crime statistics by location for the previous three calendar years

You can read the Annual Safety and Security Report at *umuc.edu/inform*. If you have questions or wish to receive a copy of the current annual report, contact the UMUC Director of Security at 301-985-7471.

To help you stay informed, additional consumer disclosures can be found at *umuc.edu/disclosures.*

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State Authorizations

As an online university, UMUC offers courses and services worldwide. Within the United States, individual states may require some form of authorization. The following information is designed to meet such state requirements.

Virginia

The University System of Maryland and the Maryland Higher Education Commission have approved all programs offered by UMUC, including those programs offered at Virginia sites. Any credit earned for coursework at UMUC in Virginia shall be applied in the same manner as if the credit was earned online or at any other UMUC location. UMUC is certified by the State Council of Higher Education for Virginia.

The university's largest site in Virginia is

UMUC at Quantico
525 Corporate Drive
Stafford, VA 22554

The university maintains locations with administrative capability at

Fort Belvoir
Barden Education Center, Building 1017
9625 Belvoir Road
Room 128
Fort Belvoir, VA 22060

Joint Base Myer-Henderson Hall
Education Center, Building 417
239 Sheridan Avenue
Room 215
Fort Myer, VA 22211

Joint Expeditionary Base Little Creek-Fort Story
1481 D Street
Building 3016
Virginia Beach, VA 23459

Naval Station Norfolk
1680 Gilbert Street
Building IE
Norfolk, VA 23511

Thomas Nelson Community College
525 Butler Farm Road
Hampton 3 Building
Hampton, VA 23666

Washington

University of Maryland University College is authorized by the Washington Student Achievement Council and meets the requirements and minimum educational standards established for degree-granting institutions under the Degree-Granting Institutions Act. This authorization is subject to periodic review and authorizes University of Maryland University College to offer specific degree programs. The Council may be contacted for a list of currently authorized programs. Authorization by the Council does not carry with it an endorsement by the Council of the institution or its programs. Any person desiring information about the requirements of the act or the applicability of those requirements to the institution may contact the Council at P.O. Box 43430, Olympia, WA 98504-3430 or by e-mail at *degreeauthorization@wsac.wa.gov.*

The transferability of credits earned at University of Maryland University College is at the discretion of the receiving college, university, or other educational institution. Students considering transferring to any institution should not assume that credits earned in any program of study at University of Maryland University College will be accepted by the receiving institution. Similarly, the ability of a degree, certificate, diploma, or other academic credential earned at University of Maryland University College to satisfy an admission requirement of another institution is at the discretion of the receiving institution. Accreditation does not guarantee credentials or credits earned at will be accepted by or transferred to another institution. To minimize the risk of having to repeat coursework, students should contact the receiving institution in advance for evaluation and determination of transferability of credits and/or acceptability of degrees, diplomas, or certificates earned.

CPA Requirements

UMUC's programs in accounting may help prepare you to sit for the Uniform Certified Public Accountant Exam and/or obtain initial licensure as a Certified Public Accountant (CPA) in Maryland. To sit for the CPA Exam in Maryland, a candidate is required to have successfully completed 120 credits toward an accounting degree. Many other states, however, require candidates to successfully complete 150 credits prior to sitting for the CPA Exam.

To obtain initial licensure as a CPA in Maryland and most other states, a candidate is required to have successfully completed 150 credits. UMUC graduate accounting programs help prepare you to become licensed as a CPA in Maryland.

If you intend to request transfer credits from a nonregionally accredited institution or an institution located outside of the United States, it may impact your ability to become licensed as

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a CPA. For information regarding licensure in other states and transfer credit, please visit *umuc.edu/professional-licensure.*

Stateside Classroom Locations with Zip Codes

Name of Location	Zip Code
Aberdeen Proving Ground	21005
Academic Center at Largo	20774
Anne Arundel Community College at Arundel Mills	21076
Cecil College	21901
Dorsey Station	21075
Eglin Air Force Base	32542
Fort Belvoir	22060
Fort Benning	31905
Fort Bliss	79916
Fort Drum	13602
Fort Gordon	30905
Fort Myer	22211
Jacksonville Naval Air Station	32212
Joint Base Anacostia-Bolling	20032
Joint Base Andrews	20762
Joint Base Lewis-McChord	98433
Joint Expeditionary Base Little Creek-Fort Story	23459
Killeen	76549
Laurel College Center	20707
National Security Agency	20755
Naval Station Mayport	32228
Naval Station Norfolk	23511
Odenton	21113
Prince George's Community College	20774
Quantico Corporate Center	22554
Shady Grove	20850
Southern Maryland Higher Education Center	20619
Thomas Nelson Community College	23666
University of Maryland, College Park	20742
U.S. Coast Guard Base Honolulu	96819
USM at Hagerstown	21740
Waldorf Center for Higher Education	20602
Walter Reed National Military Medical Center (Bethesda)	20889

Retention of Student Records

UMUC maintains records of students' admission, enrollment, grades, transfer of credits, transcripts and graduation while the student is enrolled and permanently after graduation.

MyUMUC Terminology

The following is an explanation of terms students may encounter when using MyUMUC.

Academic Advisement Report (Degree Plan): A review of the academic progress that a student has made within his/her UMUC program.

Activation: The automated process of verifying a student's record for enrollment eligibility each term based on certain criteria. This process enables a student to register for courses.

Admission: The process of being admitted to the university, which includes completing an application and paying the fees required for entrance.

Campus: The UMUC division where a student is located. UMUC has three major campuses—UMUC Asia, UMUC Europe, and UMUC Stateside. Within those campuses are additional locations where classes are held or staff and academic advisors may be reached.

Career: Graduate or undergraduate level of study.

Class Number: The unique, five-digit number assigned to each class at UMUC.

Drop: To cancel your enrollment in a class before the end of the drop period posted on the UMUC website for your division.

eApp: An abbreviation for electronic application, which is an application to the university that is filled out and submitted online.

EmplID (or Student ID): A system-generated identification number for student use. Students should record their EmplID in a safe, secure place, as it will be needed to access the various services. GoArmyEd students should note that their UMUC EmplID will be different from their GoArmyEd EmplID.

Enrollment Activity: The process of adding or dropping a class.

Lower-Level (LL) Courses: Courses that are numbered 100-299.

Mid-Session (or "Intensive Session"): A shorter class period held between the standard eight-week sessions.

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Official Evaluation (or Academic Advisement Report): A review of the academic progress that a student has made within his/her UMUC program.

Portal: A website that integrates online applications, such as e-mail, databases, references to other websites, and proprietary applications, under one unique URL, often allowing secure access with one unique login and password.

Real-Time: This means that transactions are implemented at the moment a user makes them, regardless of time zone. There is no time delay; all information is current up to the moment users access it.

Semester: Also known as a term (usually a five-month period divided into two sessions).

Session: Usually an eight-week period within a term (weeks may vary), during which classes are offered.

Subject and Catalog Number: The four-letter abbreviation and three-digit number for UMUC classes. For example, in COMM 300, "COMM" stands for communications and "300" is the catalog number.

Term: A full semester, which may be subdivided into sessions. Student finance and financial aid offices use this time period for instructional accounting.

Third-Party Payment: A payment made by a third party, such as tuition assistance (TA), Army Emergency Relief (AER), and scholarships. (Note: Loans and federal grants are not third-party payments.)

Units: Credit value the university assigns to a course.

Upper-Level (UL) Courses: Courses that are numbered 300-499.

UserID: A student's user name for logging into MyUMUC. Students will need both their UserID and password to log in.

Withdraw: To cancel your enrollment in a class after the end of the drop period posted on the UMUC website for your division.

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University System of Maryland

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