

The Graduate College

of UNION UNIVERSITY

2005-2006 **CATALOG**

Degrees and Certificates Offered

SCHOOL OF EDUCATION	Degree	HEGIS Code
Adolescence Education 7-12 with specialization possible in: English, French, German, Greek, Latin, Spanish, Biology, Chemistry, Earth Science, Physics, Mathematics, or Social Studies	MAT	0803
Adolescence Education 7-12: Life Science	MS for T	0499
Adolescence Education 7-12: Math and Tech	MS for T	1799
Adolescence Education 7-12: Physical Science	MS for T	1901
Core Certification: Adolescence 7-12	N/A	0803

SCHOOL OF ENGINEERING

Computer Science	MS	0701
Electrical Engineering	MS	0909
Mechanical Engineering	MS	0910
Engineering and Management Systems	MS	4904

SCHOOL OF MANAGEMENT

Business Administration	MBA	0506
Law and Business Administration (with Albany Law School)	MBA	0506
Healthcare Management	MBA	1202
Law and Healthcare Management (with Albany Law School)	MBA	1202
Healthcare Management	Adv. Cert.	1202
Financial Management	Adv. Cert.	0504
Human Resources	Adv. Cert.	0515
Eight-year Leadership in Medicine– Healthcare Management (with Union College and Albany Medical College)	MBA	1202
Healthcare Management Pharmacy Doctorate (with Albany College of Pharmacy)	MBA	1202

CENTER FOR BIOETHICS AND CLINICAL LEADERSHIP

Bioethics	MS	0499
Bioethics (distance learning)	MS	0499
Bioethics and Social Work (MS) (with SUNY Albany)	MS	0499
Bioethics and Philosophy (PhD) (with SUNY Albany)	MS	0499
Clinical Leadership in Healthcare Management	MS	1202
Clinical Leadership in Healthcare Management/Pharmacy BS (with Albany College of Pharmacy)	MS	1202
Clinical Leadership in Healthcare		

Contact Numbers

Management/Pharmacy Doctorate (with Albany College of Pharmacy)	MS	1202
Eight-year Leadership in Medicine– Healthcare Management (with Union College and Albany Medical College)	MS	1202
Bioethics - Specialization in Health Policy & Law	Adv. Cert.	0499
Bioethics - Specialization in Clinical Ethics	Adv. Cert.	0499

ADMINISTRATION

President – Sue Lehrman	. . . . .	388-6054
VP Finance – Gary Ebeltoft	. . . . .	388-8385
VP Enrollment Services – Joanne Fitzgerald	. . . . .	388-8387
Director of Alumni Relations – Kate Downey	. . . . .	388-8754
Director of Career Development – Susan Bernardi	. . . . .	388-6239
Director of Development – Wallace Altes	. . . . .	388-6561
Coordinator - Institutional Reporting – Amy Nevin	. . . . .	388-6054
Ombudsperson – Michele Paludi	. . . . .	388-6596

ADMISSIONS AND REGISTRAR

Director/Registrar – Rhonda Sheehan	. . . . .	388-6238
Coordinator of Admissions – Diane Trzaskos	. . . . .	388-6642
Registration –	. . . . .	388-6148
Transcripts –	. . . . .	388-6295

SCHOOL OF EDUCATION

Dean – Patrick Allen	. . . . .	388-6361
Administrative Assistant – Chris Angley	. . . . .	388-6361

SCHOOL OF ENGINEERING & COMPUTER SCIENCE

Dean – Robert J. Kozik	. . . . .	388-8068
Administrative Assistant – Marcia Catrambone	. . . . .	388-6235

SCHOOL OF MANAGEMENT

Dean – Mel Chudzik	. . . . .	388-6447
Administrative Assistant – Marcia Catrambone	. . . . .	388-6235
Chair MBA – Mel Chudzik	. . . . .	388-6447
Chair MBA Health – John Huppertz	. . . . .	388-8738

CENTER FOR BIOETHICS & CLINICAL LEADERSHIP

Director – Robert Baker	388-8045
Assistant Director – Ann Nolte	388-8045

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Admissions Quick Facts

Applications

Accepted on a rolling basis throughout the year:

- Master of Arts in Teaching
- Master of Science for Teachers
- Computer Science
- Electrical Engineering
- Mechanical Engineering
- Engineering & Management Systems
- MBA
- MBA in Healthcare Management
- Clinical Leadership

March 1st Filing Date:

- Master of Arts for Teaching (Full-time only)

April 1st Recommended Filing Date*:

- Joint MBA programs with Albany Law School
- Joint MBA/MS programs with Albany College of Pharmacy

June 15th Recommended Filing Date:

- MS Bioethics

Union College Combined Degree – Required to file application by 10th term (fall Senior Year)*:

- BS-BA/MAT (as early as 8th term)
- BS/MS School of Engineering/Computer Science with Union College (as early as end of sophomore year)
- Accelerated/5 year BS-BA/MBA (as early as end of sophomore year)

*Separate applications and admission decisions to each school are required.

School Transcripts: The Bioethics program requires the official transcript from the highest degree earned. All other programs require all previous college transcripts.

Essay: Required by all programs. Instructions for required essays can be found on the back of the specific program application.

Application Fee: \$60 for all degree-seeking applicants. Union College students/alumni and those applying to the Engineering and Computer Science programs through the Engineering Consortium (BPMI, KAPL, Plug Power and General Electric) may waive the application fee. Non-degree students are not required to pay an application fee.

Interviews: Required by the MAT and MST program and recommended for all other programs.

Recommendations: Three recommendations are required for all programs. The MAT program requires that two of them be academic faculty familiar with the student's academic ability.

Entrance Exams: The MBA programs require the GMAT. For GMAT waivers see the *Admissions Information* section of this catalog. The Bioethics and MAT programs may request a standardized test. All other programs do not require entrance exams.

Immunizations: All students are required to submit immunization records. Students (including all Bioethics students) who will have contact with patients in a health facility require a more extensive set of forms. For specific instructions see the *Registration Information* section of this catalog.

International Applicants: The TOEFL is required for all programs unless you have studied in an English-speaking university for a minimum of two years. The Admissions Committee may request a telephone interview. It is recommended that international applicants currently studying or living outside the United States who require an I-20 or DS-2019 (formerly IAP-66) submit their applications five months prior to the first term they plan to start their studies. A complete International Grade/Degree Evaluation is required of all transcripts.

Financial Aid Applications: A Free Application for Federal Student Aid (FAFSA) is required for students applying for financial aid. Applicants should contact the Financial Aid office at Union College at (518) 388-6123. Specific program scholarships are listed in this catalog in the *Financial Aid Section*. Students may also contact the Admissions and Registrar's office for updates.

Admissions Office Hours: Weekdays 8:00 a.m. – 4:30 p.m., closed from 1:00 – 2:00 p.m.. The first week (M-Th) of each term the Office of Graduate Admissions and Registration has extended hours until 6:30 p.m. For additional extended hours consult the web site and term course listings.

Contact Information

- **Sue Lehrman, PhD** (518) 388-6054
President
- **Joanne Fitzgerald** (518) 388-8387
Vice President for Enrollment Management
- **Rhonda Sheehan** (518) 388-6238
Director of Admissions and Registrar

Provisions of this publication are not to be regarded as an irrevocable contract between the student and The Graduate College. The Graduate College reserves the right to make changes in its course offerings, degree requirements, regulations and procedures, and fees and expenses as educational and financial considerations require.

The Graduate College does not discriminate on the basis of age, race, color, religious belief, disability, sexual orientation, or national origin. The Graduate College's policy of nondiscrimination extends to all areas of its operations, including, but not limited to, admissions, student aid, athletics, employment, and educational programs. All the rights, privileges, programs, and activities generally accorded to all full-time matriculated students of The Graduate College are accorded on a nondiscriminatory basis.

The Graduate College is committed to assisting all members of its community in providing for their own safety and security. Information regarding campus security and personal safety, including topics such as crime prevention, campus safety law enforcement authority, crime reporting policies, crime statistics for the most recent three-year period, and disciplinary procedures is available from the Director of Campus Safety of Union College at 807 Union Street, Schenectady, NY 12308. This information is also available from the Union College website at www.union.edu/PUBLIC/SAFETY/CommunityReport.html

A Message from the President

It's my pleasure to introduce you to the unique programs offered by The Graduate College of Union University. Union University, established in 1873, is a federation of institutions consisting of Union College, Albany Medical College, Albany Law School, the Dudley Observatory, Albany College of Pharmacy and The Graduate College of Union University. The Graduate College is located on the beautiful Union College campus in Schenectady, New York, and our students have access to all Union College services.

The Graduate College serves full- and part-time students, providing outstanding master's-level professional degree programs that meet the needs of New York's Capital Region and beyond. We currently offer graduate programs in education, engineering (electrical and mechanical), computer science, engineering and management systems, business administration, health administration and bioethics. A number of joint programs exist between The Graduate College and other Union University institutions, including joint MBA and MS programs with Albany Law School, Albany Medical College, Albany College of Pharmacy, and Union College.

Our mission statement describes us well: Interactive classes, personalized attention, and experiential learning promote the acquisition of critical thinking, effective communication and quantitative skills, and the capacity for life-long professional learning. GCUU alumni act responsibly, independently and ethically within their institutions and assume leadership roles as they advance their careers.

Of course no catalog can capture the heart and soul of a college: the dedication of our faculty, the camaraderie and collegial relationships of our students, the care and concern of our administrators, and our close working relationships with the professional community are hard to express fully in print.

We invite you to start your exploration of The Graduate College with our catalog. However, we hope that you will call us or visit the campus to get the true flavor of our offerings and our environment. Reach a higher degree of excellence with a graduate degree from The Graduate College of Union University!

Sue Lehrman, PhD
President

LOCATION

The Graduate College of Union University is located on the campus of Union College in Schenectady, NY. As the Graduate College contracts with Union College for a number of services, this catalog refers to policies and offices that are part of Union College.

Union University

The Graduate College is part of Union University, a federation

Mission and Goals

Adopted October, 2003

of independent institutions. Other members are Union College, Albany Medical College, Albany Law School, Dudley Observatory, and Albany College of Pharmacy. Each has its own governing board and is responsible for its own programs. There are several programs jointly offered by Union University Schools.

Mission

The Graduate College of Union University serves full- and part-time students, providing outstanding master's-level professional degree programs that meet the needs of New York's Capital Region and beyond. Interactive classes, personalized attention, and experiential learning promote the acquisition of critical thinking, effective communication and quantitative skills, and the capacity for life-long professional learning. Graduate College alumni act responsibly, independently and ethically within their institutions and assume leadership roles as they advance their careers.

Goals

- To increase the size, quality, and diversity of the student body without sacrificing small class size and close student-faculty interaction.
- To maintain a faculty of sufficient size, quality and diversity to ensure program success.
- To ensure that graduates attain the necessary knowledge, attitudes, and skills to be valued workers and leaders in their professional positions. Specifically, graduates will:
 - be critical analyzers and effective decision makers
 - be able to communicate effectively
 - be ethically competent
 - excel in their professional disciplines
- To provide effective career planning and placement services for all students.
- To promote faculty service and research which enrich the classroom and help students and alumni grow professionally.
- To create innovative partnerships with key internal and external constituents.
- To establish self-monitoring programs which adjust curriculum and policies to meet significant constituent needs.

Academic Conduct and Honesty

The Graduate College is dedicated to teaching its students the most productive academic approaches, the best professional practices, and the highest ethical standards. We believe these goals will develop graduates who conduct themselves with dignity, who are recognized for their honesty, and who are productive in their respective fields. Academic honesty is one critical component of the college's purposes and ideals. Academic honesty is observed when persons think critically and independently, when they act with integrity, and when they distinguish clearly between the work done by others and their own work. The faculty demonstrate these qualities in ways appropriate to their own vocational fields. They promote academic honesty in their students and the college supports them with rules for examinations and for citing literature sources, and defines disciplinary consequences. (Refer to the student handbook for more information.)

2005-2006 College Calendar

JUNE 2005

- 13 Summer Term I Begins (School of Management)
- 14 MAT Summer Program Begins

JULY 2005

- 19 Summer Term I Ends (School of Management)
- 20 Summer Term II Begins (School of Management)

AUGUST 2005

- 7 Bioethics Program 2-week Pro-Seminar begins
- 12 MAT Summer Program Ends
- 19 Bioethics Program 2-week Pro-Seminar ends
- 15-26 Fall Term Registration
- 25 Summer Term II Ends (School of Management)

SEPTEMBER 2005

- 7 Fall Term classes begin

NOVEMBER 2005

- 7-18 Winter Term Registration
- 15 Fall Term classes end
- 16-22 Fall Term Exam period
- 23 Winter recess begins
- 28 MAT Winter Term courses begin this week

JANUARY 2006

- 3 Winter Term classes begin

FEBRUARY 2006

- 27 Spring Registration begins

MARCH 2006

- 10 Spring Term Registration ends
- 10 Winter Term classes end
- 13-16 Winter Term exams
- 17 Spring Recess begins
- 27 Spring Term classes begin

MAY 2006

- 8 Summer Term Registration begins

JUNE 2006

- 2 Spring Term classes end
- 5-7 Spring Term exams
- 10 Commencement

For withdrawal rules and fees see *Costs* section, "Withdrawals and Schedule of Refunds"

Admissions' and Registrar's Office Hours:

8:00 am – 4:30 pm; closed 1:00 pm – 2:00 pm

*Special Office Hours:

8:00 am – 6:30 pm; closed 1:00 pm – 2:00 pm

The office will be open until 6:30 pm Monday through Thursday the first week of Fall, Winter and Spring terms.

School/Program Hours: Contact the School/Program office for their hours.

Snow Closing: Snow closing announcements will be broadcast on the following stations: Television—WRGB (6), WTEN (10), WNYT (13), FOX (8); Radio—WGY (810 AM), WYJB (95.5), WQBK (103.9), WPYX (106.5), WKLI (101.9), WFLY (92.3), WRVE (99.5), WTRY (98.3) after 3:00 p.m.

Religious Observances: Classes will be held; students observing holidays may request make-up sessions for exams.

Programs and Advisors

Office of Graduate Admissions and Registration

(518) 388-6148 FAX: (518) 388-6686

School of Education

(518) 388-6361 FAX: (518) 388-6686

School of Engineering and Computer Science

(518) 388-8068 FAX (518) 388-6754

School of Management

(518) 388-6235 FAX: (518) 388-6754

Center for Bioethics and Clinical Leadership

(518) 388-8045 FAX (518) 388-8046

MS

- | | Telephone | Professor |
|---|----------------|---------------|
| • Bioethics | (518) 388-8045 | R. Baker |
| • Clinical Leadership in Health Management | (518) 388-8045 | R. Baker |
| • Computer Science | (518) 388-8361 | V. Barr |
| • Engineering: | | |
| Electrical | (518) 388-8068 | R. Kozik |
| Mechanical | (518) 388-6408 | W. Keat |
| • Leadership in Medicine - MBA or MS in Healthcare Management | (518) 388-8387 | J. Fitzgerald |

MAT/MS for Teaching

- Master of Arts in Teaching (518) 388-6361
- Master of Science for Teachers (518) 388-6361

MBA

- Non-matriculated Students

Full-time & Part-time	Joanne Fitzgerald	(518) 388-8387
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- MBA-Health Students

International:	Mel Chudzik	(518) 388-6447
	Martin Strosberg	(518) 388-6299
Full-time:	Jim Lambrinos	(518) 388-6253
Part-time:	Martin Strosberg	(518) 388-6299
5-Year Students	John Huppertz	(518) 388-5738
- JD/MBA

	Mel Chudzik	(518) 388-6447
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- MBA-Management

International:	Mel Chudzik	(518) 388-6447
Full-Time (Including JD):		
*A-F	Jay Carlson	(518) 388-6738
*G-M	Zhilan Feng	(518) 388-6236
*N-S	Rudy Nydegger	(518) 388-6538
*T-Z	Don Arnold	(518) 388-6302
Part-time	Alan Bowman	(518) 388-6297
*5-Year Students	Jim Lambrinos	(518) 388-6253
- Pharmacy Students

MS & MBA	John Huppertz	(518) 388-8738
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- 8 Year Med (LIM) (current)

MS & MBA	Joanne Fitzgerald	(518) 388-8387
(Incoming FO5 and after)	John Huppertz	(518) 388-8738
- HR Certificate

	Michele Paludi	(518) 388-6538
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HISTORY OF THE GRADUATE COLLEGE OF UNION UNIVERSITY

The Graduate College of Union University was formed in 2003 out of the graduate programs of Union College. Bolstered by expanding enrollments in all graduate programs, and the growing regional demand for full- and part-time graduate study, a need for a new professional graduate college was recognized. At the same time, this move clarified and strengthened Union College's reputation as a nationally-recognized leader in undergraduate liberal arts and engineering education.

The Graduate College consists of three graduate schools and a center: the School of Management, the School of Education, the School of Engineering and Computer Science, and the Center for Bioethics and Clinical Leadership.

The Graduate College is a part of Union University, a federation of independent undergraduate and graduate institutions, currently consisting of Union College, Albany Medical College, Albany Law School, Dudley Observatory and Albany College of Pharmacy. Established in 1873, the University has a board of governors made up of representatives of the member institutions' boards of trustees. The president of Union College serves as the chancellor of Union University.

The Graduate College believes in the philosophy of providing an educational environment characterized by high faculty-student interaction and small class size.

The Graduate College values its Union College heritage and its rich and multi-varied connection to the liberal arts and sciences. In fact, it was founded on the premise that these connections will enrich professional graduate education. Local, national, and global markets are embedded in political, economic, and cultural systems. As The Graduate College goes forward, it will build on its historical foundations.

THE GRADUATE PROGRAMS

The Graduate College of Union University, through its graduate schools and center, offers the following graduate degrees: Master of Business Administration, Master of Science, and Master of Arts.

Master of Science degrees can be earned in secondary education, clinical leadership in health management, bioethics, computer science, electrical or mechanical engineering and Engineering and Management Systems. The Master of Arts is awarded in teaching. The Master of Business Administration program also offers a degree in Healthcare Management.

Academic Requirements

Students may matriculate as either part-time or full-time students depending on their program (see the *Admissions Information* section of this catalog). Students are considered full-time if they are enrolled in two or more courses per term.

Students must finish their degree requirements within six years of matriculating at the Graduate College.

MS Programs

A minimum of one academic year of course and thesis work is required for the master of science degree in most programs. This is equivalent to nine or ten full courses or seven or eight full courses plus two thesis courses.

The Master of Science for Teachers degree requires a minimum of 11 courses, including thesis work.

Bioethics degree candidates must pass a capstone course and complete a thesis research which includes a presentation by the student.

MAT Program

A minimum of one academic year of course and thesis work is required. This is equivalent to 16 courses.

MBA Program

The MBA degrees offered by the School of Management require the completion of 20 courses.

Joint Degree Programs

Five-year accelerated joint degree programs in conjunction with Union College lead to undergraduate degrees in various disciplines and graduate degrees in the MBA, MAT, mechanical engineering, electrical engineering, or computer science areas.

Union College undergraduate students who want to enter combined bachelor's-master's degree programs must apply for graduate admission to The Graduate College no later than the end of the fall term of their senior year. A cumulative grade point average of 3.0 is required. Students are encouraged to apply as early as their sophomore year for the MBA and Engineering and Computer Science programs. The MAT program requires students to apply after the start of their eighth term and before the conclusion of their tenth term. Acceptance into a program may enable students to apply up to three 500-level graduate courses for credit in fulfillment of their undergraduate degree at Union College and their graduate degree at The Graduate College, depending upon their program of study.

The Graduate College offers opportunities for joint degrees with other members of Union University. An eight-year Leadership in Medicine program with Union College, The Graduate College and Albany Medical College allows students to earn three degrees: a BS in Biology or Chemistry, an MS in Healthcare Management or an MBA in Healthcare Management, and a Doctor of Medicine. In cooperation with Albany Law School and the School of Management of The Graduate College, students may earn a joint JD/MBA. A joint Pharmacy Doctorate and MS or MBA in Healthcare Management in conjunction with the Albany College of Pharmacy is also offered.

Online Learning

The Graduate College strongly believes in the integration of online learning technology with traditional learning modalities. A number of our traditional classroom courses use online technology to supplement the classroom environment. Our MS in Bioethics is our first totally online degree with a short summer on-campus component.

The Graduate College uses the *Blackboard Learning System*, a Web-based server software platform that offers industry-leading course management, an open architecture for customization and interoperability, and a scalable design that allows for integration with student information systems and authentication protocols.

HMAC (Consortium) Courses

As a member of the Hudson-Mohawk Association of Colleges and Universities, The Graduate College of Union University participates in programs of cross-registration, permitting full-time students to take courses at other consortium colleges and universities. Consortium cross-registrations are subject to several conditions. In general, students are advised to confer with the instructor of the course proposed to be taken, but in any case they must fulfill the prerequisites set by the institution giving the course, including permission of the instructor if that is a normal condition for entering the course. Separate applications (obtainable from the registrar) must be completed for each course. When institutional calendars do not coincide, as will be the case in most instances, the individual student will be responsible for making the necessary accommodations, including food and lodging if the home institution is closed during the period of the course. Cross-registered students will be expected to abide by all regulations including attendance, parking, honor systems, and other provisions at the host institution.

Cross-registrations will be approved only for courses not offered at the home institution; in general, they will be limited to a maximum of half the normal course load. Further, students must have their academic advisor's permission in advance to cross-register for the course(s) in question. Cross-registration will be permitted only in courses that The Graduate College normally would consider for transfer credit.

Through the consortium, Graduate College students may enroll in Reserve Officer Training Corps programs of the Navy and Air Force at Rensselaer Polytechnic Institute, Troy, and in the Army ROTC program at Siena College, Loudonville. ROTC courses do not carry credit toward graduation. Such ROTC students may be eligible for scholarships and other benefits available under two- and three-year programs of the Selective Services. Students interested should contact the respective branches of the ROTC.

GCUU students who wish to take courses through HMAC should obtain a form in the GCUU Registrar's office. After the form is complete and approvals have been obtained,

they register at the other school. Students pay at their home schools. When the course is complete a transcript will be sent to GCUU and the grade and course will be applied to the GCUU transcript.

Members of the consortium, in addition to The Graduate College, are Union College, Siena, Adirondack Community College, Albany College of Pharmacy, Albany Law School, Albany Medical College, The College of Saint Rose, Columbia-Greene Community College, Empire State College, Fulton-Montgomery Community College, Hartwick College, Hudson Valley Community College, Junior College of Albany, Maria College, Massachusetts College of Liberal Arts, Rensselaer Polytechnic Institute, Russell Sage College, Schenectady County Community College, Skidmore College, the State University of New York at Albany, and the State University of New York College at Cobleskill.

Charter and Accreditation

The Graduate College of Union University is chartered by the New York State Board of Regents and was accredited by the Regents in September 2004.

The MBA program is accredited by AACSB-International (Association to Advance Collegiate Schools of Business), the world's leading business school accrediting body. The Graduate College's program is unique in being the smallest of all AACSB accredited business programs and one of only 28 accredited programs—along with such institutions as Harvard University, Stanford University, and Dartmouth College—that focus solely on graduate degrees. Less than 30 percent of all business programs are accredited nationwide. The Commission on Accreditation of Healthcare Management Education (CAHME - formerly ACEHSA) and AACSB-International dually accredits the Health Systems Administration program.

The MAT is accredited by The Teacher Education Accreditation Council. It is the first New York State education program to be accredited by TEAC.

The Academic Calendar and Course Load

The Graduate College has adopted the Union College trimester system approved by the New York State Department of Education in 1966. It divides the nine-month academic year into three terms of ten weeks each. There are also two summer sessions of five weeks each for the MBA programs and one eight to ten week session for other programs. The Academic year starts with the beginning of the summer sessions and concludes with the spring semester. Under this system each course equates to 3 1/3 semester hours.

Full-time course load is two courses per term, or six courses during fall, winter and spring terms. A typical trimester course load is three courses per term during fall, winter and spring terms.

Office of Graduate Admissions and Registrar
Rhonda Sheehan, Director(518) 388-6148

The Office of Graduate Admissions and Registrar handles all matters dealing with admissions, registration, class schedules, grades, academic records, graduation, international student services, veterans affairs, and certification of attendance or eligibility in such areas as veterans' benefits, government loan deferment, insurance, and other policy issues.

The Olin Building

The \$9 million Olin Building introduced two new high-technology classroom formats to The Graduate College. The first is a Collaborative Computer Classroom. These rooms contain all the electronic presentation tools available in the Electronic Presentation Classroom. The lectern, however, contains only a single computer type (Windows or Mac). These rooms contain eight to twelve desktop computers for shared use by up to 36 students. Depending upon class size, no more than four students collaborate on a single computer. All computers are linked to a high-quality, high-volume laser printer in each classroom. These classrooms are ideally suited for demonstrations of course and/or management software and group-oriented problem solving. Four such classrooms with Windows PCs and one classroom with Macintosh computers are available to The Graduate College.

The Olin Building also houses a Computer Lab classroom. This facility is similar to the Collaborative Classrooms, but is larger in size and allows up to 40 students per class. It currently contains 25 PCs. This room is ideally suited for language-based instruction and can also be used to teach simulation and other computer-intensive subjects.

Although Olin classrooms and electronic classrooms elsewhere on campus are in heavy demand during the day, The Graduate College's evening program schedule means the Institute has no trouble using desired rooms. All Graduate College faculty have file storage space on a Windows-2000 server. There is also a course area in which to post files for student access.

Laboratories

Laboratories frequently used include the following (all located in the Science and Engineering Building):

- **Electrical Engineering Labs**
 N102 - Electronics lab
 N104 - Computer lab
 N108 - Microprocessor lab
 N206 - Electronics lab
- **Mechanical Engineering Labs**
 S&E 201 - Computer lab
 S&E 205 - Computer lab
 Olin 015 - Mechanics lab
- **Computer Science Labs**
 S&E - S004 Computer lab
 S&E - N102 Electronics lab

- S&E - N104 Computer lab
- Olin - 110 Computer lab

For out-of-classroom work, students use study and group meeting space in Lamont House. Almost the entire lower level of the building is dedicated to student use; three rooms on the third floor (two conference spaces and student lounge) are also provided.

Network Infrastructure

The Graduate College's main network connects all computers located in offices, labs, and student residence halls. The network uses fiber optic cables between buildings and intelligent hubs (with 10BaseT/100BaseT technology) within buildings. Each workstation (Windows, Mac, or Unix) is a 10BaseT or 100BaseT node on the network. The network has been very reliable and responsive.

The Graduate College has also established a wireless network in Lamont House. Access to this wireless network is available in Schaffer Library, the Nott Memorial, the Olin Center High-Tech Learning Center, all Olin Center electronic classrooms, the Schaffer Library Plaza, and several other study space locations on campus.

Internet

Currently, The Graduate College has one OC3 line with a dedicated 20 Mbps of Internet access. Since the OC3 line is capable of up to 155 Mbps, there is plenty of room for future growth. Internet use has grown substantially for student and faculty research purposes. However, available capacity is more than adequate to meet institutional needs.

Computing Facilities

Non-workstation computing is conducted on *idol* and *dutch*. Both are DEC Alpha Servers 2100 4/275 running Compaq TruUNIX64. Applications on *idol* include Internet access, e-mail, secure-telnet, secure-ftp, and other Internet applications. *Dutch* has various programming languages and software packages such as C++, Prolog and MatLab. *Idol* and *dutch* accounts may be accessed through Windows or Mac workstations from individual offices, electronic classrooms, Information Technology Services (ITS) computer labs, special departmental labs (including the Lamont House Graduate Student Computer Lab), dorm rooms, and dial-in modems. Several terminals and computers are also located in the College Center.

Numerous computer labs are available for student use. Typically, these labs are available on a 24-hour, 7-day-per-week basis. Students may use pre-installed software for course- and career-related purposes. Personal software may not be installed; work must be saved to a student's own storage media. Graduate College students may use the computer laboratory in Lamont House (for graduate student use only). The Windows Lab, Mac Lab and Graphics Lab on the first floor of Steinmetz Hall are also available. Steinmetz

labs are staffed by student consultants and are adjacent to Information Technology Services, where additional college employees can assist with problems during regular working hours. Graduate College students may also use the Olin Learning Center, the Statistics Lab (located in the Social Science Building) and CHUC Lab (located in the Humanities Building). All labs are equipped with printers.

Lamont House Graduate Student Computer Laboratory

Opened in the fall of 1998, the Graduate Student Computer Laboratory is located on the lower level of Lamont House. It includes twelve Pentium workstations, two Power Macintosh workstations, and three older machines for lower-intensity applications (Internet and word processing). The lab is staffed by student technicians 30 hours per week. Laser printers are provided for student use. Applications on the lab's Pentium machines include:

- Analysis applications: JMP IN statistical software
 - Course-specific applications: AweSim, ©Risk for Windows, Storm, Turbo Tax
 - Databases: Access
 - Presentation packages: PowerPoint
 - Spreadsheets: Excel
 - Word processing: Word
 - Internet: Netscape, Windows FTP for Windows, Telnet for Windows, FrontPage
 - Programming languages: Visual Basic
- Lamont House is also completely accessible via wireless connection.

Windows Computer Lab

Located in Steinmetz Hall, this lab offers 15 Pentium computers (equipped with CD-RW drives) running Microsoft Windows XP. Students may use earphones for applications with sound. The lab offers free dot-matrix printing and with both black and white and color laser printing for a minimal fee. Each computer has the following applications:

- Analysis applications: Matlab, Mathematica, SPSS, SAS, MathCAD
- Course-specific applications: E-views
- Databases: Access
- Spreadsheets: Excel
- Word processing: Word
- Graphics packages: PowerPoint, Paint Shop Pro, Photoshop Elements
- Internet: Internet Explorer, SSH Secure FTP for Windows, SSH Secure Telnet for Windows, and FrontPage for web page development
- Programming languages: Visual C++, Visual Basic

Macintosh Computer Lab

Located in Steinmetz Hall, this lab contains ten computers using the Mac OS and equipped with CD-ROM drives. The lab offers free-dot matrix printing and both black and white and color laser printing for a minimal fee. One of the Macintosh workstations is connected to an HP ScanJet

scanner. Scanned images can be edited with Graphics Converter with 1200 ppi image resolution. Each machine has the following applications:

- Analysis applications: Mathematica
- Course-specific applications: Fractals and Chaos, Geometer's Sketchpad, OzTek
- Graphics packages: PowerPoint, Graphic Converter, CA Cricket Graph III, Photoshop Elements
- Spreadsheets: Excel
- Word processing: Word
- Multimedia: iMovie, iTunes
- Internet: Internet Explorer, Mac SSH Telnet, Mac SSH FTP, and Dreamweaver for web page development

Steenstrup Graphics Lab

Located in Steinmetz Hall, this lab offers eight Windows computers with CD-RW drives, running Windows XP and connections for four laptop computers. As with the other labs, this lab offers free dot-matrix printing and both black and white and color laser printing for a minimal fee.

Two PC workstations are connected to HP ScanJet scanners. Scanned images can be edited with Paint Shop Pro with 1200 ppi image resolution. Each machine has the following applications:

- Analysis applications: Matlab, Mathematica, MathCad, SPSS
- Course-specific applications: E-views
- Databases: Access
- Graphics packages: PowerPoint, Paint Shop Pro
- Spreadsheets: Excel
- Word processing: Word
- Internet: Internet Explorer, FrontPage for web page development, SSH Secure FTP for Windows, SSH Secure Telnet for Windows
- Programming Languages: Visual C++, Visual Basic

Social Sciences Statistics Lab (Stat Lab)

The Stat Lab has 13 desktop computers and one multimedia notebook with an LCD projection plate for classroom use. Installed software includes: SAS, SPSS, P-Stat, RATS, Limdep, Lindo, MacroBytes, MathCAD, MicroCase, Micro-TSP, Warwick DEA, E-Views, Great American History Machine, and Notebuilder.

Data sets available include: CITIBASE (quarterly updates), EconLit on CD-ROM (quarterly), International Financial Statistics (CD-ROM), Penn World Tables, U.S. Dept. of Transportation datasets (several CD-ROMs), Women's Indicator (UN CD-ROM), and World Resources Database.

CHUC Lab

Located on the lower level of the Humanities Building, this lab offers Windows computers and laser and dot-matrix printers. The lab is intended primarily for word processing and includes software for writing in foreign languages.

High-Tech Learning Center

Located in the Olin Building, the Center is designed for campus-wide group study, tutorials, faculty/student interaction, and classroom breakout areas. The Center includes conference and seminar rooms that can seat up to 15, smaller group study rooms for up to six, and a central open study space. The Center provides access to the Schaffer Library Instructional Technology Center and has full computer and VCR capabilities. There are four Windows computers, two Macintosh computers, network connections for laptops, and a color laser printer.

Athletic Facilities (518) 388-6284

The Alumni Gymnasium offers an eight-lane swimming pool with seating and a diving area, a multi-use gym, five racquetball and three squash courts, as well as an exercise room, locker rooms, and offices. Alumni Gym has two weight rooms, one with fifteen Cybex machines and the other with first-rate free-weight equipment.

The Memorial Field House contains a one-tenth mile indoor track, two basketball courts, and a multi-station universal gym.

The all-weather, artificial turf field is the main outdoor facility for a very active intramural program.

Campus Safety

Emergencies 911
Non-Emergency Request for Service . . (518) 388-6911

The Campus Safety Office is located at the Inn at College Park and provides safety services for The Graduate College.

Campus Safety provides a 24-hour, seven-day per week operation. Services include the operation of the control center; vehicular, bike, and foot patrols; preventative patrols; and community patrols. The control center monitors fire alarms and receives emergency calls (911) and requests for service (6911 or 6178). Among the many services provided are fire safety inspections and upkeep of life-safety systems and equipment; emergency response to persons in need of assistance for injury or other conflict; crime prevention and investigation; conflict resolution; lost and found; student escorts; student access to rooms and, response to problems involving safety and security of students, faculty and staff.

The business office is open Monday through Friday from 8 am to 4:30 pm for all non-emergency business, including vehicle registrations, lost and found, and parking tickets. Information regarding campus security and personal safety including topics such as crime prevention, campus safety law enforcement authority, crime reporting policies, crime statistics for the most recent three-year period, and disciplinary procedures is available from the Director of Campus Safety at 807 Union Street, Schenectady, N.Y. 12308.

For further information:

<http://www.union.edu/PUBLIC/SAFETYU>

College Trolley (518) 248-5111

The college trolley is a source of safe transportation provided and maintained by the Campus Safety Office. The 24-passenger trolley operates on a standard schedule of 6 pm to 2 am Sunday through Thursday and 6 pm to 4 am on Friday and Saturday. The trolley follows a defined route through the surrounding neighborhood streets, making scheduled stops at the Reamer Campus Center and the Student Center located in Old Chapel. A schedule of the trolley route can be found inside the trolley, in the Reamer Center near the newspapers, in Old Chapel, and is distributed to each Residence Hall.

For further information:

<http://www.union.edu/PUBLIC/SAFETY>

Campus Parking Policy and Traffic Regulations

The parking policy and traffic regulations apply to anyone who has a car on campus. This includes students, faculty, staff and visitors. The number of parking spaces on the campus is not sufficient to accommodate a vehicle for every student and employee (While there are generally enough parking spaces to accommodate the number of registered cars at any given time, it is not possible for everyone to park right next to the place where he/she works or attends classes.) This policy is designed to manage the available spaces as well as to maintain open areas for traffic flow and safety purposes.

All roadways on campus are considered fire lanes to ensure that emergency vehicles have access to all buildings and residence halls. No parking is allowed in fire lanes. The campus speed limit is 15 miles per hour on all campus roadways and in parking lots. Violators will be ticketed. Reckless driving or driving under the influence will most likely result in immediate suspension of privileges pending the adjudication of Conduct Charges. For a complete list of regulations governing parking and driving on campus, including possible sanctions for violations, you may consult the Campus Safety Website: <http://www.union.edu/PUBLIC/SAFETY/PoliciesAndRegulations.html> or go to the Campus Safety Office for a hard copy, which you will receive when you register your vehicle.

Vehicle Registration

All vehicles on campus must be registered annually. However, because of the limited number of spaces, registration does not guarantee a parking space. In order to register your vehicle you must take proof of registration, your driver's license, and your ID card along with \$15 (checks or cash), to Campus Safety. Temporary registration can be obtained for visitors and members of the community who will have a car on campus for less than two weeks. The cost is \$3. Failure to register your vehicle will result in tickets and fines.

Career Development Office (518) 388-6239

The Career Development Office provides services for The Graduate College students to explore career options. Services include but are not limited to: workshops, business etiquette dinners, networking events, site visits, individual appointments and assistance in the job/internship search process. Additionally, The Becker Career Center of Union College offers additional support and resources to The Graduate College through career advising, workshops and presentations, on-campus and off-campus recruiting, and an extensive resource library and website with career and employer information. Their web-based registration and recruiting system allows students to access the Calendar of Events, job and internship listings and an alumni mentoring network, 24 hours a day, 7 days a week. For more information on Becker Career Center resources, call (518) 388-6176 or go to [www.http://www.union.edu/BeckerCareerCenter](http://www.union.edu/BeckerCareerCenter)

For more information on GCUU Career Services, visit www.gcuu.edu and click "Career Services."

**Counseling Center
Silliman Hall, Third Floor (518) 388-6161**

The Counseling Center provides services for The Graduate College students who experience personal or psychological problems. Communications are kept confidential. The Counseling Center will also assist with psychiatric and other off-campus referrals.

**College Bookstore of Union College
Reamer Campus Center (518) 388-6188**

The Union College Bookstore provides The Graduate College students the tools needed to achieve academic excellence, including computers and computer peripherals, in addition, of course, to textbooks and school supplies. The Bookstore also carries a large variety of emblematic products, (i.e., apparel, glass-ware, decals, etc.), candy and snacks, health and beauty care products, recorded CD's, film and film developing, general reading books, magazines and magazine subscriptions, online shopping, textbook buy-back, and much more. The staff is always happy to accommodate any special needs required.

For more information, visit their website: www.Bookstore.union.edu

**Copy Center
Reamer Campus Center Room 102 . . . (518) 388-6640**

- Hours: 8:30 am - 4:45 pm Monday through Friday

The Copy Center offers state of the art high-speed digital printing and photocopying. Services include full color photocopying, scanning, scan to disk, transparencies, carbonless paper, spiral binding, cutting, and more. The Copy Center also can assist you with the layout of special projects. For information contact the Copy Center at 388-6640.

Media Services of Union College (518) 388-6438

The Media Services Department has audio/video equipment that students or student groups may rent. For more information or to make arrangements, phone the office between 8:30 am and 4 pm at ext. 6438 or stop by the office in Schaffer Library room 207. Please request equipment well in advance. Rental fees apply except when requested for an academic class session.

**Alumni Relations
Kate Downey (518) 388-8754**

GCUU Alumni Relations Office is the channel of communications between the Graduate College and its alumni/ae. The office maintains current records of alumni/ae, coordinates alumni/ae participation in campus events and club functions in major cities throughout the nation, and seeks the assistance of alumni/ae in identifying candidates for admission and in providing career counseling for current and former students.

Dining Facilities (518) 388-6050

Dutch Hollow, located in the Reamer Campus Center, features fast food and much more. Beverages, pizza, ice cream, submarine sandwiches, and "broiled to order" items are readily available before and after evening classes from 7:30 a.m. to 12:00 a.m. Specials are served from 11:30 a.m. to 2:00 p.m., and 5:00 to 7:30 p.m., Monday through Friday. Another popular spot is the Rathskellar, opened by students in the 1950s and located in the basement of Old Chapel.

**Student Health Insurance
Office of Graduate Admissions and
Registration, Lamont House (518) 388-6148**

Graduate students, who do not qualify for an insurance waiver may acquire health insurance through the Office of Graduate Admissions and Registrar.

**Health Services
Silliman Hall, Second floor (518) 388-6120
Fax (518) 388-6147**

Union College Health Service provides the following free professional care for The Graduate College:

- A registered nurse on duty from 7:30 am to 11:00 pm Monday to Friday and 11:00 am to 5:00 pm Saturday and Sunday.
- Physician available: 8:00 to 10:00 am Monday, Wednesday, and Friday, and 4:15 to 6:15 pm Tuesday and Thursday. No appointment necessary.
- Women's Health Service at Silliman every Tuesday 9:00 am to 12:00 pm provided by a nurse practitioner. Appointments are needed.

Union College Health Service provides students who have completed their pre-enrollment health form the following services:

- Medical and nursing care for illness and injuries

- Allergy injections during doctor's hours
- Laboratory testing (limited)
- Health teaching and counseling
- A list of local physician specialists and health agencies
- Follow-up care as recommended by family physician or specialist
- Vision test for DMV
- TB skin testing
- Emergency Contraception/pregnancy testing
- Loan of medical equipment as needed (limited)
- Women's Health Clinic

All students' health records are confidential.

For further information:

www.union.edu/CampusLife/Services/HealthServices

Schaffer Library

Mary Cahill(518) 388-6277

Hours

8 am - 1 am, Monday - Thursday

8 am - 11 pm, Friday

10 am - 10 pm, Saturday

11 am - 1 am, Sunday

(Special hours posted for examination and vacation periods.)

Services

Students must come to the library's Circulation Department at least one time to register using their GCUU picture identification card. Students issued a replacement identification card should also check with the Circulation Department. Please call 388-6280 with any questions about registering with the library.

GCUU students in good standing with the library may borrow circulating library materials and obtain research materials through interlibrary loan at no charge. GCUU students are subject to all library rules, regulations and fine schedules.

Access to library bibliographic and full text databases and electronic journals is available from library computers located on the first floor of the library and in campus computer labs. Students should consult with Information Technology for information on obtaining access to the campus network from a home computer. Students can reach the IT department at 388-6293 between 8:30am and 5:00pm Monday through Friday.

Individual instruction on using library resources as well as assistance in using the Interlibrary Loan system is available at Schaffer Library Reference Desk most hours the library is open. Please call 388-6281 with any questions about using library resources. Please call 388-6612 with any questions about Interlibrary Loan.

Hours and general information about Schaffer Library and library services are posted on the Library Web: <http://www.union.edu/PUBLIC/LIBRARY/>. The librarian liaison to GCUU is Mary Cahill. Students with any questions or

concerns about library services may contact Mary by phone (388-6612) or email (cahillm@union.edu).

School of Education Library

Accessible 24 hours a day

The School of Education's Curriculum Library (located in the basement of Lamont Graduate Center) is a non-circulating collection of books, magazines, articles, textbooks, and other professional materials that have been purchased and/or donated to the education program. The School of Education has accumulated substantial holding on current and historical material on topics central to teachers, schools, and teaching in each of the disciplines. National Board Certification Support Groups use the library as an educator's professional library.

Writing Center

2nd Floor Schaffer Library(518) 388-6058

Hours

2:30 pm - 5 pm, Monday - Friday

7 pm - 10 pm, Sunday - Thursday

The Writing Center offers help to the College community with all kinds of writing: papers, theses, reports, résumés, etc. The director is assisted by trained student tutors. Appointments are not necessary, and brief questions can be answered on the phone (388-6058) or by e-mail (marm@union.edu). Handbooks, dictionaries, and other writers' aids are available for student use.

Multicultural Resource Center

The Multicultural Resource Center (Reamer Campus Center-308) is open during normal business hours Monday through Friday, and during the evenings for reserved events. The Center offers a space for educational, cultural, and social programming on issues relating to cultural diversity for all members of the Union College and The Graduate College community, including the history and experiences of African-American, Asian-American/South East Asian, East Indian, Hispanic/Latino, Native American, and Gay, Lesbian, and Bisexual peoples.

Religious Programs

Silliman Hall—Lower Level

- Rev. Victoria Brooks-McDonald, Protestant Campus Ministry (518) 388-6618
- George Forshey, Catholic Campus Ministry (518) 388-6087
- Margo Strosberg, Jewish Campus Ministry, and Bonnie Cramer, Jewish Program Professional . . . (518) 388-6539

The College chaplains offer students venues for community, for worship, for spiritual and ethical exploration, for personal growth, for community service, and for religious holiday observances.

Catholic Campus Ministry: Sponsored by the Diocese of Albany, the chaplain supports the Catholic community on campus by coordinating student engagement in liturgy, theological reflection, community service, and social activities. The chaplain is also available for individual consultations with students, faculty, or staff and serves as advisor to the Newman Club.

Campus Protestant Ministry: This ministry offers students a variety of programmatic and individual opportunities for spiritual exploration, worship and service to the community. Sponsored by local congregations, the Campus Protestant Minister is available to students, faculty, staff and administration for spiritual counsel and nurture. For more information visit www.union.edu/cpm.

Campus Jewish Community: Sponsored in part by Hillels of Northeastern New York, the Jewish Chaplain and the Jewish Program Professional offer students and faculty opportunities for socialization, for religious observance and growth, for community service, for cultural enrichment, and for personal development. They serve as a link between the campus and the greater Jewish community.

Reamer Campus Center (518) 388-6118

There is no smoking in the Reamer Campus Center including the building doorways. Alcohol and pets may not be brought into the building. Bicycle riding or rollerblading is not allowed. A bicycle rack is located by the front entrance for your convenience.

An ATM, stamp and change machine, video games and pin-ball are located on the first floor of the Atrium. A pool table and big screen T.V. are located in the 4th floor lounge.

To reserve Reamer Campus Center rooms, space or tables for the promotion of campus events or fundraising, please call the Office of Events at 388-6098. To reserve Chet's; Patio; Dutch Hollow Restaurant; Upper class Dining; call Dining Services. Registered officers of Student Activities groups may also schedule the Student Activities Workroom (CC 404A).

Veterans Administration Educational Benefits

Students who are eligible to receive educational benefits under the various chapters administered by the V.A. may obtain more information by contacting the Office of Graduate Admissions and Registrar at 388-6295. There are more details available in the Financial Aid Section.

Admissions Information

The Graduate College's Office of Admissions and Registrar has a friendly and helpful staff waiting to assist students through the process of applying. We welcome applications from both full- and part-time applicants. The office, which is located in Lamont House, oversees all admissions, registration and graduation processes for the students convenience. Please feel free to contact us at (518) 388-6148 with any questions.

General Requirements For Admissions

Evidence of intellectual achievement, motivation, and aptitude are required for admission to graduate programs. All students must have or be a candidate for an undergraduate degree from an accredited college before applying for graduate admissions status. A grade point average of "B" (3.0 cumulative index) or better in undergraduate work is expected for admission. Students who wish to apply for degree status must consult with the Office of Graduate Admissions and Registrar and discuss their academic program with the appropriate admission staff or program advisor. Students with advanced degrees or substantial graduate work will also be judged on the record of previous graduate accomplishments. The Admission Committees attempt to meet the desire of the Board of Trustees for broad geographic and socioeconomic distribution in the student body. We also accept students who will broaden the range of backgrounds and lifestyles within the College community.

Application

Accepted on a rolling basis throughout the year:

- Master of Arts in Teaching
- Master of Science for Teachers
- Computer Science
- Electrical Engineering
- Mechanical Engineering
- Engineering and Management Systems
- MBA
- MBA in Healthcare Management
- Clinical Leadership

March 1st Filing Date:

- Master of Arts in Teaching (Full-time only)

April 1st Recommended Filing Date*:

- Joint MBA programs with Albany Law School
- Joint MBA/MS programs with Albany College of Pharmacy

June 15th Recommended Filing Date:

- MS Bioethics

Union College Combined Degree – Required to file application by 10th term (fall Senior Year)*:

- BS-BA/MAT (as early as 8th term)
- BS/MS School of Engineering/Computer Science with Union College (as early as end of sophomore year)
- Accelerated/5 year BS-BA/MBA (as early as end of sophomore year)

*Separate applications and admission decisions to each school are required.

Applicants to all programs are required to submit:

1. Application first page
2. Application fee of \$60*
3. All official college transcripts (Bioethics requires highest degree only)
4. Three letters of recommendation (MAT requires two of the letters be academic)
5. Testing (see testing section below in this section)
6. Essay (see program application for essay instructions)
7. Interviews (required for the MAT and MST programs and strongly recommended for all other programs)

Applicants are notified within four weeks of an admissions decision after a completed application is received.

Once submitted, all application materials become the property of The Graduate College and are not returnable.

*The application fee is waived for Union College students and alumni and applicants to the Engineering and Computer Science programs through the Engineering Consortium (BPMI, KAPL, General Electric and Plug Power).

Additional MAT Applicant Requirements

Applicants to the MAT program must have completed the equivalent of at least 30 semester hours in the liberal arts major area (English, foreign language, mathematics, science, social sciences) in which they seek certification.

Testing

The Graduate Management Admissions Test (GMAT) is required for applicants to the MBA programs. The Graduate College code is 7991. Joint applicants from Union College or Siena College for the MBA program may waive the GMAT if their undergraduate grade point average is equal to or higher than a 3.4 cumulative average. For other colleges where we have 4–1 articulation agreements, the GMAT is not required for students with a cumulative GPA of 3.5 or above. Joint applicants from Albany Law School may waive the GMAT if they submit their LSAT and a college transcript with a calculus grade of "B-" or better. Students with advanced degrees may request consideration for a GMAT waiver by writing to the Director of Admissions.

Effective January 2006 – GMAT codes for GCUU (previously 7991) PT MBA – 2PK-PN-66, FT MBA – 2 PK-PN-57

Joint MS in Clinical Leadership with Albany College of Pharmacy applicants must submit the GMAT, MCAT or PCAT for admissions.

The GRE may be requested by the MAT program in specific instances.

The Bioethics admissions committee may also request a standardized test.

All other programs do not require entrance exams.

Joint Albany Law School students should request a copy of LSATs be sent from the Law School to The Graduate College.

Deferment

Students may request a deferment of their admission for one year. The request is required in writing to the Director of Admissions and Registrar. Extensions beyond the one year deferment must be submitted in writing to the appropriate admissions committee through the Director of Admissions.

Course Load Status: Full/Part time

The Computer Science, Masters of Science for Teachers, Engineering and Management Systems, Electrical Engineering, Mechanical Engineering, MBA, MBA in Health Systems Administration and MS Clinical Leadership in Health Management programs can all be completed either full-time or part-time. The Bioethics program is a part-time on-line program with a short summer on-campus component. The MAT full-time program is a one-year program, which begins in June.

The classification of a full-time student is based on a course load of two or more courses per term, with a minimum of six courses during the Fall, Winter, and Spring terms. In general, full-time students take three courses per term.

Full-time students in the MS and MA programs take three to four academic terms to complete and the MBA programs take two years to complete. Part-time students must complete program requirements within six years from the date of matriculation.

Non-Matriculated Status

All programs allow non-matriculated students. This allows qualified students to start course work while completing the application. Contact the Office of Admission for specific qualifications. Part-time students may enroll in graduate courses as non-matriculated students before admission to a graduate program, provided they satisfy the course prerequisites and have a Bachelor's degree with at least a 2.7 undergraduate grade point average. Applicants with undergraduate GPAs below 2.7 may petition the Admissions Committee to waive the 2.7 requirement for non-matriculated course work. There is a limit of two non-matriculated courses for the MAT. All other programs have a limit of three. Non-matriculated students are required to consult with a graduate program advisor before registration. All students must submit an application for graduate admission, unofficial college transcripts, and an application fee before registering for their first course. Official transcripts are required for the admissions decision. If applicants will be taking one course per term, they are asked to submit an immunization form within 30 days of registration, completed and signed by a physician. If applicants will be taking more than one course per term, the immunization form

must be submitted before the start of classes, as required by New York State law. Before registering for their third course (for MAT program) fourth course (for other programs), an admissions decision on the student's application must be made.

Combined Union College and The Graduate College Degree Programs

Union College undergraduate students with an excellent academic record may apply for a combined degree program with the Masters in Computer Science, Masters in Electrical Engineering, Masters in Mechanical Engineering, Masters of Arts in Teaching, Masters in Business Administration, or the MBA in Healthcare Management programs.

A cumulative average of 3.0 in undergraduate course work is expected (3.25 for MAT program). Acceptance into the program enables students to apply up to three graduate college courses for credit (depending on the major) in fulfillment of both undergraduate Union College and The Graduate College graduate degree requirements. MAT students may apply between the beginning of their eighth term and the end of their senior year. All other program applicants are encouraged to apply their sophomore year and must apply for graduate admission no later than the end of the fall term of their senior year at Union College. Students are required to notify both Registrars that they are in a joint program.

International Students

All international students requiring an I-20 or DS2019 (formerly IAP-66) form are encouraged to submit their applications by April 1 for fall admission. For other terms they are encouraged to allow a minimum of five months to process all required paperwork. Applicants must also provide proof of financial independence and submit a score from the Test of English as a Foreign Language (TOEFL). The TOEFL is required for all programs unless a student studied in an English-speaking university for a minimum of two years. A telephone interview may also be requested. A complete international grade/degree evaluation is required for all transcripts.

Transfer Credit/Course Waivers

With the approval of the program advisor and/or transfer review committee, graduate work completed on a satisfactory level (minimum grade of "B-") at other institutions may be counted toward a Graduate College degree if it contributes to the completion of degree requirements. Credits transfer in, but grades do not. Engineering, Computer Science and MAT programs may allow up to two transfer courses. Bioethics, MBA and Health MBA students may transfer up to three qualified courses. Transfer credits must come from courses not used for another degree.

Matriculated students interested in receiving credit for courses to be taken elsewhere are advised to obtain a per-

mission form at the Office of Graduate Admissions and Registrar and acquire the necessary approval prior to registration at another school.

MBA and MBA in Healthcare program applicants may waive and/or transfer up to a maximum of eight full courses. A waiver is based on undergraduate course work. A form is available in the Admissions office which notes specific criteria. Upper level courses will be waived with a replacement. Waiver decisions are made by the Waiver Committee. Bioethics students may waive and/or transfer up to three courses. Matriculated students are notified at time of admission of pre-approved waivers and transfers. Students who want to appeal this decision and request a further review should contact the Director of Admissions and Registrar or their academic advisor. Course outlines and descriptions to complete these reviews may be required.

Intent to Enroll/Deposit

All programs require a response form and a \$150 deposit to secure a place in the class. Once enrolled, the non-refundable deposit is applied to the student's resource fee.

Academic Committee

The Academic Committee is responsible for recommending and applying graduate policy for the admission and academic performance of students. The Committee consists of faculty representatives, a student representative, the Registrar, Deans from the Graduate Schools, Vice President of Enrollment Management, and President of The Graduate College. The Committee reviews petitions for applicants accepted by The Graduate College's Admissions Committees to degree status that fall below the 2.7 minimum requirement and reviews petitions submitted by students with academic considerations. Students who wish to petition the Committee with regard to grades, graduate status, or other matters must follow the procedures as listed in the Student Handbook.

Advisory Services

Questions regarding admission to graduate programs should be directed to the Office of Graduate Admissions and Registrar. Faculty members are available by appointment and during posted office hours each term. All students must consult with an academic advisor before enrolling in courses.

Registration Information

IMMUNIZATION

All students attending New York State colleges and universities, whose birthdates are on or after January 1, 1957, are required to show proof of immunity against measles, mumps, rubella, and tuberculosis.

Proof of immunization must be submitted to the Health Services Office prior to registration for all full-time students or part-time students taking two or more courses. Part-time students taking fewer than two courses are asked to submit the form within 30 days of registration for their first course. A form is available for this purpose from the Office of Graduate Admissions and Registrar or downloadable from the web site. Students may also provide a physician's written statement as proof of immunization but such documentation must provide all required information and be attached to our form. The Health Services Office will either electronically post a health clearance or provide the student with a Health Clearance form indicating compliance with the law. This form must be presented in order to register.

Students participating in programs that require being in contact with patients at a healthcare facility will be required to meet more stringent immunization requirements and have a physical within the last year. These students should submit this specialized health disclosure to Lamont House Registrar's office.

Students whose religious beliefs prohibit immunization, or for whom these immunizations would be detrimental to their health, will be required to submit documentation in support of their request for a waiver. Questions concerning immunization requirements should be directed to the Union College Health Services Office at (518) 388-6120.

REGISTRATION

When To Register

Students may register in person, by mail, or by fax prior to each term. Registration times are listed in the *2005-2006 College Calendar* section of this catalog and on the course listings each term and on the web site. Program advisors are available during the special evening advising held prior to each term and by appointment at other times. Registrations will be accepted through the last day of each registration period. A non-refundable late registration fee of \$50 will be assessed to all registrations received after the last day of the posted registration period and before the first day of class. This is in addition to the required \$100 non-refundable tuition deposit. A non-refundable late registration fee of \$150 will be assessed to all registrations received within seven days after the first class meeting. This is in addition to the required \$100 non-refundable tuition deposit. A non-refundable late registration fee of \$300 will be assessed to all registrations received between seven and fourteen days after the first class meeting. This is in addition to the required \$100 non-refundable tuition deposit.

How To Register

1. All registration materials are available from the Office of Graduate Admissions and Registration at The Graduate College. Prospective students may pick up the materials in person Monday through Friday, 8:00 a.m. to 4:30 p.m., or may request that they be mailed to them. Materials are automatically mailed to currently active students prior to the registration period.
2. All non-matriculated students must submit an application, application fee of \$60, and unofficial college transcript(s) before registering for courses. Proof of immunization is required prior to the start for two or more courses and within 30 days for one course. Note that non-matriculated students must complete their application and be matriculated before they can take their third MAT course or fourth course in the other programs. Applications for all graduate programs should be submitted to the Office of Graduate Admissions and Registrar. Proof of immunization must also be submitted to the office.
3. Complete the registration form, including securing the appropriate faculty advisor's signature. (Students who have an advisor-approved plan of study on file with the Office of Graduate Admissions and Registrar and follow it for the term in which they are registering will not require an advisor's signature.) Return it either in person or by mail to the Office of Admissions and Registrar. A Health Clearance form must be presented along with the registration form prior to your first registration.
4. A non-refundable tuition deposit of \$100 must accompany your registration which will be applied to that term's tuition. You may pay with a check or by MasterCard/Visa. Full payment—either by check or charge card—is due by the first week of classes.
5. All students should check with the Office of Graduate Admissions and Registration prior to registration for additions to or deletions from the course listings or changes in class times or locations.
6. Some courses have enrollment restrictions. It is the student's responsibility to register early to reserve a space in such courses.
7. The College retains the right to cancel a course if the enrollment is insufficient.
8. International students must obtain an international advisor's signature prior to registration. This advisor is the Dean of the Management School for MBA programs and the Director of Graduate Admissions and Registrar for all other programs.

Auditing of Courses

Students may audit courses for one-half the tuition charged for a credit course. Auditors must have appropriate course prerequisites and obtain written permission from the instructor. Laboratory courses and independent studies are not open to auditors. Audit status is indicated by a "Z" on the student's transcript and is not calculated in the student's cumulative average.

Students who wish to change from credit to audit may do so by notifying the Office of Admissions and Registration in writing prior to the end of the sixth week of classes. No tuition refunds are available for changes from credit to audit.

Cross-Registration

As a member of the Hudson-Mohawk Association of Colleges and Universities, The Graduate College participates in a cross-registration agreement which enables full-time matriculated graduate students to take courses at other member colleges and receive credit at The Graduate College. At least one-half of a student's term load must be taken at The Graduate College. Registration for each course must be approved by the student's advisor and the host institution. Generally, cross-registrations will be approved only for courses not offered at the home institution. Cross-registration forms with detailed instructions are available from the Office of Graduate Admissions and Registration.

Non-Degree Students

Students who are not planning to work toward a degree must submit the first page of the application, unofficial college transcripts, an immunization form, and \$100 non-refundable tuition deposit. It is required that the applicant hold a bachelor's degree with a cumulative grade point average of 2.7 or better. They are required to register during the posted registration periods (listed in the *2005-2006 College Calendar* section of this catalog) to avoid any penalty.

FINANCIAL INFORMATION

Application Fee **\$60 (Non-refundable)**

The application fee is required of all degree-seeking applicants except Union College students/alumni and students employed as part of the Engineering Consortium (BPMI, KAPL, General Electric, Plug Power and Benet Labs). There is no application fee for non-degree students.

Tuition, Fees, and Withdrawal Fees

Per Course Cost:

- School of Education \$1650
- School of Eng/C.S. \$2430
- School of Management \$2075
- Center for Bioethics. \$2420

Full tuition payments and fees are due at the Office of Graduate Admissions and Registrar by the first week of classes. Students who pay after that will be charged a late payment fee of \$75.00. Tuition for graduate courses is listed above. A schedule of fees for withdrawal from courses is listed in this section. The \$100 tuition deposit is non-refundable. The receipt of the registration is your first bill. There will be a courtesy bill the third week of the term and a formal bill the fifth week of the term.

Please note: If you are taking a course outside your major, the cost is determined by your degree type, not the course.

For withdrawal fees see "Schedule of Refunds."

To withdraw from a course, a student must submit a drop form to the Office of Graduate Admissions and Registrar and contact the professor. See "Refund Policy." Students may withdraw from a course up until the end of the sixth week of classes. Withdrawal after the sixth week will appear as an "F" on the student transcript. Any student who stops attending a course without written notification to the Office of Graduate Admission and Registrar will also receive an "F" and be charged the entire course amount. Please note: Students will not be permitted to withdraw if there is an outstanding balance on their bill.

Tuition Notice

All tuition and fees must be paid in full. A student will be placed on delinquent status if they maintain an unpaid tuition and fee balance. Delinquent accounts will be forwarded to the college's collection agency and then to the attorney for collection. Students will receive written notification in advance of any action. The student will be responsible for any and all collection costs, attorney fees, accrued interest, etc. that result from the collection of his/her delinquent tuition and fees.

Books and Supplies

It is estimated that books and supplies will be approximately \$1200 per academic year.

Room and Board

Students are required to secure their own off-campus housing. The estimated cost of housing is from \$300 to \$500 per month depending on an individual's personal choice. The total average estimated cost is \$4,800. Meals are estimated at \$4,000 per year. This is an estimated total of \$8,800 per year.

Other Living Expenses

These costs may include, but are not limited to, costs related to the use of a vehicle, travel, and personal living expenditures. The estimated cost is \$3,500 annually.

Senior Citizens

Persons over 65 are eligible for a tuition waiver for one course per year on a space-available basis, and with the permission of the instructor.

REGISTRATION FEES

Tuition Deposit **\$100 (non-refundable)**

A tuition deposit that is applied towards the student's tuition must accompany all registrations. The deposit must be paid before a registration will be processed. The deposit is non-refundable unless the College must cancel all courses for which a student has registered.

Registration Late Fee—After registration period and before classes begin **\$50 (non-refundable)**

A non-refundable late registration fee of \$50 will be assessed to all registrations received after the last day of the posted registration period (specific dates are listed in the catalog for each term) and before the first day of class. This is in addition to the required \$100 non-refundable tuition deposit.

Registration Late Fee—Within 7 days after the first class \$150 (non-refundable)

A non-refundable late registration fee of \$150 will be assessed to all registrations received within seven days after the first class meeting. This is in addition to the required \$100 non-refundable tuition deposit.

Registration Late Fee—Between 8-14 days of the first class \$300

A non-refundable late registration fee of \$300 will be assessed to all registrations received between eight and fourteen days after the first class meeting. This is in addition to the required \$100 non-refundable tuition deposit.

Late Tuition Payment \$75 (non-refundable)

Tuition is due by the first week of classes.

OTHER FEES

Resource Fee/Admission Deposit \$150

After accepting an offer of admission full-time students are required to pay an annual \$150 resource fee. Part-time students are required to pay this fee once at time of matriculation. This resource fee is used to support student-organized events, speakers, and expenses related to operation of the graduate student computer lab.

General Financial Obligations

Diploma and transcripts will be withheld from a student who has not met all financial obligations to the College. Failure to satisfy all financial obligations will result in the account being sent to an agency for collection; the student will be responsible for all collection costs, attorney fees, accrues interest, etc. that results from the collection of his/her delinquent tuition and fees.

Fee For Checks Returned To The College

First Check \$10
Second Check \$15

Proficiency Examinations \$250

Proficiency examinations for course credit are provided to students with previous experience or study. Applications should be made with the department chair. Registration and fee payment must be made at the Office of Admissions and Registration prior to taking the examination.

Status Continuation \$100

Graduate students who are degree candidates and are working on their thesis must pay a continuation fee for any term in which they are not formally enrolled in one of the required research and thesis courses. The summer term is not applicable.

Master's Thesis \$15
Diploma Fee \$65
Transcripts \$3
Parking Decal \$15
ID Cards \$0
Replacement ID Cards \$25

TUITION WAIVER POLICY

Students with waivers must pay all fees other than course tuition.

MASTERCARD AND VISA

Tuition and fees may be charged on MasterCard and/or Visa accounts. The authorization section of the registration form must be completed and signed.

COMPANY BILLING

Some companies and government agencies pay their employees' tuition directly to the College. If your tuition will be paid in this manner, please supply authorizing forms or letters from your employer which must include your company's contact person and information. If your employer intends to pay 100 percent of your tuition at the start of the term, your tuition deposit will be waived.

COMPANY REIMBURSEMENT

Some companies and government agencies pay their employees' tuition once grades are received. If your tuition will be paid in this manner, you will be responsible to pay tuition in full the first term you register. For subsequent, consecutive terms, providing the same numbers of classes are taken, you may register with a tuition deposit of \$100 with the balance to be paid by the end of the third week of the term. **Please note:** If payment is not received in our office by the fourth week of the current term, whether reimbursement has been received or not, a late payment fee of \$75 will be assessed.

REFUND POLICY

Refunds are based on the date of the student's add/drop, complete termination, or official course withdrawal as noted in the "Schedule of Refunds." Furthermore, refunds are based on the official starting date of the term, not on the student's actual class attendance.

Add/Drop (first two weeks of a term)

Students may change sections or courses of equal credit without financial penalty. Adding new courses may incur additional tuition liability according to the tuition schedule. Students may add courses the first two weeks of a term (or 1st week during summer), with an advisor's approval and no additional late fee.

COSTS INFORMATION

Complete Termination

Students who drop registered courses through the last day of the add/drop period (for dates see each term's course listing) will be eligible to receive the appropriate refund percentage as noted below.

Course Withdrawal

Students who withdraw from courses during the withdraw period (first six weeks; first three weeks during summer) will be eligible to receive the appropriate refund percentage as noted below. All withdrawals and drop forms must be submitted in writing to The Graduate College's Registrar office and you are required to notify your professor. Your advisor's signature is required. (See Policies Affecting Financial Aid)

Schedule of Refunds

Requests prior to the start of the term or prior to the second class meeting (after 1st) – refund is 100% of tuition and fees minus the \$100 deposit.

Requests prior to the third class meeting (after 2nd) – refund is 75% of the tuition and lab fees.

Requests prior to the fourth class meeting (after 3rd) – refund is 50% of the tuition and lab fees.

After these periods there is no refund.

Exceptions

Students who withdraw to enter military service prior to the end of the term are eligible for a 100% refund of the tuition and refundable fees for courses not completed. Documentation of such military services must be provided from the appropriate military official.

Students who withdraw due to military changes of assignment and who have paid their own tuition and fees are eligible for full refund. Documentation of such military services must be provided from an appropriate military official.

If the College should elect to cancel a course due to enrollment limits or based on other circumstances, the tuition deposit will be refunded in full.

Note: *Students earn their financial aid by attending classes.*

Federal Regulations require the Graduate College of Union University to recalculate a student's financial aid eligibility if the student withdraws from or stops attending his/her class before completing at least 60% of the term. If a student stops attending classes after the college's refund policy period, the student is liable for all his/her tuition and fees, even if the financial aid eligibility is reduced under the Return of Title IV Aid recalculation.

The Office of Financial Aid and Family Finance of Union College is located in Grant Hall. It is responsible for financial aid services to the students of The Graduate College of Union University. Questions concerning eligibility for state and federal programs should be directed to the Office of Financial Aid and Family Finance of Union College at (518) 388-6123. Students may qualify for one or more of the programs listed below. The Office of Graduate Admissions and Registration has a Financial Assistant who will process loan disbursements.

FEDERAL SUBSIDIZED STAFFORD LOANS

Matriculated graduate students who are United States citizens or permanent residents may borrow up to \$8,500 per year, if they qualify. The maximum Federal subsidized and unsubsidized loan is \$138,000 including undergraduate loans.

Loans carry a variable interest rate capped at 8.25%, which is deferred until six months after completion of studies or a drop in enrollment below half time. Students have up to ten years to repay. Eligibility is determined by completing a Free Application for Federal Student Aid (FAFSA) and a loan application, and submitting federal tax returns and other supporting documentation to the Financial Aid and Family Finance Office of Union College. Allow twelve weeks from start of the application process to receipt of the loan check. Loans are disbursed in at least two payments.

FEDERAL UNSUBSIDIZED STAFFORD LOANS

Matriculated graduate students are eligible for up to \$10,000 per year if they qualify. The maximum Federal subsidized and unsubsidized loan is \$138,000 including undergraduate loans.

Note: If the loan originally covers a term in which you do not enroll at least half time, a portion of the amount received must be returned to the bank. Students who withdraw from The Graduate College of Union University must visit the Financial Aid Office for exit information regarding their loan. Upon graduation, this information session is required.

FEDERAL WORK STUDY

Students who wish to participate should secure a form from the admissions office and submit to the financial aid office as early as possible.

POLICIES AFFECTING FINANCIAL AID ELIGIBILITY

Return of Title IV Aid

Under the Higher Education Amendments of 1998, Federal student aid (PELL, SWOG, and Direct loans) must be calculated for the students who withdraw from or stop attending all of their courses before completing at least 60% of the

term. This calculation is required under the Return of Title IV Aid regulation. Class attendance is monitored throughout the term.

Official Withdrawals

If a student officially withdraws from all of his/her courses before completing at least 60% of the term, his/her financial aid will be recalculated based on the student's withdraw date. The student's recalculated aid will be based on the percentage of time he/she completed in the term. The percentage of financial aid eligibility will be directly related to the percentage of the term completed. For example, if a student completed 10% of the term, he/she will be eligible for 10% of his/her financial aid. If he/she completes 30% of the term, he/she will be eligible for 30% of his/her financial aid.

Unofficial Withdrawals

If a student does not formally withdraw from all of his/her courses but stops attending courses before completing 60% of the term, the student is considered unofficially withdrawn from the college and his/her financial aid will be recalculated under Return of Title IV Aid regulations. In the case of an unofficial withdrawal, the effective date of withdrawal will be the midpoint of the term.

Tuition Liability

If a student officially or unofficially withdraws after the end of the college's refund period, the student is liable for all of his/her tuition and fees, even if the student's financial aid is decreased. If the student's financial aid previously covered his/her bill, but no longer covers it after the Return of Title IV Aid calculation, the student will be expected to pay his/her outstanding tuition and fees. Further, if the student receives a disbursement of financial aid, and the Return of Title IV Aid calculation shows the student was not entitled to the funds, the student will be billed for the funds, and the overpayment information will be forwarded to the U.S. Department of Education. It will be the student's responsibility to repay the funds before he/she is eligible to receive any further federal student aid, even if the student attends another college. This overpayment will appear on the student aid report until the overpayment is repaid.

SUPPLEMENTAL LOAN PROGRAMS

Available to students attending The Graduate College of Union University on a full- or part-time basis. Loan approval is based on a review of credit worthiness and ability to repay. Loans are funded through private lenders and financial institutions such as Citibank, Sallie Mae, Sallie Mae-MBA, and Fleet Bank. Applications are available at the Financial Aid and Family Finance Office of Union College, located in Grant Hall.

TUITION ASSISTANCE PROGRAM (TAP)

Full-time matriculated graduate students who are residents of New York may apply for TAP. Eligibility is based on New York State net taxable income. Graduate students may receive up to \$550 per year. FAFSA forms are available at the Offices of Graduate Admissions and Registration and Financial Aid. In order to receive TAP, you must file a FAFSA application.

VETERANS ADMINISTRATION EDUCATIONAL BENEFITS

Students who are eligible to receive educational benefits under the various chapters administered by the V.A. may obtain more information by contacting the Office of Graduate Admissions and Registration at (518) 388-6295.

Entitlement will vary depending on the education program.

Students claiming veterans' benefits are required to submit written monthly statements attesting to the fact that they are attending class. The following statement must be submitted in person or by mail before the fifth of every month to the Office of Graduate Admissions and Registration, Attn: Veterans' Benefits:

"I, the undersigned attest that I have regularly attended the classes for those courses in which I am currently enrolled."

Any veteran not forwarding this statement along with their signature, will be decertified, resulting in the termination of benefits.

Students pay tuition and fees upon registering and subsequently receive benefit checks from the V.A. on a timely basis.

SCHOLARSHIPS AND FELLOWSHIPS

Below is a listing of available scholarships through The Graduate College of Union University. Students interested in these should contact the specific programs for requirements, updates, and availability.

Athletic Assistant Scholarship

Two full-tuition (9 courses per year) scholarships are offered through the Athletic Director of Union College for up to one academic year. They are reviewed annually. All fees are still required.

School of Education

A limited number of program fellowships or fee remission scholarships are available from the program. Other students who qualify based on financial need may receive some assistance in the form of tuition reduction through the graduate program. Application forms for graduate MAT assistantships are available from the School of Education office.

The Harriet and Roscoe L. Williams '30 Endowed Scholarship

In memory of Harriet and Roscoe L. Williams, whose lives of dedication and service enriched schools and communities in the Dutchess County, Adirondack and Capital District regions of New York State. The Williams family supports scholarship assistance to highly qualified MAT graduate students preparing for careers in classroom teaching and educational administration in New York.

Computer Lab Assistantship

Tuition waivers are awarded to a qualified student to work in the Graduate Computer Lab in Lamont House.

School of Engineering and Computer Science

A limited number of one-year and/or partial year tuition scholarships are available for qualified full-time students. A limited number of stipends are also available. Most scholarships and/or stipends are associated with department assistantships or completion of a master's thesis as part of the qualified applicants plan of study to complete his/her degree program. Applications are available from the admissions office.

School of Management

German Federation Exchange Program: Two full nine-course load scholarships are awarded in conjunction with the German Federation Exchange Program.

Full Time Students Merit Based Awards

Full-time MBA students are automatically considered for scholarships and need not fill out a separate scholarship form. **As long as funds are available**, scholarships are awarded starting in April and continue through August.

Accelerated BS/BA/MBA students who wish to qualify for merit scholarships must take the GMAT regardless of their grade point average at Union College. This scholarship cannot be awarded until the student has completed Union College requirements.

Many of the MBA Scholarship Awards are supported by alumni and donors. Recipients of these will be notified.

Part-time MBA Students

Students pursuing the MBA on a part-time basis will be considered for merit scholarships based on that portion of their tuition that is not reimbursable by an employer. Tuition waivers will be awarded from April to August. Students interested in being considered for part-time financial aid **must** inform the Director of Graduate Admissions at (518) 388-6238 and submit a copy of their employer's tuition benefits policy with a letter requesting consideration.

International Students

International students will be considered for merit-based scholarships on an individual basis.

Academic Information

THE GRADUATE COLLEGE STUDENT RETENTION/GRADUATION RATES

The Graduate College Student Retention for full-time students (Students still in process were removed from equation)

Program	# of New FT Students Entered Program	# Who Left the Program	# Still in Process	# Graduated (Percentage Figure Equates to Cohort Completion Rate)
School of Education				
Class of June 2003 (started fall 2002)	45	3	0	93%
Class of June 2004 (started fall 2003)	38	3	6	91%
Class of June 2005 (started fall 2004)	53	3	18	91%
School of Management				
Class of June 2003 (started fall 2001)	69	4	5	94%
Class of June 2004 (started fall 2002)	70	5	8	92%
Class of June 2005 (started fall 2003)	44	1	34	N/A
School of Engineering/Computer Science*				
Class of June 2003 (started fall 2002)	15	0	2	100%
Class of June 2004 (started fall 2003)	15	2	2	85%
Class of June 2005 (started fall 2004)	12	2	3	78%
*Primarily part-time program.				
Center for Bioethics and Clinical Leadership*				
Class of June 2003 (started fall 2002)	2	1	0	50%
Class of June 2004 (N/A)	0	0	0	N/A
Class of June 2005 (N/A)	0	0	0	N/A
*Primarily part-time program.				

The Graduate College Student Retention For Part-Time Students

Students may take up to six years to complete.

Program	# of New PT Students Entered Program	# Who Left the Program	# Still in Process	# Graduated (Percentage Figure Equates to Cohort Completion Rate)
School of Education				
Students starting 2002	9	4	0	56%
Students starting 2003	3	1	2	N/A
Students starting 2004	6	0	6	N/A
School of Management				
Students starting 2002	26	9	12	N/A
Students starting 2003	31	7	21	N/A
Students starting 2004	25	4	21	N/A
School of Engineering and Computer Science				
Students starting 2002	26	4	10	N/A
Students starting 2003	10	0	7	N/A
Students starting 2004	23	2	20	N/A
Center for Bioethics and Clinical Leadership				
Students starting 2002	8	1	3	80%
Students starting 2003	10	3	6	N/A
Students starting 2004	9	0	9	N/A

ACADEMIC INFORMATION

GRADING POLICIES AND PROCEDURES

Course Numbering System

The Graduate College of Union University uses a course numbering system with two levels. Courses numbered Pre 1-9 are those which are taken as prerequisites for which no credit is given. Courses numbered 500-699 are Graduate College courses.

Academic credit is computed using a system which counts the number of course units completed. Most courses are for full credit (1 course unit) which is equivalent to 3¹/₃ semester credit hours or five quarter hours. All courses listed in this catalog are full credit courses unless designated otherwise.

Grading

Grades are awarded according to the following system:

A	4.0	B+	3.3	C+	2.3
A-	3.7	B	3.0	C	2.0
		B-	2.7	F	0.0

A student who receives a grade of "F" may petition the Academic Committee for approval to repeat the course. If the student is reinstated both the "F" and the new grade appear on the transcript and are included in the cumulative index. Please refer to the *Academic Standing* paragraph of this section below.

All grades are mailed to the students and are not released over the phone or via email.

Incompletes

Incomplete grades will only be assigned in extenuating circumstances. A grade of incomplete may be requested before the submission of grades, but only on the grounds of circumstances beyond the control of the student.

- A. The incomplete request form must include the student's signature, the instructor's signature, and the signed approval of the Dean or Director of the program the course is a part of. The form must be submitted to the Office of Graduate Admissions and Registrar.
- B. All work must be completed at the end of the following term and a grade turned in to the Office of Graduate Admissions and Registrar.
- C. For cases in which it is not possible to complete the work within the deadline because of circumstances beyond the control of the student, a petition for an extension of incomplete may be submitted in writing to the Academic Committee through the Registrar's office.

Withdrawal from a Course

- A. With the advisor's signature, and with proper notice to the Office of Graduate Admissions and Registrar a student may withdraw from a course (i.e. with a grade of W)

at any time in the first six (6) weeks of a term (or first three during summer). (In accordance with federal immigration regulations, international students F-1 and J-1 visa holders, must consult their Foreign Student Advisor/Designated School Official, as well as their academic advisor for approval to withdraw from a course). The student is also responsible to notify the professor.

- B. Dropping a course after the sixth (6th) week date will result in a grade of "F", unless the advisor and the Dean of the graduate school of which the student is a member, agree that there are extraordinary personal circumstances that justify altering this procedure.
- C. If proper notice of withdrawal from a course is not given to the Office of Graduate Admissions and Registrar, a grade of "F" will be posted to the record.

Please note: Students will not be permitted to withdraw if there is an outstanding balance on their bill and they will receive an "F" for the course.

Pass/Fail Grades

If a graduate thesis, internship, or project is two-part, the first part is graded with a pass/fail grade. A grade of "Pass" will not be calculated in the cumulative index; a grade of "Fail" however, will count as a failing grade. After completion of the second part, a final grade is assigned.

End of Term Grade Changes

Grades are assessments, as fair and objective as possible, of the student's work at the end of the term. Fairness demands that all students be held to the same reasonable standards. All instructors are expected to make fair and careful appraisal of each student's work, and to submit grades to the Office of Graduate Admissions and Registrar no later than the due date specified by that office for the final exam period.

Grades, once submitted, come within the protective domain of the College. Grade changes (other than clerical error) must be made in writing to and approved by the Dean/Director of the program and the Academic Committee. The Dean/Director will present the request to the Academic Committee.

A faculty member must request in writing to change a grade for substantive reasons. This request must be approved by the Dean/Director of the program and the Academic Committee. The Dean/Director will present the request to the Academic Committee.

The Academic Committee will not accept a request without a full explanation supported with detail. Faculty may not allow a student to submit late or additional work in order to improve the grade, unless an official grade of incomplete has been assigned.

Student Grade Appeal

The Academic Committee will grant a grade change appeal by a student only under extraordinary circumstances, namely when it can be demonstrated that the grade was inequitably awarded.

- A. A student wishing to appeal a grade in a course should do so no later than the end of the second week of the subsequent term.
- B. The student should first confer with the faculty member who assigned the grade (if this faculty member is not available then the student should meet directly with the Dean of that program). The student should inform the instructor of concerns and seek to fully understand the grounds and procedures the instructor has used in determining the grade. The aim of this conference is to try to reach a mutual understanding about the grade and the process by which it was assigned.
- C. If upon meeting with the faculty member, as outlined above, the matter is not resolved within 2 weeks, the student may make a formal written complaint to the Dean/Director.
- D. If the issue is not yet resolved within a second two (2)-week period, the matter may be forwarded to the Academic Committee.
 1. If upon review, the Dean/Director finds sufficient grounds of an inequitable award of the grade to warrant an official hearing, the Dean/Director will consult the Academic Committee.
 2. The Academic Committee will consider the student's letter of appeal, and any other relevant materials provided by the Dean/Director, and make a determination regarding the appeal. In no case will Academic Committee substitute its judgment on the merits of a student's work for the bona fide judgment of a faculty member. The decision of the Academic Committee is final.

Repeat Policy

Students who repeat a course they have previously failed will have both grades listed on the transcript. All credits attempted and total quality points earned will be used in calculating the cumulative grade point average. Students who repeat a course they have previously passed (with a grade of "C" or better) will have both grades listed on the transcript, but neither the quality points associated with the second grade nor the credits attempted or earned will be factored into their GPA.

Academic Standing

The Graduate College regards a student as "in good standing" academically if he or she satisfies two conditions: (1) satisfactory progress toward the degree and (2) maintenance of a minimum GPA.

- A. Full-time students, are defined as follows:

Satisfactory progress means a sufficient accumulation of

course credits toward a degree. In order to achieve the minimum satisfactory academic progress, students must complete six (6) courses per academic year. Students failing to achieve these academic year standards may be placed on academic warning and forfeit their access to Federal Student Aid Funds until minimum standards are met. These minimum standards are in addition to the minimum GPA standards described below. The New York Tuition Assistance Program (TAP) has stricter requirements.

- B. Part-time students are defined as follows:

Satisfactory progress means a sufficient accumulation of course credits toward the degree. In order to achieve the minimum satisfactory academic progress, students must complete their degree within six (6) years of matriculation. These minimum standards are in addition to the minimum GPA standards described below. (The New York Tuition Assistance Program (TAP) has stricter requirements.)

- C. Academic Standing for full-time and part-time students is defined as:

An average grade of "B" (3.0) in all courses. (A cumulative GPA of at least 3.0 is necessary for graduation.) Students with GPA below 3.0 will be sent academic warning letters. The student must raise his/her grade average to "B". Failure to do so will lead to placement on academic probation and possible termination of graduate status.

A grade of "F" in one course or a grade of "C" or "C+" in two (2) graduate level School of Engineering/Computer Science, School of Education or Bioethics courses or three (3) School of Management courses may indicate that the student is not of graduate caliber. A letter of termination will be sent to the student. Matriculated students will be dropped from the program. Matriculated students may petition (in writing) the Dean/Director of their school with regard to reinstatement. The Dean/Director will refer the request to the Academic committee. A grade of "B-" is considered sub-standard performance for a graduate level course.

A student placed on academic warning due to the non-attainment of minimum GPA standards but permitted to remain at the College, as an enrolled student shall be considered in "good standing" where questions of eligibility for Federal Student Aid Funds are concerned.

The Dean/Directors may review the status of any student in their program whose GPA or other considerations suggest questions of satisfactory progress toward graduation. If, after such a review, the student's record is deemed unacceptable by the Dean/Director they may adopt one of the following actions:

ACADEMIC INFORMATION

- 1. Academic Warning:** The student may remain in college but will be placed on academic warning. The student will be subject to subsequent action unless the record improves.
- 2. Suspension:** When, in the judgment of the Dean/Director, a student's record makes it inadvisable to continue in college, he or she may be suspended, normally for not less than two terms. The student then may petition the Vice President for Administration and Student Services for readmission.
- 3. Dismissal:** In certain cases, the Dean/Director may dismiss a student permanently. Petitions for readmission must be submitted in writing to the Academic Committee.

The Dean/Director needs to notify the registrar in writing of his/her decision including the reasons for the decision within three (3) business days of the decision. The Registrar will then notify the student in writing by certified mail.

Transcripts

Official transcripts from The Graduate College of Union University must be requested in writing with a signature. They cannot be sent to students, but will be mailed to other educational institutions, employers and prospective employers. This insures the privacy of the student's academic records. Unofficial transcripts, without the college seal, are available for the student's personal records. A financial hold on a student account will prevent the release of transcripts.

Fees for transcripts (official & unofficial):

- \$3.00 each if check or cash
- \$3.50 each if credit card
- \$4.00 each if faxed

GRADUATION

A student who intends to graduate in June must submit a letter of intent to the Office of Graduate Admissions and Registration by December 1 of the preceding year. This obligation rests with the student for assuring that the program presented for graduation fulfills all requirements, both in general and in specialized study. A form is available at the Office of Graduate Admissions and Registration or on the The Graduate College web site.

Graduation Requirements

To qualify for a degree a student must:

1. Complete satisfactorily, the requirements of the degree program, including the major field examination and/or thesis, or internship as applicable;
2. Attain a minimum cumulative GPA of 3.0 overall.

To graduate, a student also must have paid all sums due the Office of Graduate Admissions and Registrar must have made satisfactory provision for payment of any other finan-

cial obligations assumed while in the Graduate College, and must have returned all books borrowed from the Library.

The individual student is solely responsible for assuring that the program presented for graduation fulfills all requirements, both in general and in specialized study. The Office of Graduate Admissions and Registrar should be consulted when questions arise about the satisfaction of graduation requirements. (Notice of intent to graduate must be sent to The Office of Graduate Admissions and Registrar not later than December 1 prior to the June graduation date.

Waiver Requirements

Request for waivers to the graduation requirements must be made in writing to the Graduate College Registrar. The registrar will present the request to the Waiver Committee for consideration. The ruling of the Waiver Committee is final. The student will be notified in writing by the registrar of the Waiver Committee decision within five (5) business days of the rendering of the decision.

Diplomas

Diplomas will not be released to anyone who has a financial obligation or grades of "I" incomplete and "Y" delayed.

Family Education Rights and Privacy Act (FERPA)

The Graduate College complies fully with the provisions of the Family Educational Rights and Privacy Act (FERPA), 20 U.S.C. 1232g. Under FERPA, students have, with certain limited exceptions, the right to inspect and review their education records and to request the amendment of their records to ensure that they are not inaccurate, misleading, or otherwise in violation of the students' privacy or other rights.

Requests to inspect or review education records should be addressed to the Registrar, or other record custodian and will be honored within 45 days. Any student questioning the accuracy of any records may state his/her objection in writing to the appropriate record custodian, who will notify the student of his or her a decision within 45 days of receiving the objection. If the decision is in agreement with the student's request, the appropriate records will be amended. If the decision is not in agreement with the student's request, the College will notify the student of the decision and advise the student of his/her right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing. Students alleging failure to comply with FERPA also have the right to file complaints with the U.S. Department of Education under its regulations (see 34 C.F.R. Part 99). The name and address of the office that administers FERPA is:

Family Policy Compliance Office
U.S. Department of Education
600 Independence Avenue SW
Washington, D.C. 20202-4605

FERPA further requires, again with certain limited exceptions, that the student's consent must be obtained before disclosing any personally identifiable information in the student's education records. One exception, which permits disclosure without consent, is disclosure to school officials with legitimate educational interests, as determined by the administrator responsible for the file. A "school official" includes: anyone employed by the College in an administrative, supervisory, academic or research, or support staff position (including law enforcement, unit personnel and health staff); any person or company acting on behalf of the College (such as an attorney, auditor or collection agent); a member of the Board of Trustees or other governance or advisory body; and a student serving on an official committee (such as a disciplinary or grievance committee) or assisting another school official in performing his/her tasks. Other exceptions which permit disclosure without consent are: to persons or organizations providing student financial aid, to accrediting agencies carrying out their accreditation function, to persons in compliance with a judicial order, and to persons in an emergency in order to protect the health or safety of students or other persons. Another exception permits disclosure without consent to parents and guardians in cases of violation of institutional policies governing the use or possession of alcohol or a controlled substance if the student is under the age

of 21 and if the College determines that there has been a violation with respect to such use or possession.

The College considers the following to be directory information: name, address (campus, home, e-mail), telephone numbers, date and place of birth, academic fields of study, dates of attendance, ID photographs, participation in recognized activities and sports, degrees and awards, weight and height of athletic team members, most previous educational agency or institution attended, or other similar information. The College may publicize or respond to requests for such information at its discretion. However, the use of these records for commercial or political purposes is prohibited unless approved by the President.

All requests made on or before August 15th of this year will make it possible to be excluded from the College's campus directory. In addition, currently enrolled students may also request that directory information be withheld from disclosure by making a request, in writing, to the Registrar on or before the 5th day of the Fall Term. The College assumes that failure on the part of the student to specifically request the withholding of any directory information indicates approval of disclosure. Request for non-disclosure will be honored by the institution for only one academic year; therefore, authorization to withhold directory information must be filed annually.

Student Conduct and Academic Honesty

A student's first responsibility is academic honesty. The College assumes that students will not resort to plagiarism, theft and mutilation of library books and periodicals, or any other form of academic dishonesty. Any student found guilty of academic dishonesty will be subject to appropriate disciplinary action. Additional information is found in the *Graduate Student Handbook*, which is available at the Office of Graduate Admissions and Registration.

All members of The Graduate College community are bound together by respect for the individual and the collective rights of others. Any student who violates the safety and security of The Graduate College community is subject to disciplinary action by the College as outlined in the Student Code of Conduct (See the *Graduate Student Handbook*). Any member of The Graduate College community or a guest/visitor may file an incident report against a student and upon review by the Dean/Director of the student's program a decision will be made whether or not to initiate charges.

Allegations of misconduct against a student enrolled in graduate programs must be submitted in writing to the Dean/Director. Responsibility for adjudicating violations and imposing disciplinary actions rests with the Dean/Director according to the procedures stated in the Student Code of Conduct.

The Graduate College of Union University has a central concern for establishing and maintaining a community in which work and learning proceed in a humane and caring atmosphere for all its members. Sexual harassment is a violation of law and will not be tolerated in any form at The Graduate College.

Sexual harassment, according to the definition developed by National Organization of Women, is any repeated or unwanted verbal or physical sexual advance, sexually explicit derogatory statements, or sexually discriminatory remarks made by someone in the classroom or workplace which is offensive or which causes the recipient discomfort or humiliation, or which interferes with the recipient's education or job performance.

Should students feel they have been the victims of any form of the behavior noted above, they may initiate informal discussion or more formal procedures through the Affirmative Action Advisor. The policy in the *Graduate Student Handbook* regarding sexual harassment outlines appropriate actions students may take. It is distributed to all new students.

The Graduate College of Union University's policy of nondiscrimination on the basis of age, race, religion, disability, sexual orientation or national origin extends to all areas of College operations including, but not limited to, admissions, student aid, athletics, employment and educational programs.

Schools and Programs

School of Education

Location: Lamont House
Telephone: (518) 388-6361
Fax: (518) 388-6686

Dean: Patrick F. Allen
Associate Deans and Clinical Faculty: Beatrice Hall
Ken Blom

Degrees Offered

- Master of Arts in Teaching
- Master of Science for Teachers of Mathematics and Science

Professional Development Projects with Schools

- National Board Certification Facilitators Support Groups
- Establishing Effective Mentoring Programs in Schools
- Teaching American History

Mission Statement

The School of Education program was established to promote excellence in teaching and learning. The program develops classroom teachers who practice the art of teaching, an orchestration of personal skills and research-based instructional approaches serving adolescent learners. Building upon each candidate's liberal arts background, which includes education in the arts, sciences, foreign language, social science, mathematics, English language arts, and technology, the course of study emphasizes fundamental principles essential for the teaching profession. Graduates have a deep understanding of organizing concepts and methods of knowledge generation in their discipline. They know the developmental levels of their students and use that understanding to create productive, challenging learning environments for adolescents with a wide range of abilities. By actively participating in learning communities with their students and their peers, graduates demonstrate a commitment to lifelong learning. Trained in the principles of educational research, they see the pursuit of knowledge as a foundation for sound decision-making. Recognizing the vital links between theory and practice, Education faculty, students, and programs promote and form ongoing meaningful interpersonal and professional relationships with colleagues in educational institutions serving 7-12 students. Motivated by strong ethical values of adults committed to serving youth, School of Education graduates cultivate the dispositions, knowledge, and skills to practice accomplished teaching, modeling professional excellence in their schools, districts, and communities.

THE MASTER OF ARTS IN TEACHING (MAT)

The MAT degree is designed for individuals who have completed a baccalaureate degree in a liberal arts discipline and who would like to teach subjects such as English, foreign languages, mathematics, science, social studies, or technology in secondary schools. This program provides the pedagogical course work and experience necessary for New York

State initial certification, grades 7-12. It also provides the opportunity to extend and deepen knowledge in the subject area of certification and the Master's degree necessary for professional certification.

MAT Program Requirements

The MAT program requires at least 16 courses: 10-13 in pedagogy and 3-5 in the subject area for which certification is sought. **Prerequisites are PSY-PRE 1 (Educational Psychology), one year of a college level foreign language or its equivalent, and EDS 500 A, B, C (two weeks of structured field experiences). Pre-requisites must be completed before a student enrolls in the intensive summer program, not necessarily before the student is accepted into the program.** Core requirements are: EDS 540 (Psychology of Teaching), EDS 540L (Psychology of Teaching Laboratory); one of the EDS 511-516 courses (Curriculum and Methods of Teaching English, languages, mathematics, science, social studies or technology); EDS 541 (Essential Reading literacy), EDS 544 (Writing in the Content Classroom); EDS 550A (Seminar on Special Needs Populations), 550B (Assessment) and 550C (School Reform). The program requires a one-year teaching internship (EDS 551, 552, 553), Master's research (either a two-term thesis in the discipline (EDS 598-99), or a one-term classroom-based project (EDS 580), plus three to five electives. Students who plan to complete the course-work over a two- or three-year period may apply at any time in the academic year, but they must apply no later than March 1 of the year in which they intend to enroll in the special intensive summer program.

Admission to the MAT

Applicants to the program must have completed a BS or BA from an accredited institution with the equivalent of at least 30 semester hours (9 courses at Union College) in the liberal arts major area (English, language, mathematics, science, social sciences) in which they will seek certification. A minimum grade point average of 3.0 in undergraduate or previous graduate work is normally expected in this discipline, and overall. An interview, an essay, and **at least three** references are required, two of which must be academic. Evidence of intellectual achievement, motivation, and aptitude are necessary for admission.

Union College undergraduates are also eligible for a BA/MAT or BS/MAT combined degree program (see below). Students may begin the combined degree program during any term, but must complete the intensive summer program prior to the beginning of their internship. Students expecting to begin the program in the summer must submit application materials no later than March 1 of the preceding spring. Students who plan to complete the course work and internship over a two- or three-year period may apply at any time in the academic year, but they must apply no later than March 1 of the year in which they intend to enroll in the spe-

cial, intensive summer program. Interested students must see a program advisor before registering and may register for only two elective courses before matriculation. In addition to the admission requirements above, students are expected, before the special summer program, to have completed: 1) an undergraduate educational psychology course or the equivalent competency examination, and 2) two weeks of structured field experiences as defined in School of Education Program literature. All students must complete one year of a foreign language at the college level or its equivalent before the college can recommend certification.

The Teaching Internship

Most MAT candidates will complete a half-day, year-long internship in a secondary school, taking full responsibility for at least two classes. Students will be interviewed at the site(s) where they expect to intern. Entrance into the internship portion of the program is contingent upon completion of Psychology of Teaching and the appropriate Curriculum and Methods course with minimum grades of "B."

Master's Research and Thesis

The thesis generally comprises two of the 3-5 courses in the discipline. For students attempting to complete the program in one calendar year, the thesis is generally undertaken in the fall and winter terms. The thesis advisor is normally a faculty member in an academic discipline directly related to the student's area of certification. The thesis and all the required paperwork must be on file in the Registrar's Office two weeks prior to graduation.

The MAT Project

In lieu of a thesis, students may enroll in EDS 580, which involves carrying out classroom-based research in pedagogy as it relates to an academic discipline. Students who write an MAT Project normally undertake it during the winter term with School of Education faculty. Opting to complete a project usually means enrolling in one more elective course in the discipline than those who undertake an MAT thesis.

Computer Literacy

Each student in the MAT program is expected to leave the program with a greater degree of computer literacy than the degree of literacy with which s/he entered. Students who enter with less than basic computer knowledge are expected to include as an elective at least one of the following: CST 565, 570 or 571, or demonstrate competence in one of those areas.

Elective Course Work

Students in the MAT program are normally required to take at least three elective courses in their academic discipline selected with the approval of their advisor. If the student chooses to undertake an MAT Project in lieu of an MAT Thesis, then the student must select an additional elective for a total of four graduate electives related to the area of

certification. Courses are offered in the late afternoons and evenings during the academic year. With the approval of an advisor, up to two graduate-level courses may be transferred into the MAT.

POST-GRADUATE TEACHING CORE

For some individuals already holding an advanced degree in a discipline related to their prospective teaching area, it may be unnecessary to complete the entire MAT degree program in order to qualify for professional certification. Selected students will be accepted into the Post-Graduate Degree Teaching CORE. The CORE consists of 9 graduate courses in pedagogy including a year-long internship (counting for 3 of the 9 courses). A full-time, eight-week summer term is required. Students who complete only the CORE are not normally recommended for certification by the School of Education program. Each CORE student must apply for certification on her/his own. That means each CORE students must meet the letter of New York State certification standards as defined by the Office of Teaching Certification.

BA or BS/MAT Combined Degree Program

Although all Union College undergraduate students who meet the School of Education's entrance requirements are eligible to become MAT students, to be eligible for the combined undergraduate/graduate degree program a student must be a Union undergraduate and must normally have a grade point average of at least 3.25 or above. Students must apply to the program no earlier than their 8th term and no later than the end of their 10th term. Students will complete the usual requirements for the baccalaureate degree, including PSY 50 (Educational Psychology) and the non-credit structured field experiences (EDS 500A and EDS 500B). In the summer prior to their last year (in most cases between the senior year and their graduate year), students will complete the graduate 8-week summer term of EDS 540 (Psychology of Teaching), EDS 540L (Psychology of Teaching Lab), the appropriate Curriculum and Methods course EDS 511-516, and EDS 541 (Essential Reading Literacy). They will take EDS 550A, B, C concurrently with the year-long teaching internship. In addition to the education courses required for certification, combined degree students must enroll in either a two-term thesis in the discipline or a one-term master's degree project. Students who undertake a thesis must enroll in one additional elective; students who undertake a project must enroll in two additional electives. For undergraduate and graduate work, students in the combined degree program will complete a minimum of 50 courses, allowing them to apply two of their courses to both the undergraduate and graduate degrees.

New York State Certification

Those students requesting New York State Certification through The Graduate College of Union University should complete the appropriate certification form and attach a fifty dollar postal money order made out to New York State

Education Department. These documents should be sent to the Office of Graduate Studies in Lamont Graduate Center. Official transcripts should be requested from all colleges/universities attended and sent to the Office of Graduate Studies in sealed envelopes. The deadline for receiving this information is July 1 following graduation from the M.A.T. program. Anyone who has not completed this process by that date will be required to seek certification on his/her own.

Job Placement Statistics

Among MAT Graduates looking for jobs:

2001 Graduates

Percent placed by September after graduation—98%

2002 Graduates

Percent placed by September after graduation—96%

2003 Graduates

Percent placed by September after graduation—88%

2004 Graduates

Percent placed by September after graduation—100%

Outline of MAT Program

Prerequisites: PSY-Pre 1 or PSY 050 (Educational Psychology) or equivalent, EDS 500A, EDS 500B (non-credit, two weeks), or equivalent.

Summer Session: An eight-week intensive summer session is required of all students immediately prior to their internship comprised of EDS 540, EDS 540L, and EDS 511-516 (depending on major), and EDS 541.

Typical MAT Full-time Program, One Year

Summer: EDS 511-516, EDS 540 (internship), EDS 540L, EDS 541

Fall: EDS 550A, EDS 551 (internship), EDS 598 (Thesis) or EDS 544

Winter: EDS 550B, EDS 552 (internship), EDS 599 (Thesis) or EDS 580 (MAT Project), Elective

Spring: EDS 550C, EDS 553, Elective

THE MASTER OF SCIENCE FOR TEACHERS OF MATHEMATICS AND SCIENCE

This graduate program is designed for individuals who already hold provisional or initial certification with the State of New York and wish to gain the Master's degree necessary for permanent certification. The program offers courses in topics of contemporary importance in the life sciences, physical sciences, mathematics, and computer fields. Courses are designed to provide information in specific subject areas and their integration into the classroom. The program enables teachers to enhance their subject matter competence, to develop further competence in their present teaching assignments, to move from one subject area or teaching level to another, or to meet additional

certification requirements. A different selection of courses is offered each academic year.

Program Requirements

The MS for T degree in science or mathematics is awarded for the completion of eleven courses (36.3 credits). Normally, five courses are taken in one of three general subject areas: Life Science (biology, geology, chemistry), the Physical Sciences (chemistry, geology, physics), or the Mathematics/Computer field. Students interested in the degree must consult an academic advisor in planning their program of study and should matriculate no later than the end of their second course. One or two graduate level courses from other institutions may be transferred into the program, as determined by a faculty advisor.

Admission to the Program

Applicants to the program must have completed a BA or a BS from an accredited institution. A minimum grade point average of 3.0 in undergraduate and/or previous graduate work is normally expected. An interview, an essay, and at least three references are required, two of which must be academic. Evidence of intellectual achievement, motivation, and aptitude are necessary for admission. Students may complete the degree on a part-time or full-time basis and may apply at any time during the year.

Master's Research and Thesis

The thesis generally comprises two of the five courses in the discipline area of concentration. The thesis advisor is normally a faculty member in the academic discipline. If a student does not complete a thesis, s/he must complete master's level research by completing a Master's Project.

The MS for Teachers of Mathematics and Science Project

In lieu of a thesis, students may enroll in EDS 580, which involves carrying out classroom-based research in pedagogy as it relates to the discipline of the student's academic concentration. Students who write an MS for Teachers of Mathematics and Science Project normally complete it during the winter term with a School of Education faculty member. Electing to complete a project usually means completing one more required elective in the discipline than those who complete an MS for Teachers thesis.

Elective Course Work

MS for Teachers students are normally required to take five elective courses beyond the six courses required in their discipline area selected with the approval of an advisor. Graduate courses in the subject area of certification and in education-related subjects are offered in the late afternoons and evenings of the academic year. With the approval of an advisor up to two graduate-level elective transfers may be accepted.

Computer Literacy

Each student in the MS for Teachers program is expected to leave the program with a greater degree of computer literacy than the degree of literacy with which s/he entered. Students who entered with less than basic computer knowledge are expected to include as an elective at least one of the following: CST 565, 570 or 571, or demonstrate competence in one of those areas.

School of Engineering and Computer Science

Location Steinmetz Hall
 Telephone (518) 388-8068
 Fax (518) 388-6789

Dean of Engineering and
 Computer Science Robert J. Kozik

Degrees Offered

- Master of Science in Computer Science
- Master of Science in Electrical Engineering
- Master of Science in Mechanical Engineering
- Master of Science in Engineering and Management Systems

Mission

The School of Engineering and Computer Science is dedicated to providing students with the advanced theoretical, practical, and professional knowledge needed to advance in their careers. We believe that a balanced approach which includes specialization in a particular discipline and exposure to multidisciplinary perspectives best prepares graduates to thrive in a rapidly changing world.

Job Placement

Over 80% of the students are working professionals enhancing and/or broadening their technical background. Full time students are provided job placement services with focus on the Capital District and the surrounding Tech Valley industries.

MASTER OF SCIENCE IN COMPUTER SCIENCE

The Computer Science department offers a Master of Science in Computer Science. Students may take courses in a variety of subjects from both the Computer Science and Electrical and Mechanical Engineering departments.

Program Requirements: Nine courses numbered 500 or higher, are required, including CSc 511. Three of the nine courses must come from CSC 531, 533, 537, 538, 542, 548, and 550. Two of the nine courses must be either a project (CSc 594–595) or a thesis (CSc 596–597). Students who have extensive software experience may petition to take other graduate-level courses instead of the project/thesis

requirement. EER530, from the EER department, may also be used toward the degree. The nine courses must include a course from each of the core areas:

- Computational theory CSc 512, CSc 542
- Programming languages CSc 513, CSc 531, CSc 550
- Software systems CSc 510, CSc 516, CSc 533, CSc 548
- Hardware systems CSc 518, CSc 552, CSc 554, CSc 537

For those without sufficient background in computer science, the following are additional required courses beyond the minimum nine: CSc Pre1 (for students who have not studied discrete mathematics and computer architecture), CSc Pre2 (for students who have not studied object-oriented programming), and CSc Pre3 (for students who have not studied data structures). All students entering the Master's program must pass candidacy exams that cover the material in CSc Pre1, CSc Pre2, and CSc Pre3 unless they have passed these or similar courses with grades of a "B" or better.

In addition to the nine courses, all candidates are required to participate in the MS Graduate Seminar in Computer Science (CSc 599). This non-credit seminar serves as the capstone experience of the MS in Computer Science degree. It is normally taken in the last year of the candidate's program.

MASTER OF SCIENCE IN ELECTRICAL ENGINEERING

The electrical engineering profession involves the design and/or manufacture of electrical products and devices. Typical applications include digital computers, digital and analog control systems, communication systems, electric machinery and power systems, solid-state electronics, and electromagnetics.

Program Requirements

A minimum of ten graduate courses and an MS Graduate Project in Electrical Engineering are required. Each student's program should include at least seven electrical engineering courses and up to three technical electives. Each student should, in conference with the graduate advisor, plan a complete graduate program prior to taking any courses for graduate credit. Students with weak backgrounds may need to take more than ten courses.

Technical electives should normally be chosen from graduate level courses in electrical engineering, computer science, mechanical engineering, and MBA programs. The advisor must approve every course taken for graduate credit. A thesis could be considered as one or two technical electives.

All candidates not completing a thesis or independent study are required to participate in the MS Graduate Project in Electrical Engineering. This is a non-credit, no-fee project that serves as the culminating experience of the MS in Electrical Engineering degree.

MASTER OF SCIENCE IN MECHANICAL ENGINEERING

The mechanical engineering profession involves the use of the fundamentals of mechanics, materials, thermodynamics, and systems analysis as they apply to the design and/or manufacture of engineering devices and systems. Graduates of this program may be prepared to enter any of the major branches of mechanical engineering, including solid mechanics, thermal fluid science, control instrumentation, energy systems, thermal and nuclear power generation.

Program Requirements

The MSME requires a total of ten courses. Three of the courses will form a core in mechanical engineering and must be taken by all students at the start of their program: MER 502 (Engineering Analysis), MER 500 (Elasticity), and MER 501 (Transport Phenomena). Of the remaining seven courses, five must be in the mechanical engineering major at the 500 level. The remaining two courses are selected from engi-

neering (mechanical or electrical), computer science, and mathematics. One of these two courses may be selected from the MBA program. Not all courses from these areas are satisfactory selections; therefore all course selections must be approved by the graduate advisor before course registration. Each student must submit a program plan of study (to be approved by the advisor) before completion of the first course taken for graduate credit.

Full-time degree candidates are required to do Research and Thesis for two courses. Part-time students can complete the degree by taking ten courses and the MS Graduate Project in Mechanical Engineering noted below. They also have the option of replacing one or two courses with independent research conducted in the form of a Master's Project (one course) or a thesis (two courses) with departmental approval. All students, either part-time or full-time, intending to do Research and Thesis must consult the department for appropriate guidance. Part-time students not completing

MS DEGREE REQUIREMENTS IN ENGINEERING AND COMPUTER SCIENCE

MS Program Required?	MS Thesis	MS Project or Independent Study	Core Program Required?	Remaining Program	Capstone Experience
Computer Science Nine courses required	The student must choose one of the following: 1. Complete a two-course thesis 2. Complete a two-course independent programming project 3. Substitute two courses with faculty approval.		Yes , CSc511 as part of nine courses numbered 500 or higher. CSc Pre1, CSc Pre2, CSc Pre3 are required for students lacking experience in these areas.	The nine courses must include one course from each of these four areas: 1. Computational theory 2. Programming languages 3. Software systems 4. Hardware systems Three courses from the following: CSC 531, 533, 537, 538, 542, 548 and 550.	The MS Graduate Seminar in Computer Science*: A regularly scheduled seminar in which all candidates participate in a discussion of a current topics in Computer Science.
Electrical Engineering Ten courses required	Not required, but if the student elects to do a thesis, it counts as one or two technical electives.	Not required, but if the student elects to do an independent study, it counts as one technical elective.	No	Minimum of Seven EE courses and up to three technical electives	The MS in Electrical Engineering Culminating Experience: The candidate must choose one of the following: Thesis, independent study, or MS Graduate Project* approved by the faculty advisor.
Mechanical Engineering Ten courses required	Required for full-time students. Not required for part-time students, but if the student elects to do a thesis, it counts as two technical electives.	Not required, but if the student elects to do an independent MS project, it counts as one course.	Yes , three core courses: 1. MER 502, Engineering Analysis 2. MER 500, Elasticity 3. MER 501 Transport Phenomena	Five ME courses at the 500 level plus two technical electives.	The MS in Mechanical Engineering Culminating Experience: The candidate must choose either a thesis, Independent Study, Masters Project or MS Graduate Project* approved by the faculty advisor.

*MS Graduate Seminar and MS Graduate Project are no-fee, no-credit course listings.

a Master's Project, thesis, or independent study are required to complete an MS Graduate Project in Mechanical Engineering. This is a non-credit, no-fee project that serves as the culminating experience of the MS in Mechanical Engineering degree.

MASTER OF SCIENCE IN ENGINEERING AND MANAGEMENT SYSTEMS

The engineering and computer science professions continue to require the understanding and application of broadening technologies that complement each other in their product, system, or service application. Course offerings from all three disciplines (Electrical Engineering, Mechanical Engineering, Computer Science) may be required to provide a student with their desired technical growth or parallel the direction of their industrial interests. Technical career growth may be additionally enhanced by supplementing strong technical fundamentals with management disciplines such as finance, marketing, operations, or other related business skills. The Master of Science in Engineering and Management Systems provides a balanced degree program of engineering and computer science complimented by courses from the School of Management.

A minimum of eleven (11) graduate courses are required. Each student's program should include at least 6 courses from the School of Engineering and Computer Science and 5 courses from the School of Management. Each student should, in conference with their graduate advisor, plan a complete graduate program prior to taking any courses for graduate credit. Students with weak backgrounds may need to take more than eleven (11) courses. The student's advisor should approve every course taken for graduate credit toward this degree.

Graduate courses taken from the School of Engineering and Computer Science should be selected from the following:

- Mechanical Engineering - credit bearing Mechanical Engineering courses
- Electrical Engineering - credit bearing Electrical Engineering courses
- Computer Science - credit bearing Computer Science courses of which 1 of 2 or 3, 2 of 4 or 5, or 3 of 6 must come from CSc 531, 533, 537, 538, 542, 548, 550. If only 1 Computer Science course is taken, it may be any credit bearing course.

Graduate courses taken from the School of Management should be selected from those credit bearing courses numbered GMI-510 and above.

The Master of Science in Engineering and Management Systems Program will not allow the utilization of graduate level courses completed as a Union undergraduate to be credited toward both an undergraduate and graduate degree per the existing Union College and Graduate

College agreement noted elsewhere in this catalog; it also will not allow graduate work from another institution to be transferred toward completion of this degree program per the existing transfer policy noted elsewhere in this catalog. This program is focused at providing the working professional or new graduate student the opportunity to integrate curriculum from each of the School of Engineering and Computer Science and School of Management disciplines to focus on a career or industry objective. As such, reducing the core engineering and computer science requirements or management requirements by allowing prior transfer courses is not consistent with the objective of the curriculum or the degree. During completion of the degree requirements a candidate may obtain agreement to take a graduate course from another institution and apply it to this degree as part of their approved course selection such as a nano engineering course from SUNY Albany.

School of Management

Location Lamont House
 Telephone (518) 388-6235
 Fax (518) 388-6754
 Website www.gcuu.union.edu

Dean Melvin W. Chudzik
 Chair, MBA Melvin W. Chudzik
 Chair, MBA Healthcare
 Management Program John W. Huppertz

Degrees Offered

- Master of Business Administration (MBA)
- Master of Business Administration—Healthcare Management

Mission

To graduate MBAs who bring professional and disciplinary excellence to their work immediately and who assume leadership roles as they advance in their careers—who think analytically, are technologically current, communicate effectively, work well in teams, have the ability to work in cultures other than their own, and are committed to ethical action. To enrich the learning process by maintaining close personal interaction between students and faculty. To hire and support faculty who are active researchers and dedicated to creating a collegial, student-focused learning environment. To enter into mutually beneficial partnerships with the business community.

AACSB—International Accreditation

The School of Management's program is accredited by AACSB—International (Association to Advance Collegiate Schools of Business), the world's leading business school accrediting body. The program is unique in being the smallest of all AACSB—International accredited business programs and one

of only 28 accredited programs—along with such institutions as Harvard University, Stanford University, and Dartmouth College—that focus solely on graduate degrees. Fewer than 30 percent of all business programs nationwide are accredited.

Transfer Credit

With the approval of the transfer review committee, graduate work completed on a satisfactory level (minimum grade of “B-”) at other institutions may be counted toward a Graduate College degree if it contributes to the completion of degree requirements. One transfer reduces the total courses required by one. Credits transfer in, but grades do not. MBA students may transfer/waive up to eight courses. Matriculated students are notified at time of admission of pre-approved transfers. Students who want to appeal this decision and request a further review should contact the Director of Admissions and Registrar. The request for further transfers must be submitted in writing and accompanied (at minimum) with a copy of the transcript showing relevant courses. Students are encouraged to attach a catalog description, course syllabi and/or other materials that will aid in the decision. All requests must be submitted by the end of the first term (fall, winter or spring) during which the student takes a course as a matriculated student.

Matriculated students interested in receiving additional credit for courses taken elsewhere are advised to obtain a permission form at the Office of Graduate Admissions and Registration and acquire the necessary approval prior to registration at another school.

Course Waivers

MBA and MBA Health students may be granted a course waiver for most core courses based on comparable graduate or undergraduate level courses with a minimum grade of “B-” or better. Generally, two undergraduate courses are required to waive one graduate course. Waiver requests for advanced level courses will require a replacement of that course. MBA program applicants may waive and/or transfer up to a maximum of eight full courses. The decisions are made by the Waiver Committee. Matriculated students are notified at time of admission of pre-approved waivers. Students who want to appeal this decision and request a further review should contact the Director of Admissions and Registrar. The request for further waivers must be submitted in writing and accompanied (at minimum) with a copy of the transcript showing relevant courses. Students are encouraged to attach a catalog description, course syllabi and/or other materials that will aid in the decision. All requests must be submitted by the end of the first term (fall, winter or spring) during which the student takes a course as a matriculated student.

MBA Internships

All full-time MBA students are required to complete a minimum of 400 hours of meaningful employment in a business

environment. This also applies to JD/MBA, pharmacy/MBA and the accelerated BA or BS and MBA program students.

The internship is an opportunity for the student to apply theories, concepts and skills learned in the course of the MBA Program. The student will gain an understanding of the administrative elements and day-to-day functioning of an organization while accomplishing assigned tasks. This will strengthen judgment, decisiveness, and team skills. It will also allow the student to assess his/her own potential in the work environment and possible areas needing development to realize a successful career in management.

MBA students register for MBA 683 and Health MBA students register for HCM 683. This is a no cost, no credit course, that appears as pass/fail on students’ transcripts. It is required for full-time students to graduate. The internships are coordinated with the Director of Career Development.

At the conclusion of the internship an evaluation is required from the employer and the student before the pass/fail grade will be given. The internship is in addition to the twenty required courses.

Requirements for obtaining an MBA after an MS

Students who received one of the School of Management’s previously offered MS degrees may obtain an MBA by taking nine additional courses beyond those taken to satisfy their MS degree requirement, assuming that all MS courses fit within the degree requirements of their desired MBA program. In order to count toward the MBA, an MS course must have been completed within the past five years and the students must have received a grade of at least a “B-”.

Requirements for obtaining a second MBA

Students who received one of the School of Management’s previously offered degrees may take the additional courses to obtain their additional degree, assuming original course work to be waived fits within the new degree requirements. In order to count toward the new MBA, the previous MBA must have been completed within the past five years and the students must have received a grade of at least a “B-”.

The requirements for a Health MBA, after having completed an MBA, are the two Health core courses, seven advanced Health courses and three electives not previously taken.

The requirements for an MBA, after having completed a Health MBA, are two MBA core courses and ten advanced non-health MBA courses not previously taken.

Job Placement Statistics for 2003 and 2004

Among MBA Graduates looking for jobs:

2003 Graduates

Percent placed by time of graduation60%
 Percent placed by three months post graduation . . . 70%

Percent placed by six months post graduation90%

2004 Graduates

Percent placed by time of graduation60%
 Percent placed by three months post graduation . . . 87%
 Percent placed by six months post graduation98%

Among MBA in Healthcare Management
 Graduates looking for jobs:

2003 Graduates

Percent placed by time of graduation25%
 Percent placed by three months post graduation . . .60%
 Percent placed by six months post graduation100%

2004 Graduates

Percent placed by time of graduation%
 Percent placed by three months post graduation%
 Percent placed by six months post graduation%

THE MBA GENERAL MANAGEMENT PROGRAM

Chair: Melvin W. Chudzik (518) 388-6447
 chudzikm@union.edu

Mission

The MBA Management program prepares students for analytical, managerial, and executive-level positions in a variety of enterprises. The design and delivery of the curriculum emphasize broad exposure to core business disciplines; the building of analytical, computer, communication, and human management skills; and the development of an ethical, systems-oriented, cross-functional perspective for decision-making.

Program Requirements

As shown below, the MBA program includes twelve required core courses, and seven advanced courses and the required capstone course. After waivers and transfers, a minimum of twelve courses must be completed in the MBA. For more details, see the waiver policy. One advanced level course must be taken in each of the three required categories. Students must complete at least eight core courses before taking any advanced courses. Students must take all core courses within each category before taking an advanced course in that category. MBA 501, 502 and 506 must be taken before any advanced courses are taken. The capstone course (MBA 681) is typically the last course taken. Full-time students take core courses in their first year and advanced courses in their second year. An internship or relevant business experience is required for the degree. An internship is not considered one of the twenty required courses. By taking additional courses in a given category, students can create their own unique programmatic focus.

Required Core Courses (Twelve)

All students must complete and/or waive the required courses. The course waivers and transfers must not exceed eight courses. Eight core courses including MBA 501, MBA 502, MBA 506 and MBA 510 must be completed before advanced courses can be taken.

- MBA 500 Managing Ethically in a Global Environment
- MBA 501 Mathematics for Management (1/2)
- MBA 502 Introduction to Probability (1/2)
- MBA 506 Statistical Models for Management
- MBA 510 Financial Accounting
- MBA 512 Managerial Accounting and Finance
- MBA 517 Advanced Corporate Finance
- MBA 520 Principles of Economics
- MBA 525 Marketing Management and Strategy
- MBA 531 Operations Management
- MBA 545 Strategic Use of Information Technology
- MBA 551 Managing People and Teams in Organizations
- MBA 570 Legal Principles of Business

Required Advanced Courses (Seven)

Students must choose at least one in each of the following three areas. Of the course chosen, at least one must be designated as Management Science (*) and at least one designated as Global (**).

Finance/Accounting and Economics

- MBA 610** Advanced Topics in Domestic and International Financial Accounting
- MBA 611 Personal Finance Planning
- MBA 619 Investments
- MBA 620 Investment Management
- MBA 621 Managerial Economics
- MBA 624 Topics in Micro Economics
- MBA 629 Money, Markets and Banking
- MBA 661** International Finance

Marketing and Operations

- MBA 626* Marketing Research Techniques
- MBA 627 Industrial Marketing
- MBA 628 Consumer Behavior
- MBA 632* Quality Systems Management
- MBA 641* Systems Analysis and Simulation
- MBA 663 e-Commerce
- MBA 665** International Marketing Management
- MBA 682* Management Science

Management and Human Resources

- MBA 650 Competing By Design
- MBA 652 High Performance Leadership
- MBA 653 Organizational Development and Transformation
- MBA 656 Ethical Issues in Management
- MBA 660** Executive Decision Processes in Global Environments
- MBA 662** International Business
- MBA 664 Entrepreneurship
- MBA 675 Foundations of HR Management
- MBA 676 Managing Human Resources
- MBA 677** International Human

Capstone (One)

All students are required to take the following capstone course.

- MBA 681 Strategic Management and Leadership (Capstone)

Internship MBA 683

Internship or relevant business experience is required for the degree. An internship is not considered one of the twenty courses.

Completing the MBA program in twelve months

Students who waive at least four courses may be able to complete the MBA program in one year by starting in the summer term. Four courses can be taken during the summer in two terms and twelve courses can be taken in the three terms during the regular academic year. Students interested in this option must meet with an academic advisor during the previous academic year.

THE MBA–HEALTHCARE MANAGEMENT PROGRAM

Chair: John W. Huppertz (518) 388-8738
huppertj@union.edu

Mission

The primary purpose of the MBA Program in Healthcare Management is to prepare its graduates for management positions in health service delivery organizations (e.g. hospitals, managed care organizations, group practice, long-term care) and in related organizations (e.g. consulting, government, corporate benefits). A successfully prepared graduate will be able to obtain an entry-level or mid-level position, competently perform the duties of that position, and advance and grow professionally in a career.

The program serves students with diverse educational backgrounds and work experiences fully supporting and encouraging those with limited or no clinical and managerial experience who matriculate on both a part-time and full-time basis. The program provides its education in an environment that fosters a high level of interaction among and between students and faculty, both in and out of the classroom. Faculty and students value this small-class environment.

Goals

Program graduates will be able to:

- 1) Understand the organizational setting of health services delivery including the inputs, processes, outcomes and the legal and ethical context.
- 2) Acquire the interpersonal skills necessary for fulfilling managerial roles including leadership, communication, negotiation, and conflict resolution.
- 3) Apply analytical and functional skills to solve a range of business problems facing health delivery and health-related organizations.
- 4) Assist their organizations in effectively responding to changes in the reimbursement and health policy environment.

Overview

The MBA in Healthcare Management prepares graduates for careers as administrators and analysts in health care, governmental, and private sector organizations with strong

health care interests. Typical organizations hiring health systems graduates include hospitals, clinics, health maintenance organizations, consulting firms, planning and regulatory agencies, and research firms. The curriculum is designed to help students understand the complexities of the health care system and to manage health and health-related facilities more effectively.

CAHME Accreditation (formerly ACEHSA)

The MBA in Healthcare Management is accredited by the Commission on Accreditation of Healthcare Management Education and AACSB–International. The program has been continuously accredited since 1981 and was most recently re-accredited in 2005. The MBA in Healthcare Management program is one of only 21 programs nationwide dually-accredited by both ACEHSA and AACSB.

Program Requirements

As shown below, the MBA–Healthcare Management program includes ten required core courses and ten advanced courses (seven required; three elective). After waivers and transfers, a minimum of twelve courses must be completed at the School of Management. For more details, see the waiver policy above. Students must complete at least eight of the core courses including HCM500 before taking any advanced course. Students must take all core courses within each category before taking an advanced course in that category. The capstone course (HCM 681) is typically the last course taken.

Full-time students take core courses in their first year and advanced courses in their second year. An internship or relevant business experience is required for the degree. An internship is not considered one of the twenty courses.

Required Courses**Finance**

MBA–HCM Core Courses: MBA 510, 512
MBA–HCM Advanced Required Course: HCM 617

Economics

MBA–HCM Core Courses: MBA 520
MBA–HCM Advanced Courses: HCM 620

Marketing and Operations

MBA–HCM Core Courses: MBA 531, HCM 526
MBA–HCM Advanced Courses: None

Management Science

MBA–HCM Core Courses: MBA 501/2, 506
MBA–HCM Advanced Required Courses: None

Management

MBA–HCM Core Courses: MBA 500, HCM 501
MBA–HCM Advanced Required Courses: HCM 650

Health Environment

MBA–HCM Core Courses: HCM 500
MBA–HCM Advanced Required Courses: HCM 674, 680

Information Technology

MBA–HCM Advanced Required Courses: HCM645, 646

Capstone

MBA–HCM Core Courses: None

MBA–HCM Advanced Required Courses: HCM 681

Elective Courses

HCM 656

PHL 587

Any advanced elective offered in the MBA Program

Please note that HCM 500 is a prerequisite for all advanced courses.

Internship HCM 683

Internship or relevant business experience is required for the degree. An internship is not considered one of the twenty courses.

Joint Degree and Other Programs**ACCELERATED BA OR BS AND MBA PROGRAM**

Union College students considering entrance into the accelerated Bachelor's/MBA program should consult with an MBA program advisor and apply for admission during the sophomore, junior, or first term of the senior year. Joint degree students must complete twenty graduate courses, three of which may count toward Bachelor's degree requirements. Graduate courses may not be taken until the junior year and are typically completed during the senior and fifth years. For specific courses see the "Center for Bioethics" section of this catalog.

FOUR-YEAR JD/MBA PROGRAM

This program is designed to meet the management development needs of students enrolled at Albany Law School. Students spend their first year in law studies, their second year in management studies, and their third and fourth years in law and management studies. Four designated law courses transfer into the MBA degree.

JOINT PHARM D/MBA IN HEALTHCARE MANAGEMENT

This program in cooperation with the Albany College of Pharmacy allows Pharm D students to complete an MBA Healthcare Management in an accelerated period of time. The program is designed to give future pharmacists an understanding of the complex business environment in which they will ultimately practice.

CERTIFICATE PROGRAMS IN HEALTH SYSTEMS AND FINANCE

These programs—which include six courses—are designed for individuals who already have a graduate degree but would like to expand their expertise in either health care or finance. The curriculum is tailored to the needs of each student.

CERTIFICATE IN HUMAN RESOURCE MANAGEMENT

Professionals currently in Human Resource management or those wanting to enter the field who have an undergraduate degree may take six HR management courses and receive a certificate that is approved by the NYS Education Department. This is intended to prepare the individual for an executive position in HR. The GMAT is not required for the HR certificate. If the individual wishes to expand their management skills they may apply the courses taken in the certificate program toward an MBA.

ARTICULATION AGREEMENTS

The School of Management has established 4+1 agreements with:

- Alfred University
- Cazenovia College
- Elmira College
- Hartwick College
- Hilbert College
- Keystone, PA
- New England College
- Randolph Macon, VA
- Skidmore College
- Siena College
- Southern Vermont College
- SUNY Brockport
- SUNY Geneseo
- SUNY Oneonta
- SUNY Potsdam
- Virginia Union University

This normally allows their students to complete their MBA degree at The Graduate College in one additional year after graduation from their undergraduate program. Qualified students may take courses the summer prior to their senior year. Visit our web site for details or call (518) 388-6642.

Center for Bioethics and Clinical Leadership

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 Telephone (518) 388-8045
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 Website www.bioethics.union.edu

Director Robert Baker
 Assistant Director Ann Nolte
 Technical Support Ryan Maloney

Degrees Offered

- Master of Science in Bioethics
- Master of Science Clinical Leadership in Health Management

MS IN BIOETHICS

This distance and campus-based MS in Bioethics is offered jointly by the Center for Bioethics and Clinical Leadership, The Graduate College of Union University and by the Center for Medical Ethics, Albany Medical College.

The MS in Bioethics provides advanced bioethics and clinical education for doctors, healthcare administrators, lawyers, nurses, pharmacists, philosophers, researchers and students enrolled in professional and graduate degree programs. The hybrid format of short on-campus summer sessions and distance learning courses has been specially designed to meet the needs of working healthcare professionals.

Mission

Our mission is to provide a quality master's level education for professionals who are unable to participate in conventional graduate programs because of the demands of work or obstacles of distance.

Course Waiver Policy

Up to three courses or practica may be waived by the admissions committee. To secure a waiver, the student must complete a "Course Waiver" form and submit all applicable transcripts and other relevant documentation. A separate form must be completed for each waiver requested.

Program Requirements

There are twelve required courses in the program: an intensive Summer Seminar in Health and Human Values; four required courses; three practica; a two-course thesis; and two elective courses.

Courses

BIE 500 Proseminar in Health and Human Values
 BIE 510 Biomedical Ethics
 BIE 520 Health Care Policy
 BIE 530 Bioethics and the Law
 BIE 545 Reproductive Ethics
 BIE 555 Research Ethics: Scientific Integrity
 BIE 565 Empirical Research Methods in Bioethics
 BIE 590 Clinical Ethics
 BIE 610 On-line Practicum
 BIE 620 Practicum in Clinical Ethics (on-site)
 BIE 630 Masters Project I
 BIE 640 Masters Project II
 BIE 650 Capstone in Clinical Ethics

MS IN CLINICAL LEADERSHIP IN HEALTHCARE MANAGEMENT

The MS Clinical Leadership in Healthcare Management degree is designed for future clinicians who wish to better

understand the health care industry and the environment in which it exists or who aspire to clinically-related leadership roles.

There are two populations of students in the MSCL program: Joint Albany College of Pharmacy students and 8 yr. Leadership in Medicine BS/MS/MD Union College/Albany Medical College students.

PharmD/MS

The Pharmacy Doctorate or Bachelor of Science and Master of Science Clinical Leadership in Healthcare Management joint program is limited to students from Albany College of Pharmacy (ACP). The program is designed to give future pharmacists an understanding of the complex business environment in which they will ultimately practice. The program is typically completed on a part-time basis over three years. Students start coursework in the fall of their third year at ACP. Students must submit separate applications to The Graduate College of Union University and Albany College of Pharmacy. Students interested in the joint MBA Program should refer to the School of Management section of this catalog.

Mission

The goal of the Clinical Leadership program is to broaden the horizons of future pharmacists and physicians by providing them with knowledge and skills in bioethics, health policy and health management as well as in the health sciences.

Program Requirements

There are twelve required courses in the program. Students in the Pharmacy Doctorate/MS Clinical Leadership in Health Management Program automatically waive three of these courses (MBA 510, HCM 656, and STA 501). Additionally, one MBA course (MBA 510) can substitute for an ACP elective. Courses are listed below:

- LIM 500 Introduction to Health Systems
- LIM 503 Health Systems Management
- LIM 553 Economics of Health
- LIM 571 Health Care Practicum
- PHL 574 Biomedical Ethics
- MBA 510 Financial Accounting
- MBA 512 Managerial Accounting and Finance
- HCM 617 Health Care Finance
- HCM 656 Group Practice Management
- HCM 674 Legal Aspects of Health Care
- HCM 680 Health Policy and Managerial Epidemiology
- STA 501 or an approved Statistics course

**MS OR MBA LEADERSHIP IN MEDICINE
(8 YR PROGRAM)**

The Leadership in Medicine program is jointly offered by Albany Medical College, The Graduate College of Union University, and Union College. Upon completion of the program, students will receive a BS from Union College, an MS or MBA from The Graduate College of Union University, and an MD from Albany Medical College. The application process is administered by the Admissions Office of Union College.

Mission

The goal of the Leadership in Medicine–Health Management program is to prepare students for the challenge of medical leadership by combining an enriched undergraduate curriculum with graduate education in bioethics, health management, and medicine.

Program Requirements

The MS requires 12 courses as listed below.

Courses for the MS

- MBA 510 Financial Accounting
- MBA 512 Managerial Accounting and Finance
- HCM 617 Health Care Finance
- HCM 674 Legal Aspects of Health Care
- HCM 681 Health Leadership Capstone
- LIM 500 Introduction to Health Systems
- LIM 503 Health Systems Management
- LIM 544 Health and Human Values I
- LIM 545 Health and Human Values II
- LIM 553 Economics of Health
- LIM 571 Clinical Leadership Practicum
- PHL 574 Biomedical Ethics

Courses for the MBA

The MBA requires 20 courses as listed below.

- MBA 506 Statistical Models for Management
- MBA 510 Financial Accounting
- MBA 512 Managerial Accounting and Finance
- MBA 520 Principles of Economics
- MBA 525 Marketing Management and Strategy
- MBA 531 Operations Management
- HCM 617 Health Care Finance
- HCM 625 Health Systems Marketing & Managerial Epidemiology
- HCM 674 Legal Aspects of Health Care
- HCM 680 Health Policy and Information Systems
- LIM 500 Introduction to Health Systems
- LIM 503 Health Systems Management

- LIM 544 Health and Human Values I
- LIM 545 Health and Human Values II
- LIM 553/HCM 620 Economics of Health
- LIM 680/HCM 681 Health Leadership/MBA Capstone
- PHL 574 Biomedical Ethics
- EBHC Evidence Based Healthcare (at Albany Medical College) (Two course credits)
- Elective
OR
- LIM 571 Clinical Leadership Practicum
Or Alternative

An approved Internship is required for the MBA but is not one of the 20 required courses.

CERTIFICATE PROGRAMS

This Bioethics Certificate Program was designed to respond to the needs expressed by hospital administrators and hospital ethics committees. It was specifically designed for health professionals, lawyers, pharmacists and healthcare administrators seeking advanced training in bioethics.

The Certificate is offered in two forms:

Certificate in Bioethics: Specialization in Health Policy & Law; an on-line distance learning Specialization in Health Policy and Law

Certificate in Bioethics: Specialization in Clinical Ethics and a hybrid, on-line/on-site Specialization in Clinical Ethics which incorporates an intensive one week on-site practicum. Certificates take approximately one year to complete.

Program Requirements

Each certificate program requires four courses.

Specialization in Health Policy & Law

- BIE 520 Health Care Policy
- BIE 510 Biomedical Ethics
- BIE 530 Bioethics & the Law

Plus one of four electives offered

- BIE 545 Reproductive Ethics
- BIE 555 Research Ethics: Scientific Integrity
- BIE 565 Empirical Research Methods
- BIE 590 Clinical Ethics (as an elective)

Specialization in Clinical Ethics

- BIE 510 Biomedical Ethics
- BIE 590 Clinical Ethics (online)
- BIE 620 On-site Clinical Ethics Practicum

Either BIE 520 or BIE 610

- BIE 520 Health Care Policy
- BIE 610 On-line Clinical Ethics Practicum

Courses of Instruction

Key to Terminology

- * = Advanced MBA or MBA-HSA Course
- ** = Course descriptions appear in Union College's Catalog
- Prerequisite Discussion and Terminology:
 - "Pre" = Prerequisite. Student must have finished this course prior to beginning the listed course.
 - "Rec" = Recommended. It is recommended (but not required) that this course be completed prior to the course listed.

If "prerequisites" have not been fulfilled, then written permission forms, signed by the instructor or Dean, must accompany the registration form.

MBA students must take 80% of all core courses, including MBA 510/512 and MBA 506, prior to taking any advanced course.

With the exception of MBA 570, MBA students must take all core courses in each subject category prior to taking any advanced course in that category. Health students must take HCM 500 and HCM 501 before taking any advanced course.

Additional prerequisite requirements are listed below.

The School of Education Courses

The following courses are for students in the MAT or MS for T programs. Enrollment in these courses is by permission of School of Education Deans only.

PSY 050. Educational Psychology (Pre-1)

Winter, Spring; Gligora

Principles of psychology applied to teaching, with emphasis on cognitive abilities of students, classroom management procedures, and motivational techniques. Visits to a variety of local schools. Prerequisite: PSY 010.

EDS 500A. Field Observations (Middle School)

Fall, Winter, Spring; Allen

40 hours, observing classes and meeting with secondary school teachers in the discipline for which certification is sought. Five days are required at the middle school level. Specific observation activities outline the expected outcomes of the experiences as well as information regarding observational techniques and procedures. Typical experiences involve in-depth observation of one teacher and additional observations of other teachers and classes to see a range of grade/ability levels. Observers are asked to consider physical environment, classroom climate, learners and learning styles, the curriculum, and teacher planning/preparation. Students are also expected to become familiar with instructional materials and resources.

EDS 500 B. Field Observations (High School)

Fall, Winter, Spring; Allen

40 hours, observing classes and meeting with secondary school teachers in the discipline for which certification is sought. Five days are required at the high school level. Either 200A or B must be conducted in a high needs school.

EDS 500C. Continuation of EDS 500A and 500B. Field Observations (Internship School)

Spring; Allen

40 hours, observing classes and meeting with secondary school teachers in the discipline for which certification is sought. Specific observation activities outline the expected outcomes of the experiences as well as information regarding observational techniques and procedures. Typical experiences involve in-depth observation of one teacher and additional observations of other teachers and classes to see a range of grade/ability levels. Observers are asked to consider physical environment, classroom climate, learners and learning styles, the curriculum, and teacher planning/preparation. Students are also expected to become familiar with instructional materials and resources.

EDS 511. Curriculum and Methods of Teaching English

Summer; Danaher

Curricular planning and instruction for the teaching of English at the secondary school level. The course will include an analysis of secondary language arts curricula including New York State Frameworks for language arts, instructional techniques and strategies, designing and locating instructional materials, planning, implementing, and evaluating lessons and units.

EDS 512. Curriculum and Methods in Teaching Mathematics

Summer; Monaghan

Curricular planning and instruction for the teaching of mathematics at the secondary school level. The course will include an analysis of classic and current secondary mathematics curricula including New York State Frameworks for mathematics, instructional techniques and strategies, designing and locating instructional materials, planning, implementing, and evaluating lessons and units.

EDS 513. Curriculum and Methods in Teaching Languages

Summer; Remaley

Curricular planning and instruction for the teaching of modern and classical languages at the secondary school level. The course will include an analysis of secondary language curricula including New York State Frameworks for languages; instructional techniques; the teaching of speaking, listening, reading, and writing; designing and locating instructional materials; planning, implementing, and evaluating lessons and units.

EDS 514. Curriculum and Methods in Teaching Sciences

Summer; Williams

Curricular planning and instruction for the teaching of science at the secondary school level. The course will include an analysis of secondary science curricula including New York State Frameworks for sciences; instructional techniques and strategies for teaching scientific concepts; laboratory methods and safety, designing and locating instructional materials; planning, implementing, and evaluating lessons and units.

EDS 515. Curriculum and Methods in Teaching Social Sciences

Summer; Reynolds

Curricular planning and instruction for the teaching of social sciences at the secondary school level. The course will include an analysis of secondary social studies curricula including the New York State Frameworks for social studies; models and techniques for teaching and integrating the various social sciences; designing and locating instructional materials; planning, implementing, and evaluating lessons and units.

EDS 516. Curriculum and Methods in Teaching Technology

Summer; Smith

Designed for those with a technology or engineering background, this course will help prepare technology educators to promote students' learning by the use of multiple instructional models. The course builds teacher skills in lesson planning, content organization, and hard and software evaluation and use. New York State Standards for technology and evolving approaches to integration of technology in the teaching/learning process will also be explored.

EDS 540. Psychology of Teaching

Summer; Allen, Blom, Hall, Remis

Theories of learning and memory applied to instruction; models and research on teaching in secondary schools. This course will include a laboratory component with micro-teaching experiences and will be taken in the summer preceding the teaching internship. **(Co-requisite: EDS 240 Lab)**

EDS 540L. Microteaching Laboratory

Summer; Keeley, Lehnert, Merriman, Moore

Students prepare and present several 5-30 minute lessons using a variety of instructional models. Lessons are video-taped and critiqued by peer-coaches and laboratory faculty. This laboratory must be taken concurrently with EDS 240 and a course in Curriculum and Methods in Teaching (EDS 511-516).

EDS 541. Essential Reading Literacy

Summer; Hall

An examination of the reading approaches, both aesthetic and efferent, covers text features, vocabulary building, and strategies for meaning-making to support students' reading in the academic discipline content areas.

EDS 544. Literacy for the Content Classroom

Fall, Winter; C. Reynolds, Wojcik

The theory and instructional approaches which support students' acquisition of content knowledge through writing. Builds upon the reading essentials of EDS 541 to help teachers use writing processes and varied assignments and strategies for specific content learning objectives, writing to learn as well as display writing, includes instructional planning elements such as types of assignments, writing frequency and pacing, feedback, grading, and reflective analysis of writing products.

EDS 550A. Special Needs Seminar: Drug, Alcohol, Child Abuse

Fall; Kelley & Hobday, Maloney

This seminar is required of all MAT candidates and is to be taken concurrently with their internship. This course explores major aspects of special needs populations in schools including State mandates; laws dealing with the handicapped; gifted and talented students; the instruction required for teachers in drug, alcohol, and child abuse; and projects to increase teachers' competence in working with special needs populations. **Only students engaged in an internship may enroll in this course.**

EDS 550B. Seminar in Instruction and Evaluation

Winter; Blom, Hall, Staff

This seminar is required of all MAT candidates and is to be taken concurrently with their internship. Topics include: application of instructional theory and research, reflective teaching and self-evaluation, traditional and alternate/performance assessments. Each student will produce a professional portfolio and a teaching video-tape in this course. **Only students engaged in an internship may enroll in this course.**

EDS 550C. Seminar in Instruction and Evaluation

Spring; Blom, Hall

This seminar is required of all MAT candidates and is to be taken concurrently with their internship. Topics include: application of instructional theory and research, reflective teaching and self-evaluation, exposure to major school reform movements/proposals, and the relationship of new teachers to the reform movement. **Only students engaged in an internship may enroll in this course.**

EDS 551, 552, 553. Teaching Internship (No Fee)

Fall, Winter, Spring; Allen

Graduate interns teach a minimum of two courses in a local secondary school under the direction of an experienced school mentor and a college supervisor. Students meet several times a trimester on campus in addition to their teaching responsibilities. **Only matriculated MAT students may be enrolled in an internship.**

EDS 570. Growing Up in America: Issues of Diversity

Not offered 2005-06

Childhood and coming of age will be examined through the works of a diverse group of American writers. The class will

read and respond to biographies, autobiographies, fiction, and personal essays that grapple with building, personal, cultural, or social identities. Discussions will include such issues as the role of education for immigrants and disadvantaged populations, racism, affirmative action, bilingual instruction, and cultural diversity.

EDS 580. MAT/MS For Teachers Project

Winter; Hall, Kennedy, Vrtiak, Staff

Individual and group projects relating to the classroom teaching of a particular discipline. Typical projects are: systematic applications of an instructional model of a major segment of curriculum in a teaching subject area; classroom action research; addressing curricular or instructional questions/issues within one's teaching subject area.

EDS 590. EDS 690. Independent Study in Education

EDS 598. EDS 599. Research and Thesis in the Discipline

Fall, Winter

EDS 600. Status Continuation (\$100)

Graduate students who are degree candidates and are working on their thesis must pay a continuation fee for any term in which they are not formally enrolled in any other course counting toward the completion of their degree.

Courses Taught in Discipline Areas for the School of Education

BIO 548. Genetics

Winter; K. Williams

An introduction to the fundamental principles of human genetics. Topics include single gene and multifactorial inheritance, pedigree analysis, cytogenetics, genetic variation in populations, genetics of cancer and immunities, prenatal testing, and human sexuality. The course will foster understanding of the central role which genetic factors play in human health and disease, the ways in which new genetic information is revolutionizing biology, and a working knowledge and vocabulary needed to make well-informed professional and personal decisions.

BIO 553. Plant Biology

Spring; Tobiessen

This course will focus on a survey of the land plant kingdom with an emphasis on phylogeny, anatomy, physiology, field identification, and ecology. Emphasis will be placed on the New York State curriculum for biology in secondary schools and ways to link plant study to the curriculum.

BIO 590. Biological Demonstrations

Fall; D. Williams

Focusing on specific biological laboratories taught in middle schools and high schools, this course not only explores the New York State mandated biological laboratories, but also the

potential laboratories that can be taught in the discipline at the secondary school level. The emphasis is on the NYS standards-based skills that secondary students need to know and be able to perform. Each student leaves the course with a wide variety of laboratories that can be used in a wide variety of school settings.

CHM 590. Chemical Demonstrations

Spring; Hull

This course focuses on teaching students the chemistry content and the procedures for creating effective, safe, and challenging chemistry laboratory experiments in secondary classrooms. Each student will leave the course knowing a multitude of required and potential chemistry laboratories that can be used successfully with secondary school students.

CST 565. Introduction to Computers in the Classroom

Fall; Wilkinson

This core course is required of all students specializing in computers who have not had a similar course in their previous study. It is strongly recommended for all students in any education program who have had little or no exposure and/or knowledge of computers, computer systems, and their basic applications: word processing, databases, and spreadsheets. Emphasis will be placed on what computers do, how they can be used, an understanding of the various parts of the hardware, loading programs, running programs, the primary and secondary storage capabilities and their functions. All students will become familiar with word processing, spreadsheets, databases, and their applications. A basic introduction to E-mail, the Internet, and some of their basic uses in the classroom will also be included along with an elementary explanation of programming through the use of Quick Basic or another introductory programming language.

CST 570. Computers in the Language Arts Classroom

Fall; Reynolds

Investigates the potential of microcomputer technology to improve reading, writing, study, communication, and second language skills. During the first five weeks, many tools, techniques, and materials will be presented through demonstrations, readings, lectures, and lab sections. Class members will further explore one or more of these areas and develop an implementation plan during the second portion of the course. Students should have an acquaintance with computers but do not need to be programmers. Some Logo or Carol the Robot is helpful.

CST 571. Computers in the Math and Science Classroom

Spring; Wilkinson

Investigates the potential of new technology for improving the teaching of math and science. Special attention is given to the advanced uses of spreadsheet and database software in the secondary curriculum. Course discussions will emphasize the educational applications of computer technology rather than development of software. Advanced use of E-mail, the Internet and World Wide Web will be taught as well.

EGL 510. Writing and Teaching: A Process Approach*Fall; Danaher*

Using the techniques developed by the National Writing Project to use the writing processes of actual writers in school writing, this course presents an in-depth examination of the writing process. Students are expected to write weekly and to use the techniques in the course with their own students in secondary schools. As a result, the course combines writing theory with practical classroom practice.

EGL 531. Reading Poetry*Spring; Stevenson*

Students will examine a broad range of poems in order to examine the sources and characteristics of the unique powers of poetry and poets claimed throughout history. Students will learn to formulate theories of how poetry operates in ways peculiar to itself and to develop personal, aesthetic, and critical approaches to reading poetry effectively.

EGL 581. Criticism*Not offered 2005-06*

This course focuses on gaining a broad familiarity with the major theoretical approaches to the study of literature and culture. The course will apply the insights gained about theory to the practical act of interpreting literary texts and narratives of various sorts. Strong links will be drawn between theory and practical application.

EGL 582. The Civil War Era*Winter; Allen*

Focusing on the history and literature of the Civil War Era, this course selects materials from 1850-1870. Key concepts and their extensions into the 19th and 20th centuries will be emphasized including race, gender, immigration, industrialism, military tactics, individualism, Romanticism, Realism, Naturalism, and Patriotism. The course will emphasize several interdisciplinary approaches to the study of literature and history, including a wide variety of artifacts that can be used to teach the history and literature of the period. The course will be organized as a seminar emphasizing discussion and student presentations.

FRN 533. Advanced French Language and Grammar*Spring; Ndiaye*

This course focuses on advanced language training for accomplished French students. The course examines some of the finer points of grammar, stylistics, and phonetics.

HST 510. Comparative History*Spring; Sargent*

History 510 takes a comparative and topical approach to the study of traditional global history. The goal is to provide teachers with several different framework within which to understand and teach global history. Five main approaches are examined. The course will be organized as a seminar focusing on class discussion rather than lecture. Grading will be based on short papers and a final exam.

HST 558. The Holocaust*Spring; Berk*

A formal study of European and American Jewry in the period 1933-1945 focusing on modern anti-Semitism, the Nazi world view, German extermination policies, the response of Europe and the United States, and Jewish behavior in a time of crisis.

HST 582. The Civil War Era*Winter; Allen*

Focusing on the history and literature of the Civil War Era, this course selects materials from 1850-1870. Key concepts and their extensions into the 19th and 20th centuries will be emphasized including race, gender, immigration, industrialism, military tactics, individualism, Romanticism, Realism, Naturalism, and Patriotism. The course will emphasize several interdisciplinary approaches to the study of literature and history, including a wide variety of artifacts that can be used to teach the history and literature of the period. The course will be organized as seminar emphasizing discussion and student presentations.

HST 589. Special Topics in Social Science*Spring; Sargent*

This course is designed as a critical thinking course, analyzing the ways in which social scientists write, think, make arguments, and present evidence. The course provides future teachers with multiple ways to evaluate social science evidence in multiple disciplines. The course demands analytical thinking and the ability to articulate orally and in writing.

PHY 590. Physics Demonstrations*Not offered 2005-06*

School of Engineering and Computer Science Courses

COMPUTER SCIENCE

Specific 2005-06 course offerings are identified below and updated via www.gcuu.edu or by contacting the Dean of Engineering.

To ensure that students meet appropriate prerequisites for all courses, all graduate students are required to have a plan of study on file that has been approved by the graduate advisor.

NON-CREDIT COMPUTER SCIENCE COURSES**CSc Pre1. Topics in Computer Logic and Mathematics**

Introductory logic and proof methods, set theory, and Boolean algebra; number systems, computer organization, and elementary digital logic; data representation. Prerequisites: Calculus and programming experience. (no-credit)

CSc Pre2. Structured Programming and Computer Organization

Object-oriented programming and design; principles of computer organization. Algorithms will be implemented in Java and assembly language. No prerequisites. (no-credit)

CSc Pre3. Data Structures

Winter; Staff

Basic concepts of data organization and abstraction, software design, stacks, queues, trees, and their implementation with linked structures. Sorting and searching techniques. Programming in Java. Students must register for a laboratory section. Prerequisite: CSc Pre2. (no-credit)

CSc 599. Master of Science Graduate Seminar in Computer Science

Winter, Spring; Staff

This required, non-credit Seminar provides a capstone experience for graduate Computer Science candidates. Candidates select a topic for independent research during the Fall term. The candidate submits a final written report and presents the research during a seminar session the following Winter or Spring term. Each candidate is required to attend all seminar sessions. The candidate receives a pass/fail grade which appears on the official transcript. This is a no-fee course. This course is normally taken during the final year of the candidate's program. Prerequisite: approval of graduate advisor. (no credit)

CREDIT-BEARING COMPUTER SCIENCE COURSES**CSc 510. Operating Systems**

Spring; Staff

Batch, interactive, real-time, and distributed operating systems; multiprogramming, multiprocessing, multiplexing, multi-tasking; concurrent programming; elementary queuing theory; memory management; resource allocation, sharing and protection. This course is cross-listed in the Union College catalog as a 100-level undergraduate course. GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: CSc Pre1 and CSc Pre3.

CSc 511. Algorithm Design and Analysis

Fall, Spring; Staff

Fundamental algorithms used in a variety of applications. Includes algorithms on list processing, string processing, geometric algorithms, and graph algorithms. This course is cross-listed in the Union College catalog as an undergraduate course (250). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: CSc Pre3 and CSc Pre1.

CSc 512. Theory of Computing**

Fall; Staff

A discussion of the fundamental ideas and models underlying

computing—properties of formal languages, finite automata, regular expressions, pushdown automata, context-free languages, Turing machines, and undecidability. This course is cross-listed in the Union College catalog as an undergraduate course (350). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: CSc Pre3 and CSc Pre1.

CSc 513. Programming Languages**

Winter; Staff

An introduction to issues in programming language design and implementation. Major programming language paradigms: functional, logic, and object-oriented, and their use. This course is cross-listed in the Union College catalog as an undergraduate course (370). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: CSc Pre3 and CSc Pre1. Recommended: CSc 511.

CSc 514. Computer Graphics

Algorithms for handling two-dimensional and three-dimensional objects. Interactive graphics hardware and systems. X windows, engineering workstations. This course is cross-listed in the Union College catalog as an undergraduate course (385). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: CSc Pre3 (Calculus III: Differential Vector Calculus and Matrix Theory) or its equivalent.

CSc 515. Introduction to Databases

Fall; Staff

Introduction to data models and database design. Coverage of network, hierarchical, and relational architectures with emphasis on the latter. Study of relational algebra, entity-relationship modeling, and data normalization. Study of fourth generation query languages including SQL. Introduction to centralized, distributed, federated, and mediated systems. This course is cross-listed in the Union College catalog as an undergraduate course (340). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: CSc Pre3 (Data Structures).

CSc 516. Software Engineering

Spring; Staff

Strategies for the specification, design, production, testing, and support of computer programs; software development models; programming team structures; documentation and maintenance. This course is cross-listed in the Union College catalog as an undergraduate course (360). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: CSc 511.

**CSc 518 Digital Design
(Cross-listed as EER 518)***Winter; Staff*

The design of digital hardware systems at the module level using modern approaches. Datapath and control unit design, hardware description languages, minimization, pipeline. Laboratory exercise and a design project are required. This course is cross-listed in the Union College catalog as an undergraduate course (318). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Introduction to Digital Computers or equivalents.

**CSc 529. Neural Networks
(Cross-listed as EER-529)***Spring; Staff*

Topics include the biological basics of artificial neural networks, neuron models and architectures, backpropagation, associative and competitive learning. Weekly computer laboratories and a final project required. This course is cross-listed in the Union College catalog as an undergraduate course (329). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Linear Algebra and Differential Equations, CSc Pre3 for computer science students.

CSc 531. Computer Language Translators

The modules of a compiler and their functions. Lexical processor, syntax analyzer. Symbol table access methods, scanning arithmetic expressions, error recovery, code generation. Prerequisite: CSc 512.

CSc 533. Advance Topics in Software Engineering*Spring; Staff*

Seminar on topics in software engineering covering selected modern approaches to requirements engineering, software design, and verification of software systems. Prerequisite: CSc 516 or permission of instructor.

**CSc 536. Computer Network Protocols
(Cross-listed as EER 536)***Spring; Staff*

Design, analysis, and operation of communication protocols for computer networks; the Internet, TCP/IP, addressing, switching, routing, congestion control, application protocols. This course is cross-listed in the Union College Catalog as an undergraduate course (336). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in the class. Prerequisites: Introduction to Digital Computers or equivalent programming ability.

**CSc 537. Comparative Computer Architecture
(Cross-listed as EER 537)**

Study of computer architectures, with an emphasis on RISC processors, performance metrics, datapath and control, pipelines, cache design, and parallel instruction execution. Prerequisites: CSc 510 and CSc Pre1.

CSc 538. Advanced Topics in Database Systems

Physical data organization and its application to database management. Study of file layouts, indexing, and query optimization techniques. Advanced database topics will be studied including concurrency control, transaction management, data recovery, and security. Prerequisite: CSc 515.

CSc 542. Analysis and Design of Computer Algorithms*Winter; Staff*

The analysis of time and space requirements of algorithms; the design of efficient algorithms using techniques such as divide and conquer, and dynamic programming; efficient algorithms for graph problems, matrix multiplication, fast Fourier transforms, polynomial multiplication, pattern matching; introduction to complexity theory. Prerequisite: CSc 511.

CSc 544. Artificial Intelligence*Spring; Staff*

Fundamental concepts used in creating "intelligent" computer systems; semantic representation, logical deduction, natural language processing, and game playing; expert systems, knowledge-based systems, and elementary robotics. This course is cross-listed in the Union College Catalog as an undergraduate course (320). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in the class. Prerequisite: CSc 511.

CSc 547. Data Communications and Networks*(Cross-listed as EER-547)**Fall; Staff*

An introduction to protocols, communication hardware, networks, error detection and handling, and software. This course is cross-listed in the Union College catalog as an undergraduate course (337). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Introduction to Digital Computers or CSc Pre 1 (Topics in Computer Logic and Mathematics), or equivalents. A knowledge of statistics is helpful.

CSc 548. Concurrent Programming

Survey of synchronization and communication in concurrent programs; introduction to concurrent programming languages and systems such as Java and MPI; computation in distributed and multi-processor systems. Prerequisite: CSc 511. Recommended: CSc 510.

CSc 550. Advanced Programming Language Topics

Advanced issues in programming languages design; descriptions of syntax and semantics, types, binding time, run-time systems. Projects will include implementations of small programming-language interpreters. Prerequisites: CSc 511 and CSc 513.

CSc 551. Large Scale Software Development*Winter; Staff*

Strategies for the systemic design, implementation, and testing of large software systems. Design notations, tools, and techniques. Design patterns and implementation idioms. Implementation, debugging and testing. Includes team and individual software development projects. This course is cross-listed in the Union College catalog as an undergraduate course (260). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: CSc Pre 3 and Logic & Set Theory.

CSc 552. Microprocessors and Microcomputers; Architecture, Programming, and Applications (Cross-listed as EER 552)*Spring; Staff*

Hardware and architecture with emphasis on 8051 microcontroller; programming in assembly and higher-level languages, microcomputer applications, and interfacing. Design projects required. This course is cross-listed in the Union College catalog as an undergraduate course (352). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: Knowledge of computer programming and introduction to Digital Computers or equivalent.

CSc 554. VLSI System Design (Cross-listed as EER 554)

Design of very large scale integrated systems including structured design, stick diagrams, delay time estimation. Design from logic to physical levels; CAD tools for layout and simulation. Design projects required. This course is cross-listed in the Union College catalog as an undergraduate course (354). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: Introduction to Digital Computers and Introduction to Semi-conductor Devices and Circuits or equivalents.

CSc 571. System Modeling & Optimization (ie Computational Intelligence)*(Cross-listed as EER 571)**Fall; Staff*

Topics include the theory, design, and application of biologically and linguistically motivated computational methods emphasizing neural networks, genetic algorithms, fuzzy logic, and hybrid intelligent systems in which these methods are employed. Special emphasis will be placed on applying these techniques to "real-world" problems, and examples from a broad range of industrial applications will be presented. Homework assignments and a final project are required. Prerequisites: undergraduate calculus and linear algebra.

CSc 583. Selected Topics in Computer Science

Prerequisite: Permission of the instructor.

CSc 590-593. Independent Study*(by arrangement)**Fall, Winter, Spring; Staff*

Prerequisite: At least two CSc courses numbered between 530 and 589.

CSc 594-595. Two-Term Programming Project*(by arrangement)**Fall, Winter, Spring; Staff*

Prerequisite: At least two CSc courses numbered between 530 and 589.

CSc 596-597. Research and Thesis*(by arrangement)**Fall, Winter, Spring; Staff*

Prerequisite: At least two CSc courses numbered between 530 and 589.

ELECTRICAL ENGINEERING

Specific 2005-2006 course offerings are identified below and updated via www.gcuu.edu or by contacting the Dean of Engineering.

To ensure that students meet appropriate prerequisites for all courses, all graduate students are required to have a plan of study on file that has been approved by the graduate advisor.

NON-CREDIT ELECTRICAL ENGINEERING COURSES**EER 599. Master of Science Graduate Project in Electrical Engineering***Winter, Spring; Staff*

This non-credit seminar project provides a capstone experience for graduate electrical engineering candidates not completing a thesis or independent study. The candidate and faculty advisor agree on project scope and evaluation process. The candidate receives a pass/fail grade which appears on the official transcript. This is a no-fee course.

CREDIT-BEARING ELECTRICAL ENGINEERING COURSES**EER 502. Advanced Circuit Analysis***Winter; Staff*

General network theory, graph topology. Topological methods applied to loop, node, node-pair, mixed variable, and state equations. Linear, nonreciprocal, and active networks. Prerequisite: Discrete Systems or equivalent.

EER 510. Semiconductor Device Theory

In-depth examination of the physical operation of basic semiconductor devices such as diodes, bipolar transistors, junction and metal-oxide-semiconductor field effect transistors. Determination of internal parameters that contribute to device performance. Prerequisite: Electronic Devices or equivalent or permission of the instructor.

EER 512. Application of Integrated Circuits

Electronic processing of signals; properties of linear and hybrid integrated circuits; design of linear, nonlinear and hybrid electronic systems, active filter networks. Design projects required. This course is cross-listed in the Union College catalog as an undergraduate course (312). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Analysis and Design of Electronic Circuits, Control Systems or equivalents, or permission of instructor.

**EER 518. Digital Design
(Cross-listed as CSC 518)**

Winter; Staff

The design of digital hardware systems at the module level using modern approaches. Datapath and control unit design, hardware description languages, minimization, pipeline. Laboratory exercise and a design project are required. This course is cross-listed in the Union College catalog as an undergraduate course (318). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Introduction to Digital Computers or equivalents.

EER 520. State Space Analysis

Fall; Staff

Formulations of state equations, matrices and determinants. Main concepts of linear algebra. Eigenvalues and Eigenvectors. Solutions of state equations by EV-EVR methods. Prerequisites: Circuits and Systems, Discrete Systems or equivalents.

EER 521. Modern System Theory

Winter; Staff

Continuation of EER 520. Functions of matrices; Cayley-Hamilton's theory. Time-varying systems, controllability and observability. Nonlinear systems and Lyapunov's stability. Prerequisites: Control Systems, EER 520 or equivalents.

EER 524. Random Processes

Review of discrete probability, random processes. Markov chains and Queuing Theory. Applications to communication systems, and computer networks. Prerequisite: Some probability knowledge desirable.

EER 525. Non-Linear Optimization

Extremization of objective functions (cost, performance, etc.) subject to constraints in the form of equalities and inequalities. Method of Lagrangian Multipliers. Kuhn Tucker conditions. Gradient search algorithm. Penalty functions. Direct methods of variational calculus and their application to approximate solutions of problems in electric circuit theory. Economics of electric power networks. Prerequisite: Undergraduate math and linear algebra.

EER 526. Optimal Control Systems

Introduction to the theory and applications of optimal control. Development of Bellman's dynamic programming,

variational methods and Pontryagin's maximum principle. Applications to the synthesis of optimal regulators and trackers. Solution of control problems with minimum time, energy or fuel consumption. Prerequisites: Background in control theory and better than average mathematical ability. EER 520 helpful, but not necessary.

EER 528. Computer Based Control Systems

Sampling and reconstruction of analog signals, sampled data, z-transform, the computer as a control element, state-space representation of digital control systems, quantization effects, controllability; observability, stability. Prerequisite: Control Systems or equivalent.

**EER 529. Neural Networks
(Cross-listed as CSc 529)**

Spring; Staff

Topics include the biological basics of artificial neural networks, neuron models and architectures, backpropagation, associative and competitive learning. Weekly computer laboratories and a final project required. This course is cross-listed in the Union College catalog as an undergraduate course (329). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Linear Algebra and Differential Equations, CSc Pre3 for computer science students.

EER 530. Fuzzy Logic

Topics include fuzzy sets and relations, membership functions, defuzzification, classical logic and fuzzy logic, fuzzy rule-based systems, nonlinear simulation, decision-making, pattern recognition and control systems. This course is cross-listed in the Union College catalog as an undergraduate course (330). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Calculus and Linear Algebra, CSc Pre3 for computer science students.

EER 531. Electronic Devices

Terminal characteristics and theory of electronic devices; band theory, photo and electronic effects, PN junctions; bipolar and field effect transistors, discrete and integrated electronics. This course is cross-listed in the Union College catalog as an undergraduate course (310). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Introduction to Semiconductor Devices and Circuits or equivalent.

EER 533. Wireless Communication Circuits

Communication circuits, including coupling networks, electrical noise, high-frequency amplifiers, mixers, phaselock loops, high efficiency and broadband amplifiers, modulators and demodulators, pulse modulation techniques. Three lab hours each week. Design projects required. This course is cross-listed in the Union College catalog as an undergraduate course (333). GCUU graduate students will be expected

to complete additional course work beyond the undergraduates in this class. Prerequisite: Analog Communications, Analysis and Design of Electronic Circuits or equivalents, or permission of the instructor.

**EER 536. Computer Network Protocols
(Cross-listed as CSc 536)**

Spring; Staff

Design, analysis, and operation of communication protocols for computer networks; the Internet, TCP/IP, addressing, switching, routing, congestion control, application protocols. This course is cross-listed in the Union College catalog as an undergraduate course (336). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: Introduction to Digital Computers or equivalent programming ability.

**EER 537. Comparative Computer Architecture
(Cross-listed as CSc 537)**

Study of computer architectures, with an emphasis on RISC processors, performance metrics, datapath and control, pipelines, cache design, and parallel instruction execution. Prerequisites: Operating Systems and either Introduction to Digital Computers or CSc Pre1 (Topics in Computer Logic and Mathematics) or equivalents.

EER 541. Energy Conversion

Fall; Staff

Theory of electromechanical energy conversion; characteristics of transformers and DC induction, and synchronous machines. This course is cross-listed in the Union College catalog as an undergraduate course (341). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Electric Circuits or equivalent.

EER 542. Power Electronics

Rectifying devices and rectifier circuits: device characteristics, waveforms, harmonic content filtering. Controlled rectifiers (thyristors, triacs): device characteristics, single-phase and multiphase systems. Snubber circuits and device limitations. AC-DC converters: design, application, topologies. Energy storage element selection and design: capacitors and inductors. This course is cross-listed in the Union College catalog as an undergraduate course (342). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: Circuits and Systems, Introduction to Semiconductor Devices and Circuits or equivalents.

EER 543. Introduction to Antenna Theory

Spring; Staff

Propagation of electromagnetic waves, antenna parameters, arrays, wire antennas, aperture antennas, receiving antennas. Prerequisites: Introduction to Electromagnetic Engineering I or equivalent. This course is cross-listed in the Union College catalog as an undergraduate course (368). GCUU graduate

students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: Introduction to Electromagnetic Engineering or equivalent.

EER 544. Digital Communications

Elements of a digital communication system, digital source coding, error correction, introduction to information theory, channel models, signaling waveforms, optimum reception and detection. Prerequisites: Analog Communications, Probability and Digital Communications or equivalents.

EER 546. Digital Signal Processing

Discrete sequences, sampling, z-transform, discrete and fast-Fourier transforms, discrete filter realizations, filter design based on analog, Butterworth, Chebyshev, Elliptic low pass filters, windowing and quantization effects. Prerequisite: Discrete Systems or equivalent.

**EER 547. Data Communications and Networks
(Cross-listed as CSc 547)**

Fall; Staff

An introduction to protocols, communication hardware, networks, error detection and handling, and software. This course is cross-listed in the Union College catalog as an undergraduate course (337). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Introduction to Digital Computers or CSc Pre1 (Topics in Computer Logic and Mathematics), or equivalents. A knowledge of statistics is helpful.

EER 548. Digital Circuits

Winter; Staff

Special circuitry of digital systems; transistors as switches, logic gate types (RTL, DTL, TPL, ECL, MOS, CMOS, etc.), digital ICs semiconductor memories. Design projects required. This course is cross-listed in the Union College catalog as an undergraduate course (348). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Introduction to Digital Computers, Introduction to Semiconductor Devices and Circuits or equivalents, or permission of the instructor.

**EER 552. Embedded Microcontroller Systems
(Cross-listed as CSc 552)**

Spring; Staff

Hardware and architecture with emphasis on 8051 Microcontrollers; programming in assembly and higher-level languages, microcomputer applications, and interfacing. Design projects required. This course is cross-listed in the Union College catalog as an undergraduate course (352). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: Knowledge of computer programming and Introduction to Digital Computers or equivalent.

**EER 554. VLSI System Design
(Cross-listed as CSC554)**

Design of very large scale integrated systems including structured design, stick diagrams, delay time estimation. Design from logic to physical levels; CAD tools for layout and simulation. Design projects required. This course is cross-listed in the Union College catalog as an undergraduate course (354). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: Introduction to Digital Computers and Introduction to Semi-conductor Devices and Circuits or equivalents.

EER 556. Detection, Estimation and Filtering

Decision criteria, estimation of their parameters, Wiener and Kalman filters. Prerequisites: Analog Communications and some knowledge of probability or Probability and Digital Communications, or equivalents.

EER 557. Image Processing

Fall; Staff

The course covers the basic operations performed on digital images. These include digitization, image enhancement and restoration, color image processing, and image compression using the discrete cosine transform and wavelets. This course is cross-listed in the Union College Catalog as an undergraduate class (347). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Discrete Systems or equivalent.

EER 558. Waves in Communication

Spring; Staff

This course will cover the basic concepts needed to develop electromagnetic devices in wireless communication. These include transmission line theory and circuits, wave propagation and transmission, elements of guided waves and resonators, and basic antenna concepts. This course is cross listed in the Union College Catalog as an undergraduate class (358), GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Intro to Electromagnetic Engineering or equivalent.

EER 560. Power System Analysis I

Power and energy in AC circuits. Single-phase, three-phase and polyphase circuits in balanced and unbalanced regimes. Measurement of three-phase power. Determination of three-phase sequence. Single-line diagrams. Per-unit method of representation and computations. Transformers and synchronous machines in power systems. Parameters of transmission lines. This course is cross-listed in the Union College catalog as an undergraduate course (360). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Electric Circuits or equivalent.

EER 561. Power System Analysis II

Wave-propagation in transmission lines. Analysis of power networks, load-flow solutions and control. Three-phase faults and symmetrical components. Power system protection. Stability of power systems. This course is cross-listed in the Union College catalog as an undergraduate course (361). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: Electric Circuits or equivalent.

EER 563. Fundamentals of Wireless Electronics

Fall; Staff

RF components, transmission line theory, Smith chart, 2-port models, matching networks, RD transistor circuit design. This course is cross-listed in the Union College catalog as an undergraduate course (463). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisite: Introduction to Semiconductor Devices and Circuits or equivalent.

**EER 571. System Modeling & Optimization
(ie Computational Intelligence)**

(Cross-listed as CSC 571)

Fall; Staff

Topics include the theory, design, and application of biologically and linguistically motivated computational methods emphasizing neural networks, genetic algorithms, fuzzy logic, and hybrid intelligent systems in which these methods are employed. Special emphasis will be placed on applying these techniques to "real-world" problems, and examples from a broad range of industrial applications will be presented. Homework assignments and a final project are required. Prerequisites: undergraduate calculus and linear algebra.

EER 581, 582, 583. Special Topics in Electrical Engineering.

Topics chosen from the current literature according to faculty and student interest. Possible topics include new developments in the major areas of electrical engineering such as electromagnetic fields, communications, controls, circuits, power, devices, electronics, and computer design. Topics may include but not be limited to image processing, machine vision, speech synthesis, integrated optics, antenna systems, adaptive filtering, variational methods, stochastic processes, optical communications, space and satellite communications, and computer networks. Each of these special topics courses has a variable content addressing specific current areas of interest to students. They will be offered whenever the need arises.

EER 590-595. Independent Study

(by arrangement)

Fall, Winter, Spring; Staff

EER 596-597. Research and Thesis

(by arrangement)

Fall, Winter, Spring; Staff

MECHANICAL ENGINEERING

Specific 2005-06 scheduled course offerings will be available via www.gcuu.edu or by contacting the Dean of Engineering.

To ensure that students meet appropriate prerequisites for all courses, all graduate students are required to have a plan of study on file that has been approved by the graduate advisor.

NON-CREDIT MECHANICAL ENGINEERING COURSES

MER 599. Master of Science Graduate Project in Mechanical Engineering

This non-credit Seminar project provides a capstone experience for graduate mechanical engineering candidates not completing a thesis or independent study (i.e. all course work). The candidate and faculty advisor agree on project scope and evaluation process. The candidate receives a pass/fail grade which appears on the official transcript. This is a no-fee course.

CREDIT-BEARING MECHANICAL ENGINEERING COURSES

MER 500. Elasticity

Winter; McLaughlin

The behavior of substances which possess the property of recovering their size and shape when forces producing deformation are removed. Review of stress and strain; study of two-dimensional problems in rectangular, polar, and curvilinear coordinates; introduction to three-dimensional problems; torsion and bending. Prerequisites: Calculus IV: Integral Vector Calculus, Topics in Analysis, Linear Algebra and Differential Equations, Advanced Mechanics or equivalents.

MER 501. Transport Phenomena

Spring; Staff

The fundamentals of momentum, energy, and mass transfer and their analogous transport mechanisms. One-dimensional transport, transport properties, transport with internal generation, transfer coefficients, convective and turbulent transport. Prerequisites: Linear Algebra and Differential Equations, Heat Transfer Analysis and Design or equivalents.

MER 502. Engineering Analysis

Fall; Wicks

Topics in applied mathematics needed to analyze and model engineering problems by constructing mathematical models for a physical situation and the reduction of the ensuing mathematical problems to numerical procedures. Matrices, linear algebra, vector and tensor calculus, partial differential equations, calculus of variations, finite element and difference techniques, Fourier series and integrals. Prerequisites: Calculus IV: Integral Vector Calculus, Topics in Analysis, Linear Algebra and Differential Equations, or equivalents.

MER 506. Mechanical Behavior of Materials

Strain relationships in elastic and plastic behavior. Metallurgical fundamentals of plastic deformation. Dislocation theory. Materials testing. Creep and metal fatigue. Prerequisites: MER 500, MER 502 or equivalents.

MER 507. Design for Manufacturing

Fall; Poeth

Relationships among mechanical design considerations, material properties and selection, and manufacturing techniques are developed to enhance manufacturing productivity and quality. Prerequisites: Dynamics and Kinematics, MER 502 or equivalent.

MER 508. Fracture Mechanics

Modern theory of fracture in design. Subjects treated include occurrence of fracture, fracture toughness, fracture resistance, and fatigue. Offered alternate years. Prerequisites: MER 500, MER 502 or equivalent.

MER 509. Current Approach to Fatigue in Design

Current approach to the mechanisms of fatigue nucleation, crack growth, and fracture; high and low cycle fatigue; temperature effects; predictive equations for design in pressure vessels. Prerequisites: MER 500, MER 502 or equivalent.

MER 510. Advanced Dynamics

Analytical dynamics with engineering applications to particles and rigid bodies. Topics include three-dimensional kinematics and dynamics, Lagrangian dynamics. This course is cross-listed in the Union College catalog as an undergraduate course (451). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Offered alternate years. Prerequisites: Advanced Mechanics, Rigid Body Mechanics or equivalent.

MER 512. Vibrations of Discrete Systems

Response of single and multi-degree-of-freedom systems to harmonic, periodic and impulsive excitation. Fourier series and transforms; ideal impulse and impulse response; convolution in the time and frequency domains; matrix and modal methods; system eigenvalues and vectors; impulse testing with a spectrum analyzer. Prerequisites: Dynamics and Kinematics, MER 502 or equivalent.

MER 515. Processing and Selection of Engineering Materials

A comprehensive examination of processing technologies for engineering materials, and the effects of selected processing routes and materials to meet and satisfy design and applications criteria. Prerequisites: Mechanics II: Materials Science or equivalent.

MER 516. Finite Element Methods in Engineering

Introduction to the use of finite element methods in various engineering applications. Prerequisites: MER 500, MER 502, or equivalent.

MER 525. Engineering Optimization*Fall; Minas*

Introduction to development and application of mathematical and numerical methods used to analyze engineering problems including mathematical model building, unconstrained optimization, linear programming, constrained optimization, transformation and linear programming. Prerequisites: MER 502 or equivalent.

MER 532. Composites

A comprehensive introduction to composite materials and motivation for their use in modern applications. Topics include selection and availability of composite materials, manufacturing processes, useable theoretical concepts, testing and characterization of composites, and strength theories. This course is cross-listed in the Union College catalog as an undergraduate course (452). GCUU graduate students will be expected to complete additional course work beyond the undergraduates in this class. Prerequisites: Materials Science, Strength of Materials, or equivalent.

MER 534. Dynamics of a Viscous Fluid

Analysis of Laminar and turbulent flow fields. Approximate solutions of the Navier-Stokes equations according to boundary layer theory. Prerequisites: Fluid Mechanics, Topics in Analysis or equivalent.

MER 536. Compressible Fluid Flow*Fall; Brilliant*

Analysis of internal and external compressible flow fields. Supersonic airfoil analysis according to shock-expansion theory. Prerequisites: MER 501, MER 502, or equivalent.

MER 537 Combustion Fundamentals

The study of the chemical and physical processes in combustion. Analysis of thermochemistry and fuel oxidation, premixed and diffusion flame phenomena, combustion of condensed phases, detonation, combustion in practical systems, and combustion generated air pollution. Prerequisites: MER 501, MER 502, or equivalent.

MER 538. Fluid Dynamics of Turbomachinery

Analysis of the energy exchange between a continuously-flowing fluid and a turbomachinery rotor. Study of the design and operating principles of axial and radial-flow turbines, compressors, and pumps. Prerequisites: MER 501, MER 502, or equivalent.

MER 540. Thermodynamic Analysis

Consideration of various particulate and continuum bases for structuring thermodynamic principles and their application to the solution of current and prospective engineering problems. Prerequisites: MER 501, MER 502, or equivalent.

MER 550. Conduction Heat Transfer

Study of the equations for steady state and transient heat conduction using analytical and numerical techniques. Prerequisites: MER 501, MER 502, or equivalent.

MER 552. Convection Heat Transfer

Analysis of laminar and turbulent heat transfer processes. Approximate solutions of the energy equation according to boundary layer theory. Prerequisites: MER 501, MER 502, or equivalent.

MER 554 Flow and Heat Transfer in Multiphase Systems

Analytical and empirical methods for evaluation of flow characteristics, particularly in liquid vapor systems and boiling and condensing of heat transfer. Prerequisites: MER 501, MER 502, or equivalent.

MER 560 Nuclear Engineering and Technology

Nuclear reactions and radiation; basic concepts and terminology used in reactor theory; radiation shielding; heat generation and transfer in nuclear reactors; study of reactor design variables with reference to existing designs.

MER 571. System Modeling & Optimization (ie Computational Intelligence)*Fall; Eklund*

Topics include the theory, design, and application of biologically and linguistically motivated computational methods emphasizing neural networks, genetic algorithms, fuzzy logic, and hybrid intelligent systems in which these methods are employed. Special emphasis will be placed on applying these techniques to "real-world" problems, and examples from a broad range of industrial applications will be presented. Homework assignments and a final project are required. Prerequisites: undergraduate calculus and linear algebra.

MER 580 Fuel Cell Technology

Survey course is to introduce fuel cell technology. The emphasis will be on the electrochemistry, the polymer materials science of PEM systems, and the various methods of generating power directly from a fuel and an oxidant. The course will cover the science and engineering aspects of fuel cells. The system effects of the stack will be introduced so as to provide a complete picture of the technology. Elements addressed will range from thermochemistry, electrochemistry, polymer science, and electrochemical engineering. Development of an understanding of the proton exchange membrane fuel cell will be the primary objective. The student is expected to have a broad understanding of the technical needs, challenges, and opportunities after completing this course.

Prerequisites: Advisor approval.

MER 580A Photo Voltaic Technology*Fall; Dashiell*

The course focuses on the physical principles, technology, and design of efficient semiconductor photovoltaics. Course goals equip students with the concepts and analytical skills to understand efficiency limitations, to assess the viability of various solar and thermophotovoltaic technologies, and to introduce the physics required for understanding photovoltaic energy conversion. The course will focus on three primary aspects of photovoltaic energy conversion, (i) the

transfer and conversion of solar (i.e. thermal) radiation to electronic energy, (ii) the theory and design of the semiconductor photovoltaic cell and (iii) photovoltaic systems and applications.

Prerequisites: Advisor approval.

MER 580B Turbine Technology

Course on fundamentals of design, analysis, and technology of turbo machinery – jet engines, gas turbines, steam turbines, water turbines, and wind turbines. The course will provide an understanding of all aspects of system development: thermodynamic cycles, design-point and off-design performance; function and design of components (inlets, compressors, combustors, turbines, outlets), operational limits, and environmental concerns; structural analysis, lifting, and materials; rotor dynamics and blade aeromechanics; clearance analysis, sealing, and packing; heat transfer, blade and component cooling; starting and control; power and thrust generation; testing and instrumentation. The student is expected to develop a broad understanding of the state-of-the-art, challenges, and future of turbine systems.

MER 590-591. Independent Study

(by arrangement)

MER 592A. Masters Project

(by arrangement)

The preparation and writing of an extensive report on a topic of interest between the student and a department faculty member. A single course presented over two terms; one grade will be given for two terms of work only. Enrollment recommended no earlier than the last year of study. See MER 592B.

MER 592B. Masters Project

(by arrangement)

Continuation from MER 292A. Completed writing of the report and its oral presentation. Students must register for MER 592B even though they have previously registered for MER 592A. Open only to part-time graduate students.

MER 596-597. Research and Thesis

(As arranged by department).

School of Management Courses

MBA COURSES

**Indicates Advanced Course*

MBA 500. Managing Ethically in a Global Environment

Fall, Winter, Spring; Mathias / Summer; Belasen

This course examines issues of team functioning, ethics, and managing differences all in an increasingly global business

environment. Students work individually and in groups to improve written and verbal communication skills.

MBA 501 (Half Course). Mathematics of Management

Fall, Winter; Bowman

This course focuses on mathematics useful in modeling management processes. Fundamental concepts of differential and integral calculus and their applications to management are addressed. Students must register separately for MBA 501 and MBA 502.

MBA 502 (Half Course). Introduction to Probability

Fall, Winter; Bowman

This course covers marginal, joint and conditional probability; random variables, expected value and variance; selected probability distributions and their uses in management; and sampling distributions and the Central Limit Theorem. Students must register separately for MBA 501 and MBA 502. Prerequisite: MBA 501.

MBA 506. Statistical Models for Management

Fall, Winter; Oppenlander / Spring; Eno

This course emphasizes statistical approaches (confidence intervals, hypothesis testing, regression analysis, chi-square tables) that support managerial decision-making. Examples of such decisions include determining the best of several suppliers or appropriate salary levels based on education and required skill. Examples from quality management, such as capability analysis and control charting will also be included. Emphasis will be placed on problem statement formation, translation of problem statements into quantitative terms, and finding appropriate data to reach supportable conclusions. Analysis will be performed using statistical and other software. Prerequisites: MBA 501, and MBA 502.

MBA 510. Financial Accounting

Fall, Spring; Arnold

An introduction to the “generally accepted accounting principles” of financial accounting as applied to publicly reported financial statements. Emphasis is to be placed on understanding the application of “generally accepted accounting principles” to financial statements. This course is designed for individuals with no prior academic or professional education on the topic of financial accounting.

MBA 510. Financial Accounting—Distance Learning

Summer; Neidermeyer

This course is the same as MBA 510 in class version previously noted. Classes will have voice over powerpoint and video. The students will need a DSL or cable line to facilitate downloading the classes. If the system does not work, backups will be available on either DVD or CD. Classes will meet together two times: before classes begin and then exam week for a class session (the final exam will be given in the class and there will be presentations). The course is limited to 15 students.

MBA 512. Managerial Accounting*Fall, Winter, Spring; Neidermeyer Summer; St. John*

An introduction to the tools and techniques of financial analysis and decision-making. Topics covered include financial statement analysis, cost classification and behavior, cost-volume-profit analysis, incremental cost analysis, time value of money, capital budgeting, and financial planning. Spreadsheet programs are used in this course. Prerequisite: MBA 510. Students are expected to be proficient in the use of Microsoft Excel®.

MBA 517. Advanced Corporate Finance**Fall, Winter; Feng Spring; Murtaugh*

This course covers advanced topics in corporate financial management. The analytical skills necessary to evaluate complex financial problems are developed through case studies. Topics covered include: advanced capital budgeting, agency theory, option theory and applications, measuring and hedging financial risk, merger and acquisition analysis, corporate financial analysis and planning models, and short-term financial management. Prerequisites: MBA 510 and MBA 512.

MBA 520. Principles of Economics*Fall, Spring; Lambrinos*

This course covers the basic microeconomic model of price determination; the impact of market structure on price and output decisions by firms; the role of the public sector in an economy; the basic macroeconomic model of national income determination; the impact of fiscal and monetary policies on employment levels, price stability and economic growth; and international economic relationships.

MBA 525. Marketing Management and Strategy*Fall; Carlson Spring, Summer; Barth*

In this course, marketing-related considerations for organizations, both generally and specifically, are discussed in a manner that is designed to provide students with a basic-level understanding of issues organizations face which have strategic importance from a marketing perspective.

MBA 531. Operations Management*Fall, Winter, Spring; Bowman Winter; Kauffman*

This course starts with a look at total quality management with an emphasis on the Six Sigma approach to process improvement. Next the fundamentals of inventory management are discussed with the primary objective being to understand the causes of inventory and how to effectively reduce inventory levels. This topic is expanded into the important topics of lean supply chain design and management, and lean production management. A balanced approach is taken with coverage of tools but also an emphasis on the impact of strategic and managerial decisions on the effectiveness of various approaches to operations management.

MBA 545. Strategic Use of Information Technology**Fall, Winter, Spring, Summer; Lemelin*

The course considers the use of management information systems within the organization, specifically addressing what an information system is, the underlying technologies, and how current and future computing and telecommunications technologies will contribute to the daily operation and competitiveness of the organization. Particular emphasis is placed on use of information systems to gain competitive advantage.

MBA 551. Managing People and Teams in Organizations*Fall, Winter, Summer; Nydegger Spring; Moore*

This course approaches management issues from the "human" side. By relying on text materials related to basic theory and research in management, and by integrating activities and hands-on learning opportunities, students have a broad range of techniques that equip them to function as effective managers in modern organizations. Particular emphasis is given to skills and activities associated with Total Quality Management.

MBA 570. Legal Principles of Business*Fall; Cavalier Winter; Valle*

The objectives of the course are to enable the business manager to identify situations with legal implications and to interact effectively with professional legal counsel. Particular areas of the law examined during the course are contracts, sales, negotiable instruments, negligence, product liability, secured transactions, and ethical considerations. Not open to JD/MBA students.

MBA 610. Advanced Topics in Domestic and International Financial Accounting**Spring; Arnold*

Examination of financial statement reporting practices for selected advanced business activities including income recognition of complex business transactions, business financing decisions, mergers/acquisitions, international subsidiaries and international business transactions and related hedges. Prerequisite: MBA 510.

MBA 611. Personal Financial Planning*Fall; Neidermeyer*

This two-part course first presents an examination of personal financial planning in a global environment encompassing topics such as personal budgeting, insurance coverage, investment planning, managing credit, retirement planning and estate planning. The course then extends the topics to related domestic and international tax issues of income tax considerations for individuals, corporations and partnerships. Knowledge of the current business environment (tracked through the *Wall Street Journal*, *Business Week*, online at CNNFN.com, etc.) will be expected. Prerequisite: MBA 510 and 512.

MBA 619. Investments**Fall, Spring; Feng*

This course provides an in-depth analysis of modern investment analysis and portfolio management techniques.

Current theory, empirical evidence, and institutional practices are considered. Topics covered include portfolio theory and asset pricing models, market efficiency, fixed-income portfolio management and immunization, equity valuation models, the valuation of options, futures and other derivative securities, portfolio management and performance evaluation, and international diversification. Recommended: MBA 517. Prerequisite: MBA 510 and 512.

MBA 620. Investment Management*

Three term course starting Fall; Feng

The preliminary goal of this course is to provide students with an opportunity to gain valuable hands-on experience in fiduciary management of investment assets, such as security research, valuation of risky assets, asset allocation, and portfolio management. Investment is a field of business where intuition often plays a more important role than theoretical knowledge. In this course, we discuss the rapid development in investment theory that helps us identify the factors that are responsible for price movements. We focus on how to apply theory into practice. Students will work on challenging, integrated, analytical projects using real time capital market data. This course will increase the student's knowledge in industries such as equity research, investment banking, commercial banking, and corporate finance. This course runs for three terms starting in the fall term. This course is run in conjunction with the Investment Club; therefore participation in the Investment Club is required.

MBA 621. Managerial Economics*

NOT OFFERED

The course applies principles of micro-economic theory to managerial decision-making. Micro topics include demand theory, estimation and forecasting, production and cost theory, market structure, forecasting with econometric, time series and exponential smoothing models. Other topics include the role of government in decision-making, risk analysis, and pricing practice. Prerequisite: MBA 520.

MBA 624. Topics in Microeconomic Applications*

Spring; Lambrinos

This is a survey course in three areas in Microeconomics emphasizing applications. The topics covered will be Labor Economics, Forensic Economics and Sports Economics. Approximately one-third of the course will be devoted to each of these topics. Topics to be covered include the factors related to the demand for the supply of labor, wage discrimination models (labor economics); the estimation of economic damages in tort cases (forensic economics); efficiency of sports wagering markets, discrimination in professional sports (sports economics). Prerequisite: MBA 520.

MBA 626. Marketing Research Techniques*

Fall; Carlson

The objective of this course is to provide comprehensive exposure to marketing research methods. The course is designed for the manager with ultimate responsibility for

identifying the scope of and implementing particular market research activities. The course explores the application of scientific investigation to the identification and solution of marketing problems. Prerequisite: MBA 525.

MBA 627. Industrial Marketing*

NOT OFFERED

This course examines the process of product development from the stage of market identification through rollout of the new product. Subjects considered include: market research techniques, using primary and secondary data, idea generation, designing for quality, marketing strategy and launch. The primary focus will be on products to service the industrial or business market, but techniques from consumer marketing will be incorporated. Prerequisite: MBA 525.

MBA 628. Consumer Behavior*

Fall; Carlson

This course is designed to enhance your understanding of consumers like you and me. To that end, we will explore the current state of knowledge regarding consumer behavior through discussion of several theories and marketplace exemplars. This exploration will identify many, many influences that may shape an individual's behaviors in the marketplace, with subsequent discussions regarding the impact of these influences on various managerial decision-making situations. Prerequisite: MBA 525.

MBA 629. Money, Markets and Banking*

Winter; Murtaugh

The course covers the nature and functions of money and finance in the economy. Commercial and central banking, monetary theory, and monetary policy are also considered. Recommended: MBA 517. Prerequisite: MBA 510 and MBA 512.

MBA 632. Quality Systems Management*

Fall; Schmee

The course looks at quality improvement approaches in the context of overall organizational objectives. The course discusses the contents and impact of important government and industry standards such as ISO 9000. The course covers Six Sigma including the Measure-Analyze-Improve-Control model (MAIC) and Design for Six Sigma (DFSS). It discusses extensions to benchmarking and quality functional deployment and offers advanced tools such as systems reliability and maintainability, and life data analysis. Prerequisite: MBA 506.

MBA 641. Systems Analysis and Simulation*

Winter; Bowman

In this course students build and utilize computer simulation models to analyze a wide range of systems. Applications include restaurants, doctors' offices, customer call centers, and many others. Models are built using specialized simulation software as well as Microsoft Excel. Prerequisite: MBA 506 and MBA 531.

MBA 650. Competing by Design**Winter, Summer; Belasen*

Design often signals a shift in strategic emphasis and patterns of organizational performance. Design can also be used to shape an organization's tone or operating style. Dramatic and lasting restructuring or reengineering plans often fail without the mindset of change architects who share the new strategic vision and corporate values. The ultimate goal of design is to use organizational structures, systems, and processes creatively as a sustainable source of competitive advantage. This course focuses on examining how successful corporations leverage competitive advantages through restructuring and external alliances. Students will apply theoretical knowledge and conceptual models to analyze organizational structures, diagnose organizational design, and evaluate a range of design options and implementation strategies available for transitioning organizations. Topics include corporate downsizing, strategic control systems, horizontal structures, outsourcing, partnerships, virtual forms, and global design. Prerequisite: MBA 551.

MBA 652. High Performance Leadership**Spring; Belasen*

This course emphasizes cognitive skills and experiential/practicum learning applied to ongoing leadership and organizational problems. Students learn about leadership roles and competencies essential for building and supporting organizational capabilities and business strategies in global markets. The course also enables students to learn a method to diagnose their strengths and weaknesses in leadership capacities and measure their proficiencies against benchmarked models of high performance leadership. Prerequisite: MBA 551.

MBA 653. Organizational Development and Transformation**Winter; Nydegger*

This course considers the theory and practice of planned organizational change. Students are exposed to a variety of intervention techniques applicable in a wide range of organizational settings. Lectures are complemented with participatory exercises and interactive discussions. Prerequisite: MBA 551.

MBA 656. Ethical Issues in Management**Fall; Mathias*

The purpose of this course is to develop a general management perspective that includes the abilities to: 1) identify ethical issues in management, 2) analyze these issues in terms of several important frameworks for ethical reasoning and 3) appreciate the central role of ethics in managerial decision-making. Issues from a variety of the functional areas of business – including accounting, marketing and advertising, financial services, human resources, and information technology – will be considered. The course will rely heavily upon the case analysis method, group discussion, and group presentations.

MBA 660. Executive Decision Processes in Global Environments**Fall; Belasen*

Along with information technology, international management is the major challenge facing organizations in the hypercompetitive global marketplace. Companies that once served a specific geographic area or serviced a specific need have learned to compete with anybody, anywhere, anytime. Needing to diversify in order to compete effectively, an increasing number of multinational companies are finding it essential to anticipate changes and innovate continually to become world-class organizations. Global management requires visionary leaders and strategic thinkers who are driven by a customer focus and continuous improvement, supported by a fluid virtual organization and sustained by creative human capital and extensive information technology. These leaders must also recognize the existence of cognitive barriers to decision-making and how to overcome decision traps and make better choices for their multinational companies. Using Internet-based search engines, cases, and small group projects, students will have hands-on experiences and acquire the skills necessary to become successful decision makers for their multinational companies. Prerequisite: MBA 551

MBA 661. International Finance**Fall, Winter; Luzine*

An analysis of international financial markets and the special problems and opportunities associated with the financial management of multinational firms. The international monetary and banking system, balance of payments, and economic parity relationships are also examined. Foreign exchange risk management, international financing activities, multinational capital budgeting, political risk, international taxation issues and diversity of financial reporting are considered. Prerequisite: MBA 510 and 512.

MBA 662. International Business**Fall; Shaye*

This course examines international business management as influenced by the important economic, political and cultural environment within which businesses must conduct international trade and investment. The problems and issues confronting international managers are evaluated related to a firm's strategy, organizational structure, manufacturing, material management, marketing, R&D, human resources and finance. Competitive strategies are examined that have been successful in leading international companies. Case studies are used extensively to illustrate the relevance of these topics in the practice of international business.

MBA 663. e-Commerce**Fall; Pindaro*

This course provides an exposure to important concepts and major issues of e-commerce. Several case studies of the leading companies in Internet business will be analyzed.

This course aims: a) to evaluate the new economies of infor-

mation and the strategies for new and existing businesses on the web; b) to study the aspects of framing a market opportunity on the web; c) to understand the seven major business models on the web—online retailers, online content providers, Internet access providers, online market makers, online portals, online brokers, and application service providers; d) to provide an overview of the network infrastructure and web technologies; e) to study the marketing opportunities on the web and what is an effective web site; f) to review the global impact of e-commerce and an insight into the legal and security issues; g) to understand managing risk in e-business and to understand the critical success factors; and h) to examine the last two years of e-commerce and to look at what worked and what did not work on the web and to look at the future of e-commerce.

MBA 664. Entrepreneurship*

Winter; Schwartz/Buse

Course held off campus, 8 Airport Park Blvd, Latham, NY (<http://www.shggroup.com.contactus.htm>) for directions.

The primary objective of this course is to develop an awareness of the process of new venture creation, whether it is an intrapreneurial or entrepreneurial event. The skills, knowledge and attitudes important for creating new ventures, and the complex tasks faced by individuals who start and manage new and growing businesses as well as corporate ventures and franchises will be addressed. The course is designed to provide a broad overview of management and financial issues. We will pay particular attention to: entrepreneurial decision-making, techniques entrepreneurs and investors use for evaluating and testing the feasibility of business opportunities, understanding the impact of market and industry forces on start up, performance and survival of new ventures, financing a business opportunity, etc.

MBA 665. International Marketing Management*

Spring; Shaye

This course examines development of international marketing strategies, from determining objectives and evaluating international market opportunities through coordinating strategies in world markets. Particular emphasis is placed on application of marketing principles in the multinational environment. Prerequisite: MBA 525.

MBA 675. Foundations of Human Resource Management*

Winter; Paludi

An introduction to the theory and practice of human resource management that examines the psychological, economic, political, legal and managerial aspects of the following functions: recruitment and selection, job analysis, human resource planning, training and development, foundations of selection, employee rights and ethics, and equal employment opportunity. The focus of this course includes profit, non-profit and governmental organizations with particular emphasis on health care delivery firms. Prerequisite: MBA 551.

MBA 676. Managing Human Resources*

Spring; Paludi

An introduction to the theory and practice of the following human resource management functions: performance appraisals, establishing rewards, pay plans and benefits, health and safety in the workplace, workplace violence, effective workplace communications, discipline and corrective action, labor relations and collective bargaining. Three perspectives will be addressed in each function: management, psychological and legal. The focus of this course includes profit, non-profit and governmental organizations with particular emphasis on health care delivery firms. Prerequisite: MBA 551.

MBA 677. International Human Resource Management

Summer; Paludi

International Human Resource Management will focus on how effective human resource policy and practice contributes to a global company's competitiveness. This course will be considered within the context of strategic business objectives, culture, and resource management constraints given by the various national entities. Special focus will be placed on understanding the unifying human resource policies that support the strategic objectives of a global organization. This course will draw on practical examples from companies that have experienced challenges of international human resource management. Prerequisite: MBA 551..

MBA 681. Strategic Management and Leadership (MBA Capstone)

Winter, Spring; Chudzik and Huppertz

The goal of this course is to integrate all of the MBA course work to prepare the students to address the full scope of business they will face as a leaders in the business world. This is done by having student teams work with real start-up companies to develop a complete business plan for the company. The plans are developed in phases over the term with the teams working closely with their companies and culminating in a presentation of the plan to a simulated investor panel made up of the company CEOs. Case studies are used to illustrate effective strategies and leadership. Students must have three or fewer courses left to complete the degree requirements after taking MBA 681.

MBA 682. Management Science*

Spring; Bowman

Management science refers to the use of mathematical/computer models to solve managerial problems or help make managerial decisions. This course covers the management science tools most widely used in industry (mathematical programming, queueing theory, decision analysis, network models of project management, and an introduction to simulation). Students will learn the solution procedures associated with each approach, utilize software to implement the procedures, and conduct case studies using the computer models. Prerequisites: MBA 506 and 531.

MBA 683. Management Internship*No fee; Fall, Winter, Spring, Summer***MBA 690, 691. Independent Studies****Written permission of the instructor and Dean is required.***HEALTH SYSTEMS MBA COURSES****HCM 500. Introduction to Health Systems***Winter; Strosberg*

This course examines the determinants of health, illness, and medical care utilization, institutional arrangements and settings for the delivery of acute and chronic care, the doctor-patient relationship, resource allocation and financing, and measuring and evaluating system performance. This is a prerequisite to all advanced health courses.

HCM 501. Health Systems Management*Spring; Nydegger*

This course examines the various aspects of managing in the modern health care environment. A variety of methods including lectures, case studies, in-class exercises, and student presentations will be used. Topics covered include quality improvement, ethical management, managing diversity, communications, leadership, motivation, team building, and conflict resolution. Prerequisite: HCM 500.

HCM 526. Health Systems Marketing*Winter; Huppertz*

This course introduces students to the principles of marketing and their application to Healthcare settings. At the end of this course, students should a.) Understand what marketing can do for the healthcare organization in terms of contribution to strategic planning, building business, strengthening relationships between the organization and its constituents, and achieving competitive advantage. b.) Clearly understand how to use health data in marketing planning and implementation. c.) Appreciate the challenges of evaluating the effectiveness of marketing communications investments made by healthcare organizations. d.) Understand the relationship between patient/customer satisfaction and service quality in health organizations. e.) Understand how to judge marketing communications quality, both qualitatively and quantitatively. f.) Demonstrate effective communications skills through in-class participation, writing assignments, and class presentations. g.) Analyze marketing problems and select effective strategies for solving them. h.) Understand key marketing concepts and their applications to business and healthcare organizations.

HCM 590-595. Independent Study in Health Systems.

Students pursue programs of independent study in a particular area of health systems under the supervision of a faculty member. Written permission of the instructor and MBA Dean is required.

HCM 617. Health Care Finance**Winter, Spring; Feng/Callan*

This course covers financial management in a regulated health care environment. Topics include cost-finding and third-party reimbursement, contemporary issues in health care financing, sources of capital, capital budgeting, financial planning and analysis, cost accounting, and managed care issues. Prerequisites: MBA 510 & 512.

HCM 620. Health Economics**Fall; Lambrinos*

This course is intended for students entering the health field and investigates economic approaches to problems and solutions. Students obtain an understanding of how economics contributes to public and private decision-making in health care, and learn to properly interpret economic research results and apply them to work performed by health planners and administrators. Recommended: MBA 510, GMI 512.

HCM 645. Introduction to Strategic Use of Information Technology (1/2)**Fall; Lemelin*

This is a five-week introductory class which will cover the basic concepts of information technology. Specific topics include hardware, software, databases, and telecommunications. Class will be a mix of lecture, class participation, and guest speakers. Case studies, along with discussion of contemporary IT events and situations will be used to demonstrate the importance and impact of IT in the modern world. The focus of the course is on real-world problem solving and interactive discussions rather than a presentation of facts. This course is the first five weeks of MBA 545. This course is a prerequisite for HCM 646 Health Information Technology.

HCM 646. Health Information Technology (1/2)**Winter; Smith*

HCM 646 builds on the information technology foundation presented in HCM 645 by focusing on clinical and administrative applications commonly found in health care organizations. The course surveys the historical development, structure, role and use of information systems in the management, strategic planning and operation of health service organizations. Emphasis is on information technology from the end user's perspective, particularly the role of information technology in patient safety, quality management and how information technology supports the efficient and effective delivery of health services to the target population. Prerequisite: HCM 645 Introduction to the Strategic Use of Information Technology.

HCM 650. Structural Dynamics in Health Care Systems**Fall; Strosberg*

Application of organization theory to health care organizations and systems for the purpose of improving performance. Topics include: organizational structure and design, coordination and control, power and politics, organizational culture, organizational ethics, organizational change.

HCM 656. Group Practice Administration: Seminar and Practicum**Winter; Kleinbauer*

The objective of this course is to introduce students to the organization and management of private group practice through seminar and practical experience. It is intended that this course will prepare students for employment in private group practices and/or other ambulatory care organizations.

HCM 674. Legal Aspects of Health Care**Spring; Rosenberg Summer; Zambri/Hussar*

This course is designed to familiarize students with basic legal issues involved in managing health care systems. Antitrust, consent, labor law, malpractice, professional rights and other problems are explored using actual and hypothetical case studies. Not open to JD/MBA students.

HCM 680. Health Policy and Managerial Epidemiology**Spring; Strosberg and Stephens*

This course covers two main topics. The first (focusing on public policy formulation and implementation) is designed to provide an understanding of the political and regulatory environment of health care organizations. The second focuses on understanding and applying basic epidemiological methodologies to the health care management arena.

HCM 681. Strategic Issues for Health Care Organizations* (Health MBA Capstone)*Spring; Huppertz and Smith*

This course is designed to integrate the concepts and skills associated with managerial problem-solving learned throughout the MBA in Health Systems Administration program. Students analyze case studies addressing the strategic realignment of health service organizations in today's turbulent environment. A variety of expert practitioners present their views on this topic. Students must have three or fewer courses left to complete after taking HCM 681.

HCM 683. Health Internship*No fee; Fall, Winter, Spring, Summer***HCM 684. Strategic Issues for Health Care Organizations (for Leadership in Medicine Students) (MS Capstone)***Summer; Staff*

This course is designed to integrate the concepts and skills associated with managerial problem-solving learned throughout the MBA in Health Systems Administration program. Students analyze case studies addressing the strategic realignment of health service organizations in today's turbulent environment. A variety of expert practitioners present their views on this topic.

STATISTICS**STA 501. Introduction to Probability and Statistics***Winter; Eno*

This course studies the fundamentals of applied probability,

most important distributions, acceptance sampling, confidence intervals, point estimation, and tests of hypotheses.

Center for Bioethics and Clinical Leadership Courses**MS IN BIOETHICS COURSES****BIE 500. Proseminar in Health and Human Values***Summer (two weeks in August), On-site, D, Albany Medical College and Union College; Baker, Shelton, Greenlaw, Lederer, McCullough, Veatch*

An intensive two-week introduction to current topics in clinical ethics and bioethics, taught seminar style at Albany Medical College and Union College. This overview of current issues in bioethics humanities involves four special seminars, case conferences and ethics rounds. There will also be extensive training in the computer skills (demonstrations, workshops) essential to mastering distance learning. Must be taken in the first fifteen months of enrollment.

BIE 520. Health Care Policy*Fall, Distance Learning; Strosberg*

This course provides an understanding of the public policy-making process and the political and regulatory environment in which health care organizations function. It also provides an understanding of managerial processes, politics, and structure of the health care organizations where ethical policies and practices are implemented and carried out on an ongoing basis. Policies for consideration include resource allocation, end-of-life decision-making, accountability and performance measurement, and conflict-of-interest.

BIE 610. Biomedical Ethics*Winter, Distance Learning; Baker*

An advanced historically-based introduction to bioethics and clinical ethics focusing on such formalizations of medical morality as the Hippocratic Oath, the AMA codes, the Belmont Report and Beauchamp and Childress Principles, and the idea of casuistry. Major cases in bioethics will also be reviewed and the evolution of the core concepts and infrastructure of medical ethics and bioethics will be examined.

BIE 530. Bioethics and the Law*Spring, Distance Learning; Greenlaw and Ouellette*

This course is designed to familiarize students with major legal issues and legal concepts relevant to bioethics.

BIE 545. Reproductive Ethics*(elective)**Summer, Distance Learning; Steinbock*

An investigation of the ethical and legal problems associated with new reproductive technologies and genetics. Elective course.

BIE 555. Discussions in Scientific Integrity*(elective)**Fall, Distance Learning; Kaplan*

A course in research ethics including a discussion of the IRB process. Elective course.

BIE 565. Empirical Research Methods in Bioethics*(elective)**Winter, Distance Learning; Jacoby*

A course in empirical research methodology designed to teach how to conduct empirical research in the field, and how to analyze the empirical bioethics literature. Elective course.

BIE 590. Clinical Ethics*Spring, Distance Learning; Shelton*

This course deals with the practical applications of clinical ethics, including clinical ethics consulting and its recording and documentation, the work of ethics committees and IRBs, and other practical ethics of clinical ethics.

BIE 610. On-Line Clinical Practicum*Fall, Distance Learning*

A supervised practical experience in clinical ethics designed to teach skills of clinical ethics consultation. Supervision by on-site mentors and on-line faculty. Prerequisite: BIE 620.

BIE 620. Clinical Practicum*Spring, On-site, AMC*

A supervised practical experience in clinical ethics designed to teach skills in clinical ethics consultation. Prerequisite: BIE 590.

BIE 630 & BIE 640. Masters Project*Winter and Spring, Distance Learning*

The masters project in bioethics or clinical ethics, will involve two terms of research culminating in a written document addressing some aspect of clinical ethics or bioethical policy, such as a proposal to revise or reform practices at a medical institution or managed care organization, or a proposal to change bioethical policy.

BIE 650. Capstone*Spring, On-site, Albany Medical College and Union College*

Capstone practicum in which students demonstrate their mastery of clinical ethics consultation.

MS IN CLINICAL LEADERSHIP AND HEALTHCARE MANAGEMENT COURSES**PHL 574. Biomedical Ethics***Spring E; Baker*

An advanced historically based introduction to bioethics and clinical ethics focusing on such formalizations of medical morality as the Hippocratic Oath, the AMA codes, the Belmont Report and Beauchamp and Childress Principles, and the idea of casuistry. Major cases in bioethics will also be

reviewed and the evolution of the core concepts and infrastructure of medical ethics and bioethics will be examined.

LIM 500. Introduction to Health Systems*Fall D; Goldner*

This course examines the determinants of health, illness, and medical care utilization, institutional arrangements and settings for the delivery of acute and chronic care, the doctor-patient relationship, resource allocation, and the measuring and evaluating system performance.

LIM 503. Health Systems Management*Winter D; Strosberg*

This course examines managerial roles and processes within health service organizations—organization design, managerial epidemiology, governance, total quality management, human resource management, labor relations, and ethics. Prerequisite: LIM 500.

LIM 553. Economics of Health*Spring E; Ju-Ming Chang*

Examination of demand and supply for medical personnel; analysis of hospital cost, inflation, and health insurance. Discussion of issues in cost benefit analysis of public health and regulation of health care markets.

LIM 571. Clinical Leadership Practicum*Spring D; Engel*

Students will work in the field with a preceptor in a clinical leadership role. Students may be placed in a variety of health care settings including: hospitals, physician offices, health maintenance organizations, etc. Classes meet every other week to discuss students' field experiences and selected readings.

LIM 680. Health Policy and Information Systems*Winter E; Smith*

This course covers two main topics. The first (focusing on public policy formulation and implementation) is designed to provide an understanding of the political and regulatory environment of health care organizations. The second focuses on the role of information systems in the management and operation of health services organizations and how data derived from these systems can be utilized to assess and improve the health of defined populations.

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