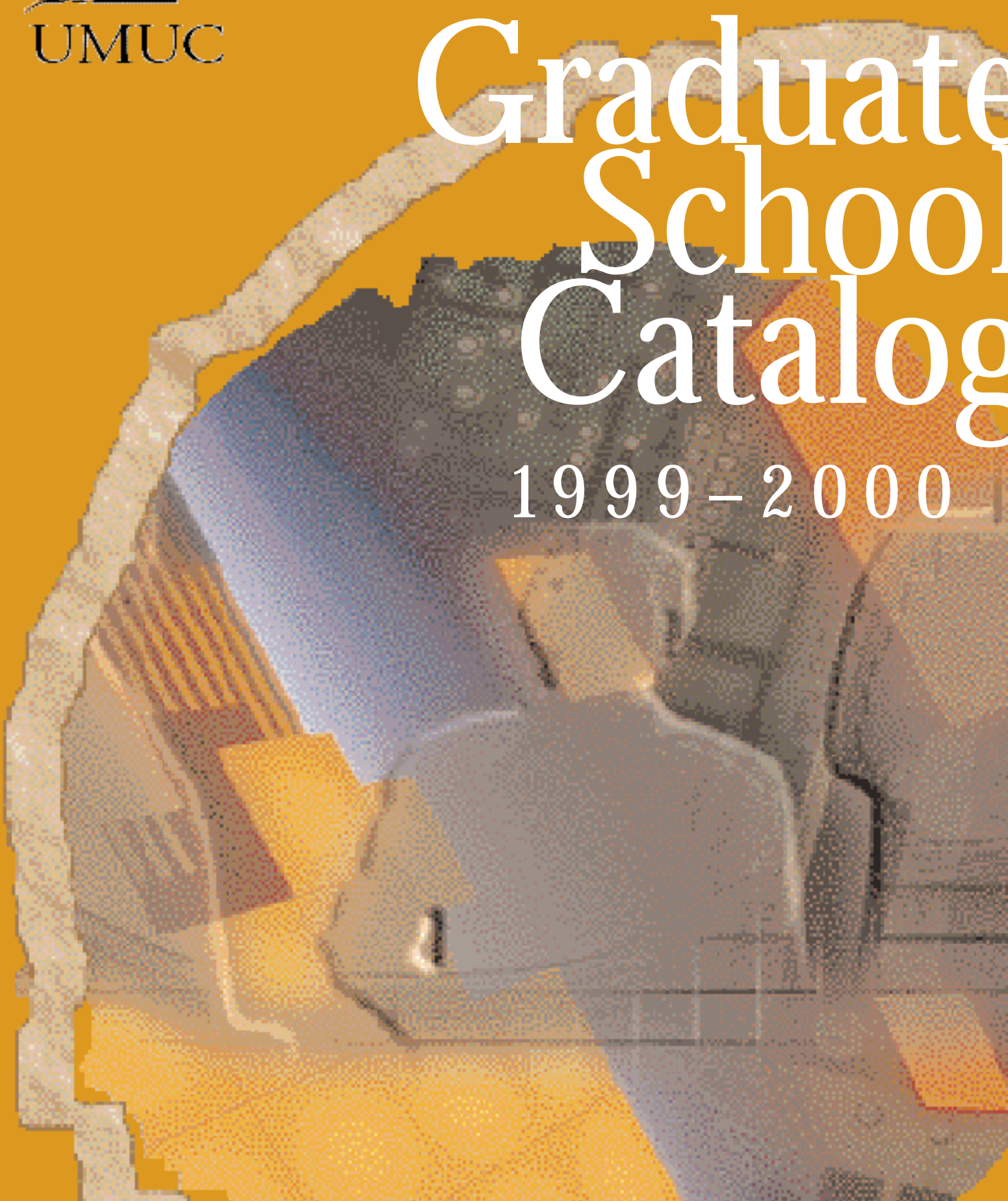


Graduate School of Management & Technology



Graduate School Catalog

1999-2000





Graduate School of Management & Technology

Policy Statements

The provisions of this publication are not to be regarded as an irrevocable contract between the student and University of Maryland University College (UMUC).

From time to time, changes are made in the general regulations and academic requirements. There are established procedures for making changes – procedures that protect the institution's integrity and the individual student's interests and welfare. When a curriculum or graduation requirement is altered, it is not made retroactive unless the alteration is to the student's advantage and can be accommodated within the span of years normally required for graduation.

Accreditation

UMUC is accredited by the Commission on Higher Education of the Middle States Association of Colleges and Schools, 3624 Market Street, Philadelphia, PA 19104 (215-662-5606)

The Commission on Higher Education is an institutional accrediting agency recognized by the U. S. Secretary of Education and the Commission on Recognition of Postsecondary Accreditation.

Nondiscrimination

UMUC welcomes applications from prospective students and employees regardless of race, age, sex, physical or mental disability, religion, national origin, sexual orientation, marital status, or political affiliation.

General Information

Telephone: 301-985-4617

Fax: 301-985-7544

E-Mail: gradschool@info.umuc.edu

World Wide Web: www.umuc.edu/grad

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Residents of Maryland: Voter Registration Applications available by calling 1-800-222-VOTE.

Message From the Dean

Dear Students,

As you read through this catalog you will find descriptions of programs and courses, policies, services available, tuition and fee information, and a listing of our faculty. What you will not see, but we hope you will soon appreciate, are the values, beliefs, and practices of the people who stand behind these programs and policies. In choosing UMUC, you have found a truly remarkable organization filled with people who care about you and the quality of your experiences with us. We want you to enjoy the benefits of the very best graduate education possible and pledge our continued dedication to that goal.

The Graduate School's 10 master's degree programs (comprising 19 specialty tracks) are designed to provide working professionals with an opportunity to add to or sharpen their knowledge, skills, and abilities in a variety of areas crucial in today's global, technology-driven workplace. We offer classes on evenings and weekends in a number of locations throughout the Baltimore–Washington region. Four of our degree programs are also available in an accelerated “Executive” format that allows completion in as little as 18 months. All degree programs can be completed online via UMUC's asynchronous computer-conferencing system known as WebTycho. So, in addition to quality, we offer unparalleled choice and convenience to our students.

UMUC's new leadership team, headed by President Gerald Heeger, is already working to build on UMUC's strong record of success over the last 50 years. We are a global university, offering courses and programs to students throughout the world regardless of time and place constraints. In the Graduate School we continuously review and revise our courses, keeping them current and close to the needs of the workplace. We constantly experiment with ways to improve our online delivery medium. And we continue to develop and implement new courses and programs in response to the ever-changing demands of our society and economy.

I am pleased you have chosen to join our unique graduate student body of approximately 5,000. Thanks to our online courses, you will find that your classmates come from all over the country and the world, and from all sectors of the workplace. I wish you every success in your graduate studies with us.



Christina Hannah, Ph.D
*Dean, Graduate Studies and
Associate Vice President, Academic Affairs*

Welcome to UMUC

Introduction

For more than 50 years, University of Maryland University College (UMUC) has fulfilled its principal mission: to serve adult, part-time students through high-quality learning opportunities. One of 11 degree-granting institutions in the University System of Maryland, UMUC offers a complete range of educational services both in the traditional classroom and through contemporary distance learning formats. Classes are held throughout Maryland, in the Washington, D.C., metropolitan area, and in hundreds of locations overseas. Students also can “attend class” from anywhere in the world that is connected electronically—even from places as remote as Antarctica.

Forbes magazine ranks UMUC in the “Top 20 Cyber Universities.” In addition, UMUC received the University Continuing Education Association–Peterson’s in 1998 and 1999 Award for Innovative Distance Education. Also, UMUC has been selected as one of 15 participants in the U.S. Department of Education’s Distance Education Demonstration Program.

UMUC is an important partner in Maryland’s economic development. Adhering to its mission of bringing convenient and relevant learning opportunities to the workforce, it has developed strong relationships with many prominent Maryland businesses to ensure that their education and training needs, and those of their individual employees, will be met.

UMUC conducts postsecondary programs for military servicemembers, U.S. government employees, and their families through its Asian and European Divisions. A two-year residential campus in Mannheim, Germany, serves the sons and daughters of U.S. military and government

personnel stationed abroad. Also, military personnel can earn their degree from anywhere in the world through distance education.

At its residential campus in Schwäbisch Gmünd, Germany, UMUC provides an international undergraduate education to students from the United States and dozens of other countries. Russian students may earn a UMUC bachelor’s degree through programs offered jointly at Far Eastern State University in Vladivostok and Irkutsk State University in Irkutsk.

UMUC is unlike any other institution of higher education in the world. It is preeminent in its offering of higher educational opportunities for adults in the United States. In fall 1999, UMUC enrolled nearly 35,000 students worldwide; annually, it serves more than 70,000 students. More than 5,700 academic degrees were awarded in the past year. Every year, UMUC holds commencement ceremonies in College Park, Heidelberg, Tokyo, Okinawa, Seoul, Schwäbisch Gmünd, Irkutsk, and Vladivostok.

History and Scope

When the University of Maryland was reorganized in 1970, UMUC was designated as a separately accredited institution, an acknowledgment of the significance of its programs for adult learners. Since then, UMUC has expanded its regional and international programs and implemented a variety of innovative technologies to keep pace with its students’ needs.

Higher education in Maryland was reorganized further in 1988, when the five institutions composing the University of Maryland joined with six other public colleges and universities to form the University System of Maryland. The

System now consists of 11 degree-granting institutions—Bowie State University; Coppin State College; Frostburg State University; Salisbury State University; Towson University; University of Baltimore; University of Maryland, Baltimore; University of Maryland, Baltimore County; University of Maryland, College Park; University of Maryland Eastern Shore, and University of Maryland University College—and two research and service units, University of Maryland Biotechnology Institute and University of Maryland Center for Environmental Science.

UMUC cooperates with its sister institutions to extend educational opportunities throughout Maryland, administering the University System of Maryland Shady Grove Center in Rockville, the CCCC-UMUC Waldorf Center, and the UMUC Annapolis Center. UMUC also conducts classes at more than 20 additional sites in the region and offers popular distance learning courses, using online instruction and other methods, in Maryland and around the globe.

UMUC is known for its commitment to excellence in both credit and noncredit programs. Undergraduate degree students may choose a primary specialization from among 30 academic subjects and may take advantage of UMUC's innovative approaches to learning experiences, such as distance education, interdisciplinary programs, cooperative education, and documentation of prior experiential learning. The Graduate School of Management & Technology confers master's degrees in ten areas of management and technology. Four degree programs are also offered in an accelerated format: Master of Business Administration, Master of Science in Management, Master of Science in Technology Management, and an Executive Program in Information Technology leading to a Master of Science in Computer Systems Management or Telecommunications Management. The office of Executive Programs also offers two certificates: the Executive Certificate in International Management and the Executive Certificate for Chief Information Officers (CIO).

UMUC enhances its programs with an array of support services tailored for adult students, such as academic advising, tutoring, career planning, and well-equipped computer labs.

UMUC headquarters are in College Park, Maryland, and include the Inn and Conference Center, an impressive residential facility where UMUC conducts educational conferences and adult learning programs that draw students from around the world. The center also houses a large collection of the work of Maryland artists, which is on public display year-round.

UMUC's place at the forefront of higher education worldwide has inspired a motto that expresses the scope of this innovative institution: "The sun never sets on the University of Maryland."

College Park Commencement Date: May 20, 2000



The Graduate School

Managing Technology for Today and Tomorrow

More than 5,000 students are actively pursuing their graduate studies at the UMUC's Graduate School—a remarkable growth since the school's inception in 1978. UMUC extends the resources of the University System of Maryland to students employed throughout Maryland, the District of Columbia, Northern Virginia, the nation, and the world. Courses are offered during evening and weekend hours at locations that accommodate students' career and family commitments. Students taking online courses are not limited to UMUC's traditional classes. Rather, they can pursue their studies when and where they choose.

Mission Statement

The Graduate School provides postbaccalaureate education to members of the private, public, and not-for-profit sectors who seek to enhance their competencies in management and technology. UMUC's goal is to prepare students to become managers with the vision, knowledge, and skills necessary to help lead organizations in a global environment characterized by workforce diversity, increasing competition, and advanced technology.

UMUC strives for educational leadership in the quality of programs we offer and in their delivery. The Graduate School's role is that of a catalyst for individuals who will make our state, our nation, and our global society a better place in which to work and live.

The Graduate School serves the Baltimore–Washington region and the state of Maryland, as well as other areas of the nation and the world. Where appropriate, the Graduate School enters into alliances with other institutions within and outside the University System of Maryland to achieve its educational goals.

Student Profile

Approximately 75 percent of the Graduate School's students have completed non-business-related studies such as engineering, computer science, biological and medical science, or social science. Most of the Graduate School's students are mid-career professionals who have made steady progress in their chosen fields. These students are now at the point where they desire additional preparation in anticipation of a new managerial assignment. The purpose of UMUC's varied graduate degree programs is to provide students with an opportunity to fully develop themselves as managers so they can confidently accept a more challenging role within their organizations.

The average student age is 36 years. Nearly 60 percent of the students are employed in the private sector of the economy, and more than 48 percent are women. Approximately 8 percent of all applicants to the Graduate School hold postgraduate degrees.

UMUC's goal is to prepare students to become managers with the vision, knowledge, and skills necessary to help lead organizations in a global environment characterized by workforce diversity, increasing competition, and advanced technology.

Graduate Degree and Certificate Programs

UMUC's Graduate School offers the following graduate degree programs, many of which include certificates for completing a specialization in areas of specific competence:

Master of Business Administration

Master of Science in Management/

Master of Business Administration*

Master of Science in Management*

Specialty Tracks

- Accounting*
- Financial Management*
- Health Care Administration*
- Human Resource Management*
- Interdisciplinary Studies in Management*
- Management Information Systems*
- Marketing*
- Not-for-Profit Management*
- Procurement and Contract Management*

Master of Science in Computer Systems Management

Specialty Tracks

- Applied Computer Systems
- Database Systems and Security*
- Information Resources Management*
- Software Development Management*

Master of Distance Education*

Master of Science in Environmental Management*

Master of International Management*

Specialty Tracks

- International Commerce*
- International Finance*
- International Marketing*

Master of Software Engineering*

Master of Science in Technology Management*

- General Program*

Specialty Tracks

- Biotechnology Management*
- Technology Systems Management*

Master of Science in Telecommunications Management*

Executive Management Programs

- Executive Master of Business Administration
- Executive Master of Science in Management
- Executive Master of Science in Technology Management
- Executive Program in Information Technology leading to a Master of Science in Computer Systems Management or Telecommunications Management
- Executive Certificate in International Management
- Certificate for Chief Information Officers (CIO)

* Offered in both the traditional setting and online.

Institute for Environmental Management

The Institute for Environmental Management (IEM) provides educational services in the field of environmental management to individuals and corporations, and to federal, state, and local governments. IEM contributes to the exchange of knowledge in this field by conducting workshops and short courses. Priorities include providing guidance to organizations on regulatory compliance requirements, working with government and the private sector to help them resolve environmental issues and improve technology transfer, and working with organizations to build the leadership competencies needed to respond to the expanding demand for environmental services.

For further information, contact the director of the Institute for Environmental Management by phone at 301-985-7824 or e-mail rbeauchamp@umuc.edu.

Institute for Global Management

The Institute for Global Management (IGM) conducts research and provides training on topics central to the management of international enterprises. IGM offers customized seminars and consulting services and engages in applied research on topics that prepare managers for the effective conduct of international business. IGM's priorities include leadership development in transnational organizations; technology management, particularly the information systems of transnational corporations; and corporate responsibility, with special emphasis on global environmental issues, technology transfer concerns, and localization of management.

Students may obtain further information from the director of the Institute for Global Management by phone at 301-985-7029 or e-mail cmann@umuc.edu.

Graduate Professional Studies (GPS)

The Graduate School provides opportunities for postgraduate studies in specific technical areas to students seeking to upgrade their knowledge. A student may earn a document of completion by successfully completing the full complement of courses for a specific specialty track. The number of courses ranges from four to six, depending on the specialty area. For full descriptions of the courses, select the area of interest from the list on page 8 and refer to the specialty track course descriptions in each of the degree programs. Also, visit www.umuc.edu/gsmt for more information.

For those students wishing to continue and complete a master's degree, the GPS courses may be applied to the course requirements for a degree. More detailed information about Graduate Professional Studies is provided on page 66.

Graduate Professional Studies Programs

The GPS areas and the degree programs with which they are associated are as follows:

Master of Science in Management

- Accounting
- Financial Management
- Health Care Administration
- Human Resource Management
- Marketing
- Management Information Systems
- Not-for-Profit Management
- Procurement and Contract Management

Master of Science in Computer Systems Management

- Information Resources Management

Master of Science in Environmental Management

Master of International Management

- International Commerce
- International Finance
- International Marketing

Master of Science in Technology Management

- Biotechnology Management

Professional and Workforce Development Program

Graduate School faculty collaborate with clients to design flexible products and programs that target key business objectives.

Current program topics are offered in four management areas: interdisciplinary, environmental, international, and technology. A partial list of these topics may be found on page 68. Further information may be obtained by calling Graduate School Outreach at 301-985-7644 or by e-mail at gradschool@info.umuc.edu.

Federal GSA 1,000 by the Year 2000 Program

The Graduate School was selected by the General Services Administration (GSA) to participate in the federal *1,000 by the Year 2000* program. The purpose of this program is to prepare today's information resource managers to meet the challenges of rapidly changing technology and increased demand for government services.

To complete the program, students must take the three courses and one elective in the Master of Science in Computer Systems Management IRM track. Two other electives are to be selected from a variety of technical and technical management courses in the Master of Science in Computer Systems Management or Master of Science in Telecommunications Management programs, or the Master of Science in Management, Management Information Systems track. Upon completion of their studies, students receive a document of completion from UMUC; federal

employees may also receive a *1,000 by the Year 2000* certificate from GSA. Students may elect to finish their Master of Science in Computer Systems Management degree by completing 18 more credits. Students interested in this opportunity should call a Master of Science in Computer Systems Management advisor for further details or e-mail gradschool@info.umuc.edu.

Partnership with National Defense University

In 1995, the UMUC Graduate School formed an alliance with the National Defense University Information Resources Management College (IRMC). The purpose of this alliance is to expand academic opportunities by combining coursework from IRMC's Advanced Management Program and the Chief Information Officer Certificate Program with the Graduate School's technical track and capstone courses.

To complete this program, students apply 15 semester hours of coursework from IRMC with 21 semester hours from UMUC to receive either a Master of Science in Computer Systems Management or a Master of Science in Telecommunications Management degree. Students must apply to and meet the established admissions guidelines for the Master of Science in Computer Systems Management program. Interested students are referred to either IRMC or a Graduate School advisor.

Agreement with U.S. Chamber of Commerce Institutes for Organization Management

In 1999, the UMUC Graduate School of Management & Technology and the U.S. Chamber of Commerce Institutes for Organization Management (Institute) agreed to provide extended academic opportunities to institute students. The institute offers professional development programs for association executives and a Certificate in Association Management for participants who successfully complete the program.

UMUC will accept the successful completion of designated institute courses as partial fulfillment of four Graduate School courses in its Master of Science in Management degree program, Not-for-Profit track. Students must apply to and meet the established admission guidelines for the Master of Science in Management program and submit a portfolio that will be evaluated by the Graduate School to receive credit for the four courses.

Center for Teaching, Learning, and Assessment

UMUC's Center for Teaching, Learning, and Assessment (CTLA) coordinates faculty development and intensive training in distance education, course development, and prior learning assessment for UMUC faculty and collects and analyzes data on student and faculty satisfaction with courses and curricula.

Registration Information

Regulations

Students may be admitted to only one institution in the University System of Maryland at any one time. Students may be admitted as either graduates or undergraduates, but no one may hold both classifications simultaneously. A student's most recent application for admission invalidates any previous admission.

Note: Graduate students may take both graduate and undergraduate courses concurrently.

Students may be admitted to only one graduate program at any time. Application for admission to a second graduate program is not permitted until notification of resignation has been presented to the first program. Students admitted to any other graduate program in the University System of Maryland must notify UMUC.

Students retain active status for one year (two consecutive semesters and the summer trimester) even without being registered in the program. However, after one year without a completed graduate course, students must submit a new application along with another application fee.

Students may withdraw from the Graduate School at any time by writing to Graduate Services or sending an e-mail to gradinfo@umuc.edu. Procedural information and deadlines for withdrawing from a specific class may be found in the current semester *Graduate Schedule of Classes*. UMUC graduate students who have been academically dismissed from one program will not be considered for readmission to any other Graduate School degree or professional studies program.

Academic Credit

The standard graduate programs of UMUC are offered on a semester basis with one accelerated summer session. The normal measure of academic work is the semester hour. Each semester hour requires one hour of class attendance per week per semester. Most courses carry 3 semester hours. Accelerated programs are offered on a semester basis each worth 6 to 9 credits.

Course Load

Students are advised to limit their course loads to conform with the demands of their employment and the time they have to prepare for class. A normal load for full-time students or for those employed no more than 20 hours a week is 9 semester hours per term. Fully employed students are limited to a maximum of 6 semester hours in the fall and spring semesters, and 3 semester hours during the summer.

Full-time students who are not employed during the summer or who work fewer than 20 hours a week may request to take additional courses by submitting a request in writing to the assistant dean, Graduate Services (except for MBA). Requested exceptions to the academic load must be made in writing to the Assistant Dean, Graduate Services, at least one month before the beginning of the semester.

Time Limit for Degrees

All requirements established for the completion of a degree program or a professional development certificate program, must be fulfilled within seven consecutive years. This regulation includes courses transferred from other institutions. Any transfer of credit must be completed within the seven-year time frame applied toward the degree or certificate. (Note: All work toward the MBA degree must be completed within five consecutive years.) All graduate coursework completed at UMUC where the student received a grade will be included in the student's overall GPA, and it is the cumulative GPA that must meet Graduate School requirements for academic standing and for graduation with at least a 3.0 on a 4.0 scale and no more than one "C" on the transcript. Graduation requirements for any degree

will be those that were in effect in the semester in which the first course within the seven-year time frame was completed.

Transfer Credits

Up to 6 semester hours of graduate credit may be considered for transfer credit to UMUC if earned at a regionally accredited institution and if applied to the student's program of study (3 semester hours can be transferred to the MBA program). All graduate credits offered for transfer credit must meet the following criteria:

1. The credits must have been earned as graduate credit.
2. The credits must not have been used to meet the requirements for any degree the student previously earned.
3. The credits must have been awarded no more than seven years (or five for MBA) prior to the date the student completes his or her current program requirements.
4. The student must have earned a grade of "B" or better in the courses considered for transfer. These grades are not included in the calculation of the student's grade-point average.
5. The advisor and the program director must have determined that the transfer courses are relevant to the student's program of study.
6. The credits must have been earned at an accredited institution and be equivalent to graduate-level coursework.

Graduate students at UMUC must complete a minimum of 12 semester hours at the graduate level with a minimum GPA of 3.0 and have degree status before transfer credits will be released or posted to their permanent records.

Note: Transfer credit will not be accepted toward the completion of the professional development certificate or document of completion.

Audit and Pass/Fail

If a student does not want to receive credit, "audit" or "pass/fail" may be selected on the registration form as the grading method. The same fees are charged, but courses that are audited or taken pass/fail do not count toward a degree. All fees and procedures for application and registration apply to students choosing to audit or take courses as pass/fail. Students registering for the management project or executive program courses should leave the "grade option" blank for regular grading; these courses are automatically awarded grades of "S," "I," or "F."

The deadline to change a grading method to audit is five weeks after the semester begins; the deadline to change to a pass/fail option is the last day of late registration.

State Residency Status

It is the policy of the Board of Regents of the University System of Maryland to recognize the categories of in-state and out-of-state students for purposes of admission, tuition, and charge differential at those constituent institutions where such differentiation has been established. The student is responsible for providing the information necessary to establish eligibility for in-state resident status.

Students who are financially independent or financially dependent shall have their residency classification determined on the basis of permanent residency. A student will be assigned in-state status for admission, tuition, and charge differential purposes only if the student, or in the case of a financially dependent student, the student's parent, guardian, or spouse, fulfills all of the following:

For at least 12 consecutive months immediately prior to and excluding the last date available to register for courses in the semester/term for which the petition applies, the student, or if the student is financially dependent, the parent, guardian, or spouse must:

1. Own or rent and occupy living quarters in Maryland.
2. Maintain substantially all personal property in Maryland.

3. Pay Maryland income tax on all earned taxable income, including all taxable income earned outside the state.
4. Receive no public assistance from a state other than Maryland or from a city, county, or municipal agency other than one in Maryland.
5. Have a legal ability under federal and Maryland law to reside permanently without interruption in Maryland.

For at least 11 consecutive months immediately prior to and including the last date available to register for courses in the semester for which the application applies, the student, or if the student is financially dependent, the parent, guardian, or spouse must:

1. Register all owned motor vehicles in Maryland.
2. Obtain a valid driver's license issued by the state of Maryland.

Within the 12 consecutive months immediately prior to and including the last date available to register for courses in the semester for which the application applies, the student, or if the student is financially dependent, the parent, guardian, or spouse must register to vote in Maryland.

The following categories of students have in-state status:

1. Full-time or part-time (at least 50 percent time) permanent employees of the University System of Maryland.
2. Spouses or dependent children of full-time or part-time (at least 50 percent time) permanent employees of the University System of Maryland.
3. Graduate assistants within the University System of Maryland.
4. Full-time, active-duty members of the U.S. armed forces, their spouses, or a financially dependent child.
5. For UMUC, a full-time active member of the armed forces of the United States on active duty, or the spouse of a member of the armed forces of the United States on active duty.

To apply for in-state status, a completed Petition for Change in Residency Classification for Admission, Tuition, and Charge Differential form must be filed, together with all appropriate documentation. The application must be submitted to the office of Graduate Services no later than the last day of late registration. Only one petition may be submitted per semester. All questions concerning in-state status should be directed to the office of Graduate Services at 301-985-7155 or by e-mail at gradinfo@umuc.edu.

International Applicants

To be considered for admission, international students must have:

- Official documents indicating successful completion of the equivalent of a U.S. bachelor's degree. Applicants educated in countries other than the United States must have their official transcripts evaluated by an independent evaluation service. The evaluation company will send a copy of the evaluation both to the applicant and to the Graduate School. Providing the transcript does not ensure admission to the Graduate School. For a transcript evaluation, students should contact directly one of the following independent companies, not affiliated with UMUC:

1. International Consultants of Delaware, Inc. (ICD)
109 Barksdale Professional Center
Newark, Delaware 19711-3258
Phone: 302-737-8715; Fax: 302-737-8756; E-mail: icd@icdel.com
2. American Association of Collegiate Registrars and Admissions Officers (AACRAO)
Office of International Education Services
One Dupont Circle, N.W., Suite 520
Washington, DC 20036-1135

Phone: 202-293-9161; Fax: 202-872-8857; E-mail: goughd@aacrao.nche.edu or oies@aacrao.nche.edu

3. International Education Research Foundation (IERF)
P.O. Box 66940
Los Angeles, California 90066
Phone: 310-390-6276; Fax: 310-397-7686; E-mail: info@ierf.org

Please consult our Web site for additional information on these evaluation services: www.umuc.edu/studserv/credeval.html.

- Proven English language proficiency. Applicants who have not received a bachelor's degree from the United States, United Kingdom, Australia, New Zealand, or English-speaking Canada must demonstrate English proficiency by submitting a minimum score of 580 on the Test of English as a Foreign Language (TOEFL) and a minimum score of 5 on the Test of Written English (TWE) to be eligible for admission. Applicants must arrange to have official score reports sent directly from the testing agency to the Graduate School. Test scores must be less than two years old.
- A photocopy (front and back) of either a permanent residency card, work authorization card, or the first page and visa page of a valid passport and Form I-94 is required for those international students wishing to study in UMUC programs in the United States.
Note: International students seeking Form I-20 or IAP-66 must be granted admission three months before the semester start date to register for classes. International applicants not seeking Form I-20 or IAP-66 may register for only one course in the decision-pending status while awaiting the official transcript evaluation and official Test of English as a Foreign Language (TOEFL) and the Test of Written English (TWE).

Providing these documents does not ensure admission. An interview may be required. Official transcript evaluation from the aforementioned independent companies must be submitted and evaluated before admission is considered.

Social Security Number

Compliance with the request for the Social Security number is voluntary. UMUC uses this number only as an identifier for records. It will not be disclosed to any third party except on records sent at the student's request and as allowed by the Family Educational Rights and Privacy Act of 1974.

Note: Students who have used the Social Security number in previous contacts with University System of Maryland institutions should continue to do so. Those students who apply for government-controlled financial aid, whose Social Security number is the number that identifies their student records, should also use that number on admission and registration materials for UMUC.

Advising

All students admitted to degree status are assigned an academic advisor. Students are encouraged to contact their academic advisors to prepare study plans before completing 9 semester hours. These plans are then reviewed by the student, the relevant academic advisor, and the program director. Advisors also provide help on issues relating to curriculum, elective credits, transfer credits, and management projects.

Golden ID Program

Students must be Maryland residents, U.S. citizens, or documented permanent residents; 60 years old by the beginning date of the semester for which they are applying; and not employed more than 20 hours per week. To request an application, students should contact Graduate Services at 301-985-7155. Golden ID students may register during late registration for up to 6 credits per semester on a space-available basis without paying tuition.

Policies and Procedures

Tuition and Fees

All graduate students are required to pay graduate tuition for all graduate courses in which they are enrolled.

Standard Master's Degree Programs

A nonrefundable fee of \$50 is due when a student applies for admission to the Graduate School.

<i>Graduate Student Tuition per Semester Hour</i>	
Maryland residents	\$281
Nonresidents	\$382

<i>Late registration fee</i>	\$30
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Note: These fees were in effect at the time of publication and are subject to change. For more information, see www.umuc.edu/prog/gsm/tuition.html.

Note: Tuition for active-duty military and their spouses is the same as tuition for Maryland residents.

Dual Degrees

A nonrefundable fee of \$50 is due when a student applies for admission to the Graduate School. For the MSM/MBA, there is an additional cost of \$75 for the Library Research course. For the MBA/MSM, there is an additional cost of \$375 for the Orientation and Library Research course.

<i>MSM to MSM/MBA for entire 54-Credit Program</i>	
Maryland residents	\$18,666
Nonresidents	\$22,302

<i>MSM to MSM/MBA for entire 57-Credit Program</i>	
Maryland residents	\$19,509
Nonresidents	\$23,448

<i>MBA to MBA/MSM for entire 54-Credit Program</i>	
Maryland residents	\$22,740
Nonresidents	\$24,255

<i>Late registration fee</i>	\$30
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Note: These fees were in effect at the time of publication and are subject to change. For more information, see www.umuc.edu/prog/gsm/tuition.html.

Note: Tuition for active-duty military and their spouses is the same as tuition for Maryland residents.

Master of Business Administration

A nonrefundable fee of \$50 is due when a student applies for admission to the Graduate School. The fee for the orientation program is \$300 and the cost for the required Library Research course is \$75. The cost for books and materials is additional.

<i>Master of Business Administration for the entire 42-credit program</i>	
Master of Business Administration	\$19,950

Executive Master's Degree Programs

A nonrefundable fee of \$50 is due when a student applies for admission to the Graduate School.

<i>Executive Program Tuition per Seminar</i>	
Executive Master of Business Administration	\$4,650

<i>Executive Program Tuition for Entire 36-Credit Program</i>	
Executive Master of Science in Management	\$19,800

Executive Master of Science in Technology Management	\$19,800
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Executive Program in Information Technology	\$22,800
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Executive Certificate in International Management	\$11,800
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Executive Certificate for Chief Information Officers (CIO)	\$14,000
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Note: Neither tuition remission for University System of Maryland employees nor tuition remission under the Golden ID program may be used for the executive master's programs. Tuition and fees are those in effect at time of publication, but are subject to change.

Other fees applicable to UMUC students are (1) schedule adjustment (\$15), withdrawal (\$15), and late registration (\$30); and (2) regular transcript service (\$3), rush transcript service (\$8), and replacement ID card (\$10). For elective or prerequisite courses taken at other institutions, students will pay tuition in accordance with the amount charged by the institution in which these courses are offered.

Refund Policy

The official date used to determine a refund is either the date the withdrawal form is filed in the office of Records and Registrations or the post-mark or e-mail date on a written request. The official date for federal financial aid recipients is the last date of class attendance as determined by federal regulations.

Note: Students in their first enrollment period with UMUC, who are receiving financial aid (grants, work-study, or loans) and withdraw from the institution (not merely from a course) before completing 60 percent of the enrollment period for which they have been charged, are subject to a new federal pro-rata refund policy. Financial aid counselors can provide further information.

Refund for Course Cancellations

The university refunds 100 percent of tuition and registration fees for courses canceled by the university. The application fee is nonrefundable, even when a course is canceled.

Refund for Student Withdrawals

Tuition is refunded as follows:

100%	if class is dropped before the first class meeting
75%	if class is dropped before the second class meeting
50%	if class is dropped before the third class meeting
25%	if class is dropped before the fourth class meeting
0%	if class is dropped the day of or after the fourth class meeting

Application and change in registration fees are not refunded. A \$15 withdrawal processing fee is deducted from the 100 percent refund. The official date used to determine a refund is either the date the withdrawal form is hand-delivered to the Information Desk at the Student and Faculty Services Center, the date and time of the e-mail to gradinfo@umuc.edu, or the post-mark date on a mailed request. The office's business hours are Monday through Friday, from 8:30 a.m. to 5 p.m.

Note: This policy applies only to students not receiving federal financial aid.

Graduate Student Financial Aid Programs

Federal

Federal Perkins Loan

- Interest rate – 5 percent
- Eligibility – Degree-seeking students
- Amounts – Variable
- Determination – Based on financial need and available funding
- Application – FAFSA* and UMUC application material

William D. Ford Federal Direct Loan Program

- Direct Loan subsidized and Direct Loan unsubsidized
- Interest rate – Variable but no higher than 8.25 percent
- Eligibility – Degree-seeking students enrolled at least half-time (6 semester hours in fall and spring, 3 semester hours in summer)
- Amounts – \$18,500 per year (not to exceed the student's cost of attendance)
- Determination – Regardless of income, but federal government only pays interest on need-based loans
- Application – FAFSA and UMUC application material

State

Senatorial Scholarship Program

- Eligibility – Degree-seeking students
- Amounts – \$400–\$2,000 per year
- Determination – Awarded by state senators
- Application – FAFSA and Maryland Financial Aid Form (FAF), due March 1

Delegate Scholarship Program

- Eligibility – Degree-seeking students
- Amounts – Vary
- Determination – Awarded by state delegates
- Application – Students apply directly to their delegates in Maryland; deadline set by delegate

*Information, financial aid forms, and a link to the FAFSA form are available at www.umuc.edu/prog/gsmf/finaid.html.

each semester. Students must submit current (within three years) documentation of a disability. Documentation may include one or more of the following records from a qualified medical, psychological, or educational professional: secondary school records, medical or psychological reports and diagnosis, and aptitude and achievement results and evaluations. The documentation must show a relationship between a disability and the request for services. To allow for adequate planning, students should register and request services four to six weeks before the first day of classes.

Financial Aid Opportunities

Students who wish to apply for financial aid for the 1999–2000 academic year must complete the 1999–2000 Free Application for Federal Student Aid (FAFSA). It is important to apply for assistance as early as possible, since the processing of applications takes at least 10 weeks. The application deadlines listed below are the dates for high-priority consideration in the most desirable assistance programs. UMUC will have the financial aid award authorization ready for those students who meet the deadline dates listed below by the time walk-in registration starts.

Enrollment Deadlines

Fall semester	June 1
Spring semester	November 1
Summer semester	April 1

Financial Aid for Graduate Students

Financial aid is any grant, scholarship, loan, or paid employment offered to help a student meet educational expenses. Such aid is usually provided by three primary sources: federal agencies, state agencies, or private institutions such as foundations, corporations, and colleges and universities. Grants and scholarships are gifts and do not need to be repaid, though they usually specify requirements that must be met. Loans are usually offered at low-interest rates for half-time or full-time enrollment, and they can be repaid over an extended period after the student drops below half-time enrollment status or leaves the institution. The federal government will pay the interest if the student qualifies for a subsidized loan. Otherwise, most loan interest payments must be made by the student on a month-to-month schedule.

Financial aid may be used to cover: tuition and fees, housing and food, books and supplies, personal expenses, and miscellaneous or unusual expenses such as special equipment, child care, and costs related to a student's disability.

Most UMUC students can meet the general eligibility requirements for the federal loan programs. To be eligible, a student must be admitted to UMUC as degree seeking; be enrolled at least half-time; have a valid Social Security number; not be in default on a federal student loan or have a repayment on a federal grant; have demonstrated satisfactory academic progress toward a UMUC degree; be a U.S. citizen or classified as an eligible noncitizen; and be registered for Selective Service, if required to do so.

Generally speaking, a student's financial need is the difference between the cost of attendance for the period of enrollment and his or her contribution toward that need as determined by the federal government, minus financial aid from other sources (tuition assistance, outside scholarships, etc.). Graduate students must complete and submit the Free Application for Federal Student Aid to be considered for the following programs: Federal Work Study, Federal Carl Perkins Loan, Federal Direct Loan, and UMUC and state scholarships and grants. In addition to these sources, students may seek other resources by checking scholarship directories

Academic Calendar

The Graduate School conducts many courses and programs each semester, scheduling them to meet at times and places convenient to students. Because of the variety of sites and programs offered, and the changes made from the date this catalog is published, the dates indicated below are approximate.

Approximate Class Schedule

Summer	First week in June to third week in July
Fall	End of August to mid-December
Spring	Fourth week in January to mid-May

Actual times, dates, and locations may be found in the *Graduate Schedule of Classes*, which is published each semester and is available by calling 301-985-4617, sending a fax to 301-985-7544, sending e-mail to gradschool@info.umuc.edu, or viewing www.umuc.edu/studserv/impdates.html online.

Services for Disabled Students

Graduate students with disabilities who plan to enroll at UMUC should contact the technical director for Veteran and Disabled Student Services on the Staff Support Team. Students must register and request services

through libraries, employers, charitable organizations, and foundations. Those who are already receiving tuition assistance or educational benefits, grants, or scholarships may be able to receive additional aid.

Financial Aid Recipients

Financial aid offers are considered active final awards at the end of UMUC's refund period. If a student withdraws before the end of this period, the student is liable for all costs incurred and will be billed accordingly. Policies stated previously on official withdrawal date and cancellation fee continue to apply.

Recent UMUC Undergraduates

Graduate School financial aid for recent graduates of the UMUC undergraduate program will not be processed in time to cover the first semester's tuition and book costs. Instead, the Graduate School's financial aid office will process the financial aid at some point during the first semester of attendance.

The financial aid satisfactory academic progress policy includes both a qualitative measure (cumulative grade point average) and a quantitative measure (maximum time frame for completion of program). To demonstrate a satisfactory grade point average, a graduate student receiving financial aid is required to maintain a 3.00 cumulative grade point average each period of enrollment. To maintain a satisfactory completion rate, a graduate student must complete a specific minimum number of attempted credits each year. The chart that follows displays the year of program, the minimum number of credits that must be completed each year based on specific enrollment level and the cumulative number of credits that must be completed based upon the year of program, and enrollment level.

Maximum Time Frame					
Year	1	2	3	4	5
Hours Attempted	12	12	12	12	10
Hours Earned	8	8	8	8	7
Cumulative	8	16	24	32	39
GPA	3.0	3.0	3.0	3.0	3.0

A student is allowed to receive federal financial aid for only one repetition of a course completed with an "I" or "W." Federal financial aid is not awarded for courses taken with the audit option. To determine whether satisfactory academic progress is being made, each student's grade record is reviewed annually.

Refunds and Repayments

Continuing students who are receiving federal financial aid at UMUC who withdraw from the institution (not merely from a course) before completing the first 50 percent of the semester are entitled to a refund based on the number of weeks completed, according to the following schedule. For these federal refunds, "a week of classes" is considered to start on Sunday and end the following Saturday. The student financial aid refund policy applies when a student receiving financial aid funds withdraws, drops out, is expelled, or otherwise fails to complete the period of enrollment for which he or she was charged.

100%	From the date of registration to the first day of classes
90%	From the second day of classes to the end of the second week of classes
50%	From the beginning of the third week of classes to the end of the fourth week of classes
25%	From the beginning of the fifth week of classes to the end of the eighth week of classes

If a student is in his or her first enrollment period with UMUC, is receiving federal financial aid (work-study or loans), and withdraws from the institution (not merely from a course) before completing 60 percent of the enrollment period for which the student has been charged, the student is subject to a federal pro-rata refund policy.

All classes are calculated independently using the federal formulas. Based on this calculation, most of the refunded federal aid is returned to the appropriate federal aid program.

Repayment Formula

A "repayment" is the amount of cash disbursed to a student that must be repaid to Title IV programs. A cash disbursement is paid to a student for noninstitutional expenses (educational costs not payable directly to UMUC).

A repayment is required if a student received a cash disbursement greater than the amount needed to cover any noninstitutional expenses reasonably incurred before the student ceased attendance at UMUC.

Veterans Benefits

Graduate students who are eligible for Department of Veterans Affairs (DVA) educational benefits should contact Graduate Services each semester to initiate or continue their benefits. The amount of DVA monthly benefits a student receives varies with the different educational assistance programs. Full- or part-time status is determined by using the following tables.

Table for Computing Graduate Units

Level of Course	Units Allowed
000-399	2 units per credit
400-499	4 units per credit
500-599	5 units per credit
600-898	6 units per credit
799 (research)	12 units per credit
899 (research)	18 units per credit

Conversion Table for Training Time

Graduate Units	Status
48	Full-time
36	3/4-time
24	1/2-time
12	1/4-time

Training time for a graduate student enrolled in a 3-semester-hour course is greater than quarter-time and less than half-time. Chapter 30 graduate students receive a half-time monthly benefit rate, not to exceed tuition and fees. Chapter 1606, 35, and 32 students receive the quarter-time monthly benefit rate. Training time during the summer semesters varies depending on the length of the course(s).

Graduate students may not receive benefits for any course below the 400 level unless it is required by their department and a letter so stating is approved by the academic department and submitted to the Graduate Services office at registration. Audited courses cannot be counted toward credit for graduate students, and benefits are not allowed. Charges for audit and credit courses are the same. Students may contact Graduate Services at 301-985-7155 or by e-mail at gradinfo@umuc.edu for further information.

Rules and Regulations

Unless specifically noted, the general academic policies of UMUC apply.

Attendance

Students are expected to attend all classes and any related activities regularly and punctually. Attendance in itself is not a requirement for successfully completing a course.

Students who are absent from class retain responsibility for completing any missed coursework, as indicated in the course outline. Students are also responsible for obtaining information about each class session, including any announcements and assignments they missed. Failure of the student to complete any required coursework as scheduled may adversely affect the grade earned. Teachers are not expected to repeat material that a student missed because of absence.

Academic Jeopardy

Graduate students are required to maintain a 3.0 GPA at all times. Academic jeopardy is a temporary status in which degree-seeking students have the opportunity to restore their GPAs to 3.0. There are three instances when a degree-seeking student is in academic jeopardy: when the GPA has fallen below 3.0 for the first time, when a second "C" is recorded, or when the student receives an "F." Under these circumstances, students are considered to be in academic jeopardy and are notified of conditions that must be fulfilled to continue their studies. While in academic jeopardy a student may not enroll in any course(s) until the course in which a "C" or "F" was earned has been successfully repeated. If enrolled in a course for the next semester, the student will be administratively withdrawn from that course to meet the terms of the academic jeopardy.

A Second Graduate Degree

A student who has completed one master's degree program and wishes to begin a second master's degree program must submit a new application and pay the required application fee. If there are duplicate course requirements between the completed degree and the second program, the student must substitute other coursework, which must be approved by the program director and the dean. Students interested in pursuing a second graduate degree should contact the program director of the second degree program.

Academic Scholarship

According to Graduate School grading policy, the following symbols are used:

- A = excellent
- B = good
- C = passing
- F = failure

The grade of "B" represents the benchmark for the Graduate School. It indicates that the student has demonstrated competency in the subject matter of the course, i.e., has fulfilled all course requirements on time, has a clear grasp of the full range of course materials and concepts, and is able to

present and apply these materials and concepts in clear, reasoned, well-organized, and grammatically correct responses, whether written or oral. Only students who meet this standard and, in addition, demonstrate exceptional comprehension and application of the course subject matter merit an "A."

The Grade of "C" and Repeated Courses

Students may have only one "C" on their final transcript. When a grade of "C" in a course causes a student's GPA to fall below 3.0, the student will be placed in academic jeopardy and must repeat the course in which the "C" was earned, completing it with a grade of "B" or better. Students who are in degree status are permitted one opportunity to repeat any course in which they have earned a grade of "C" or "F." For any course completed with a grade of "F," the one-time option to repeat must be exercised. Thereafter, no other courses may be repeated. If a student earns a third "C" or an "F" after repeating a previous course in which a second "C" or an "F" was earned, the student will not be permitted to repeat again and will be academically dismissed.

The option to repeat a course is not permitted for students admitted with provisional status. Therefore, a provisional status student receiving an "F" in the first 9 semester hours, or earning a final grade of "C" in two of the first three courses, will be academically dismissed.

A minimum overall grade-point average of 3.0 ("B") is required for graduation. Thus, any semester hour of "C" in coursework must be balanced by a semester hour of "A."

After a student completes one academic year (12 semester hours), a cumulative GPA of 3.0 will constitute evidence that the student is able to succeed in a graduate program. If, at the completion of one academic year (12 semester hours) or thereafter a student's cumulative GPA is below 3.0, the student will be subject to dismissal from the Graduate School. Provisional students must have a GPA of 3.0 at the completion of the first 9 semester hours in a program. If such students fail to earn that average, they will be dismissed.

A student encountering academic difficulty is expected to seek guidance and counsel from a faculty advisor. UMUC graduate students who have been academically dismissed from one program will not be considered for readmission to any other Graduate School degree or certificate program.

The Grade of "I" (Incomplete)

The grade of "I" is exceptional and is given only to students whose completed coursework has been qualitatively satisfactory but who have been unable to complete all course requirements because of illness or other extenuating circumstances beyond their control. The grade of "I" may be considered only for students who have completed at least 50 percent of the total coursework requirements with a grade of "B" or better. The faculty member retains the right to make the final decision on granting a student's request for an "I," even though the student may meet the eligibility requirements for this grade.

It is the responsibility of the student to complete the remaining coursework before the agreed-upon deadline. If the student does not meet the deadline, or if the remaining work has not been completed within six months of the last day of the term during which the course was attempted, the faculty member will submit a grade change form convert-

ing the grade to the letter grade indicated on the original agreement. Graduate faculty may not issue a terminal “I” grade.

Notice of grade changes must reach the Operations Team (301-985-7236) no later than six months after the last day of the term during which the course was attempted. The faculty member may change an “I” grade by submitting a Change of Grade form. The Operations Team will notify each student who has been given an “I” when the grade change is finalized.

The Grade of “W” (Withdrawal)

A student who wishes to officially withdraw from a course must either use the IRIS system or, for those outside the region, must send their request to gradinfo@umuc.edu. This must be done no later than two weeks before the official last day of class. The grade of “W” will appear on the official transcript but will not be used in calculating the GPA.

Academic Integrity

Academic integrity is central to the learning and teaching process. Students are expected to conduct themselves in a manner that will contribute to the maintenance of academic integrity by making all reasonable efforts to prevent the occurrence of academic dishonesty. Academic dishonesty includes (but is not limited to) obtaining or giving aid on an examination, having unauthorized prior knowledge of an examination, doing work for another student, and plagiarism of all types. Students can avoid unintentional plagiarism by carefully following accepted scholarly practices. Also, students shall not submit as their own work any work that has been prepared by others. Appropriate sanctions (which include suspension or expulsion) will be imposed on any student who is found guilty of acts of academic dishonesty.

Plagiarism

Plagiarism is the intentional or unintentional presentation of another person's idea or product as one's own. Plagiarism includes, but is not limited to, the following: copying verbatim all or part of another's written work; using phrases, charts, figures, illustrations, or mathematical or scientific solutions without citing the source; paraphrasing ideas, conclusions, or research without citing the source; and using all or part of a literary plot, poem, film, musical score, or other artistic product without attributing the work to its creator. Students can avoid unintentional plagiarism by carefully following accepted scholarly practices. Notes taken for papers and research projects should accurately record sources of material to be cited, quoted, paraphrased, or summarized, and papers should acknowledge those sources in footnotes.

Grievance/Appeal Procedure

Students having legitimate complaints about Graduate School faculty should contact the appropriate program director. For information on the procedure to file a formal complaint about the actions of a faculty or administrative staff member, students should contact the office of the Associate Dean of Academic Affairs at 301-985-7200 or send an e-mail message to graddean@nova.umuc.edu for information on the procedure to follow.

Policies and Regulations on Student Drug and Alcohol Use

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, or 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 state, federal, and/or local authorities for prosecution in the courts.

Program Completion Requirements

To graduate, students must successfully complete the required coursework within the designated time for their degree.

Transcript Services

Students should contact the Office of the Registrar to receive an official UMUC transcript.

Professional Development Certificate and Documentation of Completion Requirements

To receive the professional development certificate or the document of completion from the UMUC Graduate School of Management & Technology, students must submit proof of completion of the courses required for the student's program and a combined GPA of 3.0 in all courses, with no more than one course with a grade of “C.” Transfer credits may not be used toward the professional development certificate or the document of completion. Courses must be completed within the designated time. A professional development certificate/document of completion application must be submitted by the following deadlines:

Fall	October 1
Spring	February 15
Summer	June 1

Certificates/documents will be awarded once a semester. Students may apply when all the required courses are completed. Application forms are available through the Graduate Services office, 301-985-7155, or by e-mail at gradinfo@umuc.edu.

Note: UMUC graduate students who have been academically dismissed from one program will not be considered for admission to any other Graduate School degree, certificate, or document program.

Undergraduate Programs

UMUC's Undergraduate Programs offers courses that lead to a Bachelor of Arts or Bachelor of Science degree, with specializations in 28 subject areas of study. Evening, daytime, and weekend classes are offered at convenient locations throughout Maryland and the Washington, D.C., metropolitan area. Students may also earn a bachelor's degree by completing courses via voice-mail or online via the World Wide Web.

Undergraduate Programs is supported by a full range of student services, including "walk-in" advising and registration, and tutoring services in writing, mathematics, and other subject areas. Information may be obtained from Undergraduate Programs at 301-985-7000 or by e-mail at umucinfo@info.umuc.edu. Information can also be obtained by visiting the Web page at www.umuc.edu/ugp.

Professional and Workforce Development

The Professional and Workforce Development (PWD) office provides noncredit educational and training programs and services to individuals and organizations. Drawing upon resources of the university, professional, corporate, and governmental communities, PWD identifies ongoing and emerging workforce training needs and develops and delivers timely, high-quality, university-level programs to meet those needs.

PWD also develops and conducts customized training programs on a contract basis. Program topics include management practices, total quality management, written and oral communications, and computer applications. Programs are tailored to meet a particular organization's objectives. Consultation is available to assist organizations in developing their own in-house training programs. Many programs are conducted at the UMUC Inn and Conference Center, conveniently located in College Park, Maryland. Training programs may also be held at a location convenient to the client.

PWD may be reached by phone at 301-985-7644, by fax at 301-985-7887, or by e-mail at pdreg@nova.umuc.edu.

National Leadership Institute

The National Leadership Institute (NLI) offers a wide range of programs and services designed to help managers and executives become more effective as leaders in their organizations and to help organizations enhance their overall leadership effectiveness. A licensee of the Center for Creative Leadership, NLI has conducted leadership training programs to thousands of managers and executives since 1979. Additionally, the National Leadership Institute provides high-quality customized programs to private- and public-sector organizations to enhance the managerial skills of their leaders. More information about NLI is available by calling 301-985-7195 or by e-mail at kloster@polaris.umuc.edu. Information can also be obtained by visiting the Web page at www.umuc.edu/prog/nli/nli.html.

Institute for Research and Assessment in Higher Education

The Institute for Research and Assessment in Higher Education (IRAHE) seeks, through research, to generate knowledge that will lead to improvements in higher education for adults. IRAHE's research and action programs enable UMUC and partner institutions to achieve immediate improvements through the implementation and evaluation of new practices.

IRAHE's initial research projects, funded by grants from The Pew Charitable Trusts and an anonymous donor, have been directed toward achieving equity of access and success for students of color (the Diverse Students Program) and making the delivery of college-level learning more efficient both for students and for higher-education institutions (the Effectiveness in Learning Program). While the focus of IRAHE's research is on serving the needs of adult, part-time students, its findings can be used to advantage by colleges serving younger students as well. IRAHE will disseminate its findings among other institutions of higher education and interested individuals. IRAHE may be reached by calling 301-985-7031 or by e-mail at irahe@listserv.umuc.edu. Information can also be obtained by visiting its Web page at www.umuc.edu/irahe.

Distance Education

Information about the Graduate School's distance education opportunities is available at www.umuc.edu/prog/gsmtdist. An online orientation to distance education at UMUC is available at www.umuc.edu/distance/index.html.

Introduction to Graduate Distance Education

Graduate Programs from the Worldwide Leader in Distance Education

For more than 25 years, UMUC has been setting the standard in distance education for working adults worldwide. Because UMUC brings its resources to online students—admission, registration, counseling, financial aid, veterans benefits, textbook ordering and delivery, and library services—there is no need to go to a campus.

Online students enjoy the unparalleled convenience of commuting to class by modem. They also benefit from classes taught by excellent faculty members whose academic and professional experience enables them to balance business theory with practice.

High-Quality Graduate Programs

UMUC's distance education programs combine theory with practice and emphasize leadership, communication, systems, technology, and a global perspective. As a result of this practical focus, students grow professionally and graduate ready to accept positions of expanded leadership and responsibility.

Distinguished Faculty

Faculty members are selected and retained based on their extensive management and professional experience, teaching ability, and educational achievements. More than 87 percent have doctorate or terminal degrees.

Convenient for Busy Adults

UMUC offers ten online master's degree programs with 18 specialty tracks that permit you to earn your graduate degree from anywhere in the world. Through predominantly asynchronous, computer-mediated conferencing via the World Wide Web, you can earn your degree in only two and a half years—or you can advance at a more leisurely pace if you wish. It's your choice. The exception is the 24-month, part-time MBA program, through which students progress in cohort groups.

Personal Satisfaction and Career Advancement

UMUC's alumni pursue successful careers in many walks of life. In a survey of recent graduates, 96 percent reported they had improved job skills, 87 percent had improved personal recognition, and 97 percent had achieved personal satisfaction with attainment of their UMUC degree. More than 86 percent reported they were able to apply what they had learned to their current positions.

Quality Educational Programs Addressing Real-World Challenges

Since 1978, the Graduate School has provided cutting-edge educational programs that address the challenges managers

Online Degree Programs

The Graduate School offers 10 degree programs with 18 specialty tracks online asynchronously via WebTycho:

- Master of Business Administration
- Master of Science in Management/
Master of Business Administration
- Master of Distance Education
- Master of International Management
 - International Commerce
 - International Finance
 - International Marketing
- Master of Science in Computer Systems Management
 - Database Systems and Security
 - Information Resources Management
 - Software Development Management
- Master of Science in Environmental Management
- Master of Science in Management
 - Accounting
 - Financial Management
 - Health Care Administration
 - Human Resource Management
 - Interdisciplinary Studies in Management
 - Management Information Systems
 - Marketing
 - Not-for-Profit Management
 - Procurement and Contract Management
- Master of Science in Technology Management
 - General Program
 - Biotechnology Management
 - Technology Systems Management
- Master of Science in Telecommunications Management
- Master of Software Engineering

face in today's globally competitive business environment. The curricula blend theory and practice—helping working adults develop the knowledge and skills needed to address the increasingly complex issues of a constantly changing world, and preparing them for the workplace of the 21st century.

Ten Master's Degree Programs Available Anywhere in the World

InterEd, a research and assessment organization in higher education, reports that University of Maryland University College (UMUC) is the largest virtual university in the United States in terms of enrolled students and graduates. UMUC has graduated more than four times as many students than its nearest competitor.

UMUC's decision to develop a virtual university was driven by the needs of part-time, adult students who juggle many responsibilities and require the flexibility and convenience

that online education provides. Students can pursue graduate degrees or take individual courses online from the favorite room of their home . . . a hotel room in Singapore . . . or anyplace where they can connect to the Internet.

Online Courses

Demand for online courses is extraordinarily heavy. Students are advised to register early. Those outside the local mailing area may be given priority to register for online courses only until two weeks before classes begin.

The schedule of classes is available online at www.umuc.edu/studserv/isis/schedule/grsocmenu.html.

Graduate School tuition and fees are the same for online and on-site courses.

How Does an Online Course Differ from an On-Site Course?

The Graduate School's online courses maintain the same academic standards of its on-site courses. Course content, texts, requirements, assignments, and class participation are comparable for online and on-site courses. Before registering for an online course, students may want to consider the following:

1. WebTycho students need to be prepared to write extensively because the majority of communication is written. WebTycho students need strong English reading and writing skills.
2. WebTycho students need to be competent in the use of computers and commonly used software programs.
3. Since WebTycho is predominantly asynchronous and students are expected to be active participants online, students are encouraged to log in frequently to check what has transpired in their online classroom (in lieu of face-to-face class meetings).
4. WebTycho students need disciplined work habits, effective time management skills, and the ability to work both alone and collaboratively.

Full Services Provided Online

With the help of full electronic services, graduate students may inquire, apply, register, pay tuition, receive grades, update information, and receive advisement online. Graduate students have access to a wide variety of online publications and more than 65 proprietary databases.

Online Technical Requirements

The following are the minimum online technical requirements for WebTycho (Webtycho is UMUC's interactive Web-based course management system):

Hardware

For an IBM-Compatible Personal Computer

- 486-type/66 MHz processor
- Windows 3.x operating system to run Netscape 4.x or Windows 95 operating system to run Netscape 4.5
- 28.8 Kbps modem
- 16 MB RAM to run Netscape
- 40 MB hard drive space to install and run Netscape

For a Macintosh Computer

- 68030 processor to run Netscape 4.0–4.05 or PowerPC to run Netscape 4.06 or higher
- Macintosh System 7.5 operating system to run Netscape 4.0–4.05 or Macintosh System 7.6.1 operating system to run Netscape 4.06–4.5
- 28.8 Kbps modem
- 16 MB RAM to run Netscape
- 40 MB hard drive space to install and run Netscape

Software

- A current Web browser: Netscape Communicator version 4.x with standard encryption or another current browser, such as MS Internet Explorer 4.x
- Any word-processing software
- Other software as necessary, depending on specific class requirements
- Browser plug-ins such as RealPlayer or QuickTime, as required for certain classes, as determined by the teacher

Internet Access

- An Internet service provider (ISP) or local area network (LAN) account
- An active e-mail account

Some Programs Have Additional Technical Requirements

Students in the Master of Business Administration, Master of Science in Computer Systems Management, Master of Software Engineering, and Master of Science in Telecommunications Management programs will need the following additional requirements:

- Pentium-based PC (or Mac equivalent) with at least 32 MB of RAM (64 MB is preferred)
- Minimum 100 MB hard drive space (1 GB is preferred)
- 8X CD-ROM (12X CD-ROM is preferred)
- Sound-Blaster-compatible sound card with speakers or headphones
- Microphone
- Netscape Communicator 4.0 or higher
- Microsoft Office Suite (including Word, Excel, and PowerPoint)
- Adobe Acrobat Reader
- QuickTime

Students are responsible for their own phone line and Internet access costs. Comprehensive information about technical requirements is available at <http://tychousa.umuc.edu>.

Policy on Connectivity and Computer Literacy

To take full advantage of the Graduate School's educational offerings, students must own or have access to a personal computer and modem.

All graduate students must be able to reach their fellow students, faculty, and the university via e-mail. Students who do not have a personal e-mail account may create one by using the directions in the current *Graduate Schedule of Classes* or on the Web at www.umuc.edu/gsmr/resfacil.html#unix. In some classes, students may be required to participate in asynchronous, computer-based class discussions and study group activities.

All graduate students are expected to have a working knowledge of, and access to, a basic word processing program such as WordPerfect or Microsoft Word; a spreadsheet program such as Lotus, QuattroPro, or Microsoft Excel; and Internet electronic mail services. Knowledge of Microsoft Windows and Internet information services such as the World Wide Web is also highly recommended. Internet information services may



be necessary to conduct appropriate research for some courses. The Library Skills for the Information Age is a required course for all new students as of fall 1998 and all students who reapply for admission and who have completed 6 credit hours or less. This noncredit course's fee is \$75.

Applicants and students who require further training in the use of Internet services and basic software packages may wish to consult the UMUC *Undergraduate Schedule of Classes* or speak to an undergraduate counselor. The schedule may be obtained by calling 301-985-7000, and counselors may be reached at 301-985-7939.

Alternative Instruction Formats

Instructional Television (ITV)

The ITV system is an innovative broadcast network that provides live, interactive courses to students. ITV beams its courses by microwave to remote classroom locations throughout the region. Each remote classroom is equipped with a telephone talk-back system, so that all students may participate in idea exchanges and feedback sessions. ITV is a two-way audio, one-way video system.

Interactive Video Network (IVN)

The IVN system uses telecommunication technology to link students and faculty at two or more sites for exchange of visual and audio information. The image of the instructor and each student permits active classroom discussions at each site. The fact that students are able to see and hear each other during the discussion enhances the classroom experience. Students at different sites can engage one another in classroom discourse to debate specific course-related issues. Participating sites may include Annapolis, College Park, Frederick Community College, Fort Detrick, Shady Grove, Southern Maryland Higher Education Center, USM Downtown Baltimore Center, and Waldorf.

Master of Business Administration

This program is designed in an online format for working professionals from a wide range of academic and organizational backgrounds. The program can be completed in 24 months without interrupting careers. The objectives of the program are to explore the evolving nature of corporations, blend leadership with change management, better measure an organization's intellectual assets, merge product development with entrepreneurship, and foster new approaches to measuring the economic performance of organizations. Organizational and management processes are discussed in the context of the global business environment. The MBA program combines current management theory and relevant research with the real-world experiences of students and faculty to address the major competitive challenges of the 21st century.

Degree Program

The MBA program consists of seven 6-credit seminars, each of which is 12 weeks long with 2 weeks off between seminars. Each student is assigned to a cohort of approximately 30 students, who continue together through completion of their MBA program. Upon application to the MBA program, students register for a 4-week orientation course consisting of a series of self-assessment activities and background reading. Students must satisfactorily complete the orientation course before they are allowed to begin the first seminar, OMBA 601 Organizational and Management Processes.

Required Library Research Skills Course

To ensure students are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Admission Requirements

A student may be admitted in one of two classifications: degree seeking and provisional. The admission requirements for each classification are explained below.

Degree Status

Degree status is granted to students who meet or exceed the following criteria: a bachelor's degree from a regionally accredited university or college; an overall undergraduate grade-point average (GPA) of at least 3.0 on a 4.0 system, submission

of the official transcript from the bachelor's-degree-granting institution, and a personal statement. The UMUC Graduate School reserves the right to request additional transcripts.

Note: Applicants educated in countries other than the United States and who are non-native speakers of English should refer to the section entitled International Applicants (page 10) for information about the TOEFL and TWE examinations.

Provisional Status

Provisional status may be granted to students who fall slightly below the minimum grade-point requirement for degree status. Once admitted to this category, students are given an opportunity to demonstrate, by performance, their ability to succeed in graduate studies. Students may register for no more than three graduate courses (9 credits) while in the provisional category. Those who maintain a 3.0 GPA during the completion of the 9 credits are moved automatically to degree status. No courses may be repeated while a student is in provisional status. The minimum admission requirements for provisional status are a bachelor's degree from a regionally accredited university or college, an undergraduate GPA of at least 2.5 on a 4.0 system in the student's major area of study, submission of the official transcript from the bachelor's-degree-granting institution, and a personal statement. The UMUC Graduate School reserves the right to request additional transcripts.

OMBA 600 **0 credits**
Orientation Course

This four-week pass/fail course is designed to familiarize students with basic management concepts and to improve their proficiency in the analytical skills and technologies necessary to successfully complete the MBA program. The

Program Director

Master of Business Administration
Michael Evanchik, *Program Director*
mevanchik@umuc.edu

objective is to prepare people with diverse academic and business backgrounds to work effectively together throughout the program. The course contains reading assignments, self-assessment activities, problems, and discussion questions in the following areas: systems thinking, economics, statistics, financial accounting, financial decision making, organizational development, leadership, and the legal environment of business. A syllabus outlining the required assignments is sent once a student is registered. Students are expected to complete all of the reading before the start of the orientation course. It is also recommended that students complete the problem set before the course begins. During the four weeks all of the readings are reviewed, and students can ask questions. In addition, students conduct team-building and group-project exercises, prepare a case analysis, prepare a team-based research paper, and evaluate their critical thinking and writing abilities. By the end of the course, students have a good overview of what will be expected of them in the MBA program.

OMBA 601 **6 credits**
Organizational and Management Processes

This seminar introduces participants to the concepts and theories that are the essential building blocks of management thinking. These key themes are incorporated throughout the program and are further developed in subsequent seminars. They are sequenced so that they build upon each other during the course of the first seminar. The core themes are:

- Systems Thinking
- Critical Thinking and Creativity
- Ethics and Social Responsibility
- Technology Impacts
- The Future of Organizations
- Global Challenges

OMBA 602 6 credits**The Dynamics of Individuals and Groups at Work**

This seminar is designed to offer learning opportunities for students to evaluate the interplay of the nature, meaning, and value of work with individual, group, organizational, and societal outcomes. It explores strategies and methods for aligning individual interests and organizational needs to reach organizational goals. Through readings, case analyses, exercises, presentations, and discussions, students analyze the philosophical, legal, psychological, and structural decisions that managers and leaders must make in managing the dynamic human element at work. The seminar includes interpersonal skill development, with an emphasis on effective communication processes, to assist students in increasing their competence in successfully working with people. The major topics include:

- The Nature of Individuals
- The Nature of Groups
- Leadership and Organizational Culture
- Managing Human Resources
- Change Management

OMBA 603 6 credits**The Marketing of New Ideas**

The rapid pace of technological change, coupled with the globalization of business, has increased the competitive pressure on organizations to more quickly evolve their product and service offerings. Stable product design and long production runs are no longer the norm. Because product life cycles are now often measured in months rather than years, companies want to customize their products to sustain customer loyalty. This seminar discusses business development strategies from the perspective of the customer and investigates sources of new capital that can be tapped to finance development efforts. Formulating effective marketing programs that address the continuous flow of new products is equally important. In particular, electronic commerce—an increasingly popular distribution channel—is an integral part of the seminar. Finally, this seminar approaches the process of new product development from the perspective of how information is created and managed in organizations. Topic areas include:

- Product Development
- Venture Capital/Entrepreneurship
- Market Research
- Electronic Commerce
- Knowledge Management

OMBA 604 6 credits**Technology and Operations Management**

This seminar explores the latest information technologies that enable an organization to operate around the world and around the clock. To maintain an organization's competitiveness, managers need the tools—such as statistical process control, decision trees, forecasting techniques, expert systems, and organizational benchmarking—to quickly and effectively acquire and analyze information. This involves taking advantage of changes in technology, monitoring customer and competitor behavior, and analyzing their own organization's processes. Because shortened product life cycles make managing new projects a critical task, effective project management concludes the seminar. Topic areas include:

- Information Systems and Telecommunications
- Control Charts, Decision Trees, Forecasting
- Expert Systems
- Operations Management
- Project Management

OMBA 605 6 credits**Economics of Management Decisions**

The economic environment of an organization defines the threats to its survival and the opportunities for its future success. This seminar applies the concept of economic decision making to a wide range of management decisions. The global economy is continually undergoing changes. Of special significance is the evolution of financial markets in response to rapidly expanding worldwide investment opportunities. This seminar provides insight into these issues. Important valuation themes discussed in this seminar include the valuation of intellectual property and the valuation of businesses as a whole for the purpose of merger or acquisition. Increasingly, managers are restructuring financial information as well as supplementing it with nonfinancial information to better analyze the economic performance of their organizations. Several important techniques in this area of performance measurement are discussed: economic value added (EVA™), the balanced scorecard, and open-book management. Cost management remains an essential topic within every organization; in this regard, activity-based costing is discussed. However, there is a growing concern that too much attention to cost overlooks the key objective of every organization, which is to increase the value it provides to the customer. Therefore, an organization's performance is also analyzed from the perspective of the theory of constraints. This seminar is divided into four modules:

- Historical Perspective on Managerial Decision Making
- Valuation Issues
- Performance Measurement Issues
- Cost Management Issues

OMBA 606 6 credits**Organizations and the External Environment**

This seminar focuses on the various types of business organizations and the public regulatory environments that shape organizational decisions. Emphasis is placed on the framework of relevant laws, regulatory structures, and public policies at local, state, national, and international levels that define the inner workings of business activities. The impact of law, regulation, and technology on corporate decision making will be key focus points in this seminar. Systems thinking, critical thinking, ethics and social responsibility, the impact of technology on management, the future of organizations, and global challenges are linked with the seminar's critical features. Increased student knowledge of and comfort with the nature of external business environments is a seminar goal. Topic areas include:

- Business and Antitrust Law
- Corporate Governance
- Regulatory Environments
- International Trade
- Macroeconomic Policy
- Technology Innovation

OMBA 607 6 credits**Strategic Action Planning**

Drawing on the broad array of content covered in the first six seminars, this capstone seminar integrates management techniques and methodology through various means of strategic action planning. This seminar builds on foundations laid in previous seminars, deepens insight into strategic thinking and strategy implementation, and concludes with a practical research project. Students may choose to develop a business plan for an organization, which could be their own employer or own venture; design and complete an organizational assessment with change strategy as appropriate; examine futuristic trends in business and leadership; or develop an integrative organizational model to meet the challenges of the future. Topic areas include:

- Strategic Models
- Strategy Formulation and Implementation
- Organizational Assessment
- Building Business Plans
- Elective Component
 - Business Plan
 - Organizational Assessment
 - Futures Model

Master of Science in Management/ Master of Business Administration

Program Director

Master of Science in Management/Master of Business Administration

Michael Frank, *Program Director*
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The purpose of the dual Master of Science in Management (MSM) and the Master of Business Administration (MBA) degrees is to provide students with a path to pursue both breadth and depth study and to achieve two academic master's degrees from UMUC for 54 to 57 credits rather than 78 to 81 credits. There is shared curriculum content between the core of the Master of Science in Management and the Master of Business Administration (24 credits).

Program structure MSM to MSM/MBA: Students first complete the entire MSM degree program (36–39 credits) and meet all requirements for graduation. (A MSM degree will be granted upon completion of the MSM program at time of graduation application.) These MSM “alumni” can then earn an MBA degree (second actual degree document) by completing 18 credit hours of MBA work.

These credits hours are as follows:

Seminar IV—Technology and Operations Management

Seminar VI—Organizations and the External Environment

Seminar III—The Marketing of New Ideas

or

Seminar V—Economics of Management Decisions

Selection of Seminar III versus Seminar V must be approved by the Graduate School Program Director from the MSM program. Alumni of the marketing track must complete Seminar V; alumni of the finance track must complete Seminar III.

Program Structure MBA to MBA/MSM: Students first complete the entire MBA degree program (42 credits) and meet all requirements for graduation. (An MBA degree will be granted upon completion of the MBA program at time of graduation application.) MBA students who elect for the dual degree program will complete three MSM track credits as part of Seminar VII of the MBA. MBA “alumni” can then earn a MSM degree (second actual degree document) by completing 12 additional credits of a MSM track; therefore, a total of 15 credits in an MSM track will be required. MBA students who want the MSM degree must declare before the beginning of Seminar VII of the MBA.

All requirements for both degrees must be completed within 7 years. All MBA work must be completed with 5 years.

Additional information on the combined degree program will become available during the fall 1999 semester. As information becomes available, it will be posted at www.umuc.edu/prog/gsm/mbamsm.html.

Master of Distance Education

Program Director

Master of Distance Education
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The UMUC Master of Distance Education (MDE) is designed to produce individuals who are capable of managing the distance education enterprise within educational, business, government, and nonprofit organizations. In a rapidly expanding field, the graduates of the MDE program will be prepared to engage in the planning, budgeting, development, delivery, and support of distance education and distance training programs. The MDE program is designed in an online format for working adults who want to complete their degree without interrupting their careers. Students who successfully complete the master's degree will be able to understand and critique the broader policy and social issues that arise from using distance education and technology-based learning; plan and manage distance education and training courses, programs, departments, and organizations; design, develop, and deliver high-quality distance education and training in ways that reflect a variety of different approaches to teaching and learning; select and use technologies on the basis of their differing educational and operational characteristics; evaluate and conduct research on distance education professionals around the world; cost and budget distance education development and delivery systems; and understand, from a learner's perspective, what it means to engage in distance and technology-mediated learning.

Degree Program

In each segment of the degree program, theory and concepts are presented so the student may develop and evaluate management skills. In each course, faculty members combine theoretical concepts with the practical application of usable skills. This degree program consists of five (3-credit) core courses; six (3-credit) track courses; and one (3-credit) management project; or, in lieu of the project, the two-course option.

Required Library Research Skills Course

To ensure students are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Admission Requirements

A student may be admitted in one of four classifications: degree seeking, provisional, certificate, or decision pending. The decision-pending classification is temporary while students await final approval of admission. Certificate status exists for students pursuing the professional development certificate. The admission requirements for each classification are explained in the following sections.

Degree Status

Degree status is granted to students who meet or exceed the following criteria: a bachelor's degree from a regionally accredited university or college, an overall undergraduate grade-point average (GPA) of at least 3.0 on a 4.0 system; submission of the official transcript from the bachelor's-degree-granting institution; and a personal statement. The UMUC Graduate School reserves the right to request additional transcripts.

Note: Applicants educated in countries other than the United States and who are non-native speakers of English should refer to the section entitled International Applicants (page 10) for information about the TOEFL and TWE examinations.

Provisional Status

Provisional status may be granted to students who fall slightly below the minimum grade-point requirement for degree status. Once admitted to this category, students are given an opportunity to demonstrate, by performance, their ability to succeed in graduate studies. Students may register for no more than three graduate courses (9 credits) while in the provisional category. Those who maintain a 3.0 GPA during the completion of the 9 credits are moved automatically to degree status. No courses may be repeated while a student is in provisional status. The minimum admission requirements for provisional status are a bachelor's degree from a regionally accredited university or college, an undergraduate GPA of at least 2.5 on a 4.0 system in the student's major area of study,

submission of the official transcript from the bachelor's-degree-granting institution, and a personal statement. The UMUC Graduate School reserves the right to request additional transcripts.

Decision-Pending Classification

The decision-pending classification is short term and is meant for students who have not completed the admission process previously described. Students may enroll in one of the following graduate courses before UMUC has received the official transcript from the bachelor's-degree-granting institution: ADMN 601, ADMN 625, or ADMN 635. Students must receive an admission decision before subsequent enrollments. The UMUC Graduate School reserves the right to request additional transcripts.

Certificate Program

A certificate program is available for students who are not interested in the degree program but who desire a sequence of graduate courses leading to a certificate in distance education. The program comprises four or more courses (12 or more semester hours). All courses in the certificate program can be used to satisfy the requirements for a full Master of Distance Education degree. All coursework must be completed within seven consecutive years. Contact the program director for further information regarding the certificate programs and appropriate coursework.

Core Courses

MDE 601	3 credits	Foundations of Distance Education
MDE 602	3 credits	Distance Education Systems
MDE 603	3 credits	Technology in Distance Education
MDE 604	3 credits	The Management of Distance Education
MDE 605	3 credits	The Business of Distance Education
MDE 606	3 credits	Instructional Design and Course Development in Distance Education

Elective Courses

MDE 611	3 credits	Issues in the Delivery of Library Services to Distance Students
MDE 612	3 credits	K-12 Distance Education
MDE 621	3 credits	Training at a Distance and the Corporate Virtual University
MDE 622	3 credits	New and Emerging Media in Distance Education
MDE 623	3 credits	Web-Based Learning and Teaching and the Virtual University
MDE 624	3 credits	Student Support in Distance Education
MDE 625	3 credits	Teaching and Learning in Distance Education

MDE 626	3 credits	International and Cross-Cultural Aspects of Distance Education
MDE 631	3 credits	Advanced Technology in Distance Education I: Synchronous Systems
MDE 632	3 credits	Advanced Technology in Distance Education II: Asynchronous Systems
MDE 633	3 credits	Information Technology and Distance Education
MDE 690	3 credits	Distance Education Project

Note: This list of courses is tentative. Since this is a new program, all courses will not be available immediately.

Master of Science in Management

This program is designed for professionals who, as they assume increasing responsibility within their organizations, find that the basis for success has shifted from technological expertise to the knowledge and skills necessary to manage human resources. Important topics covered in the required courses include methods and conduct of organizational assessments, the organization/environment relationship, strategic planning, organizational communication, budgeting and resource allocation, leadership, and organizational decision making. Throughout the curriculum, major emphasis is placed on the effects of rapid technological change on organizations and administrative processes and the consequent ethical and moral responsibilities of managers to society at large.

Note: This catalog applies to students who begin their M.S. program in fall 1999 or later. MGA students who began their program before fall 1998 should refer to their catalog for the courses they need to complete for their degree. Students should contact their academic advisor if they have any questions.

Degree Program

In each segment of the degree program, theory and concepts are presented so the student may develop and evaluate management skills. In each course, faculty members combine theoretical concepts with the practical application of usable skills. This degree program consists of six (3-credit) core courses, five (3-credit) track courses, and one (3-credit) management project, or, in lieu of the project, the two-course option.

Required Library Research Skills Course

To ensure students are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Admission Requirements

A student may be admitted in one of four classifications: degree seeking, provisional, certificate, or decision pending. The decision-pending classification is temporary while students await final approval of admission. Certificate status exists for students pursuing the professional development certificate. The admission requirements for each classification are explained in the following sections.

Degree Status

Degree status is granted to students who meet or exceed the following criteria: A bachelor's degree

from a regionally accredited university or college; an overall undergraduate grade-point average (GPA) of at least 3.0 on a 4.0 system, submission of the official transcript from the bachelor's-degree-granting institution, and a personal statement. The UMUC Graduate School reserves the right to request additional transcripts.

Note: Applicants educated in countries other than the United States and who are non-native speakers of English should refer to the section entitled International Applicants (page 10) for information about the TOEFL and TWE examinations.

Provisional Status

Provisional status may be granted to students who fall slightly below the minimum grade-point requirement for degree status. Once admitted to this category, students are given an opportunity to demonstrate, by performance, their ability to succeed in graduate studies. Students may register for no more than three graduate courses (9 credits) while in the provisional category. Those who maintain a 3.0 GPA during the completion of the 9 credits are moved automatically to degree status. No courses may be repeated while a student is in provisional status. The minimum admission requirements for provisional status are a bachelor's degree from a regionally accredited university or college, an undergraduate GPA of at least 2.5 on a 4.0 system in the student's major area of study, submission of the official transcript from the bachelor's-degree-granting institution, and a personal statement. The UMUC Graduate School reserves the right to request additional transcripts.

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Decision-Pending Classification

The decision-pending classification is short term and is meant for students who have not completed the admission process previously described. Students may enroll in one of the following graduate courses before UMUC has received the official transcript from the bachelor's-degree-granting institution: ADMN 601, ADMN 625, or ADMN 635. Students must receive an admission decision before subsequent enrollments. The UMUC Graduate School reserves the right to request additional transcripts.

Certificate Program

A certificate program is available for students who are not interested in the degree program but who desire a sequence of graduate courses leading to a certificate in general administration. The program comprises 18 semester hours of coursework, and includes the six core courses (ADMN 601, ADMN 625, ADMN 630, ADMN 635, ADMN 638, and ADMN 651). Students may not use transfer credits toward the certificate. All coursework must be completed within seven consecutive years.

Certificate Status

Certificate status is granted to students seeking a professional development certificate who meet the same criteria as degree-seeking students.

Locations

Classes in the M.S. program usually meet in the evening, once a week during the fall and the spring semesters and twice a week during the summer session. (Students in online courses are expected to access their classes several times each week.) Core courses are scheduled at the following nine locations throughout the Maryland and Washington, D.C. area: Annapolis, downtown Baltimore, California, Catonsville, College Park, Leonardtown/Patuxent, Rockville/Shady Grove, Waldorf, and downtown Washington, D.C. Specialty track courses may require attendance at selected sites because of enrollment requirements established by UMUC. Students should check the current *Graduate Schedule of Classes* to determine when courses will be offered at specific locations.

Core Courses

ADMN 601 3 credits
The Manager in a Technological Society

This course presents an overview of the fundamental concepts of organizational theory and design, in the context of a post-industrial and increasingly global society. Integrated within the study of

organizations are 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. Course content addresses essential concepts in organizational theory and design, including measuring effectiveness, organizational life cycles, options for organizational structure, and becoming the learning organization. The course provides a knowledge base upon which other core courses build.

ADMN 625 3 credits
Organizational Communication and Group Development

This course investigates the theories and research related to communication and group development within modern organizations. It examines definitions, models, and barriers, including structural, psychological, and technological factors. It investigates current issues, such as the impact of the global environment, cultural diversity, and virtual environments. It includes strategies and methods for managing conflict and managing change. Interpersonal, small group, and large group settings are addressed. Managerial application of the concepts is stressed.

ADMN 630 3 credits
Financial Decision Making for Managers

This course focuses on financial decision making in business, government, and not-for-profit organizations. Emphasis is placed 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 are employed in the analysis of these decisions. Break-even analysis is used in profit planning. The cost of individual products and services is determined by activity-based costing procedures. Product mix and resource allocation issues are examined using linear programming. Discounted cash flow techniques are used to compare alternative investment opportunities, and the balanced scorecard provides a framework with which organizational performance can be evaluated. In addition, contemporary managerial systems, such as target costing and kaizen costing, are explored as a means of improving operational efficiency.

Note: Students are expected to know the materials covered in UCSP 620 Financial Accounting and UCSP 621 Economics, including the concepts of opportunity cost, the time value of money, financial accounting, and financial analysis. Students may not enroll in both ADMN 630 and ADMN 631. Financial Management track students must enroll in ADMN 631.

ADMN 631 3 credits
Financial Management in Organizations

This course is the core course for students who choose the Financial Management track and students who wish to take this course in lieu of ADMN 630. It focuses on financial management theory and applications in business, government, and not-for-profit organizations. Basic accounting concepts and their use in financial statement analysis are discussed. Discounted cash flow and rate-of-return analysis are used to evaluate projects. Break-even analysis is employed to measure the impact of changes in volume and costs. An introduction to scenario analysis, short- and long-term financial management, international finance, and operating budgets and their preparation is provided.

Note: Students may not enroll in both ADMN 630 and ADMN 631. Financial Management track students must enroll in ADMN 631.

ADMN 635 3 credits
Organizational Leadership and Decision Making

The overriding theme of this course is that the ability to lead and make decisions in an environment of continual change is a crucial ability for the 21st century. Thus, this course focuses on four aspects of leadership: theory and research, individual and team perspectives, judgment and managerial decision making, and the global environment. Approaches to leadership such as power-influence, situational factors, individual traits, and behaviors are explored, as are various models of decision-making theory. Issues such as the relationship of management to leadership, the value of participative and charismatic leadership, the leader's role in organizational culture and organizational change, and the impact on diversity, are investigated from domestic and international perspectives. The increasing role of teams in organizational life and the ability to apply good judgment to decisions that pertain to supervisory, participatory, and team leadership principles at appropriate points are discussed.

ADMN 638 3 credits
Research Methods for Managers

ADMN 638 presents techniques and methodologies related to the evaluation and utilization of organizational research and evaluation studies in making business decisions. Emphasis is placed on preparing the student to evaluate and utilize research-based information developed by other individuals. The focus of the course is on the analysis and interpretation of research-based materials in assessing the performance of individuals, work groups, and organizations. Areas of coverage include principles of good research design, measurement, appropriate sample size, evaluating research instruments, reviewing procedures for collecting and analyzing data, and

evaluating and utilizing existing research-based materials in solving business problems. ADMN 638 provides the student with the approaches and skills necessary to evaluate research-based materials and their utilization in business decision making. This course provides the student with various approaches to data collection (including the Internet) and utilization that best serve the practical needs of the manager.

Note: Students will be expected to know the materials covered in UCSP 630 Introduction to Research Methods including data collection techniques, presentation of data in tables and charts, basic descriptive statistics, basic probability distributions, normal distribution and sampling distributions, estimation, and hypothesis testing.

ADMN 651 3 credits Capstone

This is the capstone seminar, which investigates how strategy interacts with and guides an organization within its internal and external environments. Emphasis is on corporate and business unit level strategy, strategy development, strategy implementation, and the overall strategic management process. Key elements examined include organizational mission, vision, goal setting, environmental assessment, and strategic decision making. Techniques such as industry analysis, competitive analysis, and portfolio analysis are presented. Strategic implementation as it relates to organizational structure, policy, leadership, and evaluation issues is covered.

The desired outcome is to improve the student's ability to "think strategically" and to weigh things from the perspective of the total enterprise operating in an increasingly global market environment. In addition to integrating prior core content areas through case analysis and text material, the course will give students familiarity with the problems and issues of strategy formulation through their participation in the Business Strategy Game simulation. (Prerequisites: Completion of 30 credit hours, including all core courses.)

End-of-Program Option

ADMN 690 and ADMN 690M 3 credits Management Project

Students demonstrate their ability to structure and complete a major project that identifies and resolves an important management or organizational issue. Students report the results of their efforts in written and oral form. The project may be developed in cooperation with students' current employers or with some organization of their choice, provided there is no conflict of interest. The project is conducted under the direction of an on-site supervisor in cooperation with a faculty advisor. Students have 2 semesters to complete the management project.

Prerequisites: Completion of ADMN 651.

Two-Course Option 6 credits

Instead of the management project, students may take two additional courses from the approved list—one interdisciplinary course (3 credits) and one elective (3 credits). The approved courses are as follows:

Interdisciplinary/Breadth Courses*

ENGM	615	Systems Analysis and Decision Making
IMAN	601	Managing in a Competitive International Environment
IMAN	661	Area Studies: Business Strategies for Europe
TMAN	640	Project Management
TMAN	632	Management of Productivity and Quality in Technological Operations (replaces TMAN 665)

**Students should contact the appropriate program or track director to assure they are capable of performing the coursework before enrolling in an interdisciplinary course.*

Elective/Depth Courses

Students may take a sixth course in their specialty tracks if there is one. If not, students are to work with their academic advisors to determine the most appropriate course. All elective courses must be approved by academic advisors.

Accounting (ACCT)

The accounting track is designed to satisfy the increased academic requirements to obtain or retain licensure in the accounting profession. The scope of the accounting track provides students with greater depth and breadth than accounting courses taken at the undergraduate level. Coursework will include solving problems and understanding and applying accounting principles as they relate to financial accounting and management accounting theory, the auditing process, accounting information systems, and federal income taxation. In addition, the capstone course in the track is a comprehensive review in preparation for the Certified Public Accountancy examination. Mastery of courses in this track coupled with the management coursework for the Master of Science in Management degree will provide a comprehensive and applied graduate education for individuals in the field of accounting.

Note: Prerequisites for this program include completion of the following undergraduate courses from an accredited institution: basic accounting theory; introductory managerial accounting; financial statement analysis; financial statement preparation; accountancy management of organization (cost analysis, budget preparation, responsibility accounting, and standard cost); income tax accounting, professional accounting ethics; consolidated and partnership statement analysis using case studies and computer applications. These courses are the equivalent of UMUC undergraduate courses ACCT 220, 221, 310, 311, 321, 323, 411, and 424, respectively.

ACCT 610 3 credits

Financial Accounting

This course interrelates contemporary accounting practice and standards with current research.

ACCT 611 3 credits

Management Accounting

This course stresses the use of accounting information by managers to control the economic resources of organizations, provides an understanding of cost concepts and their relationship to operational and environmental variables, and reviews current industry practices.

ACCT 612 3 credits

Auditing Process

This course covers audit objectives, audit planning, evidence gathering, internal controls, and audit procedures in the context of generally accepted accounting principles; current research in auditing is also reviewed.

ACCT 613 3 credits

Federal Income Taxation

This course explores concepts of federal taxation along with the interpretation and application of federal tax laws as they apply to individual taxpayers and corporations.

ACCT 614 3 credits

Accounting Information Systems

This course underscores the essential components of AIS and the design of accounting systems, along with the internal controls necessary to ensure their accuracy.

ACCT 615 3 credits

Capstone Accounting Course

This course entails a systematic review of the components of the CPA examination, as preparation for those who will take the exam and also to synthesize earlier coursework in preparation for work in the accounting field.

Prerequisite: All core and other track courses.

Note: Certification Requirements

Since educational requirements to sit for the Uniform CPA Examination differ among states, students planning to take the examination should determine the requirements by contacting the appropriate state board of accountancy. Students seeking information concerning the CPA examination in Maryland can contact their UMUC advisor or the Board of Accountancy for Maryland.

Financial Management Track (FM)

The Financial Management track is intended for people seeking to exercise managerial responsibilities over the financial functions of their organizations, or for those general managers who wish to strengthen their knowledge of and skills in the financial management of their organizations. The following five courses plus ADMN 631 are required for this track: ADMN 632, ADMN 633, ADMN 634, ADMN 639, and ADMN 655.

ADMN 632 3 credits Financial Management of Current Operations

The primary focus of this course is on the financial management of ongoing operations in organizations. Cost-volume profit analysis is extended to cost allocation, operating leverage, make-or-buy decisions, and market and transfer pricing issues. Forecasting and budgeting coverage is expanded to include flexible budgets and sales, manufacturing, purchasing, and cash budgets. The effects of various credit, inventory, accounts payable, and working capital policies on an organization are examined, as are alternative approaches for meeting short-term cash needs and working capital management.

Note: Students should take ADMN 631 before enrolling in this course.

ADMN 633 3 credits Long-Term Financing of Organizations

The long-term capital needs of an organization and the methods employed to meet those needs are addressed. Students examine and implement the capital budgeting decision process. Various types of long-term funding sources are analyzed, including term loans, debt and equity securities, and leasing. Alternative policies with regard to financial leverage, capital structure, and dividends are evaluated. Scenario and risk analysis are used to appraise alternative capital project opportunities.

Note: Students should take ADMN 631 before enrolling in this course.

ADMN 634 3 credits Financial Markets and Investments

Building on the content of ADMN 631, this course provides an in-depth exploration of the financial environment of organizations, the role of financial intermediaries, capital and money markets, types of financial instruments, investment portfolios, and financial derivatives. Students explore alternative sources for raising capital, calculate the cost of capital under different risk conditions, evaluate debt and equity instruments, and construct investment portfolios using various theories and models. Emphasis is

placed on the application of financial decision making tools for managers.

Note: Students should take ADMN 631 before enrolling in this course.

ADMN 639 3 credits Multinational Financial Management

Financial management issues in multinational organizations are the focus of this course. Major 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 additional issues considered in the course.

Note: Students should take ADMN 631 before enrolling in this course.

ADMN 655 3 credits Strategic Financial Management

This is an integrative course for the Financial Management track, heavily oriented toward readings, discussion, and case studies and/or simulations using analytical tools developed in the track courses. Current topics reflect the changing environment for and the role of financial management in organizations. Such topics include measuring and implementing economic value added (EVA); performance-based reward systems; diversification, restructuring, and strategic partnering; business-process reengineering; corporate governance; value-based management; strategic cost management; and ethics in financial management. Within the context of one or more of the topics covered in the course, students are required to analyze and make recommendations concerning a financial problem or opportunity at their workplaces or other approved organizations.

Prerequisites: ADMN 631, 632, 633, 634, and 639.

Health Care Administration Track (HCA)

The Health Care Administration track prepares students to assume administrative and managerial positions in health care organizations including hospitals, nursing and long-term care facilities, managed care organizations (MCOs), and ambulatory care facilities. Though previous experience in health care is not a requirement, all entering students should be familiar with the fundamental values, practices, vocabulary, and basic concepts regarding health services organization and delivery if they are to be successful in this track.

Note: Students must take ADMN 670, ADMN 673, and ADMN 674 plus two other track courses.

ADMN 670* 3 credits The Health Care System

A comprehensive examination of the complex, dynamic, rapidly changing health care system in the United States is presented. The health care system's major components and their characteristics are identified, with an emphasis on current problems in health care financing and delivery. Social, economic, and political forces that have shaped and continue to influence the system are traced. The health care system in the United States is compared with systems in industrialized and developing nations. An analysis of current trends in health care and prospects for the future is included.

ADMN 671 3 credits Public Health Administration

This course is designed to acquaint students with the field of public health, emphasizing leadership and management. It is geared toward analyzing the current U.S. public health system, focusing on federal, state, and local public health entities. Major topics covered include the history of public health; epidemiology; the condition, issues, and problems of the U.S. public health system; core public health functions; and the politics and financing of public health. Field contact in a public health setting for the purpose of analyzing a public health program or policy may augment text and lecture presentations.

ADMN 672 3 credits Financial Management for Health Care Organizations

This course focuses on the financial management of health care organizations and stresses the basic economic models used in the United States. The course describes the American health care market and the attendant concepts of financial management of health services organizations within that market. The issues of free market and mixed market economies, regulation, licensure, certification, and other barriers to free market economies are examined, as are various insurance mechanisms. In addition, there is extensive discussion of the major financial issues of health care organizations, including reimbursement mechanisms, managed care, capitation, per case or per diagnosis payment, how these are packaged by third party payors, and the effects reimbursement types have on health care provider organizations.

The course also focuses on financial problems and how health care providers should respond to financial problems such as uncompensated care, cost increases, increased competition, and increased regulation. Issues of working capital, capital budgeting and investment in relation to net present value and value added to the organization, health care organizations' ratio analysis, cost analysis, and other financial management

techniques of primary importance to health care organizations are discussed.

Note: Students without a knowledge of finance are required to take ADMN 630 or ADMN 631 before enrolling in ADMN 672.

ADMN 673* 3 credits

Legal Aspects of Health Care Administration

This course deals with the law and legal process as applied to the practice of health care administration. The principles of health care law, with an emphasis on contracts and torts, are discussed. Topics addressed include legal and regulatory constraints imposed on the health care industry, the liability of health care providers, the rights of patients, labor relations, and administrative law for health care organizations. A variety of pressing bioethical issues facing health care practitioners and administrators are examined.

ADMN 674* 3 credits

Health Care Institutional Organization and Management

The internal organization and management of health care institutions are examined. The diverse topics covered include health care management, organizational theory and design, managerial roles, performance measures, and controls. In addition, issues relating to strategic planning and organizational adaptation to changing environmental conditions are studied. Through the case study approach, students have the opportunity to utilize problem resolution and decision making skills in solving typical problems facing managers in health care organizations.

ADMN 675 3 credits

Long-Term-Care Administration

Long-term-care administration encompasses all of those activities that relate to caring for and satisfying the essential needs of the aging population including housing, health care, nutrition, education, and recreation. This course focuses on the management of skilled nursing, intermediate care, and long-term-care facilities; the management of day care, residential care, social HMOs, and community-based programs; and home health services. Textbooks and readings are supplemented by case studies in management of long-term-care services and facilities.

**Required courses for HCA students, plus any two of the other track courses.*

Human Resource Management Track (HRM)

The Human Resource Management track is designed for managers who want to increase their understanding of the human resource management field. Individuals who intend to become human resource professionals, as well as other

managers who plan to supervise staff and need to comprehend the issues, policies, and procedures involved in effectively managing people, will find this program useful. The HRM courses provide the theory, research, knowledge, and procedures used by human resource executives and specialists. Contemporary issues in human resource management such as workforce diversity, employee-management relations, recruitment and selection, training and career development, compensation, organizational development and change, and the impact of globalization on organizations are examined.

Note: HRM students must take ADMN 662 plus four other HRM courses. (ADMN 662 is the recommended first HRM track course.)

ADMN 661 3 credits

Employee Relations

The rights and responsibilities of employees as an organized group and within nonunion organizations, and their relationship to the formal structure of the organization, are addressed. Elements of the legal framework of employee relations and human resource management are examined. Included are such matters as the role of the federal government, unionization, collective bargaining, dispute resolution, equal employment opportunity, disability issues, privacy, drug testing, wrongful discharge, employee health and safety, and sexual harassment.

ADMN 662 3 credits

Issues and Practices in Human Resource Management

This introductory course provides an overview of the human resource management profession. It includes 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. Particular attention is given to 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 included.

Note: It is strongly recommended that Human Resource Management students take this course before taking the other courses in the track. This course is required for Human Resource Management students.

ADMN 663 3 credits

Job Analysis, Assessment, and Compensation

This course is designed to familiarize the student with the interrelated aspects of human resource management. Topics include 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. Techniques are discussed 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. Consideration is given to the interaction of compensation, worker motivation, performance appraisal, and level of worker performance within the organization.

ADMN 664 3 credits

Organizational Development and Change

Issues, theories, and methodologies associated with organizational development and the management of change are presented, with a major emphasis on organizational culture and organizational change processes. Areas of concentration 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.

ADMN 665 3 credits

Current Perspectives in Human Resource Development and Training

This course introduces students to the field of human resource development (HRD), which focuses primarily on the areas of training and development, career development, and organization development. The course explores basic concepts, definitions, theories of HRD, and the ways in which adults learn; the changing role of HRD in the workplace; the relationship of HRD to strategic planning; the process of planning, designing, and evaluating a training program; measuring the cost and value of training; the role of the internal and external consultant; the role and responsibilities of the human resource development manager; the impact of technology on training and delivery of services to adults; and the expanding role of human resource development in the global environment. Students have the opportunity to complete a self-assessment of their own competencies for human resource development work, develop a one-day training program, and practice skills valuable for effective leadership in this field.

ADMN 666 3 credits**Recruitment and Selection**

This course examines the initial phases of staffing, focusing on the hiring process. It investigates the contemporary roles, relationships, and processes of recruitment and selection in the human resource management system. It highlights productivity factors (such as the use of technology) and quality factors (such as legal, ethical, and validity issues). It includes 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.

Interdisciplinary Studies in Management (ISM)

This course track is intended for students who want a broad exposure to major areas of study that are essential for managers in every organization. Students must select one of the designated courses in each of five clusters:

- International/technology (IMAN 601, IMAN 661, TMAN 640, TMAN 632, or ENGM 615)
- Human resources (ADMN 662, ADMN 663, ADMN 664, ADMN 665, or ADMN 666)
- Legal issues (ADMN 637, ADMN 661, ADMN 627, or ADMN 660)
- Marketing (ADMN 685, ADMN 686 or IMAN 640, ADMN 687, ADMN 688 or IMAN 620, or ADMN 689)
- Management information systems (ADMN 640, ADMN 641, ADMN 643, ADMN 644, or ADMN 645)

This track is designed for students who want a general management education but do not want to specialize in either a specific management function or in the management practices of a particular industry.

Management Information Systems Track (MIS)

The Management Information Systems track provides five courses on the ways a manager can use computer-based information systems to enhance decision making and organizational effectiveness. This track is structured to accommodate the needs of students who have little or no experience with computers as well as those with advanced computer skills. In addition to receiving a technological foundation, students are exposed to the interaction of technology, organizational behavior, strategic planning, project management, and systems analysis to support the organization through its information systems. MIS students are required to take ADMN 641, ADMN 643, ADMN 644, and ADMN 645.

For the remainder of the track, students may take ADMN 640 or any course in the Computer Systems Management or Telecommunications Management area, subject to course prerequisites.

ADMN 640 3 credits**Information Systems for Managers**

This course is designed for managers without a technical background in computers and information systems. Students review and evaluate 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. Students enrolled in the class are expected to have basic microcomputer skills. Two laboratory sessions acquaint students with a relational database management system. The theme of determining managers' needs for information, and procuring and using appropriate computer systems, is emphasized throughout the course.

ADMN 641 3 credits**Information Systems Design and Integration**

This course considers the life-cycle perspective of the information system, from inception through system development to system operation and maintenance. Integration of information systems with a view toward an organization's strategic goals and directions is highlighted. Major phases, procedures, policies, and techniques in the information system life cycle are discussed in detail.

ADMN 643 3 credits**Systems Analysis and Software Engineering**

The areas of computer technology, systems analysis, systems design, and software application construction are combined in this course to aid the student in the detailed analysis and construction of large-scale applications. The course is strongly oriented toward the formalization of the information system's logical and physical analysis and design process. A computer-aided software engineering (CASE) tool is used to reinforce the concepts learned in class.

ADMN 644 3 credits**Decision Support and Expert Systems**

This course is designed to provide the student with an understanding of computer applications for management support. In addition to the technologies of decision support systems and expert systems, the organizational factors leading to the success or failure of such systems are introduced. Other topics addressed include group decision support systems, integration and implementation issues, and related advanced technologies such as neural networks.

ADMN 645 3 credits**Information Technology and Competitive Advantage**

This course adopts a proactive information management posture by considering the competitive edge with a view toward "business-edge" technologies. Current and upcoming information technologies affecting the developmental, social, political, and economic trends of the industry are explored. The role of the information manager as technology integrator is examined. Local and global influences on the strategic information mission of the organization are highlighted.

Marketing Track (MKT)

The Marketing track focuses on the theories and skills that managers can use to increase the demand for their organizations' products, services, or programs. This track applies to managers who must market products internally in their organizations, to those who market external products, and to marketers of free services as well as those of services with specific charges. Thus, this program applies to students in both the profit and not-for-profit sectors as well as to managers in a highly charged marketing culture. Marketing students must take ADMN 685, ADMN 686, ADMN 687, ADMN 688, and ADMN 689.

ADMN 685 3 credits**Strategic Market Planning**

This course presents 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. This course also discusses trends toward a "marketing culture" in both public and private institutions and the implications that this change has for all managers and administrators. This course concentrates on the role of brand equity in achieving a sustainable competitive advantage.

ADMN 686 3 credits**Marketing Management**

This course presents theory and practices related to the management of the marketing function as they would be applied by managers and administrators in organizations concerned with "business development." The course relates to the marketing of organizational products, programs, and services to either internal or external clients. Through analysis of case studies and spreadsheet exercises, the necessity of incorporating marketing functions with other business functions is demonstrated. The planning and implementation activities required to attain marketing goals for the organization are also emphasized. Topics addressed include the product/service mix, pricing, marketing communications such as advertising and sales promotion, and channels of

distribution. The course also introduces control techniques for the overall marketing mix.

ADMN 687 3 credits
Market Segmentation and Penetration

This course is 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. Special emphasis is placed on the role of the communications strategy (i.e., advertising, promotion, public relations) in achieving the overall marketing objectives.

ADMN 688 3 credits
Marketing Intelligence and Research Systems

Applications of cross cultural 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 are presented in this course. Methodologies and special topics related to the design and completion of marketing research projects are presented, including the survey, observational, and experimental methods used in assessing and segmenting markets. Special topics in data analysis that are especially useful for marketing research (e.g., focus groups, customer visits, conjoint analysis and multidimensional scaling) are covered.

Note: It is strongly recommended that students take ADMN 638 before enrolling in this course.

ADMN 689 3 credits
Integrated Direct Marketing

This course presents a systematic approach to integrated direct marketing. Integrated direct marketing is a process of precision deployment of multiple media and sales channels (for example, publicity and public relations, advertising, direct mail, telemarketing, and field sales channels) that seeks to maintain contact with the customer at multiple points during the sales cycle and throughout the long-term relationship with the customer. Integrated direct marketing is an information-driven marketing process, managed by database technology that enables the marketers to develop, test, implement, measure, and appropriately modify customized marketing programs and strategies. Specific measurement tools and topics to be examined include life-time value, performance measurement, cost per million (CPM), and cost per response.

Prerequisite: ADMN 638 or appropriate background in statistics is required.

Not-for-Profit Management Track (NFP)

The Not-for-Profit Management track serves the needs of current and potential managers of organizations in the independent sector, including associations, development organizations, foundations, and political organizations. A thorough understanding of the sector is provided, with a special emphasis on revenue generation and cost control issues, legal constraints, recruitment and management of volunteers, and approaches to promotion, marketing, and fundraising. The management of contemporary concerns such as organizational quality, diversity, and ethics is also examined in the context of the not-for-profit organization. NFP students must take the following four courses in this track.

ADMN 654 3 credits
Not-for-Profit Financial Management

Theories and practices of not-for-profit financial management and decision making, including budgeting, reporting requirements, nonprofit accounting, and financial standards are studied in detail. The role of financial management in maintaining the fiscal health and legal status of the not-for-profit organization is the primary focus. Emphasis is placed on budgeting, fund accounting, cash flow analysis, expenditure control, long-range financial planning, audits, and grant and contract management. Special attention is paid to compliance with not-for-profit accounting and financial management principles with reference to maintaining public access and ethical standards.

ADMN 656 3 credits
Not-for-Profit Organizations and Issues

A framework outlining the roles and functions of the principal types of not-for-profit organizations is presented. Major characteristics are introduced that distinguish not-for-profit organizations from their counterparts in the private and public sectors. The challenges, opportunities, and common issues facing managers of not-for-profit 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 not-for-profit sector are examined.

ADMN 657 3 credits
Management of Critical Resources in Not-for-Profit Organizations

Current ideas and approaches related to financial and human resource management in not-for-profit organizations are reviewed. Included are issues and methods related to implementing revenue enhance-

ment and preservation strategies, achieving operational efficiencies, and reducing overhead costs. Human resource issues that are discussed include recruitment, retention and training of both professional and volunteer staff, managing workforce changes, and employee motivation. Roles and responsibilities of boards, executives, and staff in developing and implementing organizational strategies are examined.

ADMN 658 3 credits
Marketing, Development, and Public Relations in Not-for-Profit Organizations

Principles and practices required to develop and promote the products, services, positions, and image of not-for-profit organizations are considered. Fundraising and membership recruitment issues provide a central focus. Topics include the design of a marketing strategy and marketing mix, pricing issues, alternative revenue-generating mechanisms, and customer service. Use of the media, advertising and promotion methods, and relationships with business, government, and the community are explored. The integration of sponsors, members, and chapters in the total marketing effort is examined.

ADMN 659 3 credits
Strategic Management in Not-for-Profit Organizations

The integration and application of strategic management principles, concepts, and practices in not-for-profit organizations are discussed. The development of mission statements, goal-setting concepts, and strategy formulation and implementation approaches are included. Students are provided the opportunity to design organizational plans and strategies relevant to their specific needs and the needs of their organizations.

Procurement and Contract Management Track (PCM)

The Procurement and Contract Management track is designed for individuals who are involved in contract administration or procurement activities in the private, public, and not-for-profit sectors. The courses in this track provide a foundation for understanding both the strategic and operational aspects of the procurement function. Both general and specialized management studies are integrated with the required courses.

ADMN 626 3 credits
Purchasing and Materials Management

An overview of the procurement and contracting cycle is provided with other organizational functions. Methods of purchasing and source selection are covered, 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.

ADMN 627 **3 credits**
Legal Aspects of Contracting

The law of commercial purchasing is presented, including the law of agency, contracts, sales, torts, and antitrust. In addition, the Federal Acquisition Regulation and American Bar Association model procurement codes for state and local govern-

ments are examined. Topics addressed include the authority of purchasing, 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.

ADMN 628 **3 credits**
Contract Pricing and Negotiation

Techniques for planning, conducting, and managing negotiated procurements are presented. A primary 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 students are given the opportunity to practice negotiation techniques to achieve a fair and reasonable contract price. Students gain practice in preparing negotiation positions through analysis of cases containing detailed cost and pricing data. Ethical decision making throughout these processes is addressed.

ADMN 629 **3 credits**
Strategic Purchasing and Logistics

This course presents issues and methodologies related to strategic purchasing and logistics. The ethics, social responsibility, and accountability

considerations in procurement, logistics, and contract management are among the major topics considered in this course. In addition, specific areas of study such as the professional development of staff, just-in-time management, electronic data interchange, vendor assessment and development, pricing and negotiation, and international procurement issues are presented.

ADMN 660 **3 credits**
Commercial Transactions in a Technological Environment: Law, Management, and Technology Transfer

Students are presented with legal issues and management methodologies related to commercial transactions in a technological environment. The law, ethics, accountability, and contract management considerations in the procurement of technology products and services are among the major topics considered in this course. In addition, specific areas of study such as 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 are presented.

Note: It is recommended that students complete ADMN 627 before enrolling in ADMN 660.

Master of Science in Computer Systems Management

As organizations become increasingly interdependent and interconnected in the 21st century, the need for trained specialists to develop and streamline a global information infrastructure will grow exponentially. The Master of Science in Computer Systems Management provides educational opportunities for such information professionals. The program serves the needs of programmers, developers, engineers, and other knowledge workers who aspire to move into technical leadership positions. The emphasis is on moving technology out of the laboratory and into business development, defining the role of information literacy in decision making, and exploiting information technologies for productivity and competitiveness. The program is rich in real-life assignments and case studies.

Degree Program

In each segment of the degree program, theory and concepts are presented so the student may develop and evaluate administrative skills. In each course, faculty members combine theoretical concepts with the practical application of usable skills. This degree program consists of the following: five (3-credit) core courses, two (3-credit) electives, four (3-credit) track courses, and one (3-credit) management project or, in lieu of the project, the two-course option.

Students may choose one of four tracks: (1) Applied Computer Systems, (2) Database Systems and Security, (3) Information Resources Management, or (4) Software Development Management.

Required Library Research Skills Course

To ensure students are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

National Defense University

Students who have completed the Advanced Management Program or the Chief Information Officer Certificate Program at the National Defense University Information Resources Management College (IRMC) may transfer 15 credits in partial satisfaction of the Master of Science in Computer Systems Management degree (subject to Graduate School time limits of seven consecutive years) to replace CSMN 601, TMAN 614, TMAN 632, ENGM 610, and one elective. Students must apply and meet the established admission criteria for the CSMN program. Interested students should call either an IRMC or a Graduate School advisor.

Admission Requirements

A student may be admitted in one of four classifications: degree seeking, provisional, certificate, or decision pending. The decision-pending classification is temporary while students await final approval of admission. Certificate status exists for students pursuing the professional development certificate. The admission requirements for each classification are explained in the following sections.

Degree Status

Degree status is granted to students enrolled in the Database Systems and Security track, Information Resources Management track, and

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Information and Telecommunications Studies

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Program Directors

Applied Computer Systems

Bernard Carver, *Program Director*
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Core Courses

Information Resources Management

Paul F.G. Keller, *Program Director*
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Database Systems and Security

Garth R. MacKenzie, *Program Director*
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Software Development Management

Joseph E. Kasser, *Program Director*
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Software Development Management track who meet or exceed the following criteria: a bachelor's degree from a regionally accredited university or college, an overall undergraduate grade-point average (GPA) of at least 3.0 on a 4.0 system, submission of the official transcript from the bachelor's-degree-granting institution, and a personal statement. UMUC reserves the right to request additional transcripts.

Degree status is granted to students in the Applied Computer Systems track who meet or exceed the above criteria and, in addition, have at least one undergraduate semester of calculus (i.e., Calculus I) completed with a minimum grade of "C" or equivalent proficiency demonstrated by means of a College Level Examination Program (CLEP) test.

Note: Applicants educated in countries other than the United States and who are non-native speakers of English should refer to the section entitled International Applicants (page 10) for information about the TOEFL and TWE examinations.

Provisional Status

Provisional status may be granted to students who fall slightly below the minimum grade-point requirement for degree status. Once admitted to this category, students are given an opportunity to demonstrate, by performance, their ability to succeed in graduate studies. Students may register for no more than three graduate courses (9 credits) while in the provisional category. Those who maintain a 3.0 GPA during the

completion of the 9 credits and remedy any other unmet admission requirements are moved automatically to degree status. No courses may be repeated while a student is in provisional status. The minimum admission requirements for provisional status are as follows: a bachelor's degree from a regionally accredited university or college, an undergraduate GPA of at least 2.5 on a 4.0 system in the student's major area of study, submission of the official transcript from the bachelor's-degree-granting institution, and a personal statement. UMUC reserves the right to request additional transcripts.

Decision-Pending Status

The decision-pending status is short term and is meant for students who have not completed the admission process described previously. Students may enroll in one of the following graduate courses before UMUC has received the official college transcript from the bachelor's-degree-granting institution: CSMN 601, ENGM 610, or TMAN 632. Students must receive an admission decision before subsequent enrollments. The UMUC Graduate School reserves the right to request additional transcripts.

Certificate Program

A professional development certificate program is available for students who are not interested in the full degree program but desire a sequence of graduate courses leading to a certificate in Computer Systems Management. The program comprises 21 credits, and includes five required courses (CSMN 601, TMAN 614, ENGM 610, TMAN 632, and CSMN 660) and two elective courses chosen from the four CSMN tracks. Students may not use transfer credits toward the certificate. All coursework must be completed within seven consecutive years.

Certificate Status

Certificate status is granted to students seeking a professional development certificate who meet the same criteria as degree-seeking students.

Locations

Classes are currently offered at College Park, the University System of Maryland Shady Grove Center in Rockville, Annapolis, and online. Students should check the current *Graduate Schedule of Classes* to determine when courses will be offered at specific locations.

Core Courses

CSMN 601 3 credits Issues, Trends, and Strategies for Computer Systems Management

A study of the technological advances in computer systems and in the many environments affected by advancing technology is presented. Problems relating to ethics, security, the proliferation of databases, risk analysis, telecommunications, artificial intelligence, and human-machine interaction are examined. The rapid development of computer-based information systems in response to management needs, as well as trends and developments in the field, are discussed.

Note: This course is strongly recommended as the first course for CSMN students.

TMAN 614 3 credits Strategic Management of Technology and Innovation

For a full description of this course see page 47.

Replaces ADMN 603.

ENGM 610 3 credits Engineering Economics and Financial Analysis

or

TMAN 612 3 credits Financial Management for Technology Managers

For a full description of this course see page 47.

TMAN 632 3 credits Management of Productivity and Quality in Technological Operations

For a full description of this course see page 47.

CSMN 660 3 credits Seminar in Managerial Decision Making for Computer Systems Management

This course is the capstone of the CSMN program. It integrates the major concepts presented in all other coursework through study of the major threads that tie together all aspects of information technology in an organization. Strong emphasis is placed on viewing information technology issues in a context of making day-to-day as well as strategic management decisions based on applied research. Issues include competitive strategy, architectures, user communities, technology transfer, reengineering, collaborative computing, global technology, social impact, information policy, ethics, and the future of the Internet. Emerging trends in information technology are analyzed to understand their potential effect on the workplace and society.

Prerequisites: 27 semester hours of graduate coursework.

Elective Courses

Students must select two elective courses from CSMN specialty tracks, TLMN, TMAN, ADMN 645, or CSMN 639.

CSMN 639 3 credits Multimedia and the Internet

Multimedia presentations are regarded as essential, strategic components of an organization's competitive advantage via its World Wide Web presence. Established principles of software development life cycles, aesthetics of typographic and layout, benchmarking, and human factors research are applied to analyzing and critiquing Web sites as well as writing successful Web site development plans. Site management issues and consumer research methods are surveyed. The course's technical component emphasizes information theory, basic Web page design techniques, standards for representing common media formats in data files, compression algorithms, file format translation tools, transmission protocols, hardware requirements and standards, and system constraints. Java, CGI scripts, virtual reality, and other ancillary methods are touched upon, but no programming is required.

Note: This course cannot be completed using UMUC computer laboratory facilities. It requires a current multimedia PC with ample hard disk capacity and Internet connectivity. CSMN 601 or TLMN 602 is a prerequisite for this course; CSMN 636, TLMN 610, or TLMN 620 are desirable precursors.

End-of-Program Option

Management Project

CSMN 690 (3 credits) and CSMN 690M (1 credit)

Students demonstrate their ability to structure and complete a major project that identifies and resolves an important management or organizational issue. Students report the results of their efforts in written and oral form. The project may be developed in cooperation with students' current employers or with some organization of their choice, provided there is no conflict of interest. The project is conducted under the direction of an on-site supervisor in cooperation with a faculty advisor.

Prerequisite: CSMN 660.

Two-Course Option

Instead of the management project, students may take two additional courses from the approved list—one interdisciplinary course (3 credits) and

one elective (3 credits). The approved courses are as follows:

Interdisciplinary/Breadth Courses

ADMN 625	Organizational Communication
IMAN 601	Managing in a Competitive International Environment
TMAN 633	Human Resource Issues in Technology-Based Organizations
IMAN 661	Area Studies: Business Strategies for Europe

In selecting an interdisciplinary course, students should contact the appropriate program or track director to assure that the students are capable of performing the coursework.

Elective/Depth Courses

Students should select courses from any other CSMN track or from TLMN (except TLMN 660).

Applied Computer Systems Track (ACS)

The Applied Computer Systems track focuses on the knowledge and skills associated with managing computer systems in organizations. The track provides students with an understanding of hardware and operating systems, distributed computing, principles of programming languages, and knowledge-based systems. The track applies to tactical and operational managers interested in formal computer systems training, manufacturing/engineering workers interested in system and process enhancement through modern automation techniques, and business professionals with needs in applied computer systems education.

Track students must take the following four courses:

CSMN 615 3 credits **Hardware and Operating Systems**

Interrelationships between hardware and software from technical, operational, and system points of view are examined. An architectural review of selected hardware systems, virtual memory management, operating systems, disk performance optimization, analytic modeling, and distributed operating systems is presented.

CSMN 616 3 credits **Distributed Computing**

Topics central to the design and management of distributed computing systems, including distributed synchronization and resource sharing, concurrency control in distributed databases, distributed simulation languages for distributed computing, management proof techniques for

distributed systems, and distributed operating systems are covered.

Prerequisite: Calculus I or equivalent.

CSMN 617 3 credits **Principles of Programming Languages**

The course explores the theory and implementation of modern programming languages. Topics include the attributes of a good language, programming environments (for example, batch, interactive, real-time, network, and embedded systems), language syntax, various grammar types, data types, object-oriented structures, sequence control, subprogram control, and parallel programming. The properties of programming languages are illustrated using examples from current languages such as Fortran, Cobol, C, C++, Pascal, Ada, Prolog, and Java.

Prerequisite: Calculus I or equivalent.

CSMN 618 3 credits **Knowledge-Based Systems**

This course covers the identification, creation, and use of knowledge-based systems from an applied approach. Cognitive science, formal logic, and finite automata are highlighted throughout. The course starts with an overview of intelligent systems and concludes with a hands-on intelligent system created as a class product. Using the case-study approach, the course explores the art of knowledge acquisition and crafting of domain-specific, knowledge-based applications using various processing technologies with representation methods.

Prerequisite: Calculus I or equivalent.

Database Systems and Security Track (DSS)

The Database Systems and Security track provides practical, appropriate, and effective applications of database technology. This track presents the nature and characteristics of database management, database modeling, database design, and database implementation, with related security and reliability issues. This track is intended for knowledge workers and business professionals interested in designing, implementing, and maintaining database systems for today and tomorrow.

Track students must take the following four courses:

CSMN 655 3 credits **Information Risk Assessment and Security Management**

The proliferation of corporate databases and the development of telecommunication network technology as gateways or invitations to intrusion are examined. Ways of investigating the management of the risk and security of data and data systems are presented as a function of design through recovery and protection. Issues of risk and security, as they relate to specific industries and government, are major topics in the course. Examples are presented of how major technological advances in computer and operating systems have placed data, as tangible corporate assets, at risk. Quantitative sampling techniques for risk assessment and for qualitative decision making under uncertainty are explored.

Prerequisite: Statistics.

CSMN 656 3 credits **Database Processing and Design**

The purpose of this course is to introduce the fundamental concepts necessary for the design, use, and implementation of database systems. The course stresses the fundamentals of database modeling and design, the languages and facilities provided by database management systems, and the techniques for implementing database systems. The course covers the relational network, hierarchical data models, and in-depth presentation of the entity-relation (ER) model. Semantic, object-oriented, and functional data modeling concepts are also included. Various database design techniques, implementation concepts, and techniques for query optimization, concurrency control, recovery, security, and integrity are investigated.

CSMN 657 3 credits **Advanced Database Applications**

A substantial body of proven concepts is covered, such as data abstraction, encapsulation, inheritance, polymorphism, extensibility, generic programming, information hiding, code reusability, modularity, and exception handling. The course provides students with an overview of existing object-oriented databases (OODB), including examples of their use and comparison of their strengths and weaknesses. After a survey of OODBs, three representative ones are selected for closer scrutiny. C++ serves as the primary data manipulation language. A brief overview of the language, its power, and its limitations is presented.

Note: Students are encouraged to take CSMN 656 before this course.

CSMN 658 3 credits**Software Reliability and Reusability**

This course discusses principles of reliability, reusability, initiatives, and standards in software engineering, such as function point as a measure of complexity and, hence, reliability. The course provides an overview of software reliability models, software fault-tree analysis, types of software errors, types of design errors, and inherent characteristics of software that determine reliability. Software redundancy, automating tools for software reliability prototypes, and real-time software reliability are also covered.

Information Resources Management Track (IRM)

The Information Resources Management track is defined as the combination of computing, telecommunications, office automation, records management, and newer technologies such as multimedia and document imaging. The IRM track is intended for federal ADP management and acquisitions personnel as well as those who work in the private sector. Because various agencies differ in their interpretation of IRM, the track has a great deal of flexibility, allowing students to tailor it to their specific needs.

For students who are not prepared to commit to an entire degree program, there is also a distinct 18-semester-hour IRM professional development document program, which is for federal workers allied with General Services Administration's *1000 by the year 2000* program. Coursework taken for this program can be applied to a Master of Science in Computer Systems Management degree in this track at a later date (subject to Graduate School time limits).

Track students must take the following three courses plus one elective from the approved degree programs.

CSMN 635 3 credits**Systems Development and Project Control**

The purpose of this course is to provide a thorough understanding of the systems development life cycle as it applies to large hardware and software systems. The course discusses various

approaches to system development including the traditional waterfall model (system analysis, system design, system implementation, and system use and evaluation), spiral model, and prototyping. Computer-aided software engineering is also examined. An important aspect of this course is the integration of the principles of project management (time, money, and quality) with the discussion of the system development life cycle.

CSMN 636 3 credits**Telecommunications and Connectivity**

The fundamentals of data communication systems and technologies are examined. Students explore these technologies from the perspective of the current and future public-switched network, wide area networks, and local area networks. Also addressed are network architectures, networking standards, digital and analog signaling, and the various transmission media. Future trends in data communication concepts, equipment, applications, and services, including the open systems interconnection (OSI) model, T-1/T-3 multiplexers, fiber optics, integrated voice/data equipment, "intelligent networks," and the Integrated Services Digital Network (ISDN) are also discussed.

CSMN 637 3 credits**Acquisition of Information Technology**

This course explores in detail the principles of information technology (IT) acquisition in a life-cycle context, taking into account best practices in commercial firms and government agencies. Emphasis is placed on the process of determining the relative value and priority of proposed IT acquisition projects, ongoing IT acquisition projects, and in-place IT systems in terms of their expected contribution to the success of the organization. The course explores methods for identifying high-priority areas for applying IT within an organization, establishing IT project assessment criteria, assessing competing IT projects, and making decisions on IT acquisition priorities. The requirements for successfully initiating an IT project and managing and controlling it over its life cycle are considered from various standpoints, including the IT executive's and the non-IT executive's (user's). Also

explored are such vital areas as success and risk factors, project management, and sources of information on IT acquisition. The course is applicable to commercial firms, state agencies, and federal government/military components seeking to meet requirements for IT capital planning and investment management.

Plus one elective:

One course (3 credits) chosen from TMAN, TLMN, another CSMN track, or ADMN 645. Individual course prerequisites apply.

Software Development Management Track (SDM)

The Software Development Management track is designed for software development professionals and technical managers who are interested in the entire software life-cycle process. The courses include both formal and "real life" descriptions of software requirements, development, validation, and maintenance concepts. This track provides the technical knowledge to complement the management concepts contained in the CSMN core courses.

Track students must take the following four courses:

MSWE 645 3 credits**System and Software Standards and Requirements**

For a full description of this course, see page 45.

MSWE 646 3 credits**Software Design**

For a full description of this course, see page 45.

MSWE 647 3 credits**Software Verifications and Validation**

For a full description of this course, see page 45.

MSWE 648 3 credits**Software Maintenance**

For a full description of this course, see page 45.

Master of Science in Environmental Management

The Master of Science in Environmental Management is designed to provide the skills, knowledge, and competencies that students will need to function effectively in multiple environmental management settings. The courses in the program are interrelated and provide a solid conceptual and applied foundation. An applicant is required to have at least 3 undergraduate credits each in basic biology and chemistry.

Degree Program

In each segment of the degree program, theory and concepts are presented so the student may develop and evaluate administrative skills. In each course, faculty members combine theoretical concepts with the practical application of usable skills. This degree program consists of seven (3-credit) core courses, four (3-credit) elective courses, one (3-credit) management project, or, in lieu of the project, the two-course option.

Required Library Research Skills Course

To ensure students are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Admission Requirements

A student may be admitted in one of four classifications: degree-seeking, provisional, certificate, or decision pending. The decision-pending classification is temporary while students await final approval of admission. Certificate status exists for students pursuing the professional development certificate. The admission requirements for each classification are explained below.

Degree Status

Degree status is granted to students who meet or exceed the following criteria: a bachelor's degree from a regionally accredited university in social science, physical science, biological science, or engineering; a minimum of 6 semester hours of coursework in chemistry and biology; a minimum of one year of experience or other evidence

of expertise in the environmental field; an undergraduate grade-point average (GPA) of 3.0 on a 4.0 scale; submission of the official transcript from the bachelor's-degree-granting institution; and a personal statement. UMUC reserves the right to request additional transcripts.

Note: Applicants educated in countries other than the United States and who are non-native speakers of English should refer to the section entitled International Applicants (page 10) for information about the TOEFL and TWE examinations.

Provisional Status

Provisional status may be granted to students who fall slightly below the minimum grade-point requirement for degree status. Once admitted to this category, students are given an opportunity to demonstrate, by performance, their ability to succeed in graduate studies. Students may register for no more than three graduate courses (9 credits) while in the provisional category. Those who maintain a 3.0 GPA during the completion of the 9 credits and remedy any other unmet admission requirements are moved automatically to degree status. No courses may be repeated while a student is in provisional status. The minimum admission requirements for provisional status are a bachelor's degree from a regionally accredited university in social science, physical science, biological science, or engineering; a minimum of 3 semester hours of coursework each in chemistry and biology; a minimum of one year of experience or other evidence of expertise in the environmental field; an undergraduate grade-point average (GPA) of at least 2.5 on a 4.0 scale in the student's major area of study; submission of the official transcript from the bachelor's-degree-granting institution; and a personal statement. UMUC reserves the right to request additional transcripts.

Students who have not completed 6 semester hours of combined coursework in chemistry and

biology may be admitted to provisional status while completing this requirement. They will be allowed to register for a maximum of three courses chosen from the following list while completing the requirement in chemistry and biology: ENGM 610, TMAN 640, ENVM 641, ENVM 643, and ENVM 646.

Decision-Pending Classification

Decision-pending classification is short term and is meant for students who have not completed the admission process described previously. Students may enroll in one of the following graduate courses before UMUC has received the official college transcript from the bachelor's-degree-granting institution: ENVM 646, ENVM 648, or TMAN 640. Students must receive an admission decision before subsequent enrollments. The UMUC Graduate School reserves the right to request additional transcripts.

Certificate Program

A professional development certificate is available for students who are not interested in a full degree program but who desire a sequence of graduate courses leading to a certificate. The program comprises 21 semester hours of coursework and includes ENVM 646, ENVM 641, ENVM 643, TMAN 640, ENVM 647, ENVM 644, and ENVM 670. Students may not use transfer credit toward the certificate. All coursework must be completed within seven consecutive years.

Certificate Status

Certificate status is granted to students seeking a professional development certificate who meet the same criteria as degree-seeking students.

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Locations

Classes in the Master of Science in Environmental Management are offered at the College Park and Shady Grove Center sites. Students should check the current *Graduate Schedule of Classes* to determine when courses will be offered at specific locations.

Course Requirements

ENVM 648 Fundamentals of Environmental Systems is a required course for students lacking an undergraduate degree in science or engineering and one year of experience in the environmental field. ENVM 648 (if required) and ENVM 646 Environmental Law and Policy Development must be among the first four courses taken by new students admitted into the program.

Core Courses

ENGM 610 3 credits
Engineering Economics and Financial Analysis

TMAN 640 3 credits
Project Management

For a full description of this course see page 48.

ENVM 641 3 credits
Environmental Auditing

Methods for attaining statutory, regulatory, and permitting compliance are examined. The protection of workers and other stakeholders is also examined in the context of organizational, budgetary, and other constraints. 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 hazard waste management laws, and pollution prevention initiatives—are emphasized.

ENVM 643 3 credits
Environmental Communication and Reporting

The range of communication practices required for environmental managers in the fulfillment of legal, regulatory, ethical, and organizational responsibilities is examined. The various populations with whom environmental managers must communicate and interact are identified and examined, including plant supervisors, corporate executives, regulators, the legal community, civic groups, labor unions, and the media. The types of communication discussed range from decision memoranda to environmental impact statements, presentations of corporate environmental policies

before affected communities, and development/conveyance of technical evidence for obtaining permit variances.

ENVM 646 3 credits
Environmental Law and Policy Development

U.S. environmental law and policy, including its development, implementation, and enforcement, are examined. The environmental movement, since its early beginnings, is examined with emphasis placed on developments and changes during the last 25 years. Issues to be covered include air pollution, water pollution, hazardous waste, and toxic substances. Legislative, executive, and judicial perspectives and the roles and impacts these institutions have made on environmental law and policy are analyzed. Specific laws and their ensuing policies addressed include the following: National Environmental Protection Act; Clean Water Act; Clean Air Act; Comprehensive Environmental Response, Compensation, and Liability Act; Resource Conservation and Recovery Act; and Toxic Substances Control Act.

ENVM 647 3 credits
Environmental Risk Assessment

This course is designed to acquaint managers with the basic concepts of risk assessment. It examines 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 an exploration of 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.

ENVM 670 3 credits
Seminar in Environmental Management
(Same as TMAN 671.)

Electives 12 credits

Students must choose four of the following courses:

ENVM 644 3 credits
New Technologies in Environmental Management

An overview is offered of new waste management and waste minimization technologies, including treatment technologies such as physical and chemical treatment of hazardous wastes, bioreactors and bioremediation, and reverse osmosis and ultrafiltration. Disposal technologies are reviewed, such as landfill design and operation, incineration, and encapsulation methods.

Pollution prevention technologies are also presented, including process redesign and computer-aided process control, as well as the substitution of toxic materials.

ENVM 645 3 credits
Hazardous Material Transportation

This course offers a review of the legal, regulatory, and operational requirements for the transport of hazardous materials and hazardous waste. A foundation is provided for understanding the state, federal, and international regulatory framework that governs the transport of such materials. The identification, classification, and description of transported materials (according to U.S. Department of Transportation criteria) is presented. The course includes the evaluation of shipment alternatives, such as the use of common carriers, contract carriage, and private carriage; compliance with shipping requirements, including the selection of appropriate packaging, labeling, and placarding; and the provision of emergency response support.

ENVM 648 3 credits
Fundamentals of Environmental Systems

The basic concepts of environmental chemistry, physics, geology, and risk are introduced. Environmental systems are presented in the study of the gaseous, liquid, and solid effluents from various industrial activities, while management methods and the statutory and regulatory requirements of major federal environmental laws affecting this management are considered. Additionally, this course provides the student with the basic vocabulary of the field and an understanding of fundamental principles relating to the transport and fate of contaminants and industrial wastes.

Note: This course is intended for students lacking a strong science background or experience in the environmental field.

ENVM 649 3 credits
Principles of Waste Management and Pollution Control

This course introduces the student to various methods of waste management including waste collection, transportation, recycling, treatment and disposal, and environmental monitoring. The course also focuses on hazardous and municipal solid waste, pollution prevention techniques, and waste minimization. An introduction to the process of disposal-facility site selection, design, and operation is also included.

ENVM 650 3 credits
Land and Water Resource Management

This course introduces the student to the development of multiple-use resource management strategies and the role of public policy in land and water resource management. Free markets, market failure, and distributional equity issues are examined. The Public Trust Doctrine, Native American Trust responsibilities, and land use regulations are also examined. Enforcement of land and water restrictions, ex-post-liability schemes, and public purchase of private land and water rights are examined as approaches to land and water management.

ENVM 651 3 credits
Watershed Planning and Management

This course introduces students to the concepts of watershed management and the development of watershed-related management planning documents. The course examines the physical characteristics of watersheds and their role in maintaining healthy environments and providing a natural resource to society. The course also focuses on examining management techniques for the conservation and maintenance of watersheds.

ENVM 652 3 credits
Principles of Air Quality Management

This course presents management techniques for addressing air quality issues and managing air quality programs. The course focuses on 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 3 credits
Air Pollution Sources and Controls

This course presents a broad overview of major air pollution sources and controls. The course examines the various contributing pollutants, sources and effects of pollutants, and dispersion and control of pollutants. Particulate and gas control systems are examined. Guides to the application of dispersion models are introduced. The course also highlights the legal and regulatory issues associated with implementing and maintaining air quality standards.

End-of-Program Option

Management Project

ENVM 690
 and ENVM 690M 3 credits

Students must demonstrate their ability to structure and complete a major project that identifies and resolves an important management or organizational issue. Results of their efforts are reported in written and oral form. The project may be developed in cooperation with the student's current employer or with some other organization of the student's choice, provided there is no conflict of interest. The project is conducted under the direction of an on-site supervisor in cooperation with a faculty advisor. Students have two semesters to complete the management project.

Prerequisites: Completion of 30 semester hours of graduate coursework and ENVM 670.

Two-Course Option 6 credits

Instead of the management project, students may take two additional courses from the approved list—one interdisciplinary course (3 credits) and one elective (3 credits). The approved courses are:

Interdisciplinary/Breadth Courses

ADMN 625	Organizational Communication
ADMN 628	Contract Pricing and Negotiation
IMAN 661	Area Studies: Business Strategies for Europe
TMAN 632	Management of Productivity and Quality in Technological Operations
TMAN 633	Human Resource Issues in Technology-Based Organizations

In selecting an interdisciplinary course, students should contact the appropriate program or track director to assure they are capable of performing the coursework.

Elective/Depth Courses

Students may choose any other elective in the ENVM program.

Master of International Management

As the business communities of the world become more intertwined, managers are increasingly challenged by such factors as cultural differences, fluctuating exchange rates, trade regulations, foreign competition, and the opening of world markets. The Master of International Management is an innovative, graduate-level management degree program developed to help midcareer professionals meet these challenges and successfully pursue careers in international business and commerce. The program is designed to fill a void in traditional business education and to help students increase the competitiveness of their organizations.

Degree Program

In each segment of the degree program, theory and concepts are presented so the student may develop and evaluate administrative skills. In each course, faculty members combine theoretical concepts with the practical application of usable skills. This degree program consists of seven (3-credit) core courses, four (3-credit) track courses, and one (3-credit) management project, or, in lieu of the project, the two-course option.

Required Library Research Skills Course

To ensure students are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Admission Requirements

A student may be admitted in one of four classifications: degree seeking, provisional, certificate, or decision pending. The decision-pending classification is temporary while students await final approval of admission. Certificate status exists for students pursuing the professional development certificate. Admission requirements for each classification are explained below.

Degree Status

Degree status is granted to students who meet or exceed the following criteria: a bachelor's degree from a regionally accredited college or university,

an overall undergraduate grade-point average (GPA) of at least 3.0 on a 4.0 system, submission of the official transcript from the bachelor's-degree-granting institution, and a personal statement. The UMUC Graduate School reserves the right to request additional transcripts.

Note: Applicants educated in countries other than the United States and who are non-native speakers of English should refer to the section International Applicants (page 10) for information about TOEFL and TWE examinations.

Provisional Status

Provisional status may be granted to students who fall slightly below the criteria for degree status. Once admitted to this category, students are given an opportunity to demonstrate, by performance, their ability to succeed in graduate studies. Students may register for no more than three graduate courses (9 credits) while in the provisional category. Those who maintain a 3.0 GPA during the completion of the 9 credits are moved automatically to degree status. No courses may be repeated while a student is in provisional status. The minimum admission requirements for provisional status are a bachelor's degree from a regionally accredited college or university, an undergraduate grade-point average of at least 2.5 on a 4.0 system in the student's major area of study, submission of the official transcript from the bachelor's-degree-granting institution, and a personal statement. The UMUC Graduate School reserves the right to request additional transcripts.

Decision-Pending Status

The decision-pending classification is short term and is meant for students who have not completed the admission process described above.

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Students may enroll in one of the following graduate courses before UMUC has received the official college transcript from the bachelor's-degree-seeking institution: IMAN 601, ADMN 630, ADMN 631, or ADMN 625. Students must receive an admission decision prior to subsequent enrollments. The UMUC Graduate School reserves the right to request additional transcripts.

Certificate Program

A professional development certificate is available for students who are not interested in a full degree program but who desire a sequence of graduate courses leading to a certificate in International Management. The program comprises 18 semester hours of coursework and includes three core courses, IMAN 601 (recommended as the first course), IMAN 615, and IMAN 625; and three of the following courses: IMAN 620, IMAN 630, IMAN 635, IMAN 640, or IMAN 645. Students may not use transfer credit toward the certificate. All coursework must be completed within seven consecutive years.

Certificate Status

Certificate status is granted to students seeking a professional development certificate who meet the same criteria as degree-seeking students.

Area Studies Option

Upon approval of the program director and the dean, students who have language proficiency and experience in a particular region of the world may receive transfer credit for up to two relevant graduate courses taken at another university as substitutes for courses in the IMAN curriculum.

Three criteria must be met by the student petitioning to enter the Area Studies option: Working knowledge of a language relevant to the region or country in question, demonstrated commitment to the region (nationality, work experience, previous coursework, etc.), and relevance of the transferred courses to the IMAN curriculum (regional economics, trade, business, etc.). Other students interested in Area Studies should consider IMAN 661. See the description on this page.

Locations

Classes in the Master of International Management program are currently offered at College Park and the Shady Grove Center. Students should check the current *Graduate Schedule of Classes* to determine when courses will be offered at specific locations.

Core Courses

IMAN 601 3 credits Managing in a Competitive International Environment

A framework is developed for analyzing the competitive structure of industries, for ascertaining the direction of industry change, and for formulating strategy within an international context. Theories of competition and competitive strategy, and methodologies of strategy planning and analysis relevant to the major national and regional business environments, are examined. Organizational and functional issues are discussed, including transnational company structures, the role of marketing, finance, trade, technology innovation, and the public-private interface in the formulation of firm strategy.

Note: This course is strongly recommended as the first course for IMAN students.

ADMN 630 3 credits Financial Decision Making for Managers or

ADMN 631 3 credits Financial Management in Organizations

For a full description of these courses see page 26.

Note: Students in the International Finance track must take ADMN 631. Students may not enroll in both ADMN 630 and ADMN 631.

As of fall 1994, ADMN 630 replaced ADMN 603 as a requirement for IMAN students. (For International Finance track students, ADMN 603 is replaced by ADMN 631.) Students who have already taken ADMN 603 prior to that time are not affected.

IMAN 615 3 credits Foreign Investment and Strategic Alliances

An in-depth treatment of the more complex business strategies and transactions for conducting and expanding transnational business operations is offered. Tools of analysis include environmental scanning, stakeholder analysis, and methods for evaluating and managing a variety of strategies in an organizational and transactional context. The topics discussed include direct foreign investment, foreign subsidiary acquisition, technology transfer arrangements, licensing, franchising, joint ventures, and various types of strategic alliances and partnerships between companies based in different countries.

IMAN 625 3 credits International Trade and Trade Policy

The theory and conduct of international trade by transnational enterprises are explored. The effects of various multilateral trade agreements are analyzed. The evolution of the Bretton Woods system, the General Agreement on Tariffs and Trade (GATT), and the World Trade Organization (WTO), and the effects of these changes on international businesses are examined. National systems of trade laws and remedies are discussed, in addition to forms of trade and their documentation.

ADMN 625 3 credits Organizational Communication

For a full description of this course see page 26.

ADMN 635 3 credits Organizational Leadership

For a full description of this course see page 26.

IMAN 650 3 credits Managing Overseas Operations

This is the capstone course in international management. A wide range of management problems facing both large and mid-sized enterprises operating internationally is examined in depth. Special attention is paid to an integrative understanding of business functions and managerial control styles in strategy implementation, and to the financial evaluation of strategies and their impact on the organization and structure of international operations.

Prerequisites: Completion of all core and track courses.

End-of-Program Options

Management Project

IMAN 690 and IMAN 690M 3 credits
Students demonstrate their ability to structure and complete a major project that identifies and

resolves an important management or organizational issue. Students report the results of their efforts in written and oral form. The project may be developed in cooperation with students' current employers or with some organization of their choice, provided there is no conflict of interest. The project is conducted under the direction of an on-site supervisor in cooperation with a faculty advisor. Students have two semesters to complete the management project.

Prerequisites: Completion of all required and elective courses, including IMAN 650.

Two-Course Option 6 credits

Instead of the management project, students may take two additional courses from the approved list—one interdisciplinary course (3 credits) and one elective (3 credits). Prerequisites apply. The approved courses are as follows:

Elective/Depth Courses

IMAN 661 3 credits Area Studies: Business Strategies for Europe

Applying marketing and market entry analysis as well as assessing the policy environment, this course enables an in-depth examination of strategies for doing business in the European Union (EU) and, to some extent, adjacent markets in Eastern Europe. Topics include institutional and political infrastructure of the European Union; internal market rules governing the movement of goods, services, and capital; market access and trade issues; member state vs. EU laws and regulations; market and marketing diversity among member states and their Eastern European neighbors; the different faces of business culture; and the formulation of strategies for U.S. companies interested in entering and undertaking business operations in Europe.

Course sessions will be scheduled on eight Saturdays or online. Students are required to take part in and pay the cost of a 10-day study trip to Europe, which is integral to the coursework. Interested persons should contact the IMAN department chair or program director. Preference will be given to students who have completed all core and track courses. Students without knowledge of marketing will be admitted only by prior arrangement with the IMAN program director or associate director.

International Commerce Track

CSMN 601, TMAN 632 (replaces TMAN 665), TMAN 633 (replaces TMAN 650), TMAN 640, and IMAN 661

International Finance Track

IMAN 635, IMAN 640, and IMAN 661

International Marketing Track

IMAN 635, IMAN 645, and IMAN 661

In selecting an interdisciplinary course, students should contact the appropriate program or track director to assure they are capable of performing the coursework.

Interdisciplinary/Breadth Courses

ADMN 626, ADMN 628, ADMN 638, ADMN 655*, ADMN 662, ADMN 664, ADMN 665, CSMN 601, TLMN 602, TMAN 632, or TMAN 640.

**International finance track students only.*

International Commerce Track

The International Commerce track is designed for students interested in the broadest range of international management issues. The courses provide a framework for understanding how business operates competitively in both national and international legal and policy environments, and for formulating strategies that reflect the complexities of these business conditions. Courses cover both basic and international aspects of finance, marketing, law, and tax, and examine the relationship between public policy and competitiveness.

IMAN 630 3 credits
International Financial Management

The theory and management of financial systems in international enterprises are examined, including the dynamics of the business system, operating funds management, and the methods of trade finance such as export-import financing and terms of payment. Considered also are the international framework of the monetary system, foreign exchange markets and balance of payment issues, and the role of governments and multilateral banking institutions in national, regional, and international capital markets.

Note: It is strongly recommended that students take ADMN 630 or ADMN 631 before enrolling in this course.

IMAN 635 3 credits
The Public Sector in International Commerce

Major issues of national competitiveness are covered, including the measurement of competitiveness and the role of the public sector in shaping competitiveness. This course also examines various domestic issues that affect the global competitiveness of businesses, such as antitrust, intellectual property protection, health and environmental

policies, and nationalistic policies. The strategic conduct of government relations at the national, regional, and international levels is considered.

IMAN 640 3 credits
International Marketing Management

The fundamentals of marketing and its management in competitive global environments and diverse national economies are discussed. Major topics that are covered include demand analysis, product development, product pricing, marketing organization, foreign representation and distribution systems, promotion, advertising, and sales and service. Regulatory issues related to international marketing are reviewed.

IMAN 645 3 credits
The International Legal and Tax Environment

International business transactions in the context of public and private international law and tax systems are reviewed. Comparative national and regional (European Community) legal systems, and a variety of commercial and corporate matters such as contract law and the transactional environment of business, are covered. The impact of competing investment laws, national tax issues including the protection of intellectual property rights, and the resolution of disputes through international litigation, arbitration, and mediation are discussed.

International Finance Track

The International Finance track is intended for students seeking to exercise managerial responsibilities over the international financial functions of an organization. Financial concepts and methods, which are needed to improve understanding and to promote informed managerial decision making within the context of international transactions and institutions, are provided.

ADMN 639 3 credits
Multinational Financial Management
For a full description of this course see page 28.

IMAN 645 3 credits
The International Legal and Tax Environment

See full description of this course on this page.

Plus any two of the following three courses:

ADMN 632 3 credits
Financial Management of Current Operations
For a full description of this course see page 28.

ADMN 633 3 credits
Long-Term Financing of Organizations
For a full description of this course see page 28.

ADMN 634 3 credits
Financial Markets and Investments
For a full description of this course see page 28.

International Marketing Track

The International Marketing track offers students the opportunity to focus on the various marketing aspects of international management. The courses provide theories and skills that enable managers to analyze domestic and foreign markets and to formulate strategies to competitively position products, services, and programs. The courses also provide an understanding of the management of the marketing function and the integration of marketing policy with the unique demands of international pricing, payment, and financial issues.

IMAN 640 3 credits
International Marketing Management
See full description of this course on this page.

ADMN 687 3 credits
Market Segmentation and Penetration
For a full description of this course see page 31.

As of spring 1999, ADMN 687 replaced ADMN 685. Students who have taken ADMN 685 before that time will not be affected.

IMAN 630 3 credits
International Financial Management
See a full description of this course on this page.

IMAN 620 3 credits
International Marketing Research and Analysis
Applications of cross-cultural 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 are presented in this course. Methodologies and special topics related to the design and completion of marketing research projects are presented, including the survey, observational, and experimental methods used in assessing and segmenting markets. Special topics in data analysis that are especially useful for marketing research (e.g., focus groups, customer visits, conjoint analysis, and multidimensional scaling) are covered.

Master of Software Engineering

The Master of Software Engineering was developed to provide a foundation in technical concepts and design techniques as well as management and teamwork approaches. The mission of the program is to prepare students to engineer the development of software products and services for industry and government in a cost-effective manner. The emphasis of the program is on implementing software engineering projects within cost and schedule by applying proven and innovative practices that overcome the shortcomings of the current paradigm.

The program consists of eight core courses (24 credits), three elective courses (9 credits) and the capstone course (3 credits).

Degree Program

The Master of Software Engineering requires the completion of 12 courses for a total of 36 credits. This degree program consists of eight (3-credit) core courses, three (3-credit) electives, and one (3-credit) practical software engineering project.

Required Library Research Skills Course

To ensure students are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Admission Requirements

A student may be admitted in one of four classifications: degree seeking, provisional, certificate, or decision pending. The decision-pending classification is temporary while students await final approval of admission. Certificate status exists for students pursuing the professional development certificate. The admission requirements for each classification are explained in the following sections.

Degree Status

Degree status is granted to students who meet or exceed the following criteria: a bachelor's degree from a regionally accredited institution, an overall undergraduate GPA of 3.0 on a 4.0 scale, an undergraduate degree in computer science or engineering, a course in discrete math—for example, CMSC 150 or equivalent or CMIS 160 or equivalent, competence in using an imperative structured programming language (work experience may be

used), one year of experience in software design, an undergraduate degree in computer science, or equivalent, submission of the official transcript from the bachelor's-degree-granting institution and the transcript that notes the discrete math course, a personal statement describing work experience and current employment and discussing how participation in the master's program will assist in achieving future goals and aspirations; and two completed recommendation forms. The UMUC Graduate School reserves the right to request additional transcripts.

Provisional Status

Students may be admitted to provisional status if they have submitted the official transcript from the bachelor's-degree-granting institution, and (1) the previous academic record is borderline (e.g., 2.5 GPA); (2) prerequisite coursework is insufficient; (3) the applicant has majored in another field and has not yet clearly demonstrated abilities in the proposed new field; or (4) the applicant has completed the bachelor's degree but has not yet submitted official verification of the last semester's work and receipt of the degree. Once admitted to this category, students are given an opportunity to demonstrate, by performance, their ability to succeed in graduate studies. Students may register for no more than three graduate courses (9 credits) while in the provisional category. Those who maintain a 3.0 GPA during the completion of the 9 credits are moved automatically to degree status provided that other requirements have been satisfied. UMUC reserves the right to request additional transcripts.

Decision-Pending Classification

The decision-pending classification is short term and is meant for students who have not completed the admission process previously

described. Students may enroll in one of the following graduate courses before UMUC has received the official transcript from the bachelor's-degree-granting institution: ADMN 601, ADMN 625, or ADMN 635. Students must receive an admission decision prior to subsequent enrollments. The UMUC Graduate School reserves the right to request additional transcripts.

Certificate Program

A professional development certificate is available for students who are not interested in the full degree program but who desire a sequence of graduate courses leading to a certificate in Software Engineering. The program comprise 18 credits of coursework, which includes MSWE 601, MSWE 603, MSWE 607, MSWE 609, MSWE 615, and one elective. Students may not use transfer credits toward the certificate. All coursework must be completed within seven consecutive years.

Certificate Status

Certificate status is granted to students seeking a professional development certificate who meet the same criteria as degree-seeking students.

International Applicants

International applicants to the M.Sw.E. program must contact the office of Graduate Services for an application and information about the admissions process. (See page 10 for further information.)

Locations

Classes in the Master of Software Engineering program are currently offered at College Park and the University System of Maryland Shady Grove Center in Rockville, MD.

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Core Courses

MSWE 601 3 credits Issues in Software Engineering

This introductory course to the program covers basic concepts and practices within the field important to both the practitioner and the theorist, as the rate of change in software engineering technology continues to increase. It also examines current issues in systems engineering, software architectures, product assurance principles, and software project management, all described in terms of established software process improvement models. Various industry life-cycle models are presented, with examples of their use. Case studies may also be included.

MSWE 603 3 credits Systems Engineering

This course examines the systems engineering process with special emphasis on software engineering as a discipline within systems engineering. The course includes an overview of system theory and structures, elements of the system life cycle (including systems design and development), risk and trade-off analyses, modeling and simulation, and the tools needed to analyze and support the systems process.

Prerequisite: MSWE 601 or permission.

MSWE 635 3 credits Software Development

The purpose of this course is to provide a thorough understanding of the development life cycle as it applies to large software systems. The course discusses various approaches to determining if the system implementation is correct during the traditional waterfall model (system analysis, system design, system implementation, and system use and evaluation), spiral model, and rapid prototyping. An important aspect of this course is the integration of the principles of project management, engineering, and quality concepts to illustrate how the principles of prevention of defects may be applied across the development life cycle.

Prerequisite: MSWE 603 and TMAN 640 or permission.

MSWE 645 3 credits System and Software Standards and Requirements

Major models of software requirements and specifications (sequential and concurrent systems), existing software standards and practices, and formal methods of software development are examined. A comparative survey of various languages and methods serves to emphasize similarities and significant differences. Additional topics covered include writing system and software requirements, formal specification analysis, formal description reasoning,

models of “standard” paradigms, and translations of such models into formal notations.

Prerequisite: MSWE 601 or CSMN 601 or permission.

MSWE 646 3 credits Software Design

This course guides the student in the transition from programming-in-the-small to programming-in-the-large. Software development processes and the role of design as applied in those processes are discussed. Major design methods and available computer-aided software engineering (CASE) tools, the proper application of design methods, and techniques for estimating the magnitude of the development effort are reviewed. Strengths and weaknesses of the development methods are covered, along with traceability to requirements and code.

Prerequisite: MSWE 601 or CSMN 601 or permission.

MSWE 647 3 credits Software Verification and Validation

The evaluation of software for correctness, efficiency, performance, and reliability is addressed. Specific skills covered include program proving, code inspection, unit-level testing, and system-level analysis. The difficulty and cost of some types of analysis are examined in addition to the need for automation of tedious tasks. Problem-solving skills are stressed, especially in analysis of code. The textbook world is contrasted with the real world using case studies from the book and personal experiences. Industry attitudes toward reliability and performance are also discussed.

Prerequisite: MSWE 601 or CSMN 601 or permission.

MSWE 648 3 credits Software Maintenance

This course provides a guide for the transition from programming for the short term to programming for the long term. The role of creation and maintenance in the software development process as well as analysis and implementation of a software design are reviewed. The need for software maintenance and evolution, software maintenance process and performance issues, planning for extended software life, and effective mechanisms to control software change are additional topics of discussion.

Prerequisite: MSWE 601 or CSMN 601 or permission.

TMAN 640 3 credits Project Management

For a full description of this course see page 48.

Electives

Students are required to take three electives (9 credits) from the following range of technical and managerial offerings:

Technical Electives

CSMN 655 3 credits Information Risk Assessment and Security Management

For a full description of this course see page 35.

CSMN 656 3 credits Database Processing and Design

For a full description of this course see page 35.

CSMN 658 3 credits Software Reliability and Reusability

For a full description of this course see page 36.

MSWE 699 3 credits Advanced Topics in Software Engineering

This course covers advanced topics selected by the faculty from the literature of Software Engineering to suit the interests and background of students. It may be taken for repeated credit up to a maximum of 6 credits.

Prerequisite: MSWE 601 and permission.

Managerial Electives

ENGM 610 3 credits Engineering Economics and Financial Analysis

TLMN 610 3 credits Data-Communication Systems

For a full description of this course see page 51.

TLMN 650 3 credits Hardware and Software Acquisitions

For a full description of this course see page 52.

TMAN 614 3 credits Strategic Management of Technology and Innovation

For a full description of this course see page 47.

TMAN 633 3 credits Human Resources Issues in Technology-Based Organizations

For a full description of this course see page 47.



Capstone Course

MSWE 617

3 credits

Software Engineering Project

This course may be considered as a comprehensive examination covering the application of the tools, skills, and techniques the students have acquired in the course of their studies. This course provides experience in applying software-engineering techniques by giving the students an opportunity to produce software when working in teams under the schedule constraints commonly experienced in industry. The instructor will emulate the vagueness

shown by typical customers in describing requirements. The instructor serves as a guide and mentor, not as a traditional teacher. The students are expected to have acquired the knowledge of what to do and how to do it from the prerequisite classes. It is up to the students to form their own teams (organization) and schedule their work to meet the deadlines imposed by the contract (syllabus).

Prerequisites: all core courses and at least two electives; or permission.

Master of Science in Technology Management

Technology management is vitally important for both private-sector organizations, which must face the challenges associated with the fast pace of technological change, as well as the public sector, which has an integral and defining role in providing regulations and policy that will shape the future of U.S. technological competitiveness. This program encompasses all aspects of management associated with the identification, development, acquisition, and application of technologies for the production of goods and services.

The Technology Management program includes the basic program focusing on innovation and entrepreneurship, as well as specialty tracks in Biotechnology Systems Management and Technology Systems Management.

Degree Program

The degree program consists of four segments: required core courses, track courses, management electives, and a final management project (3 credits), or, in lieu of the management project, the two-course option.

Required Library Research Skills Course

To ensure students are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Admission Requirements

A student may be admitted in one of four classifications: degree seeking, provisional, certificate, or decision pending. The decision-pending classification is temporary while students await final approval of admission. Certificate status exists for students pursuing the professional development certificate.

Degree Status

Degree status is granted to students who meet or exceed the following criteria: a bachelor's degree from a regionally accredited university; an undergraduate grade-point average (GPA) of 3.0 on a 4.0 system; submission of the official transcript from the bachelor's-degree-granting institution; and a personal statement.

A student applying to the Master of Science in Technology Management program will need to supply transcripts listing the last 60 hours of undergraduate coursework. Should the degree-granting transcript not have ample credits posted, the student must submit the transcript from the institution attended prior to the bachelor's degree institution. UMUC reserves the right to request additional transcripts.

Note: Applicants educated in countries other than the United States and who are non-native speakers of English should refer to the section entitled International Applicants (page 10) for information about the TOEFL and TWE examinations.

Provisional Status

Provisional status may be granted to students who fall slightly below the criteria for degree status. Once admitted to this category, students are given an opportunity to demonstrate, by performance, their ability to succeed in graduate studies. Students may register for no more than three graduate courses (9 credits) while in the provisional category. Those who maintain a 3.0 GPA during the completion of the 9 credits are moved automatically to degree status. No courses may be repeated while the student is in provisional status. The minimum admission requirements for provisional status are a bachelor's degree from a regionally accredited university in social science, biological science, physical science, business administration, or engineering; an undergraduate grade-point average of at least 2.5 on a 4.0 system in the student's major area of study; submission of the official transcript from the bachelor's-degree-granting institution; and a personal statement. UMUC reserves the right to request additional transcripts.

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Decision-Pending Classification

Decision-pending classification is short term and is meant for students who have not completed the admission process as described above. Students may enroll in one of the following graduate courses before UMUC has received the official college transcript from the bachelor's-degree-granting institution: TMAN 611, TMAN 612, or TMAN 614. Students must receive an admission decision before subsequent enrollments. The UMUC Graduate School reserves the right to request additional transcripts.

Certificate Program

A certificate program is available for students who are not interested in the degree program but who desire a sequence of graduate courses leading to a certificate in Technology Management. The program comprises 21 semester hours of coursework, which includes the seven core courses (TMAN 611, TMAN 612, TMAN 613, TMAN 614, TMAN 632, TMAN 633, and TMAN 671). Students may not use transfer credits toward the certificate. All coursework must be completed within seven consecutive years.

Certificate Status

Certificate status is granted to students seeking a professional development certificate who meet the same criteria as degree-seeking students.

Locations

Classes in the M.S. in Technology Management program are currently offered at College Park, Fort Meade, the University System of Maryland

Shady Grove Center in Rockville, and Annapolis. Students should check the current *Graduate Schedule of Classes* to determine when courses will be offered at specific locations.

Basic Program Core Courses

TMAN 611 3 credits Principles of Technology Management

This course is an overview, introducing students to the key concepts in technology management and the role of technology managers in both private- and public-sector organizations. It provides an understanding of how organizational entities can be structured and managed to respond effectively to dynamic changes caused by technology and international competition. The key cycles in the development of technology are covered from a historical perspective, including their impacts on the economy, industrial sectors, and organizational strategy and survival. Management is examined from both a process and system perspective. The major technical, social, legal, and ethical issues in innovating and implementing technology are presented.

Note: This course replaces TMAN 601.

TMAN 612 3 credits Financial Management for Technology Managers

This course prepares students to analyze and manage financial information in technology-intensive organizations with rapid product/service cycles and high value-added intellectual property. Students are introduced to the preparation of a variety of financial analysis tools from simple balance sheets to activity-based costing. The basis of asset valuation is discussed, including capital and technological assets, intellectual property, and intangibles. Topics include economic concepts, financial markets, financial accounting, cost of capital, cost management, discounted cash flows, capital budgeting, product costing and pricing, and performance measurement.

Note: This course replaces ENGM 610 only in the TMAN program.

TMAN 613 3 credits Marketing Technology-Based Products and Services

The methods and principles of marketing new technology-based products and services are introduced with a focus on innovative strategies for bringing them to market. The issues of competitive strategy, pricing, customer service, market differentiation, and new product launches are presented. The strategic role of marketing as an integrated part of the product development process and its role in the overall strategic planning of the firm is discussed. Qualitative and quantitative market research techniques, including sampling and data collection procedures,

demand forecasting, and product research and test marketing are presented.

TMAN 614 3 credits Strategic Management of Technology and Innovation

Students apply strategic analysis techniques to business policy and organizational development. Emphasis is placed on linking technology policy with corporate strategy and identifying technology options appropriate for the business or organizational strategy being executed. Topical coverage includes historical perspectives on strategic technology planning, external and internal strategic analysis, technology forecasting, benchmarking, corporate intelligence, and implementation and control strategies.

Note: This course replaces TMAN 605.

TMAN 621 3 credits Systems Analysis and Operations Research

This course introduces students to the fundamentals of systems analysis and operations research. The purpose is to provide an understanding of the systems view of a product, service, or process to include a generic representation of its elements and dynamics. The skills, tools, and methodologies needed to quantitatively analyze and optimize systems and to make decisions as technology managers are provided. State-of-the-art analytical tools and quantitative methods, including computer-based solutions, are discussed. Topics covered include decision theory, linear programming, transportation problems, network analysis, game theory, reliability theory, cost estimating, and expert systems.

Note: This course replaces ENGM 615 in the TMAN program only.

TMAN 622 3 credits Systems Development, Acquisition, and Management

The concepts, processes, and techniques used by federal agencies in the development of complex systems are introduced. An overview is provided of the legal issues and the constraints of the organizational environment influencing the acquisition of systems. The focus is on the formulation of a systems strategy of acquisition that integrates factors such as competition, rights to data, make-or-buy decisions, source selection, standardization, and warranties/guarantees. Objectives and key activities are provided for each milestone during the development of a program.

Note: This course replaces TMAN 654.

TMAN 631 3 credits Operations Management

Concepts and methods of managing production and service operations for global competitiveness are introduced. The focus of the course is on the

cross-functional integration of design, manufacturing, and marketing systems. Students are taught management skills and techniques needed for effective operations management that blend the interests of customer, employee, and manager, along with those of the public, stockholders, and other stakeholders. A systems approach is used to cover topics such as design and control for customer satisfaction, and the translation of demand into orders and orders into outcomes. Topical coverage includes product strategy, demand forecasting, capacity planning, aggregate planning, inventory management and JIT (just-in-time), MRP (material requirements planning), facility location and layout, and use of state-of-the-art information technology. Emphasis is placed on computer-based techniques for solving problems.

TMAN 632 3 credits Organizational Performance Management

Organizations of all types are facing increasing pressures to improve organizational effectiveness. Organizations that succeed will be those that anticipate change and develop strategies in advance. This puts a premium on certain performance capabilities such as adaptability, flexibility, responsiveness, decisiveness, speed, quality, value, and customer satisfaction. Organizational effectiveness is defined as an attribute or characteristic of an organization that ensures that appropriate and best products and services are being produced and provided to customers under the most efficient and effective conditions. All aspects of an organization contribute to this. All elements are aligned toward a central goal and are focused on meeting that goal. There is consistency of purpose and the organization actively leverages resources and maximizes human and intellectual capital in achieving high levels of performance. This course brings together the most successful strategies and approaches for achieving a high-performing organization. These strategies and approaches are based on the latest research findings as well as those used by "world-class" organizations. The course covers all the key elements that contribute to high performance and organizational effectiveness. Illustrations and examples of organizations, in both the public and private sectors, that have successfully applied these strategies and approaches are provided throughout the course.

Note: This course replaces TMAN 665.

TMAN 633 3 credits Human Resource Issues in Technology-Based Organizations

This course presents issues, theories, and procedures associated with the effective management of human resources in technology-based organizations. Emphasis is placed on the integration of human resource planning with corporate strategic planning. The purpose of the course is to help each student appreciate the value of effective management of people in a variety of organizational settings, and to provide the methods to do

so. Topical issues include leadership requirements for managing innovative and creative people, structuring teams, management of conflict and change, communication techniques, feedback, and the processes involved in project management. A focus of the course is on group and team formation and group dynamics using applied exercises and case studies. The course also discusses career decisions within technical organizations, including the requirements for transition to management, dual career paths for scientific/technical personnel, performance incentives, and the manager's role in subordinate appraisal and development.

Note: This course replaces TMAN 650.

TMAN 671 3 credits Seminar in Technology and Innovation Management

This is the capstone course for the Technology Management program. The objective is to provide students with an integrative exercise that draws upon the fundamental materials and skills developed in the core courses. Students work in teams to develop a comprehensive business plan for a new venture, i.e., a new product or service. The start-up concept is developed through the stages of initial screening, market assessment, business analysis (preliminary and final plan), product development, testing, production, and market launch. The techniques of market research and planning, competitive analysis, return on investment, financing and budgeting, marketing, staffing and organizational design, quality management, and project planning are emphasized in the development of the new venture.

Prerequisites: Completion of 27 semester hours of graduate coursework.

Note: This course replaces TMAN 670.

Elective/Depth Courses

Students must choose one course from the following:

TMAN 640 3 credits Project Management

This course explores the theory and practice of how to manage projects. The fundamental elements of project management are stressed, including project planning, organizing, team building, and effective control mechanisms. The key management aspects and proven techniques that differentiate project management from other types of management are fully discussed. These topics include effective project management styles, critical factors for project success, organizational support systems that enhance projects, project authority, and ethics in project execution. Cost, schedule and technical planning, and control methods such as PERT, CPM, variance analysis, TPM, and risk analysis are stressed. Project management software is used for creating a typical project plan and tracking the project.

TMAN 645 3 credits Electronic Commerce

This course begins by formulating a definition of electronic commerce and linking it to strategic objectives. It then relates technological, political, economic, and market forces to internal electronic commerce (EC) capabilities such as management, production and services, marketing, finance, R&D, and technology. Special attention is given to changing relationships in the value chain among producers, distributors, and customers brought about by the exponential growth of networks—Internet, intranet and extranets—and the emergence of digital cash as the primary form of economic transactions. An EC strategy is developed which addresses major issues such as network security and pricing; reliability and integrity of information; intellectual property rights; and privacy and international standards.

The course is divided into modules. Assignments (individual and group) are carried out as part of an integrated semester project case study. The case study provides a means for exploring how forces combine to bring about changes in transaction mechanisms, the primary unit of a market economy, and the impact of these changes on the operation and structure of economic, social, and political institutions influencing the rate and character of EC adaptation.

Other Electives

Any ENVM course

or

ADMN 644 3 credits Decision Support and Expert Systems

For a complete description of this course see page 30.

CSMN 615 3 credits Hardware and Operating Systems

For a complete description of this course see page 35.

End-of-Program Option

TMAN 690 and TMAN 690M 3 credits Management Project

Students demonstrate their ability to structure and complete a major project that identifies and resolves an important management or organizational issue. Students report the results of their efforts in written and oral form. The project may be developed in cooperation with students' current employers or with some organization of their choice, provided there is no conflict of interest. The project is conducted under the direction of an on-site supervisor in cooperation with a faculty advisor. Students have two semesters to complete the management project.

Prerequisites: Completion of 30 semester hours of graduate coursework and TMAN 671.

Two-Course Option

Instead of the management project, students may take two additional courses from the approved list—one TMAN elective (3 credits) and one interdisciplinary course (3 credits). The approved courses are as follows:

Interdisciplinary/Breadth Courses

ADMN 625	Organizational Communication
ADMN 628	Contract Pricing and Negotiation
CSMN 636	Telecommunications and Connectivity
IMAN 640	International Marketing Management
IMAN 661	Area Studies: Business Strategies for Europe
TLMN 602	Telecommunications Industry: Structure and Environment

In selecting an interdisciplinary course, students should contact the appropriate program or track director to assure they are capable of performing the coursework.

Biotechnology Management Track

The Biotechnology Management track is designed to teach scientists, engineers, and other professionals in the emerging biotechnology fields skills in management and marketing that complement their technical skills and increase their likelihood of success in biotechnology ventures. The courses expose students to societal issues in biotechnology, commercialization approaches, and methodologies for evaluating, selecting, and managing biotechnology projects. Students take three required track courses and one elective.

Core Courses

Students must take the following courses: TMAN 611, TMAN 612, TMAN 614, TMAN 631, TMAN 633, and TMAN 671.

For a complete description of these courses see pages 47–48.

Track Courses

Students must take the following courses:

TMAN 640 3 credits Project Management

For a complete description of this course see this page.

BTMN 640 3 credits Societal Issues in Biotechnology

An overview of the early history, modern developments, and bioethical issues of biotechnology is provided. Managerial views of the commercialization of technology, legal issues, biohazards, and the evolution of biotechnology as a function of human interventions are presented. Stress is

on the need for public scrutiny and the role of governmental regulatory agencies in researching, developing, and commercializing biotechnology.

BTMN 641 3 credits
Commercializing Biotechnology in Early-Stage Ventures

This course focuses on 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. Approaches to marketing technology and developing joint ventures are emphasized. Advantages and disadvantages of forming international ventures are weighed. The importance of maintaining relations with external constituents is discussed, as is the need for managing public awareness.

BTMN 642 3 credits
Selection and Evaluation of Biotechnology Projects

This course applies the methodologies of technology forecasting, technology assessment, project management, and data auditing 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. Managing the safety aspects of biotechnology is stressed.

Note: Students are encouraged to take TMAN 640 Project Management before or concurrently with this course.

Elective/Depth Courses

Students must choose one of the following UMBC OR UMUC elective courses:

UMBC Courses

ENCH 660 3 credits
Regulatory Issues in Biotechnology

Provides a comprehensive coverage of all steps involved with the regulatory approval process for a biotechnology-derived product. Documentation preparation for IND, PLA, EL, preclinical safety data, clinical studies, facilities inspection. Scientific and regulatory principles involved.

ENCH 662 3 credits
Good Manufacturing Practices for Bioprocesses

This course covers in depth the development and implementation of good manufacturing practices (GMPs) in the biotech industry. Topics covered include building and facilities, equipment design, utilities, in-process controls, records, and adequate process validation.

ENCH 664 3 credits
Quality Control and Quality Assurance for Biotechnology Products

This course covers in depth the key issues associated with adequate quality control systems, assays, and stability for the novel biotechnology products. Topics covered include quality concepts, product release testing and specifications, in-process testing, product characterization, quality assurance documentation and audits, and vendor certification.

ENCH 666 3 credits
Biotechnology GMP Facility Design, Construction, and Validation

Presents an in-depth discussion of the engineering design of a biotech facility under GMP compliance. Topics covered include bulk plant design, process equipment design, utilities, instrumentation, controls, and computerization. Facility and software validation are addressed as well.

UMUC Courses

CSMN 615 3 credits
Hardware and Operating Systems

For a complete description of this course see page 35.

TMAN 613 3 credits
Marketing Technology-Based Products and Services

For a complete description of this course see page 47.

TMAN 632 3 credits
Organizational Performance Management

For a complete description of this course see page 47.

TMAN 645 3 credits
Electronic Commerce

For a complete description of this course see page 48.

End-of-Program Option

See requirements on page 48.

Technology Systems Management Track

The Technology Systems Management track is intended for students interested in managing systems acquisition and development in technical enterprises. The courses include methods and applications for creatively designing, developing, integrating, and producing a final product; the tools and skills of project management; and systems acquisition approaches and methodologies in both the public and private sectors.

Core Courses (15 credits)

Students must take the following courses: TMAN 611, TMAN 612, TMAN 614, TMAN 631, and TMAN 671.

For a complete description of these courses see pp. 47–48.

Track Courses (12 credits)

Students must take the following courses:

TMAN 621 3 credits
Systems Analysis and Operations Research

For a complete description of this course see page 47.

TMAN 622 3 credits
Systems Development, Acquisition, and Management

For a complete description of this course see page 47.

TMAN 640 3 credits
Project Management

For a complete description of this course see page 48.

TMAN 623 3 credits
Systems Life-Cycle Analysis

This course examines the life-cycle phases of a system from conception and preliminary design to detail design and development, production, operation, maintenance, training, logistics, and disposal. Emphasis is placed on understanding and analyzing the key skills needed to manage the total life cycle of a technical program. Since early decisions in the systems life cycle greatly influence costs, a focus of the course is on early acquisition skills. These skill areas include requirement analysis, early feasibility studies, functional specifications, proposal preparation and evaluation criteria, and contract evaluation and award. After these early stages, monitoring, task evaluation and control, and corrective actions are discussed. System use, technology insertion/improvement, phaseout, and disposal complete the life cycle. Current topics in concurrent engineering are also discussed including use of integrated product/process development (IPPD), integrated project teams (IPT), risk analysis, measures of effectiveness (MOE), and design-to-cost integration.

Electives/Depth Courses

Students must choose two of the following elective courses: ADMN 628, ADMN 660, ADMN 629, TMAN 632, TMAN 645, CSMN 615, CSMN 636, TLMN 602, or TLMN 650.

For a complete description of these courses see pages 32, 35, 36, 47, 48, 51, and 52.

End-of-Program Option

See requirements on page 48.

Master of Science in Telecommunications Management

The Master of Science in Telecommunications Management is designed to provide the technical knowledge and management skills needed to plan, acquire, operate, and evaluate telecommunication systems. The program emphasizes critical management concepts, such as the structure and environment of the telecommunications industry, strategic planning, financial management, and quality improvement. In addition, the program offers instruction specific to telecommunications in the following areas: Data-communication systems, computer networks, common-carrier networks, satellite systems, electronic mass media, wireless telecommunication systems, management support systems, the complex process of hardware and software acquisition from the standpoint of both the purchaser and the vendor, and the application of these topics to practical issues of telecommunications management. All students are required to have, or have ready access to, a computer and a modem capable of supporting software as required in their degree program.

Degree Program

The Master of Science in Telecommunications Management requires the completion of 36 semester hours. This degree program consists of five (3-credit) core courses, three (3-credit) courses, three (3-credit) required systems courses, and one (3-credit) management project, or, in lieu of the project, the two-course option.

Required Library Research Skills Course

To ensure students are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

National Defense University

Students who have completed the Advanced Management Program or the Chief Information Officer Certificate Program at the National Defense University Information Resources Management College (IRMC) may transfer 15 credits in partial satisfaction of the Master of Science in Telecommunications Management degree (subject to Graduate School time limits of seven consecutive years) to replace TLMN 602, TMAN 614, ENGM 610, TMAN 632, and one elective course. Students must apply and meet the established admission criteria for the program.

Interested students should call either an IRMC or a Graduate School advisor.

Admission Requirements

A student may be admitted in one of four classifications: degree, provisional, certificate, or decision pending. The decision-pending classification is temporary while students await final approval of admission. Certificate status exists for students pursuing the professional development certificate. Admission requirements for each classification are explained below.

Degree Status

Degree status is granted to students who meet or exceed the following criteria: A bachelor's degree, preferably in a technical field, from a regionally accredited university or college; an overall undergraduate grade-point average (GPA) of at least 3.0 on a 4.0 system; at least one undergraduate course in statistics and one semester of calculus (i.e., Calculus I) completed with a minimum grade of "C" in each course or equivalent proficiency demonstrated by means of a College Level Examination Program (CLEP) or Defense Activity for Non-Traditional Educational Support (DANTES) test; submission of the official transcript from the bachelor's-degree-granting institution; and a personal statement. Students must also describe their knowledge of information technology. UMUC reserves the right to request additional transcripts.

Note: Applicants educated in countries other than the United States and who are non-native speakers of English should refer to the section entitled

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International Applicants (page 10) for information about the TOEFL and TWE examinations.

Provisional Status

Provisional status may be granted to students who fall slightly below the criteria for degree status. Once admitted to this category, students are given an opportunity to demonstrate, by performance, their ability to succeed in graduate studies. Students may register for no more than three graduate courses (9 credits) while in the provisional category. Those who maintain a 3.0 GPA during the completion of the 9 credits and remedy any other unmet admission requirements are moved automatically to degree status. No courses may be repeated while in provisional status. The minimum admission requirements for provisional status are a bachelor's degree from a regionally accredited university or college, an undergraduate grade-point average (GPA) of at least 2.5 on a 4.0 system in the student's major area of study, submission of the official transcript from the bachelor's degree-granting institution, and a personal statement. UMUC reserves the right to request additional transcripts.

Decision-Pending Classification

The decision-pending classification is short-term and is meant for students who have not completed the admission process described above. Students may enroll in one of the following graduate courses before UMUC has received the official transcript from the bachelor's-degree-granting institution: TLMN 602, TMAN 632, or ENGM 610. Students must receive an admission decision

prior to subsequent enrollments. The UMUC Graduate School reserves the right to request additional transcripts.

Certificate Program

A professional development certificate is available for students who are not interested in the full degree program but who desire a sequence of graduate courses leading to a certificate in Telecommunications Management. The program comprises 21 credits and includes five required courses (TMAN 614, ENGM 610, TLMN 602, TLMN 641, and TLMN 650) and two courses from the following elective choices: TLMN 610, TLMN 620, TLMN 625, TLMN 630, TLMN 635, TLMN 645, or TLMN 655. Students may not use transfer credits toward the certificate. All course requirements for the full degree or certificate must be completed within seven consecutive years.

Note: Students who have already completed TLMN 640 may take TLMN 641 as a technical elective.

Certificate Status

Certificate status is granted to students seeking a professional development certificate who meet the same criteria as degree-seeking students.

Locations

Courses in the M.S. in Telecommunications Management program are currently offered at College Park and the University System of Maryland Shady Grove Center in Rockville. Students should check the current *Graduate Schedule of Classes* to determine when courses will be offered at specific locations.

Required Core Courses

TLMN 602 3 credits
Telecommunications Industry: Structure and Environment

Major technological, legal, and regulatory developments (national and international) are studied as they have molded the structure of the current telecommunications industry. The course traces the progression of 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.

TMAN 614 3 credits
Strategic Management of Technology and Innovation

For a full description of this course see page 47.

ENGM 610 3 credits
Engineering Economics and Financial Analysis

or
TMAN 612 3 credits
Financial Management for Technology Managers

For a full description of this course see page 47.

TMAN 632 3 credits
Management of Productivity and Quality in Technological Operations

For a full description of this course see page 47.

TLMN 660 3 credits
Telecommunications Management Issues

This course is the capstone course of the program. It integrates the material presented in all other courses, covering techniques for the management of telecommunication systems including diverse technologies, hardware and software facilities, management support systems, technological change, strategic planning, financial analysis, and the types of organizational structures suited to various user needs. The different roles of organizational entities such as R&D, production, marketing, human resources, and operations are considered. Students analyze and report on current and future problems and issues related to the telecommunications industry as a whole and to the management of telecommunications within the enterprise. Students assess the impact of technological changes in telecommunication services and applications on effective organizational cultures and on potential social change.

Prerequisites: Completion of 27 credits of graduate coursework.

Technological Specialization Courses

Students must select three of the following six courses:

TLMN 610 3 credits
Data-Communications Systems

This course covers the technology underlying data-communications systems, such as transmission media, modulation and demodulation, multiplexing, packet switching, hardware, software, and network operations. Topics included are fiber optics, the Integrated Services Digital Network (ISDN), T-1 and T-3 multiplexers, the open systems interconnection (OSI) model, and integrated voice-data equipment. Methods for determining system requirements as well as approaches to system design are covered in light of current data-communications equipment, applications, and services and their future trends.

Students must complete a laboratory project using the telecommunications laboratory.

Prerequisites: Statistics and Calculus I, or equivalent.

TLMN 620 3 credits
Computer Networking Systems

This course examines the design, implementation, and management of distributed computing systems. It includes commonly employed local-area network (LAN) and metropolitan-area network (MAN) technologies such as Ethernet and token ring, networking technologies such as Frame Relay and Transmission Control Protocol/Internet Protocol (TCP/IP), network architectures including the Internet, network designs in multiple-location environments, and protocols. Traffic engineering techniques in networks are analyzed and evaluated. Various distributed computing architectures and emerging trends in the supporting technologies are central to course content. Topical discussions and case studies reinforce and synthesize new-found principles and provide the means for practical application of abstract concepts. Each session includes evaluation methodologies relevant to strategic and economic planning.

Prerequisites: Statistics and Calculus I, or equivalent.

TLMN 625 3 credits
Common-Carrier Digital Network Systems

This course discusses transmission and switching technology for circuit networks, packet networks including the Internet, and the Integrated Services Digital Network (ISDN). Topics include Common-Channel Interoffice Signaling (CCIS), Signaling System 7 (SS7), asynchronous transfer mode (ATM), and both digital time-division and store-and-forward switching. Cellular mobile telephony, time-division and code-division multiplexing, personal-communications services, private branch exchanges (PBX), and distributed switching systems are covered as well. Audio and video compression techniques are also studied.

Prerequisites: Statistics and Calculus I, or equivalent.

TLMN 630 3 credits
Satellite Communications Systems

This course analyzes issues surrounding the current and future design and use of satellite communications systems. Topics include such satellite system characteristics 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.

Prerequisites: Statistics and Calculus I, or equivalent.

TLMN 635 **3 credits**
Electronic Mass Media

This course examines the electronic mass media—radio, television broadcasting, cable television, and the developing Internet. Its purpose is to analyze the forces altering the structure of these formerly distinct industries. The underlying technology is presented, as are recent advances, such as high-definition television and direct broadcast satellites, that stimulate industry change. Industry organization, operations, and economics, including noncommercial broadcasting, are described. Students trace how programming of entertainment, news, and sports affects marketing, media success, and society itself. The technical, economic, and social needs for regulation are established, along with associated controversies over speech, ownership, and access. Students integrate course material to interpret current issues, such as industry deregulation, overlapping telephone and cable television services, and consolidation of the content and delivery functions.

TLMN 645 **3 credits**
Wireless Telecommunications Systems

This course reviews wireless telecommunications systems from microcell to global infrastructures. Its purpose is to teach the technology, applications, and limitations of these systems, which have become an essential element of the world information infrastructure. Technology topics covered include cellular communication principles, coding, antenna and propagation effects, channel access schemes, traffic engineering, and wireless network design. The course places emphasis on terrestrial systems such as cellular, PCS, dispatch, wireless local-area networks (LANs), and wireless data systems. Also covered are the topic areas of market trends, regulations, and standards. Students assess the role of wireless systems in comparison with other telecommunications alternatives available to organizations.

Prerequisites: Statistics and Calculus I, or equivalent.

Required Systems Courses

TLMN 641 **3 credits**
Network Management

This course in network management studies those techniques that network managers can utilize to maintain and improve the performance

of a telecommunications network. A network management system is defined and explained, including a description of how software package programs can monitor real-time performance of a network to identify problems. The emphasis of the course is placed on the five tasks traditionally involved with network management (fault management, configuration management, performance management, security management, and accounting management). A review is made of examples of current specific network management products. Also covered is how the performance data gathered from the monitoring can be archived and used later as an input when decisions are made on changes in the network architecture. Additionally, network design is studied for the development of a new network architecture when only user requirements are known.

Note: Students who have already completed TLMN 640 may take TLMN 641 as a technological specialization course.

TLMN 650 **3 credits**
Hardware and Software Acquisition

The process involved in acquisition of telecommunication systems is analyzed. Topics include, but are not limited to, consideration of the approaches to determining end-user requirements, definitions of the system, statement of design requirements, development of a request for proposal (RFP), evaluation of possible vendors, evaluation of proposed equipment and services (e.g., maintenance and other support), contract negotiations, and eventual system acquisition. Also discussed are project management concepts used to manage the procurement process.

TLMN 655 **3 credits**
Systems Integration for Telecommunications Managers

This course delineates methods by which a telecommunication system can be put together to serve the needs of an organization. Its purpose is to prescribe a systematic process for structuring, selecting, acquiring, integrating, and managing telecommunication resources for an enterprise. The systems development life-cycle is employed as it applies to telecommunication systems. Various approaches to the life-cycle process are set forth, including the associated planning techniques, project management processes, and tools currently available to support these activities. Students trace how the project manager should operate under constraints of time, cost, performance, competition, and regulation. Students work on a group project, laboratory exercises, and extended case studies.

End-of-Program Option

Management Project

TLMN 690 (3 credits) and TLMN 690M (1 credit)

Telecommunications Management Project

Students demonstrate their ability to structure and complete a major project that identifies and resolves an important management or organizational issue. Students report the results of their efforts in written and oral form. The project may be developed in cooperation with students' current employers or with some organization of their choice, provided there is no conflict of interest. The project is conducted under the direction of an on-site supervisor in cooperation with a faculty advisor. Students have 2 semesters to complete the management project.

Prerequisites: Completion of 27 credits of graduate coursework and TLMN 660.

Two-Course Option

Instead of the management project, students may take two additional courses from the approved list—one interdisciplinary course (3 credits) and one elective (3 credits). Prerequisites apply. The approved courses are as follows:

Interdisciplinary/Breadth Courses

ADMN 625 3 credits

Organizational Communication

IMAN 601 3 credits

Managing in a Competitive International Environment

IMAN 661 3 credits

Area Studies: Business Strategies in Europe

TMAN 633 3 credits

Human Resource Issues in Technology-Based Organizations

In selecting an interdisciplinary course, students should contact the appropriate program or track director to assure they are capable of performing the coursework.

Elective/Depth Courses

Students should select CSMN 601, CSMN 615, CSMN 655, or any TLMN course not yet taken.

Executive Master of Business Administration

The Executive Master of Business Administration is a 42-credit graduate degree in a format tailored to busy professionals. This accelerated 21-month program enables career minded individuals with at least five years of management experience to make full use of their management skills while meeting degree requirements. Special features of the Executive Master of Business Administration program include an integrated curriculum focusing on one subject at a time, a distinctive closing strategy project with a corporate sponsor, exceptional guest speakers and lecturers throughout the program, and an international trip.

Composition of the Executive Class

Each class has approximately 25–30 participants who progress through the program as a group. The professional backgrounds of the class members is vital to the learning experience and is further enhanced through a variety of teaching methods. In addition, group participation and interaction over the course of the seminars is designed to contribute significantly to a broader understanding of organizational issues.

Admission Requirements

Participants are selected on the basis of the following criteria: a minimum of five years of management experience, a current position as a mid- or senior-level manager, a bachelor's degree from a regionally accredited university or college, and a 3.0 overall grade-point average (GPA) on a 4.0 system for degree-seeking participants or at least a 2.5 GPA in the major area of study for provisional participants. In addition, candidates must submit a personal statement of goals and objectives, two letters of reference, and an official transcript from the bachelor's degree-granting institution. Qualified candidates will have a personal interview with the program director. All participants must have access to a computer and the internet, and a working knowledge of software programs as described on page 18. UMUC reserves the right to request additional transcripts.

Required Library Research Skills Course

To ensure participants are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Application

A complete application consists of an application form; the official transcript from the bachelor's degree-granting institution; a personal statement that indicates experience, current employment, and goals that may be fulfilled through participation in the program; two letters of reference; and the application fee.

Fees

The fees below were in effect at the time of publication and are subject to change.

Application fee	\$50
Tuition*	\$4,650 per seminar
*Includes text books and fees. Includes international trip, except for airfare.	

Tuition is payable before the start of each seminar.

A deposit of 10 percent (\$465) is required after applications are accepted to reserve a place in the class. The balance of tuition (\$4,185) is due before the start of Seminar I (XMBA 601).

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Coordinator

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Neither tuition remission for University System of Maryland employees nor tuition remission under the Golden ID program may be used for the Executive Master of Business Administration program.

Location

Face-to-face class sessions in the XMBA program will be held in Northern Virginia. Further information on this program is available from the Graduate School at 301-985-4617.

Format

The Executive Master of Business Administration is an accelerated 21-month program using the seminar format. Instruction includes lectures, case studies, structured discussions, guest speakers, videos, computer exercises, written projects, and oral presentations. The classes are held every other Saturday from 8:30 a.m. to 5 p.m. and are supplemented with UMUC's online (Web-based) instruction to provide maximum flexibility and convenience.

The program consists of seven seminars. Each seminar includes examinations, papers, and/or presentations. The end-of-program project in seminar 7 is the capstone learning experience that provides participants with a unique opportunity to plan and complete a strategic or operational business plan.

Seminar I

XMBA 601 6 credits

Overview of Management Theory, Strategic Thinking, and Global Management

This seminar introduces the concepts and theories that are essential building blocks of management thinking. Topics covered are systems thinking, the competitive structure of industry, technology trends, the future of organizations, and global challenges. Participants will have an opportunity for leadership assessments and feedback on presentation style and organizational quality.

Seminar II

XMBA 602 6 credits

Organizational Leadership, Management of Human Resources, and Business Ethics

This seminar addresses issues that confront managers working with diverse populations in a period of rapid technological change. The focus is on managing human resources through organizational change, including understanding and affecting organizational cultures and establishing and maintaining an ethical climate. It introduces strategies and methods for aligning individual interests and organizational needs in order to reach organizational goals. Participants will evaluate how individual, group, organizational and societal outcomes are affected by the nature of work, and the perceived value and meaning of work. Through self assessment instruments, case analyses, exercises, simulations and discussions, participants will analyze and practice communication skills and decisions that motivate and effectively organize individuals and groups.

Seminar III

XMBA 603 6 credits

Marketing, Entrepreneurship, and New Product Development

This seminar focuses on business development strategies from the perspective of customer needs

and preferences. It introduces market research approaches, product and service design processes and life cycles, and sources of venture capital. Through workshops, team projects, and case studies, participants will develop effective marketing programs that recognize the increasing importance of electronic commerce as a distribution channel.

Seminar IV

XMBA 604 6 credits

Technology and Operations Management

This seminar focuses on the latest information technologies and operations management techniques that enable an organization to operate around the world and around the clock. It introduces tools that managers use to measure operational efficiency and effectiveness, including statistical process control, decision trees, forecasting techniques, expert systems and organizational benchmarking. Participants will practice effective project management techniques important to introducing new products and analyzing and improving an organization's processes.

Seminar V

XMBA 605 6 credits

Financial Systems and Management Accounting

This seminar focuses on economic decision making and the techniques and tools managers use to analyze the financial performance of their organizations. Performance measurement techniques include economic value added (EVA), the balanced scorecard, open-book management, and activity based costing. The theory of constraints is introduced to analyze the value an organization provides to the customer. Other tools are used to value intellectual property and whole businesses for purposes of joint ventures, mergers or acquisitions. In assessing the broader economic environment of an organization, participants will analyze the changing global economy, including the evolution of financial markets in response to rapidly expanding worldwide investment opportunities.

Seminar VI

XMBA 606 6 credits

International Business, Trade, and Business Law

This seminar provides insight into how various strategic facets must be managed in the global context of trading and regulatory systems and the growing concerns about national competitive advantage. Participants will address the impact on corporate decision making of laws, regulatory structures and public policies at the local, state, national and international levels. In addressing national competitive advantage, participants will consider the impact of technology innovation, international trade, and business and antitrust laws on business organizations.

Seminar VII

XMBA 607 6 credits

Strategy and Capstone Project

In this seminar, participants are teamed with sponsoring organizations to develop a strategic action plan that integrates management techniques and methodologies covered in the previous seminars. Through their focus on strategic models, strategy formulation and implementation, organizational assessment and the creation of business plans, participants deepen their insight into strategic thinking and practical application. Working in teams, participants develop business plans for their sponsoring organizations that may include a new market entry strategy, a product development project, or an organizational assessment with appropriate change strategy.

Executive Master of Science in Management

The Executive Master of Science in Management is a 36-credit general management program designed to increase the knowledge, skills, and effectiveness of mid-level and senior managers. It provides in-depth treatment of such topics as organizational communication, leadership, globalization, financial management, strategy development and implementation, change management, information systems, decision making, and other vital topics. Candidates must have at least five years of management/business experience and commit to an extensive part-time study schedule over an 18-month period. Classes are scheduled on Saturdays to accommodate busy professional work schedules.

Composition of the Executive Class

Each class has approximately 25 participants who progress through the program as a group. The professional backgrounds of the class members is vital to the learning experience and is further enhanced through a variety of teaching methods. In addition, group participation and interaction over the course of the seminars is designed to contribute significantly to a broader understanding of organizational issues.

Admission Requirements

Participants are selected on the basis of the following criteria: a minimum of five years of management experience, a current position as a mid- or senior-level manager, a bachelor's degree from a regionally accredited university or college, and a 3.0 overall grade-point average (GPA) on a 4.0 system for degree-seeking participants or at least a 2.5 GPA in the major area of study for provisional participants. In addition, candidates must have a personal statement of goals and objectives, an official transcript from the bachelor's degree-granting institution, a personal interview with the program director, access to a computer and the internet, and a working knowledge of software programs as described on page 18. UMUC reserves the right to request additional transcripts.

Required Library Research Skills Course

To ensure participants are well prepared to take advantage of modern library and information

resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Application

A complete application consists of an application form; the official transcript from the bachelor's degree-granting institution; a personal statement that indicates experience, current employment, and goals that may be fulfilled through participation in the program; and the application fee.

Fees

The fees below were in effect at the time of publication and are subject to change.

Application fee	\$50
Tuition*	\$19,800

**Includes the cost of tuition, books, and instructional materials.*

Tuition is payable on the following schedule:

\$4,950 prior to Seminar I
\$4,950 prior to Seminar II
\$4,950 prior to Seminar III
\$4,950 prior to Seminar IV

A deposit of 10 percent (\$495) is required after applications are accepted to reserve a place in the class. The balance of tuition (\$4,455) is due before the start of Seminar I.

Neither tuition remission for University System of Maryland employees nor tuition remission under the Golden ID program may be used for

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the Executive Master of Science in Management program.

Location

Classes are held at various locations, including the UMUC Inn and Conference Center in College Park, Maryland. The center, which houses modern classrooms and conference rooms, computer laboratories, and dining and lodging rooms, was specifically designed for continuing professional education.

Further information on this program is available from the Graduate School at 301-985-4617.

Format

The Executive Master of Science in Management is an accelerated 18-month program using the seminar format. Instruction includes lectures, case studies, structured discussions, guest speakers, videos, computer exercises, written projects, and oral presentations. The seminars are held from 8:30 a.m. to 5 p.m. on Saturdays. Approximately 3 hours of Web-based instruction are also provided.

The program consists of four seminars. Each seminar includes examinations, papers, and/or presentations. The end-of-program project is the capstone learning experience that provides participants with a unique opportunity to plan and complete an industry and organizational analysis and to develop sound recommendations for change.

Seminar I

ADMN 691

9 credits

Contemporary Methods of Organizational Inquiry and Essential Management Skills Development

This seminar incorporates a variety of topics designed to provide participants with essential skills in analysis, strategic and operational planning, management, research, and interpersonal relations. The philosophy-of-science component of this seminar enables participants to recognize the theoretical imperatives that shape and influence management actions. The nature-of-organizations module presents an overview of contemporary issues and organizational theories affecting organizational technology, change, growth, ethics, structure, and globalization efforts. The team-building portion of the module enhances participants' self-awareness that will benefit them in the completion of the graduate program and in their work settings. The remainder of the seminar develops participants' expertise in the use and application of information management systems and research methods. The overall content prepares participants to complete the remaining seminars and end-of-program project, while developing skills essential to effective functioning in a complex and changing environment.

Seminar II

ADMN 692

9 credits

Managing in the Strategic Environment

In large measure, an organization's success is determined by its ability to respond to driving forces in the organization's internal and external environments. In this seminar, participants examine these forces and develop appropriate strategic responses based upon their assessment of critical

factors in the organization's environments. This seminar builds upon the organizational context and general management themes of Seminar I. The seminar begins with an introduction to relevant economic, accounting, and systemic principles, followed by modules in which participants solve problems and cases dealing with financial, marketing, and general organizational strategy, with an emphasis on the interrelationship of issues within these areas.

Seminar III

ADMN 693

9 credits

Managing the Internal Environment

An organization's ability to remain proactive while responding to continual change in its environment depends, in large part, on its ability to effectively engage and manage its internal resources. This seminar builds upon the general management themes of Seminar I and the strategy development/external environment themes of Seminar II. Several modules address issues that confront managers working with diverse populations in a technological age: organizational behavior, communications, interpersonal relations and cross-cultural challenges; leadership, including managing change, understanding organizational culture, and establishing an ethical climate; domestic and international approaches to conflict management and negotiation; legal issues in the business environment; current human resource developments; and technology management. Case studies, self-assessment instruments, theoretical analyses, simulations, and computer applications provide participants with the necessary critical thinking and practical

tools for successfully managing the challenges of the internal environment.

Seminar IV

ADMN 694

9 credits

The Capstone Experience and Integrative Project

In the capstone seminar, the applied behavioral aspects and the impact of the continuous changes affecting post-industrialized society are linked to decision making, a key organizational function. Various models of decision making, problem solving, and creativity are related to effective, practical, and applied decision making in organizations. This seminar also explores executive leadership, corporate communications, learning organizations, visioning, strategic thinking, and the dynamics of entrepreneurship. An in-depth case analysis, complete with specific operating plans for the product/service, concludes the seminar.



Executive Certificate in International Management

Designed for those with management or business degrees and/or extensive business experience, the Graduate Certificate in International Management prepares managers for the challenges of global business competition. The focus is on strategic issues of international management, including theories of global competition and competitive strategy, and methodologies of strategy planning and analysis. Organizational and functional issues are introduced, including transnational company structures, the role of marketing, finance, trade, technology innovation, and the public-private interface in the formulation of firm strategy in a global environment. The certificate comprises 15 graduate credits through three executive seminars and a one-week international study trip. Courses are delivered through a combination of face-to-face Saturday seminars and on-line study.

Composition of the Executive Class

Each class is comprised of approximately 25 highly qualified participants who progress through the program as a group. Each individual's business and managerial experience is vital to the learning experience, which is further enhanced through a variety of teaching methods. Participants are expected to actively participate, and group interaction over the course of the seminars is designed to significantly contribute to a broader understanding of international business and management issues. Classes are held online and on Saturdays to accommodate professional work schedules.

Admission Requirements

Participants are selected on the basis of the following criteria: a minimum of five years of management experience, a current position as a mid- or senior-level manager, a bachelor's degree from a regionally accredited university or college, and a 3.0 overall grade-point average (GPA) on a 4.0 system for degree-seeking participants or at least a 2.5 GPA in the major area of study for provisional participants. In addition, candidates must submit a personal statement of goals and objectives, and an official transcript from the bachelor's degree-granting institution, a personal interview with the program director, access to a computer and modem, and a working knowledge of software programs as described on page 18. UMUC reserves the right to request additional transcripts.

Required Library Research Skills Course

To ensure participants are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Application

A complete application consists of an application form; the official transcript from the bachelor's degree-granting institution; a personal statement that indicates experience, current employment, and goals that may be fulfilled through participation in the program; and the application fee.

Fees

The fees below were in effect at the time of publication and are subject to change.

Application fee	\$50
Tuition*	\$13,150

**Includes the cost of tuition, books, instructional materials, and the trip abroad, excluding transportation.*

Tuition is payable in the following manner:

\$3,850	prior to Seminar I
\$4,650	prior to Seminar II
\$4,650	prior to Seminar III

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A deposit of 10 percent (\$385) is required after applications are accepted to reserve a place in the class. The balance of the tuition (\$3,465) is due before the start of Seminar I.

Neither tuition remission for University System of Maryland employees nor tuition remission under the Golden ID program may be used for the Executive Graduate Certificate in International Management.

Location

Except for the one-week trip abroad, on-site classes are held in the Greater Washington area. Further information is available from the Graduate School at 301-985-4617.

Format

The International Certificate is an accelerated 8-month program delivered in three seminars and a one-week international study trip. Instruction is delivered partly on-line and partly in face to face seminars.

Each seminar includes examinations, papers, and presentations. The strategy project is the capstone learning experience, which provides participants with a unique opportunity to work with a sponsoring company on an international business issue affecting that company and to develop recommendations to address the issues. Participants work in teams on this project and throughout the course of the program.

Seminar I

XMAN 601

3 credits

Managing in a Competitive International Environment

This seminar develops a framework for analyzing the competitive structure of industries, for ascertaining the direction of industry change, and for formulating strategy within an international context. It examines theories of competition and competitive strategy, and methodologies of strategy planning and analysis relevant to the major national and regional business environments.

Organizational and functional analysis includes the role of marketing, finance, trade, technology innovation, and the public-private interface in the formulation of firm strategy.

Seminar II

XMBA 606

6 credits

International Business, Trade and Environment

This seminar provides insight into how various strategic facets must be managed in the global context of trading and regulatory systems and the growing concerns about national competitive advantage. Participants will address the impact on corporate decision making of laws, regulatory structures and public policies at the local, state, national and international levels. In addressing national competitive advantage, participants will consider the impact of technology innovation, international trade, and business and antitrust laws on business organizations.

Seminar III

XMBA 607

6 credits

Strategy and Sponsored Project

In this seminar, participants are teamed with sponsoring organizations to develop a strategic action plan that integrates management techniques and methodologies covered in the previous seminars. Through their focus on strategic models, strategy formulation and implementation, organizational assessment and the creation of business plans, participants deepen their insight into strategic thinking and practical application. Working in teams, participants develop business plans for their sponsoring organizations that may include a new market entry strategy, a product development project, or an organizational assessment with appropriate change strategy.

Executive Master of Science in Technology Management

Technology management encompasses all aspects of management associated with the identification, development, acquisition, and application of technologies for the production of goods and services. Such management is vital to both private-sector organizations, which must face the challenges associated with the fast pace of technological change, and the public sector, which has an integral and defining role in providing regulations and policy that will shape the future of U.S. technological competitiveness.

The Executive Master of Science in Technology Management program covers three important competency areas in a technology driven, globally competitive business environment: strategic management, systems management, and operations management. The executive program seminars are designed to introduce and develop these competencies, with one seminar focusing on each key area and a fourth, capstone seminar integrating the lessons and objectives of the previous three. This 36-credit program is completed in an 18-month period.

Composition of the Executive Class

Each class is comprised of approximately 25 executives who progress through the program as a group. The organizational experience of the class members is vital to the learning experience and is further enhanced through a variety of teaching methods. Each participant is expected to actively participate, and the interaction afforded by the seminars is designed to significantly contribute to a broader understanding of organizational issues in increasingly technical settings. During this 18-month master's program, classes are held on Saturdays to accommodate professional work schedules.

Admission Requirements

Participants are selected on the basis of the following criteria: a minimum of five years of management experience; a current position as a mid- or senior-level manager; a bachelor's degree from an accredited university or college in computer science, the physical sciences, engineering, or business; a grade-point average (GPA) of 3.0 on a 4.0 system for degree-seeking participants or at least a 2.5 GPA in the major area of study for provisional status; a personal interview with the program director; submission of the official transcript from the bachelor's degree-granting institution; a personal statement of goals and objectives; access to a computer and the internet; and a working knowledge of software programs

as described on page 18. The UMUC Graduate School reserves the right to request additional transcripts.

Required Library Research Skills Course

To ensure participants are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Application

A complete application consists of an application form; the official transcript from the bachelor's degree-granting institution; a personal statement that indicates experience, current employment, and goals that may be fulfilled through participation in the program; and the application fee.

Fees

The fees below were in effect at the time of publication and are subject to change.

Application fee	\$50
Tuition*	\$19,800

*Includes the cost of tuition, books, and instructional materials.

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Tuition is payable in the following manner:

- \$4,950 prior to Seminar I
- \$4,950 prior to Seminar II
- \$4,950 prior to Seminar III
- \$4,950 prior to Seminar IV

A deposit of 10 percent (\$495) is required after applications are accepted to reserve a place in the class. The balance of tuition (\$4,455) is due before the start of Seminar I.

Neither tuition remission for University System of Maryland employees nor tuition remission under the Golden ID program may be used for the Executive Master of Science in Technology Management.

Location

All classes in the Executive Master of Science in Technology Management program are held at the same location. In the past, programs have been offered at the University System of Maryland Shady Grove Center in Rockville, Northern Virginia, and UMUC's Inn and Conference Center in College Park, Maryland. The Inn and Conference Center, which houses modern class and conference rooms, computer laboratories, and dining and lodging rooms, was specifically designed for continuing professional education.

Further information on this program is available from the Graduate School at 301-985-4617.

Format

The Executive Master of Science in Technology Management is an accelerated 18-month program using the seminar format. Instructional methodologies include lectures, case studies, structured discussions, guest speakers, videos, computer exercises, written projects, and oral presentations. Seminars are held from 8:30 a.m. to 5 p.m. on Saturdays. Web-based instruction is provided as a convenience to students to supplement and enhance Saturday classes.

The program consists of four seminars, varying from 11 to 16 weekends in length. Each seminar includes examinations, papers, and/or presentations. The end-of-program project is the capstone learning experience. The project provides participants with a unique opportunity to develop sound approaches to specific technology management issues.

Seminar I

TMAN 691 12 credits
Strategic Management of Technology and Innovation

This first seminar provides the participants with the knowledge, skills, and techniques needed to develop and continuously evaluate appropriate technology strategies for their organizations. Participants are first given an overview of technology management as an academic discipline and professional practice. The critical role of the government in creating an environment that stimulates and nurtures creativity and innovation is discussed. This module is followed by an introduction to financial management for technology managers. The participants are introduced to the preparation and application of a diverse set of financial tools that are used to undertake the valuations of capital, intellectual assets and property, and intangibles.

The strategic role of marketing as an integrated part of new technology-based products and services is discussed next. This module focuses on the issues of competitive strategy, pricing, customer service, market differentiation, and new-product launches. Participants also learn qualitative and quantitative market research techniques and the principles of prototyping and market experimentation.

The last module in this seminar discusses strategic management technology and innovation. This module focuses on linking technology policy with corporate strategy and the identification of technology options appropriate for the business or organizational strategy being executed. The processes of entrepreneurship and intrapreneurship from the standpoint of various organizational functions and levels and how these

processes can be promoted through effective management are discussed.

This seminar also prepares participants to work effectively in teams by providing them with skills and knowledge for interpersonal communication, group processes, leadership, and team management.

Seminar II

TMAN 692 9 credits
Systems Development and Management Analysis

Organizational systems are the means for attaining strategic goals and objectives. In this seminar, participants learn how to design and manage organizational systems that can effectively adapt to a rapidly changing, highly competitive, technology-driven environment. They acquire the requisite skills for team building and leadership and learn how to use the systems approach to address complex organizational problems in a logical and structured manner. Topics covered include decision theory, linear programming, network analysis, and risk analysis. In the next module, the fundamentals of systems analysis, development, acquisition, and management are introduced. The focus is on the formulation of a systems strategy of acquisition that integrates factors such as competition, rights to data, make-or-buy decision, source selection, standardization, and warranties/guarantees.

During this seminar, participants are introduced to software for information systems, decision-support systems, and expert systems that they will use throughout this and the following seminars to formulate and solve problems in technology management. The concept of electronic commerce is introduced as a strategic tool in the delivery of technology to customers with an emphasis on the development and use of electronic value chains between customers, distributors, and suppliers. Emphasis is placed on developing a business strategy for electronic commerce as well as specific tools such as electronic data interchange (EDI) and real-time satellite tracking of shipments. Issues in electronic commerce such as network security and firewalls, encryption, home banking, pricing, intellectual property, and international standards are discussed.

Seminar III

TMAN 693 9 credits
Operations Management

Every member of an organization serves someone else—the customer. Effective operations management aims at serving the needs of both internal and external customers with consistently high-quality and continuously improving products and

services. Emphasis is placed on improving operational effectiveness to gain competitive advantage. Participants learn operations methods and skills that are used for facility planning, inventory control, logistics management, capacity planning, material requirements planning, and demand forecasting. Applications for both manufacturing and service organizations are emphasized.

A module on productivity and quality management provides techniques for mapping both functional and cross-functional processes such as activity-based costing, value-added analysis, and flow charting. In addition, methodologies such as total quality management and business process reengineering are discussed. A module on project management covers the latest techniques and software for effective management of complex programs. Finally, a module on human resource issues in technology-based organizations covers critical organizational and leadership issues facing managers today.

Participants are required to develop a concept paper for their management project by the end of this seminar. Participants are expected to form project teams, identify a topic, and secure a participating sponsor. Project concepts are presented by participant teams during the last weekend of this seminar.

Seminar IV

TMAN 694 6 credits
Capstone

This final seminar in the executive master's program is designed as a capstone segment, integrating the techniques, skills, and methods developed during the first three seminars. This seminar continues to build the skills needed by top management to develop and implement technology-based strategies. Emphasis is placed on the development of a cohesive, market-focused strategy to provide a sustainable competitive advantage for the firm.

Participants are introduced to the concepts, practices, and critical issues in international business strategy with a focus on developing international markets for high-technology products and services. The principles of business and contract law are presented with the objective of identifying legal issues that confront managers in dynamic organizations and analyzing methods to develop effective solutions. Integrating case studies are provided illustrating the fundamental principles embodied in the strategic management of technology and innovation.

Participants participate in field trips (during weekdays) to several firms and government organizations. These trips have two objectives: First, to gain first-hand insight and understanding of the

ways successful corporations link technology strategy to corporate strategy and craft a vision to create a competitive advantage for the firm; second, to better understand the government role in the development of policy that affects and shapes U.S. technology development. Emphasis is placed on identifying those characteristics and

attributes that distinguish highly successful firms and effective government programs.

The final product of this seminar is also the final course requirement: The final report and presentation of the management project. During this seminar participants complete the work on the

project concept presented during the previous seminar. The final session is a team presentation of the plan to a committee of faculty members.

Executive Master's Program in Information Technology

Information technology management encompasses all aspects of management associated with the planning, design, development, acquisition, implementation, and maintenance of both computer systems and telecommunications for the support of an organization's products and services. The Executive Master's Program in Information Technology is designed around three general competency areas and a specialty track; each is important for managers in a technology driven, globally competitive business environment. Seminars I, II, and IV address the areas of information management skills, new and emerging information technologies, and information technology operations. Seminar IV also serves as a capstone to integrate the lessons and objectives of the program. The third seminar offers a choice of track focusing on the specific competencies necessary for either computer systems management or telecommunications management. Consequently, participants may pursue either a degree in Computer Systems Management or Telecommunications Management. This 36-credit program is completed in an 18-month period.

Composition of the Executive Class

Each Executive Master's Program in Information Technology class, with an average of 30 participants, progresses through the program as a group (with the exception of Seminar III specialty tracks). The organizational and technical experience of the class members is vital to the learning experience and is further enhanced through a variety of teaching methods. Active participation is expected from each member of the group. The interaction afforded by the seminars is designed to contribute significantly to a broad understanding of organizational solutions in an increasingly technological environment.

Admission Requirements

Participants are selected on the basis of the following criteria: a minimum of five years of management experience, a current position as a mid- or senior-level manager, a bachelor's degree from a regionally accredited university or college, and a 3.0 overall grade-point average (GPA) on a 4.0 system for degree-seeking participants or at least a 2.5 GPA in the major area of study for provisional participants. In addition, candidates must have a personal statement of goals and objectives, an official transcript from the bachelor's degree-granting institution, a personal interview with the program director, access to a computer and the internet, and a working

knowledge of software programs as described on page 18. UMUC reserves the right to request additional transcripts.

Required Library Research Skills Course

To ensure participants are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Application

A complete application consists of an application form; the official transcript from the bachelor's degree-granting institution; a personal statement that indicates experience, current employment, and goals that may be fulfilled through participation in the program; and the application fee.

Fees

The costs for the Executive Master's Program in Information Technology are as follows:

Application fee	\$50
Tuition*	\$22,800

*Includes the cost of tuition, books, and instructional materials.

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Tuition is payable in the following manner:

\$5,700 prior to Seminar I*
\$5,700 prior to Seminar II
\$5,700 prior to Seminar III
\$5,700 prior to Seminar IV

*A deposit of 10 percent (\$570) is required after applications are accepted to reserve a place in the class. The balance of tuition (\$5,130) is due before the start of Seminar I.

Neither tuition remission for University System of Maryland employees nor tuition remission under the Golden ID program may be used for the Executive Master's Program in Information Technology program.

Location

Classes in the Executive Master's Program in Information Technology program are held in several locations, including the University System of Maryland Shady Grove Center in Rockville, Northern Virginia, and UMUC's Inn and Conference Center, College Park, Maryland. The center, which houses modern class and conference rooms, computer laboratories, and dining and lodging rooms, was specifically designed for continuing professional education.

Further information on this program is available from the Graduate School at 301-985-4617.

Format

The Executive Master's Program in Information Technology is an accelerated 18-month program using the seminar format. Instructional methodologies include lectures, case studies, structured discussions, guest speakers, videos, computer exercises, written projects, and oral presentations. Seminars are held from 8:30 a.m. to 5 p.m. Web-based instruction is provided as a convenience for students to supplement and enhance the Saturday classes.

The program consists of four, 9-credit seminars. Each seminar includes examinations, papers, and/or presentations. Also integral to the program is the management project, which provides the unique opportunity to develop sound approaches to specific information technology management issues.

Hardware/Software Requirements

All participants are required to have a notebook computer with the following minimum configuration:

- Pentium 133 MHz processor
- 32 MB RAM
- 1.2 GB hard drive
- 3.5" floppy drive (external or internal)
- CD-ROM drive (external or internal)
- 28.8 Kbps modem (pcmcia or internal)
- Two pcmcia slots
- MS Windows 95 (98)[®] and MS Office 97 (2000) Professional[®]
- 10/100 Base T Network Interface card

Seminar I

XMIT 691 9 credits
Strategic Management of Information Technology

Seminar I presents an overview of the information technology (IT) industry. Structures, purposes, and basic components of information systems used in business and government organizations are explored, both from a hardware and a software perspective. IT trends such as computer communication convergence are analyzed. Issues related to technology, computer operations, regulation, policies, and career paths are examined.

A second major focus of the seminar is to examine strategic planning for new or expanded IT systems. Strategic planning principles underpinning successful IT systems are identified and analyzed. Particular attention is paid to the need for alignment of business and IT goals and the use of IT for competitive advantage. Principles and practices related to the effective management

of people and teams, and to the creation of an ethical workplace, are introduced in the seminar and are emphasized throughout the program.

The final focus of the seminar is on interpersonal communications, group processes, and leadership which, in turn, serve as a foundation for the culminating team project in the program. In Seminar I, student teams present a preliminary business plan for a new IT system or venture. One required component of the business plan is a set of specific "user" requirements that support the organization's identified needs.

Seminar II

XMIT 692 9 credits
Current and Emerging Technologies

First, methods and tools for implementing continuous process improvement and fundamental elements of project management and financial control are explored.

Information technologies are then examined as individual systems from both a conceptual and an operational capability perspective. The various computer systems architectures are introduced and the system and software life cycle is studied. The importance of distributed computing (client/server) in today's business and government organizations is discussed. The attributes, strengths, and limitations of current telecommunication networks are examined, including their data, voice, and multimedia transfer ability.

The capabilities and uses of the current emerging information technologies are also examined, including their potential to help achieve competitive advantage. Among the technologies introduced are collaborative systems (for example, intranets), data warehousing, data mining, knowledge management, network computing, and electronic commerce. Also analyzed are the critical elements involved in deciding how and when to adopt emerging technologies.

Finally, teams develop a resource plan for a selected system or new venture. This plan includes identification of critical human resource needs and development of a preliminary organizational structure.

Seminar III-A

CSMN 693 9 credits
Computer Systems Management Specialization

A number of specialized areas of computer systems management are examined in this seminar, including an exploration of the basic

attributes, strengths, and limitations of leading programming languages. Database modeling, design, and implementation are also analyzed. A review of the software life-cycle process provides a foundation in the software development area. Finally, program participants address the analysis and design issues related in their team's IT business system or venture.

Note: This track is taken by participants seeking an Executive Master of Science in Computer Systems Management.

Seminar III-B

TLMN 693 9 credits
Telecommunication Systems Management Specialization

A number of specialized areas of telecommunication systems management are explored, including enterprise telecommunication networks such as public-switched telephone networks, wide-area networks (public and private), Internet, broadband networks, and wireless telecommunication networks. Telecommunication requirements (for example, bandwidth and quality of service) for various source content such as voice, data, multimedia, and business applications are also analyzed. Finally, program participants address the analysis and design issues related to their team's IT business system or venture.

Note: This track is taken by participants seeking an Executive Master of Science in Telecommunications Management.

Seminar IV

XMIT 694 9 credits
Information Technology Implementation and Operations

Along with planning, IT managers implement and, on a daily basis, manage system operations. This seminar examines implementation and operational issues and ideas. First explored are important implementation issues such as information risk assessment and security, information acquisition, and systems integration. Then the focus shifts to systems management and control. Program participants review current issues and trends in the IT industry, consider the concepts and best practices related to change management, and investigate the area of technological forecasting. Teams complete and present their final strategic plan for a new IT business or venture.



Executive Certificate for Chief Information Officers (CIO)

The Executive Certificate for Chief Information Officers is designed around the core competencies and learning objectives developed by the Federal CIO Council in response to the passage of the Information Technology Management Reform Act (Clinger–Cohen). Completion of this program satisfies the requirements for both a General Services Administration, CIO University certificate and an UMUC certificate granting 24 graduate credits. Seminar I addresses issues in managing information technology (IT), including a discussion of fundamental information technology and the IT industry, strategic management and innovation of information technology, human resource issues, and ethical principles. Seminar II examines practices in program management, issues in financial management, the state of current information technology, and emerging information technology as it affects organizational goals. Seminar III focuses on modeling and simulation tools useful to the information technology professional, and provides an in-depth look at both government and private sector issues and laws, and regulations and practices in the information technology arena.

Composition of the Executive Class

Each Chief Information Officer certification class, with an average of 25 participants, progresses through the program as a group. The organizational and technical experience of the class members is vital to the learning experience and is further enhanced through a variety of teaching methods. Active participation is expected from each member of the group. The interaction afforded by the seminars is designed to contribute significantly to a broad understanding of organizational solutions in an increasingly complex information technology environment.

Admission Requirements

Participants are selected on the basis of the following criteria: a current position as a mid- or senior-level manager, a bachelor's degree from a regionally accredited university or college, and a 3.0 overall grade-point average (GPA) on a 4.0 system for degree-seeking participants or at least a 2.5 GPA in the major area of study for provisional participants. Federal government employees should be GS/GM 15s and high performing GS/GM 14s. Private industry professionals should have similar grade and experience. In addition, candidates must submit a personal statement of goals and objectives and an official transcript from the bachelor's degree-granting institution. Qualified candidates will be invited to a personal interview with the program direc-

tor. All participants must have access to a computer and the internet, and a working knowledge of software programs as described on page 18. UMUC reserves the right to request additional transcripts.

Required Library Research Skills Course

To ensure participants are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all graduate participants must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Application

A complete application consists of an application form; the official transcript from the bachelor's degree-granting institution; a personal statement that indicates experience, current employment, and goals that may be fulfilled through participation in the program; and the application fee.

Fees

The costs for the Executive CIO Certificate Program are as follows:

Application fee	\$50
Tuition	\$14,000

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Tuition is payable in the following manner:

\$5,250	prior to Seminar I
\$5,250	prior to Seminar II
\$3,500	prior to Seminar III

A deposit of 10 percent (\$525) is required after applications are accepted to reserve a place in the class. The balance of tuition (\$4,725) is due before the start of Seminar I.

Neither tuition remission for University System of Maryland employees nor tuition remission under the Golden ID program may be used for the CIO program.

Location

On-site classes in the Executive Certificate for Chief Information Officers program will be held at College Park.

Further information on this program is available from the Graduate School at 301-985-4617.

Format

The Chief Information Officer Certificate program is a 12-month program using the seminar format. Instructional methodologies include lectures, case studies, structured discussions, guest speakers, videos, computer exercises, written projects, and oral presentations. Seminar meetings are held on Saturdays from 8:30 a.m. to 5 p.m. and supplemented with online (Web-

based) materials and activities. The program consists of three seminars, ranging from 9 credits in both Seminar I and Seminar II to 6 credits in Seminar III.

Hardware/Software Requirements

All participants are encouraged to have a notebook computer with the following minimum configuration:

- Pentium or equivalent processor
- 32 MB RAM
- 1.2 GB hard drive
- 3.5" floppy drive (external or internal)
- CD-ROM drive (external or internal)
- 56 Kbps modem (external or internal)
- Two pcmcia slots
- MS Windows 95/98® and MS Office 97/2000

Seminar I

XCIO 691 9 credits
Structure and Strategy

Seminar I presents an overview of the information technology (IT) industry. Structures, purposes, and basic components of information systems used in business and government organizations are explored, both from a hardware and a software perspective. IT trends such as computer communication convergence are analyzed. Issues related to technology, computer operations, regulation, policies, and career paths are examined.

A second major focus of the seminar is to examine strategic planning for new or expanded IT systems. Strategic planning principles underpinning successful IT systems are identified and analyzed. Particular attention is paid to the need

for alignment of business and IT goals and the use of IT for competitive advantage. Principles and practices related to the effective management of people and teams, and to the creation of an ethical workplace, are introduced in the seminar and are emphasized throughout the program.

An end-of-seminar presentation will be developed and presented by student teams. The focus of the briefing will be on the application of material studied during the seminar.

Seminar II

XCIO 692 9 credits
Systems and Operations

First, methods and tools for implementing continuous process improvement are examined. Project structure and schedule, risk analysis and management, and fundamental elements of project management and financial control are also explored.

A second major focus of the seminar is the examination of information technologies as individual systems from both a conceptual and an operational capability perspective. The various computer systems architectures are introduced and the system and software life cycle is studied. The importance of distributed computing (client/server) in today's business and government organizations is discussed. The attributes, strengths, and limitations of current telecommunication networks are examined, including their data, voice, and multimedia transfer ability. Program participants design an information management system by integrating the strategic planning foundation from Seminar I with the content in Seminar II.

Third, the capabilities and uses of the current emerging information technologies are examined, including their potential to help achieve competitive advantage. Among the technologies intro-

duced are collaborative systems (for example, intranets), data warehousing, data mining, knowledge management, network computing, and electronic commerce. Also analyzed are the critical elements involved in deciding how and when to adopt emerging technologies.

An end-of-seminar presentation will be developed and presented by student teams. The focus of the briefing will be on the application of material studied during the seminar.

Seminar III

XCIO 693 6 credits
CIO Processes

First, models and simulations applicable to the information technology field are examined to identify the appropriate application of models and simulations to various strategic and operational situations. There will be an in-depth examination of model and simulation input and output to identify the optimal use of the various tools.

The second topic covered is the legal and regulatory environment affecting the CIO. This will include a review of the Information Technology Management Reform Act (ITMRA), the Government Performance and Results Act (GPRA), the Federal Acquisition Streamlining Act (FASA), and other laws and regulations derived from the aforementioned legislation. The application and implementation of the elements of the various laws and regulations will be reviewed.

An end-of-seminar presentation will be developed and presented by student teams. The focus of the briefing will be on the application of material studied during the seminar.

Graduate Professional Studies (GPS)

The Graduate School provides opportunities for postgraduate studies in specific technical areas to those who are seeking to upgrade their knowledge. A student may earn a document of completion by successfully completing the full complement of courses for a specific specialty track. The number of courses ranges from four to six, depending on the specialty area. For a full description of the courses offered, select the area of interest from the list that follows and refer to the specialty tracks in the appropriate degree listings.

Admission Requirements

Admission requirements for GPS students are the same as those for degree-seeking students. Specific admission requirements for areas of specialization may be found under the relevant degree program. It is strongly recommended that GPS students seek the advice of the appropriate program advisor before registering to help ensure readiness for selected courses. If the student wishes to continue on to complete a master's degree, an official transcript must be submitted from the bachelor's-degree-granting institution. Upon receipt, the GPS courses will be applied to the course requirements for a degree.

Note: Students with a master's degree who are applying for admission to the GPS program are required to submit graduate transcripts only. The UMUC Graduate School reserves the right to request additional transcripts.

Required Library Research Skills Course

To ensure students are well prepared to take advantage of modern library and information resources, the Graduate School has developed a 100 percent online, noncredit library research course. As of fall 1998, all graduate students must successfully complete UCSP 610 Library Skills for the Information Age within their first 6 credits of study.

Master of Science in Management

Financial Management (FIN)

ADMN 632	Financial Management of Current Operations
ADMN 633	Long-Term Financing of Organizations
ADMN 634	Financial Markets and Investments
ADMN 639	Multinational Financial Management
ADMN 655	Strategic Financial Management

Health Care Administration (HRM)

ADMN 670	The Health Care System
ADMN 671	Public Health Administration
ADMN 672	Financial Management for Health Care Organizations
ADMN 673	Legal Aspects of Health Care Administration
ADMN 674	Health Care Institutional Organization and Management
ADMN 675	Long-Term-Care Administration

GPS students should take ADMN 670 and ADMN 673, any two of the other three courses, and ADMN 674.

Human Resource Management (HRM)

ADMN 661	Employee Relations
ADMN 662	Issues and Practices in Human Resource Management
ADMN 663	Job Analysis, Assessment, and Compensation
ADMN 664	Organizational Development and Change
ADMN 665	Current Perspectives in Human Resource Development and Training
ADMN 666	Recruitment and Selection

GPS Students should take ADMN 662, plus any four of the other five courses.

Management Information Systems (MIS)

ADMN 640	Information Systems for Managers
ADMN 641	Information Systems Design and Integration
ADMN 643	Systems Analysis and Software Engineering
ADMN 645	Information Technology and Competitive Advantage

Marketing (MKT)

ADMN 685	Strategic Market Planning
ADMN 686	Marketing Management
ADMN 687	Market Segmentation and Penetration
ADMN 688	Marketing Intelligence and Research Systems
ADMN 689	Integrated Direct Marketing

Not-for-Profit Management (NFP)

ADMN 654	Not-for-Profit Financial Management
ADMN 656	Not-for-Profit Organizations and Issues
ADMN 657	Management of Critical Resources in Not-for-Profit Organizations
ADMN 658	Marketing, Development, and Public Relations
ADMN 659	Strategic Management in Not-for-Profit Organizations

Procurement and Contract Management (PCM)

ADMN 626	Purchasing and Materials Management
ADMN 627	Legal Aspects of Contracting
ADMN 628	Contract Pricing and Negotiation
ADMN 629	Strategic Purchasing and Logistics
ADMN 660	Commercial Transactions in a Technological Environment

Master of Science in Computer Systems Management

Information Resources Management (GSA 1,000 by the Year 2000)

CSMN 635	Systems Development and Project Control
CSMN 636	Telecommunications and Connectivity
CSMN 637	Acquisition of Information Technology

Plus three elective courses (9 credits) chosen from TMAN, TLMN, another CSMN track, or ADMN 645. Individual course prerequisites apply.

Master of International Management

International Commerce

IMAN 601	Managing in a Competitive International Environment
IMAN 630	International Financial Management
IMAN 635	The Public Sector in International Commerce
IMAN 640	International Marketing Management
IMAN 645	The International Legal and Tax Environment

International Finance

IMAN 601	Managing in a Competitive International Environment
ADMN 632	Financial Management of Current Operations
ADMN 633	Long-Term Financing of Organizations
ADMN 639	Multinational Financial Management
IMAN 645	The International Legal and Tax Environment

International Marketing

IMAN 601	Managing in a Competitive International Environment
IMAN 640	International Marketing Management
IMAN 630	International Financial Management
IMAN 620	International Marketing Research and Analysis
ADMN 685	Strategic Market Planning

Master of Science in Technology Management

Biotechnology Management

BTMN 640	Societal Issues in Biotechnology
BTMN 641	Commercializing Biotechnology in Early-Stage Ventures
BTMN 642	Selection and Evaluation of Biotechnology Projects

Plus one of the following electives:

TMAN 631	Operations Management
TMAN 640	Project Management
TMAN 643	Entrepreneurship for New Technologies

Executive Graduate Certificate for Chief Information Officers (CIO)

XCIO 691	Structure and Strategy
XCIO 692	Systems and Operations
XCIO 693	CIO Processes

Executive Graduate Certificate in International Management

IMAN 691	Competitive International Environment
IMAN 692	Strategic Capabilities of International Firms

Noncredit Courses

General Information

The Graduate School offers a complement of noncredit courses via WebTycho. These courses are designed to provide students with skills and knowledge they may need to complete their academic programs successfully.

Although these courses carry no UMUC credits, they appear on the student's official academic transcript. At the conclusion of the course, a grade of "P" (Pass) will be posted.

Note: Non-UMUC participants will not receive a grade for noncredit courses. Financial aid, the Golden ID program, and USM remission of fees may not be applied to noncredit courses.

Current information about the Graduate School's noncredit courses is available at www.umuc.edu/gsmnt/noncred.html.

Noncredit Registration Instructions

UMUC graduate students must be admitted or have an application on file before registering for noncredit courses. UMUC offers five ways to register: by phone via IRIS, by mail, by fax, online, or in person. For help with the registration process, contact the office of Graduate Services via e-mail at gradinfo@umuc.edu or 301-985-7155.

Non-UMUC participants may register for noncredit courses by completing and submitting a Non-UMUC Participant Noncredit Course Registration Form with payment. The form is available at <https://www.umuc.edu/prog/gsmnt/nonreg.html>. A hard copy of the form may be requested by sending an e-mail message to gradschool@info.umuc.edu or calling 301-985-4617.

Note: No refunds will be given to non-UMUC participants after the official start date of class.

Course Descriptions and Tuition Information

UCSP 600

Graduate Writing Seminar

This course provides individual and conferencing instruction in work and course-related writing. With the faculty member, students identify areas of strength and weakness and develop specific writing objectives and a plan for improvement, including a week-to-week timeline for completion. The course module design enables students to work with the faculty member to

review basic concepts, principles, and tools of writing. Weekly writing assignments and conference discussion participation are required. This course serves as a refresher on writing skills as well as a basic foundation for those needing more extensive help. Among the module topics are grammar, structural and transitional techniques, audience analysis, levels of detail, treatment and integration of references from the scholarly literature, interaction of the verbal and visual presentation, collaborative writing and analysis, problem solving, synthesis, and assessment in diverse genres of business and academic writing.

Note: This course is not intended to be an ESL course.

Course Length: 10 weeks

UMUC Graduate Student Tuition: \$225

Non-UMUC Participant Tuition: \$275

Continuing Education Units (CEUs): 3 (awarded upon course completion)

UCSP 610

Library Skills for the Information Age

This course is designed to familiarize students with electronic library and information resources. The significant changes in how information is delivered and the advent of the World Wide Web make information retrieval and research an exciting challenge. This course provides an in-depth introduction to the library research process and the tools necessary to be effective in the Graduate School of Management & Technology. Students learn to efficiently and effectively use a variety of electronic retrieval systems including VICTORWeb (the online catalog of the University System of Maryland), the Web, LEXIS/NEXIS, and Dialog.

Note: This course is required for all new graduate students as of fall 1998 and all inactive students who reapply for admission. It must be completed within the first 6 credits of graduate study.

This online course is a self-paced tutorial and can be completed on the student's own schedule anytime before its end date (it is not a 15-week class). It consists of seven modules with exercises and quizzes. The purpose of the course is to alert students to the many resources, databases, and research opportunities which are now available online to the student of management. The Graduate School and the Information and Library Services office are proud to offer this materials, which is critical for 21st century managers.

Course Length: Self-paced tutorial, ongoing registration

Course Dates:

Spring: January 1 through May 31

Summer: June 1 through August 25

Fall: August 26 through December 31

UMUC Graduate Student Tuition: \$75 (This fee is for program administration and technological support)

Non-UMUC Participant Tuition: UCSP 610 is not available to non-UMUC participants

Continuing Education Units (CEUs): None

UCSP 620

Financial Accounting

Financial accounting is an information system built upon a set of fundamental concepts. Its primary purpose is to help both current and potential investors value a company's debt and equity securities, that is, its bonds and common stock. This course is designed for people with no prior coursework in financial accounting. It encompasses basic financial concepts and their use in analyzing financial statements. Students analyze financial statements of actual companies and explore the process by which accounting principles are developed. Students develop a fundamental appreciation for how financial accounting information can be used to evaluate the economic performance of companies.

Note: Students without a background in accounting and finance are strongly advised to complete this course before enrolling in ADMN 630 or ADMN 631.

Course Length: 8 weeks

UMUC Graduate Student Tuition: \$225

Non-UMUC Participant Tuition: \$275

Continuing Education Units (CEUs): 3 (awarded upon course completion)

UCSP 621

Economics

This course covers both the microeconomic issues of supply and demand for individual companies and products and macroeconomic issues concerning inflation, unemployment, and recession for the economy as a whole. Basic economic concepts such as opportunity cost, comparative advantage, economic efficiency, and the time value of money are explored in the context of business, government, and personal situations.

Note: Students without a background in accounting and finance are strongly advised to complete this course before enrolling in ADMN 630 or ADMN 631.

Course Length: 8 weeks

UMUC Graduate Student Tuition: \$225

Non-UMUC Participant Tuition: \$275

Continuing Education Units (CEUs): 3 (awarded upon course completion)

UCSP 630

Introduction to Research Methods

This course presents basic research techniques and methodologies used in organizational research and evaluation studies. The information from these studies is used in making business decisions. Emphasis is also placed on preparing the student to evaluate and use research-based information developed by other individuals. The focus of the course is on applying basic research techniques to assess the performance of individuals, work groups, and organizations. Areas of coverage 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. UCSP 630 provides students with basic approaches and beginning skills necessary to evaluate research materials and their use in business decision making.

Note: Students without a background in statistics are strongly advised to complete this course before enrolling in ADMN 638.

Course Length: 8 weeks

UMUC Graduate Student Tuition: \$225

Non-UMUC Participant Tuition: \$275

Continuing Education Units (CEUs): 3 (awarded upon course completion)

Professional and Workforce Development Programs

The Professional and Workforce Development office offers customized noncredit executive training programs for Maryland's professional workforce. Training programs may be structured to meet organizational objectives.

The prices of the customized courses vary depending on the complexity of the subject and the desired delivery method. A partial list of the topics that may be offered is as follows:

IT Certification Programs

- MCSE (Windows NT) Certification
- A+ Certification
 - Lotus Notes Certification
 - Visual Basic
 - Certified Novell Engineer Certification
 - Capability Maturity Model Training
 - Oracle
Developer 2000

Short Courses/Workshops

- Accounting and Tax Programs
- Environmental and Health and Safety Management

Federal and State Tax Institute Seminars

Test Prep Workshops

- GRE, GMAT, and LSAT Prep Courses

Online Language Courses

- French in Action
- Customized Programs
- Accounting/Finance
 - Communication Skills
 - Business Writing
 - Speech Writing
 - Emergency Management
 - Environmental Management
 - Health and Safety Management
 - Management Skills
 - Performance Improvement Management
 - Project Management
 - Sales and Marketing Management
 - Strategic Planning
 - Team Building

For more information, call Professional and Workforce Development at 301-985-7644 or send an e-mail to UMUC-at-WORK@nova.umuc.edu.

Library Services

The Information and Library Services provides access to library resources and services through VICTOR (the online information system of the University System of Maryland) and through the World Wide Web. The office promotes the use of library technology, coordinates courses in information technology, and distributes guides and other printed materials. UMUC reference librarians are located at McKeldin Library on the College Park campus and at the University System of Maryland Shady Grove Library/Media Center, and are available to assist students with their research needs.

Currently enrolled Graduate School students have borrowing privileges at all University System of Maryland libraries, and at Morgan State University and St. Mary's College of Maryland. To borrow mate-

rials, students must have a current validation sticker and barcode on their student identification card.

The USM online information system, VICTOR, provides online access to USM books. Books can be delivered to any system library as well as to the Annapolis and Waldorf Centers. There are also several databases that offer keyword access to journal article citations, abstracts, and some full-text journal articles. VICTOR is available at all USM libraries; the Shady Grove, Annapolis, and Waldorf Centers; the Patuxent River Naval Air Warfare Center Library; and the Aberdeen Proving Ground Library and Education Center. VICTOR can also be accessed through remote dial-in using a PC and modem, via the Internet, or through WebTycho.

An extensive array of online journal databases and national and international newspapers is available

through the Information and Library Services Web site at www.umuc.edu/library. There are 65 databases, over half of which are full-text, covering business, management, and computer science areas. These library resources can be accessed via the Internet using a Web browser.

Students must be registered in the library system to place a hold on a book, access VICTOR, or use the full-text databases through the Information and Library Services Web page. All graduate students are registered in the library system. A student who is not recognized by the system should contact the library or register using an online form. While UMUC has a rapidly expanding virtual library, access to a local university or college library is strongly recommended. For more information, students can call 301-985-7209 or send e-mail directly to library@info.umuc.edu.

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UMUC Graduate Council

The Graduate 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, on call of the dean, and is comprised of the following members:

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 Salvatore Monaco, *Executive Director, Office of Executive Programs*
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 Edward Shafer, *Director, Financial Management*

(Nonvoting Members)

Tana Bishop, *Associate Dean, Administration*
 Pamela A. DeMartino, *Assistant Dean, Graduate Services*

The Graduate School

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Assistant Dean, Graduate Services
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Harvey E. Bale Jr., *Senior Vice President International, Pharmaceutical Research and Manufacturers Association of America*

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Bernard Bennington, *Director, Information Networking Institute, Carnegie Mellon University*

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- G. Patrick Kane, FACHE, CEO, and *President (Retired), Columbia Hospital for Women Medical Center*
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- John A. King, *Vice President, King and Associates, Inc.*
- Ruth C. Kiselewich, *Director, Special Contracts, Baltimore Gas & Electric Company*
- Richard F. Kolasheski, *President, Mid-Atlantic Krypton Institute*
- Norman C. Lerner, *President, TRANSCOMM, Inc.*
- Marc P. Lieber, *President, ProFicient Technologies, Inc.*
- Hans F. Mayer, *Executive Director, Maryland Economic Development Corporation*
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- Michael Roberts, *Vice President, Networking, EDUCOM*
- Reva Rubenstein, *Science Advisor, U.S., Stratospheric Protection Division, U.S. Environmental Protection Agency*
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- Roger S. Sattler, *President, Sattler & Associates, Inc.*
- George Shafer, *Director, Human Resources, Lucent Technologies*
- Lucy L. Slaich, CPPO, C.P.M., CACM, *Assistant Director, Procurement and Supply, University of Maryland, College Park*
- G. B. "Steve" Stephenson, *Director of Administration, Upper Occoquan Sewage Authority*
- Barry Stern, *Senior Environmental Health Advisor, Bureau of Health Professions*
- Joseph C. Stokes, *Senior Vice President and Chief Financial Officer, Life Technologies, Inc.*
- Albert H. Teich, *Director, Science and Policy Programs, American Association for the Advancement of Science*
- Marjorie E. Vincent, *Area Operations Manager, Health South*
- Harvey W. Wallender III, *Senior Partner, Market and Technology Access Services*
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- ADAMS, KEVIN M., *Assistant Professor*
B.S., College of Engineering Rutgers University, 1981
M.S., Massachusetts Institute of Technology, 1986
- AJE, JOHN O., *Director, Technology Management and Engineering Programs, and Adjunct Associate Professor*
B.S., Clemson University, 1975
M.S., North Carolina State University, 1980
M.E.A., George Washington University, 1983
D.Sc., George Washington University, 1988
- ALBERTS, HENRY C., *Professor*
B.S., Queens College
M.S., University of Delaware
Ph.D., City University, London, U.K., 1995
- ALDEN, JAY, *Adjunct Professor*
B.S., Long Island University, 1966
M.S., Hofstra University, 1968
Ph.D., Hofstra University, 1973
- ALGABI, MARK A., *Adjunct Assistant Professor*
B.S., Arkansas State University, 1985
M.S., Central Missouri State University, 1987
Ed.S., Central Missouri State University, 1989
Ph.D., Wichita State University, 1990
- ALLEN, NICHOLAS H., *Dean, Graduate Studies, and Adjunct Professor*
B.S., U.S. Coast Guard Academy, 1963
M.B.A., Oklahoma City University, 1970
M.P.A., George Washington University, 1977
D.P.A., George Washington University, 1986
- ALLEN, TED W., *Adjunct Associate Professor*
B.A., University of North Carolina, 1969
M.S., University of Michigan, 1973
Ph.D., University of Michigan, 1974
M.B.A., University of North Carolina, 1984
- ALTER, HARVEY, *Adjunct Professor*
B.S., Queens College, City University of New York, 1952
M.S., University of Cincinnati, 1954
Ph.D., University of Cincinnati, 1957
- AMUAH, ALEXANDER, *Adjunct Assistant Professor*
B.S., University of Ghana, 1979
M.S., University of Guelph, 1987
Ph.D., University of Illinois, 1991
- ANDERSEN, G. DAVID, *Adjunct Professor*
B.S., Concordia Teachers College, 1964
M.A., Wayne State University, 1971
Ed.D., Wayne State University, 1978
- ANSARI, ARIF, *Assistant Professor*
B.S., Aligarh Muslim University, 1984
M.S., Southern Illinois University, 1988
Ph.D., Southern Illinois University, 1984
- ARDALAN, ABOL, *Adjunct Professor*
B.S., Faraday House E.E. College, 1953
B.S., Naval Postgraduate School, 1966
M.S., Naval Postgraduate School, 1967
Ph.D., George Washington University, 1993
- AZANI, CYRUS H., *Adjunct Associate Professor*
B.S., Shiraz University (Iran), 1973
M.E.A., George Washington University, 1979
D.Sc., George Washington University, 1984
- BALABAN, HAROLD, *Adjunct Associate Professor*
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M.A., American University, 1962
Ph.D., George Washington University, 1978
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B.S., University of Puerto Rico, 1965
B.S.E.E., University of Puerto Rico, 1966
M.S., University of Puerto Rico, 1969
M.E., Massachusetts Institute of Technology, 1972
Ph.D., Massachusetts Institute of Technology, 1974
- BARRETT, GLENDA J., *Associate Director, Human Resource Management, and Adjunct Professor*
B.A., Indiana University, 1973
M.A., University of Iowa, 1977
M.A., George Washington University, 1992
Ph.D., George Washington University, 1993
- BARRY, TIMOTHY M., *Adjunct Assistant Professor*
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M.S., University of Maryland, Baltimore, 1975
M.A., University of Southern Mississippi, 1984
Ph.D., University of Southern Mississippi, 1985
- BATTAGLIA, PAUL, *Adjunct Associate Professor*
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M.S., Butler University, 1974
D.B.A., Nova Southeastern University, 1994
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M.S., George Washington University, 1969
Ph.D., University of Maryland, College Park, 1988
- BECHTOL, DENNIS, *Adjunct Assistant Professor*
B.S., Florida State University, 1973
M.A., University of South Florida, 1981
Ph.D., University of New Mexico, 1994

- BENOLIEL, MICHAEL, *Adjunct Associate Professor*
B.S., Haifa University (Israel), 1977
M.A., George Washington University, 1982
Ed.D., George Washington University, 1988
- BERKOWITZ, JOAN, *Adjunct Associate Professor*
B.A., Swarthmore College, 1952
Ph.D., University of Illinois, 1955
- BETZ, FREDERICK, *Associate Director, Technology & Engineering Programs, Associate Professor*
B.S., University of Chicago, 1958
Ph.D., University of California, Berkeley, 1965
- BLAZY, LOUIS J., *Adjunct Assistant Professor*
B.A., George Mason University, 1979
M.A., George Mason University, 1981
Ph.D., University of Maryland, College Park, 1985
- BOISSEAU, H. JAMES, *Adjunct Professor*
B.S., Tulane University, 1953
M.A., Tulane University, 1960
Ph.D., Purdue University, 1967
- BOLESTA, MONICA SAVA, *Adjunct Assistant Professor*
B.S., Fordham University, 1989
M.A., University of Maryland, College Park, 1993
- BORCHINI, EZIO, *Assistant Professor*
B.S., University of Maryland, College Park, 1980
M.S., Marymount University, 1992
J.D., Catholic University of America, 1997
L.L.M., George Washington University, 1998
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B.S., University of Nebraska, 1971
M.A., University of Nebraska, 1972
M.S., University of Alabama, 1982
Ph.D., University of Alabama, 1984
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B.S., American University, 1964
M.A., American University, 1965
Ph.D., George Washington University, 1984
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M.S., University of Southern California, 1980
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M.A., University of Sussex (United Kingdom), 1985
Ph.D., University of Sussex (United Kingdom), 1990
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J.D., University of Baltimore School of Law, 1977
L.L.M., Georgetown University Law Center, 1986
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M.S., University of Maryland, College Park, 1969
Ph.D., University of Maryland, College Park, 1973
- BROOKSTONE, J. MOSES, *Adjunct Assistant Professor*
B.A., George Washington University, 1969
Ph.D., George Washington University, 1976
- BUNDENS, ROBERT W., *Adjunct Assistant Professor*
B.A., George Washington University, 1977
M.A., Michigan State University, 1980
M.L.I.R., Michigan State University, 1981
Ed.D., University of Tulsa, 1985
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Ph.D., Indiana University, 1973
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M.P.A., University of Southern California, 1987
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Ph.D., University of Minnesota, 1970
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M.B.A., Syracuse University, 1986
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D.B.A., George Washington University, 1971
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Ph.D., Columbia University, 1964
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M.S., Binghamton University, 1990
Ph.D., Binghamton University, 1996
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A.M., University of Illinois, 1970
Ph.D., Northwestern University, 1991
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M.A., University of Toledo, 1972
Ph.D., Pennsylvania State University, 1975
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M.S., University of Maryland University College, 1996
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M.S., Harvard University, 1972
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M.A., University of Washington, 1967
M.B.A., University of Pennsylvania, Wharton School of Business, 1975
Ph.D., University of California, Berkeley, 1986
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J.D., Georgetown University, 1969
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Ph.D., Catholic University of America, 1981
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B.S., Louisiana State University, 1970
M.A., California State University, 1977
D.A., George Mason University, 1977
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M.B.A., University of Maryland, College Park, 1980
Ph.D., University of Maryland, Baltimore, 1993
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Ph.D., University of Delaware, 1978
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M.S., The American University, 1992
J.D., University of Maryland at Baltimore, School of Law, 1998
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Ph.D., Emory University, 1963
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M.S., University of Alberta (Canada), 1976
Ph.D., University of Alberta (Canada), 1980
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M.S., Cornell University, 1965
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Ed.D., Wilmington College, 1996
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Ph.D., Georgetown University, 1972
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