Stuart School of Business

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Master of Business Administration:
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Business at IIT

Established in 1969 at IIT with a gift from Chicago financier Harold Leonard Stuart, the school offers a wide range of intellectually challenging business and management programs taught from a practical perspective, with an emphasis on analytic skills and the relation between business and technology. AACS-accredited programs include the M.B.A., Ph.D., and four industry-responsive master's programs.

In addition to their scholarly and teaching activities, faculty members are consultants to major national and international corporations. Their expertise has been called upon by local and federal government agencies, including the Environmental Protection Agency, National Institute of Standards and Technology, Metropolitan Sanitary District, Department of Housing and Urban Development, and Department of Energy. Most IIT Stuart students are working professionals from Chicago's business and finance communities. International students are 41 percent of the student population, contributing global perspectives to classes and extra curricular activities. Student resources include an Office of Career Services, which is available to current students and alumni; computer resources, including more than 200 student workstations; an interactive computer teaching lab featuring the latest industry software; and the Stuart Business Library.

The Stuart School of Business follows an academic calendar of four quarters, beginning in August, November, February and May. Because a majority of Stuart students work full time, most classes meet once a week in the evenings. Courses are also offered in the daytime and on weekends. All programs offer classes at our Downtown Campus. Part-time and other M.B.A. programs are also offered at IIT's Daniel F. and Ada L. Rice Campus in Wheaton, 35 miles southwest of Chicago.

Degrees Offered

Master of Mathematical Finance *(collaborative program with the Department of Applied Mathematics)*
Master of Business Administration
Master of Science in Environmental Management
Master of Science in Finance
Master of Science in Financial Markets
Master of Science in Marketing Communication
Doctor of Philosophy in Management Science

Dual-Degree Programs

M.B.A./M.S. in Environmental Management
M.B.A./M.S. in Finance
M.B.A./M.S. in Financial Markets
M.B.A./M.S. in Marketing Communication

With the Institute of Design
M.Des/M.B.A.

With the IIT Graduate Program in Public Administration:
M.B.A./Master of Public Administration

With the IIT Chicago-Kent College of Law:
J.D./M.B.A.
J.D./M.S. in Environmental Management
J.D./M.S. in Financial Markets

Graduate Certificate Programs

Graduate Management Certificates
Entrepreneurship
Financial Management
Information Management
International Business
Management Science
Marketing
Operations, Quality, and Technology Management
Strategic Management of Organizations

Graduate Certificates
E-Business
Environmental Management
Healthcare Management
Healthcare Marketing Communication

Financial Markets Certificates
Alternative Investments
Electronic Trading
Financial Markets
Financial Programming
Portfolio Management

Research Facilities

The Downtown Campus Libraries are an open-stack collection of more than 525,000 volumes, including the holdings of the Stuart Business Library, the Chicago-Kent Law Library, and the Library of International Relations, which contains international materials in history, economics, political science and law. IIT Stuart's downtown facility is equipped with four computer labs, offering more than 200 student workstations linked to the Internet and networked with IIT libraries (including the Downtown Campus Libraries). The computer lab provides access to a wide range of business software and resources. The Quantitative Research Lab provides an interactive learning environment, featuring simulated trading, investment analysis and financial industry databases.

The **Center for Financial Markets** provides a unique focus on four interrelated spheres of knowledge needed by any professional who works for a financial intermediary or other capital market institution: financial markets, trading, financial engineering, and information technology. The Center supports Stuart School's M.S. in Financial Markets program and offers related certificate programs online and on-site; promotes scholarship and linkages to Chicago's financial industry, assists faculty and students to contribute actively to projects in electronic trading, risk management, and new derivative products development. Michael Gorham, director, can be reached at 312.906.6520 or gorham@stuart.iit.edu.

The **Chicago Center for Sustainable Enterprise** has as its mission "to identify, develop, communicate, and help implement practical and equitable business strategies that advance the ecological sustainability of the Chicago area while fostering current and future economic viability." The Center brings together many disciplines at IIT in a collaborative relationship with business corporations, other academic institutions, government agencies, and members of the NGO community. George Nassos, director, can be reached at 312.906.6543 or gnassos@stuart.iit.edu.

Faculty

Martin L. Bariff, Associate Professor. B.A., M.A.S., Ph.D., University of Illinois, Urbana-Champaign. Impact of information technology on business strategy, organizational structure, management controls and human decision-making.

John Bilson, Professor of Finance. B.Econ, Monash University, Australia; M.Econ, Monash University, Australia; Ph.D., University of Chicago.

Keith Black, Assistant Professor. B.A., Whittier College; M.S., Carnegie Mellon University, A.B.D. Illinois Institute of Technology.

Sanford A. Bredine, Senior Lecturer, B.A., Trinity College, M.B.A., University of Chicago. Marketing and marketing communications.

Deborah Cernauskas, Visiting Assistant Professor. B.S., Northern Illinois University; N.S., Northern Illinois University Graduate School; M.B.A., Illinois Benedictine College; Ph.D., Illinois Institute of Technology.

Eliezer Geisler, Professor. Ph.D., Northwestern University. Organizational behavior, health care technology management, management of information and telecommunication technology, strategic management.

Joel Goldhar, Professor. B.Ch.E., Rensselaer Polytechnic Institute; M.B.A., Harvard University; D.B.A., George Washington University. Computer-integrated manufacturing, the impact of technology on business strategy.

Michael Gorham, Assistant Professor. B.A., University of Notre Dame; M.S., University of Wisconsin; M.S., University of Florida; Ph.D., University of Wisconsin

Charles T. Hamilton, Clinical Associate Professor. B.S., M.A.S., Ph.D., University of Illinois, Urbana-Champaign. Accounting education, the behavioral factors that influence audit judgment.

M. Zia Hassan, Professor. B.Sc., University of Punjab (Pakistan); M.S., Ph.D., Illinois Institute of Technology. Effective organizations, strategic and quality issues in organizations.

Kamyar Jabbari, Senior Lecturer. B.S., Towson State University; M.B.A., University of Chicago. Project financing, international banking and independent power production.

Harvey Kahalas, Professor of Organizational Management, Dean. B.S., Boston University; M.B.A., University of Michigan; Ph.D., University of Massachusetts. Economic development, organizational competetiveness.

Michael Kelly, Assistant Professor. B.Sc. (Hons), Sydney University; Ph.D. in Applied Mathematics (Queing Theory), University of NSW, Australia.

Nasrin R. Khalili, Assistant Professor and Academic Director, Environmental Management. B.Sc., M.S.P.H., Tehran University (Iran); Ph.D., Illinois Institute of Technology. Atmospheric chemistry, environmental impact analysis, environmental system analysis, and waste engineering.

Thomas W. Knowles, Professor. B.S., Purdue University; M.B.A., Ph.D., University of Chicago. Mathematical and computer modeling.

Michael K. Ong, Professor and Director of Finance and Financial Markets. B.S. Physics, University of the Philippines, M.A. Physics, M.S. Applied Mathematics, Ph.D. Applied Mathematics, State University of New York at Stony Brook. Risk management- market risk, credit risk, operational risk and regulatory issues. International finance and capital markets. Financial risk modeling.

Paul R. Prabhaker, Associate Professor, Associate Dean and Academic Director, Marketing Communication Program. B.Tech., M.B.A., Indian Institute of Technology (India); M.S., Ph.D., University of Rochester. Advertising-price interaction, Technology/Marketing interface.

Nick T. Thomopoulos, Research Professor. B.S., M.A., University of Illinois, Urbana-Champaign; Ph.D., Illinois Institute of Technology. Forecasting, inventory, assembly line systems.

Khairy A. Tourk, Professor. B.S., University of Alexandria (Egypt); M.A., Vanderbilt University; Ph.D., University of California, Berkeley. Evolution of the Asian enterprise, economics of the newly industrializing Asia.

Benjamin Van Vliet, Lecturer. B.A., Calvin College; M.Sc., Illinois Institute of Technology.

Russell Wojcik, Lecturer. B.S., SUN College at Oneonta; M.S., Clarkson College of Technology.

Admission Requirements

Admission to the Stuart School of Business is based on a profile combination of undergraduate GPA, GMAT test scores (some M.S. programs accept GRE scores in place of GMAT scores), and work experience. Applicants to all master's programs, including the M.B.A., must have, or are expected to have completed prior to enrollment, a four year undergraduate degree from an accredited institution. Applications are accepted throughout the year, and part-time students may enter most programs at the beginning of any quarter. Applicants must submit essays, letters of recommendation, official transcripts, a recent GMAT score report, and a summary of work experience. Applicants from non-English-speaking countries must also submit TOEFL (Test of English as a Foreign Language) scores of at least 600 (250 computer), unless they received an undergraduate or graduate degree from an accredited U.S. institution. Applicants who score less than 600 must enroll in "English for International Students" during their first quarter.

Completion of a diagnostic mathematics exam is required for all incoming students in the M.S. in Financial Markets and related certificate programs. Based on the performance on this exam, additional prerequisite courses may be required.

Applicants to the Ph.D. program in management science must have completed a master's degree and with a graduate level business core, or a Master's in Finance or equivalent degree. For applicants who have a master's degree but have not completed the business core, some prerequisite courses will be required.

Master of Business Administration (M.B.A.)

To meet your interests and needs, IIT Stuart offers a choice of four M.B.A. programs: the Full-Time M.B.A. program, the Flexible M.B.A. program, the Accelerated M.B.A. program, and the Fast-Track M.B.A. program.

Full-Time M.B.A. Program
The 20-course curriculum requires completion of eight core courses, four concentration electives from one of 10 areas of concentration, seven open electives, and a required capstone course in Business Policy. Students may also complete a specialization, consisting of six courses. A 16-course General Management version of this program, which does not require the four concentration electives, is also offered. Courses are offered in the daytime and evenings at the Downtown Chicago campus.

Flexible M.B.A. Program
This part-time program is designed to accommodate the needs of working professionals. Classes meet one evening each week at the Downtown Chicago campus. Students complete 20 courses including: eight core courses, four concentration electives, seven open electives, and a capstone course in Business Policy. Students may also complete a specialization, consisting of six courses. A 16-course General Management version of this program, which does not require the four concentration electives, is also offered.

Accelerated M.B.A. Program
A one-year full-time M.B.A. for recent graduates of U.S. colleges and universities, the program requires completion of 16 courses, including eight core courses, seven elective courses, and a capstone course in Business Policy.

Fast-Track M.B.A. Program
This two-year part-time program for mid-career professionals is offered only at IIT's Rice Campus in Wheaton. The cohort program consists of 16 courses (two courses per quarter in a sequenced order over eight quarters). Courses are offered either on Saturdays or on weeknights.

Master of Business Administration Curriculum

Core courses

MBA 510 Financial and Managerial Accounting
MBA 520 Organizational Behavior
MBA 530 Managerial Economics
MBA 540 Statistical Methods
MBA 550 Managerial Finance
MBA 560 Marketing Management
MBA 570 Operations Management
MBA 580 International Business

Capstone course

MBA 590 Business Policy

M.B.A. Concentration Courses

Entrepreneurship

ENT 510 Global Future Practices in Entrepreneurial Management
ENT 520 Forming New Ventures and the Value-Creation Process
ENT 530 Strategic Marketing Management of New Ventures
ENT 540 Financing New Ventures and Venture Capital

Financial Management

FIN 520 Corporate Finance
FIN 521 Investment and Portfolio Management
Two of the following:
FIN 524 Cases in Financial Engineering and Policy
FIN 525 Financial Risk Management
IB 525 International Finance
Any designated course from the M.S.F. and M.S.F.M. programs

Financial Markets

FM 503 Introduction to Investments
Two of the following:
FM 500 Global Financial Markets
FM 502 Global Market Economies
FM 505 Futures and Futures Markets

Healthcare Management

HM 500 Management of Health Care
HM 510 Health Care Systems and Technology
HM 520 Health Informatics
HM 530 Organization, Policy and Strategic Management of Health Systems

Information Technology Management

IM 510 Strategic Management of Information Technology
IM 512 Management of Enterprise Data
Two of the following:
IM 514 Data Mining
IM 516 Marketing in the Networked Economy
IM 518 Supply Chain Management

International Business

IB 515 International Trade
IB 560 The Global Enterprise in the Competitive Environment
Two of the following:
ECON 513 Macroeconomics in the Global Economy
IB 525 International Finance
MKT 548 International Marketing

Management Science

MSC 535 Models for Decision Making
MSC 545 Spreadsheet Modeling
MSC 571 Advanced Data Analysis
OM 530 Inventory, Logistics & Supply Chain Management

Marketing

MKT 541 Marketing Research
MKT 544 Strategic Marketing
Two of the following:
MKT 545 Industrial Marketing
MKT 548 International Marketing
IM 516 Marketing in the Networked Economy
Any designated course from the M.S. Marketing Communications Program

Marketing Communication

MC514 The Marketing Communication Plan
MC520 Understanding the Target Audience
Two of the following:
MC 502 Brand Management
MC 516 Marketing and Advertising Research
MC 524 Creative Strategies
MC 546 Communication Strategy in the Digital Environment
MC 552 Marketing Strategy in the Digital Environment
Any other MCOM course based on advisor's recommendation.

Operations, Quality, and Technology Management

OM 522 Management of Manufacturing and Service Enterprises
OM 510 Operating Systems Design & Management
Two of the following:
OM 530 Inventory, Logistics, and Supply Chain Management
QLM 512 Quality Management
TM 510 Strategic Management of Technology and Innovation
MSC 535 Models for Decision Making

Strategic Management of Organizations

MGT 555	Industry Structure and Competitive Strategy
MGT 553	Organization Leadership and Management of Change

Two of the following:

MGT 585	Integrated Functional Management
MGT 576	Individual Effectiveness
TM 510	Strategic Management of Technology and Innovation
MGT 545	Business Information and Management Control
ACCT 501	Financial Statement Analysis
ACCT 506	Cost Management
ECON 513	Macroeconomics in the Global Economy
MGT 551	Organization Design and Theory
MGT 557	Management and Development of Human Resources
MGT 556	Legal, Ethical, and Political Issue in Business
IB 560	The Global Enterprise in the Competitive Environment
MGT 565	Project Management

Sustainable Enterprise

EM 507 Industrial Ecology
EM 590 Business Strategy: The Sustainable Enterprise

Two of the following:

EM 515 Decision Tools for Environmental Management
EM 520 Contemporary Issues and Global Sustainability
EM 530 Energy, Environment and Economics

Specializations consisting of six courses, are available in selected areas.

Master of Science in Environmental Management

14 courses

The Master of Science in Environmental Management—among the best of such programs in the nation—integrates law, science and business to answer the increasing demand for a uniquely trained management professional who understands the many complex dimensions of environmental issues today, with an emphasis on sustainability.

To provide the program's interdisciplinary perspective, Stuart combines aspects of IIT's renowned Department of Chemical and Environmental Engineering and Chicago-Kent College of Law's pioneering program in environmental and energy law. The program prepares students for executive and management environmental positions in corporations, government agencies, consulting firms and not-for-profit organizations. The program is supported by the Stuart School's recently founded Center for Sustainable Enterprise. The mission of this resource center is to identify, develop, communicate and help implement practical and equitable business strategies to advance the ecological sustainability of the Chicago area while fostering current and future economic viability.

The master's curriculum consists of 14 courses: eight required core courses, four elective courses (at least three of which must be business electives), and two required capstone courses. Two prerequisite courses are required of students who have not taken college-level chemistry and calculus or their equivalents. Students who already have either an M.B.A. or an undergraduate business degree may substitute other recommended graduate management courses for all or some of the business electives.

Prerequisite Courses

EM 500	Fundamentals of Environmental Science
EM 503	Applied Mathematics for Environmental Managers

Required Core Courses

EM 501	Environmental Law and Regulation I
EM 502	Environmental Law and Regulation II
EM 506	Environmental Risk Assessment & Management
EM 507	Industrial Ecology
EM 508	Air and Water Pollution Control
EM 509	Solid and Hazardous Waste Management
EM 511	Industrial Health and Safety
EM 515	Decision Tools for Environmental Management

Required Capstone Courses

EM 512	Environmental Monitoring and Compliance
EM 590	Business Strategy: The Sustainable Enterprise

Elective Courses

Business Electives

MBA 510	Financial & Managerial Accounting
MBA 520	Organizational Behavior
MBA 530	Managerial Economics
MBA 550	Managerial Finance
MBA 560	Marketing
MBA 570	Operations Management
MBA 580	International Business

Technical Electives

EM 520	Contemporary Issues & Global Sustainability
EM 530	Energy, Environment & Economics
EM 597	Independent Study

Master of Science in Finance

The IIT Stuart Master of Science in Finance Program features a leading-edge curriculum. Specific courses necessary to complete the MS Finance degree requirements must be taken from the following list of twenty-one courses:

Economics Sequence
MSF 511 Financial Economics I
MSF 512 Financial Economics II
MSF 513 Financial Theory

Financial Modeling Sequence
MSF 521 Financial Modeling I
MSF 522 Financial Modeling II
MSF 523 Financial Modeling III

Corporate Finance Sequence
ACCT 501 Financial Statement Analysis
MSF 532 Corporate Finance
MSF 533 Marketing of Financial Products

Investments Sequence
MSF 541 Valuation and Portfolio Management
MSF 542 Structured Fixed Income Portfolios
MSF 543 Quantitative Investment Strategies

Risk Management Sequence
MSF 551 Futures, Options and OTC Derivatives
MSF 552 Market Risk Management
MSF 553 Enterprise Risk Management

Financial Econometrics Sequence
MSF 561 Financial Time Series Analysis
MSF 562 Econometric Analysis
MSF 563 Bayesian Inference in Econometrics

Computational Finance Sequence
MSF 571 Computational Finance I
MSF 572 Computational Finance II
MSF 573 Computational Finance III

Core Requirement
In order to obtain a general foundation in business and applied finance, students must take the following six core courses: MSF 511, MSF 521, ACCT 501, MSF 541, MSF 551, and MSF 562. These courses are shown in bold in the list above.

Specialization Requirement
In order to achieve in-depth understanding of specific areas of business and applied finance, students are required to complete at least two sequences from the seven sequences listed above.

Concentration Requirement
To gain a competitive advantage in the market place, students are strongly encouraged to pursue at least one concentration. Students graduating with a concentration will be duly recognized in the degrees they earned, for example, "Master's of Science in Finance" will appear only on their Diploma, while "Master's of Science in Finance with Concentration in XX" will appear on their official transcript.

In order to graduate with a concentration, students must complete one of the following prescribed curricula:

Concentration	Curriculum	Number of Courses
Risk Management		
	Core Requirement	6 courses
	Risk Management Sequence	2 courses
	Financial Modeling Sequence	2 courses
	Investments Sequence	2 courses
	Open Electives	2 courses
		14 courses
Corporate Finance		
	Core Requirement	6 courses
	Corporate Finance Sequence	2 courses
	Economics Sequence	2 courses
	Risk Management Sequence	2 courses
	Open Electives	2 courses
		14 courses
Quantitative Finance		
	Core Requirement	6 courses
	Financial Modeling Sequence	2 courses
	Computational Finance Sequence	3 courses
	Risk Management Sequence	2 courses
	Programming Track in M.S. Financial Markets	3 courses*
		16 courses

*The Programming Track in the M.S. Financial Markets curriculum consists of three required courses, namely, FM 492, FM 530 and FM 538, of which only FM 538 counts toward the degree program.

Important Note: Both FM 492 and FM 530 are additional requirements for graduation with a Quantitative Finance concentration. Students with a bachelors or masters degree in a technology related field may be relieved of these prerequisites, provided they show proof of taking accredited courses in Visual Basic C++ programming or commensurate professional experience.

Course Substitutions
To the extent that students have completed commensurate coursework or professional experience, substitutions to the required curriculum may be permitted, with the approval of the academic advisor.

Free Electives
Up to two electives may be taken from outside the courses prescribed above. These electives may be taken from other offerings of the Stuart School of Business, the Chicago-Kent College of Law, or the Main Campus graduate programs, provided that: (1) they are consistent with the M.S. Finance program's objectives; and (2) they have been approved, prior to the student's registration, by the Program Director of the M.S. Finance program.

A "prerequisite course" that is not part of the Finance Program curriculum will not be counted toward a student's program of study. For example, a "prerequisite course" may either be a formal prerequisite, such as MBA 510 which is a formal prerequisite for ACCT 501, or an informal prerequisite such as a basic math course which is an informal prerequisite for MSF 511.

Master of Science in Financial Markets

Introduced in 1992, the Master of Science in Financial Markets (FM) is the nation's oldest and most prestigious graduate degree program focusing exclusively on modern capital markets. Designed at the request of and in collaboration with industry leaders, the program provides an intellectual framework for understanding how financial markets are structured, regulated and interconnected in the U.S. and around the world. Some courses in the program are offered online as iCourses.

In order to earn the M.S. Financial Markets degree from the Stuart School of Business, a student must complete at a minimum, a fourteen-course program of study. Specific courses necessary to complete the M.S. Financial Markets degree requirements must be taken from the following list of courses:

Prerequisite Sequence

FM 490	Math for Financial Markets
FM 491	Statistics for Financial Markets
MBA 510	Financial and Managerial Accounting

Core Sequence

FM 502	Global Market Economics
FM 503	Introduction to Investments
FM 505	Futures and Futures Markets
FM 506	Options and Options Theory
FM 507	Quantitative Methods in Financial Markets
FM 508	Statistical Methods in Financial Markets

Investments Sequence

FM 520	Equity Valuation
FM 521	Global Investment Strategy
FM 522	Portfolio Management and Mutual Funds
FM 523	Financial Statement and Security Analysis

Alternative Investments Sequence

FM 524	Hedge Funds
FM 525	Real Estate Investment Analysis
FM 592	Enterprise Formation and Finance

Trading Sequence

FM 543	Market Analysis
FM 545	Advanced Options Trading Strategy
FM 544	Equity Trading Strategies
FM 546	Fixed Income Trading Strategies

Derivatives Sequence

FM 532	Equity & Equity Derivatives Modeling
FM 533	Term Structure & Interest Rate Derivatives Modeling
FM 545	Advanced and Options Trading Strategies

Programming Track

FM 492	Introduction to C/C++ Programming for Financial Markets
FM 530	Visual Basic & Databases for Financial Markets
FM 538	Advanced OOP for Financial Markets

Course Substitutions

To the extent that students have completed commensurate coursework or professional experience, substitutions to the required curriculum may be permitted, with the approval of the academic advisor.

Core Requirement

In order to obtain a general foundation in financial markets, students are required to take the following six courses in the Core Sequence: FM 502, FM 503, FM 505, FM 506, FM 507, FM 508. These courses are listed above in bold.

Specialization Requirement

In order to achieve in-depth understanding of specific areas of financial markets, students are required to complete at least two sequences from the five sequences listed above.

Concentration Requirement

To gain a competitive advantage in the market place, students are strongly encouraged to pursue at least one concentration. Students graduating with a concentration will be duly recognized in the degrees they earned, for example, "Master of Science in Financial Markets" will appear only on their Diploma, while "Master's of Science in Finance with Concentration in XX" will appear on their official transcript.

In order to graduate with a concentration, students must complete one of the following prescribed curricula:

Concentration	Curriculum	Number of Courses
Financial Markets		
	Core Sequence	6 courses
	Trading Sequence	3 courses
	Derivatives Sequence	3 courses
	Open Electives	2 courses
		14 courses
Investments		
	Core Sequence	6 courses
	Investments Sequence	4 courses
	Alternative Investments Sequence	3 courses
	Open Electives	1 course
		14 courses
Financial Engineering		
	Core Sequence	6 courses
	Programming Track	3 courses*
	Derivatives Sequence	3 courses
	Choose from (MSF 522, 523, 552, 553) or Financial Econometrics Sequence or Computational Finance Sequence of the M.S. Finance Program)	4 courses
		16 courses

Important Note: Both FM 492 and FM 530 are additional requirements for graduation with a Financial Engineering concentration. Students with a bachelor's or master's degree in a technology related field may be relieved of these prerequisites, provided they show proof of taking accredited courses in Visual Basic and C++ programming or commensurate professional experience.

Free Electives

Up to two electives may be taken from outside the courses prescribed above. These electives may be taken from other offerings of the IIT Stuart School of Business, the Chicago-Kent College of Law, or the Main Campus graduate programs, provided that: (1) they are consistent with the M.S. Financial Markets program's objectives; and (2) they have been approved, prior to the student's registration, by the Associate Director of the M.S. Financial Markets program.

A prerequisite or 400 level course that is not part of the Financial Markets curriculum will not be counted towards a student"s graduate program of study. For example, a "prerequisite course" may either be a formal prerequisite, such as MBA 510 which is a formal prerequisite for FM 523, or an informal prerequisite such as a basic math course which is an informal prerequisite for FM 507 or FM 508.

* Programming Track consists of three required courses, namely, FM 492, FM 530 and FM 538, of which only FM 538 counts toward the degree program.

Master of Mathematical Finance (MMF)

(Collaborative Program with the Department of Applied Mathematics)

21.6 quarter credits
18 semester credits

The objective of the MMF program is to provide individuals interested in pursuing careers in financial risk management with advanced education in theoretical, computational and business aspects of relevant quantitative methodologies. This is a collaborative program between the Stuart School of Business (SSB) and the Applied Mathematics Department (AM) and as such, it will give the students the chance to benefit from the strength of both units.

For specific course requirements, see the description on page 55.

Course Substitutions

To the extent that students have completed commensurate coursework or professional experience, substitutions to the required curriculum may be permitted, with the approval of the academic advisor.

Master of Science in Marketing Communication

The marketing communication program offers the student three distinct curriculum paths: (1) marketing communication graduate degree with a concentration in communication management; (2) marketing communication graduate degree with a concentration in electronic marketing; (3) marketing communication graduate degree with a concentration in health care.

Each path is grounded in a group of common core courses. The student completes these courses and chooses the preferred concentration. IIT Stuart's marketing communication program teaches a strategy-driven approach that integrates advertising, public relations, database marketing, promotion and other marketing tools using the latest technology and quantitative research methods. The program provides recent college graduates and professionals working in the field with the background needed to plan, manage, implement and assess marketing communication programs at advertising agencies, public relations firms, communication departments in corporations, government and not-for-profits, convention industry firms, design companies and small total marketing businesses.

The M.S. curriculum consists of 14 courses, structured to emphasize the function of objectives and strategy in the marketing communication process. If students demonstrate a mastery of such areas as media planning, promotion or direct marketing, advanced placement is available. Students may then choose from relevant electives in other Stuart or IIT courses or an independent study course. Consent of the program director is required. Students may begin in any quarter and may take up to six years to complete a degree.

Master of Science in Marketing Communication Curriculum

Required core courses

MC 510	Marketing Foundations
MC 514	The Marketing Communication Plan
MC 516	Marketing and Advertising Research
MC 520	Understanding the Target Audience
MC 522	Media Strategy and Implementation
MC 524	Creative Strategies
MC 526	The Database as Marketing Tool
MC 530	Direct Marketing

Communication Management Concentration Courses

MC 532	Sales Promotion Techniques
MC 534	Fundamentals of Public Relations
MC 536	Practicum
MC 552	Marketing Strategy in Digital Environment

Electronic Marketing Concentration Courses

MC 546	Communication Strategies in Digital Environment
MC 551	Business Strategy in Networked Economy
MC 552	Marketing Strategy in Digital Environment
MC 554	Customer Relationship Management

Healthcare Marketing Concentration Courses

MC 521	The Healthcare Consumer
MC 511	Healthcare Marketing Strategies
MC 577	The Healthcare Marketplace

Free Electives (any two)

MC 502	Brand Management
MC 504	Account Planning
MC 512	Organization Dynamics
MC 528	Writing & Presentation Skills
MC 532	Sales Promotion Techniques
MC 534	Fundamentals of Public Relations
MC 536	Practicum
MC 538	International Marketing Communication
MC 546	Communication Strategies in Digital Environment
MC 551	Business Strategy in Networked Economy
MC 552	Marketing Strategy in Digital Environment
MC 554	Customer Relationship Management
MC 563	Web Page Design

Doctor of Philosophy in Management Science

17 courses:
- Six required core courses (21.6 quarter credit hours)
- Eight elective courses in area of interest (28.8 quarter credit hours)
- Three adviser-approved open electives (10.8 quarter credit hours)

Optional practicum in teaching and curriculum (one quarter credit hour)
Qualifying exam upon completion of core coursework
Comprehensive exam upon completion of all coursework
Research (32.4 quarter credit hours)
Submission of dissertation
Oral defense of dissertation

The Ph.D. in Management Science Program at IIT prepares students and working professionals for careers in university teaching and research and for executive and management positions in business, government and consulting firms. Approximately half of the program's graduates have chosen academic careers.

The program is selective and small with a high degree of interaction between faculty and students and a mentor relationship with a faculty adviser. The Ph.D. Area Committee carefully matches the interest of the student with the expertise of the faculty member. The program offers two concentrations: Operations and Finance.

Operations Concentration

At the IIT Stuart School of Business, operations is taught as the design and implementation of systems that improve the efficiency and effectiveness of organizations. Candidates in the program learn to understand how the optimization of resources—people, technology, finance and information—can be effectively integrated for competitive advantage. Management today realizes the value of operations in any organization, whether it produces products or provides services.

Areas of research in operations pursued by faculty and students include design of quality systems, strategic quality management, forecasting, materials management, scheduling, optimization, capacity planning, manufacturing strategy, and strategic management of manufacturing firms.

Finance Concentration

The Ph.D. with a finance concentration is offered only as part of the Master of Science in Finance/Ph.D. Dual Degree Program, unless the applicant has earned a finance degree that is equivalent to the program at IIT Stuart, as determined by the program director. Students in this dual degree program may earn both an M.S. in Finance and a Ph.D. in Management Science.

Ph.D. Program of Study

IIT requires that at least three quarters of study be completed on a full-time basis. The quarters need not be consecutive but must occur within the six years prior to the awarding of the degree. Research may be done off campus if suitable arrangements for supervision can be made. Upon a student's admission to the program, the dean of the Stuart School appoints the student an adviser. The adviser helps the student to formulate an overall plan of study, including coursework, reading, independent study, and a plan of research, which must be approved by the dean of the Stuart School.

Upon completion of core coursework, a written qualifying examination is required. The qualifying examination is diagnostic in purpose, and the school determines its form and scope. After completion of all coursework, a written comprehensive examination is required. This examination is a rigorous review of the level of competency achieved as a result of the entire program of graduate study (except for the dissertation) as approved by an advisory committee and specified in the program of study. There may also be an oral component to the comprehensive examination. Qualifying or comprehensive examinations may be taken only twice.

When a student is ready to begin research, he or she is appointed a mutually acceptable research adviser by the dean of the Stuart School. A research project must be an original investigation of high quality, and the results must be submitted in the form of a dissertation and of a related publishable paper. After submitting a completed dissertation, the student will appear before an oral thesis defense committee composed of at least four full-time faculty members, one of whom will be a representative from outside the student's field. There must be a period of at least 12 months between the date of the comprehensive examination and the final defense.

Students may take up to six years to complete the degree. After six years, students may petition for an extension, but they must reapply to the program and may be required to retake a comprehensive examination. A cumulative GPA of 3.0/4.0 in an approved program of study is required for the Ph.D. program.

Doctor of Philosophy in Management Science Curriculum

Required core courses

ECON 570	Microeconomic Theory
MSC 538	Simulation
MSC 549	Advanced Spreadsheet Modeling
MSC 560	Optimization Techniques I
MSC 570	Probability and Statistics
MSC 571	Data Analysis

Elective courses (select eight)

MSC 534	Queueing
MSC 550	Topics in Quality Management
MSC 554	Scheduling Theory
MSC 562	Optimization Techniques II
MSC 564	Optimization Techniques III
MSC 573	Time-Series Analysis
MSC 595	Research Seminar
MSC 596	Special Topics Seminar
MSF 511	Financial Economics I
MSF 512	Financial Economics II
MSF F13	Financial Theory
MSF 521	Financial Modeling I
MSF 522	Financial Modeling II
MSF 523	Financial Modeling III
MSF 532	Corporate Finance
MSF 533	Marketing of Financial Products
MSF 541	Valuation and Portfolio Management
MSF 542	Structured Fixed-Income Portfolios
MSF 543	Quantitative Investment Strategies
MSF 551	Futures, Options and OTC Derivatives
MSF 552	Market Risk Management
MSF 553	Enterprise Risk Management
MSF 561	Financial Time-Series Analysis
MSF 562	Econometric Analysis
MSF 563	Bayesian Inference in Econometrics
MSF 571	Computational Finance I
MSF 572	Computational Finance II
MSF 573	Computational Finance III
MSF 596	Research Seminar in Finance

Open electives

Three adviser-approved electives should be selected from the remaining elective courses or from other curricula at IIT.

Practicum (optional)

MSC 576	Teaching and Curriculum Skills

Dual-Degree Programs

Several dual-degree programs are offered, including three in which enrollees are eligible to earn a law degree from IIT Chicago-Kent College of Law. To help plan a program of study, students will be assigned advisers from both programs in which they are studying. Simultaneous enrollment is required for varying periods of time, depending on programs. Students should consult advisers from both programs for further information. Candidates for a dual-degree program must apply to and be accepted by each program separately. Current LSAT scores are required for admission to Chicago-Kent College of Law. Current GMAT scores are required by the Stuart School of Business, but current LSAT scores may be substituted in some programs. Interested students should contact program advisers from either program for other specific requirements.

M.B.A./M.S. in Environmental Management

The M.B.A./M.S. in Environmental Management is designed to prepare professionals for management-level positions in corporations, government agencies and consulting firms. Students typically select one of the 10 M.B.A. concentrations to advance their specific professional goals in the environmental field.

For example, a student who wishes to focus on global concerns could combine the environmental management degree with an M.B.A. concentration in international business. An M.B.A. with an operations management concentration would be especially useful to students interested in the effects of the production of goods on the environment. A combination of 16 M.B.A. courses plus 12 M.S. in Environmental Management courses, for a total of 28 courses, makes up the dual curriculum. Both degrees are usually earned in three years of full-time study or in five years of part-time study. Dual enrollment can reduce degree requirements by as many as four courses.

M.B.A./M.S. in Financial Markets

The M.B.A./M.S. in Financial Markets program is designed for students and working professionals who wish to pursue a career in the financial markets at the managerial or executive level. Both degrees are usually earned in three years of full-time study or in five years of part-time study. A combination of 16 M.B.A. courses plus 12 M.S. in Financial Markets courses, for a total of 28 courses, makes up the dual curriculum. Students may select any M.B.A. concentration, except finance. Dual enrollment can reduce degree requirements by as many as four courses.

M.B.A./M.S. in Finance

The M.B.A./M.S. in Finance program is designed for students and working professionals who wish to pursue a career in finance at the managerial or executive level. Both degrees are usually earned in three years of full-time study or in five years of part-time study. A combination of 16 M.B.A. courses plus 12 M.S. in Finance courses, for a total of 28 courses, makes up the dual curriculum. Students may select any M.B.A. concentration, except finance. Dual enrollment can reduce degree requirements by as many as four courses.

M.B.A./M.S. in Marketing Communication

The M.B.A./M.S. in Marketing Communication program is designed to prepare students and working professionals who wish to pursue a career in marketing at the managerial or executive level at advertising agencies, public relations firms, and marketing firms or in the functional area of marketing at corporations. A combination of 16 M.B.A. courses plus 12 M.S. in Marketing Communication courses, for a total of 28 courses, makes up the dual curriculum. Both degrees are usually earned in three years of full-time study or in five years of part-time study. Dual enrollment can reduce degree requirements by as many as four courses.

M.Des./M.B.A.

Offered in conjunction with the IIT Institute of Design, the Master of Design / Master of Business Administration (MDes/MBA) dual degree program combines graduate professional education in both design and business. The first program of its kind in the world, IIT's MDes/MBA marks an important milestone in the co-evolution of design, management, and innovation. The dual degree will require students to take 14 MBA courses and 47 credit hours of design courses.

M.B.A./Master of Public Administration

The Master of Public Administration program, designed for the working professional, emphasizes the formulation of policy, the acquisition of human and financial resources, and the application of sound methods of management in public and nonprofit organizations. The M.B.A./M.P.A. is ideal for students who intend to work in an environment that combines aspects of both public- and private-sector management and for those who expect to move between business and government positions during their career. Both degrees are usually earned in three years of full-time study or in five years of part-time study. A combination of 16 core courses (nine M.B.A. and seven M.P.A.) and nine electives (five M.B.A., two M.P.A. and two chosen from either program), for a total of 25 courses, makes up the dual curriculum. Dual enrollment can reduce degree requirements by as many as six courses.

J.D./M.B.A.

The J.D./M.B.A. program is offered in conjunction with Chicago-Kent College of Law. The management expertise and business skills that participants acquire in the M.B.A. program can be important skills in the legal profession. A solid understanding of the business world can be invaluable in many areas of law, especially for corporate attorneys or legal/management consultants. An M.B.A. degree prepares lawyers for management responsibility in their firm. Both degrees are usually earned in four years of full-time study or five-and-a-half years of part-time study. Dual enrollment can reduce degree requirements by as many as 10 courses (five law and five M.B.A.).

J.D./M.S. in Environmental Management

The Environmental Management (EM) Program integrates managerial and technical skills into Chicago-Kent's renowned Environmental and Energy Studies Program. This dual program is particularly well integrated because the two schools worked closely together to design the Environmental Management Program and faculty are drawn from both schools. Both degrees are usually earned in four years of full-time study or in 5.5 years of part-time study. Dual enrollment can reduce degree requirements by as many as nine courses (five EM and four law).

J.D./M.S. in Financial Markets

Offered in conjunction with the Chicago-Kent College of Law, this dual degree program is designed for students who wish to specialize in securities and commodities law for a law firm, brokerage firm, commodity exchange or trading company. Students gain a unique perspective on the economics of financial products and markets that are used to advise clients, to propose regulation, or to litigate.

Course Descriptions

Numbers in parentheses represent class, lab and total credit hours, respectively.

ACCT 501
Financial Statement Analysis
After reviewing the content of the major financial statements, the course examines ratios, inventories, long-lived assets, income taxes, debt, leases, and pensions, among other topics. U.S. practices are compared to practices in other major countries. This course is intended for those who will examine financial statements of outside organizations. Prerequisite: MBA 510 or consent of instructor. (3.6, 0, 3.6)

ACCT 506
Cost Management
This course builds upon the management accounting foundation presented in MBA 510. Competitive strategy is linked with the following managerial topics: activity based costing, the theory of constraints, strategic decision-making, management and operational control, cost estimation, budgeting, and cost allocation. This course is intended for those who will use accounting information within their own organization. Prerequisite: MBA 510 or consent of instructor. (3.6, 0, 3.6)

ECON 513
Macroeconomics in the Global Economy
A survey of macroeconomics for business planning. Topics include an analysis of the forces determining the level of national income and employment, the relationship between the government and the private sector, theories of consumption and investment, the tools of monetary and fiscal policies, and the effect of the international open economy on the U.S. economy. Prerequisite: MBA 530 or consent of instructor. (3.6, 0, 3.6)

ECON 570
Microeconomic Theory
A systematic exposition of basic mathematical methods as they are related to microeconomic analysis. Topics include economic models, comparative statics, optimization, supply and demand, the economics of production market structure, and resource allocation. (3.6, 0, 3.6)

EM 500
Fundamentals of Environmental Science
An introduction to the basic scientific knowledge needed to understand the nature of environmental problems and to quantify them. The course reviews the current state of technology of environmental control in its application to water, air and land pollution. Topics include an examination of human-induced environmental problems (population growth, industrialization, energy consumption) and the role of technology in dealing with these; quantifying environmental problems using principles of physics, chemistry, microbiology, epidemiology and environmental ecology; and the technological control of environmental problems water supply, water pollution, air pollution, solid and hazardous waste. Local and global examples of environmental problems and solutions are discussed. (3.6, 0, 3.6)

EM 501
Environmental Law and Regulation I
This course will introduce students to the major federal and state statutes and regulatory programs that govern pollution from industrial, commercial, and public sources. The course will emphasize the organization of the government regulatory agencies, the techniques of environmental regulation, the interplay of federal and state environmental regulation, environmental enforcement, and environmental litigation. The National Environmental Policy Act (NEPA), the Clean Water Act, Safe Drinking Water Act, and the Endangered Species Act will be the main statutes used to illustrate the workings of the pollution control statutes. The role of environmental law in the international arena will also be discussed. (3.6, 0, 3.6)

EM 502
Environmental Law & Regulations II
This course is a continuation of EM 501. It will emphasize the organization of government regulatory agencies, the techniques of environmental regulation, the interplay of federal and state environmental regulation, environmental enforcement, and environmental compliance. The Clean Air Act, Solid Waste Disposal Act (and Resource Conservation and Recovery Act, RCRA), Toxic Substances Control Act (TSCA), Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) will be the main statutes used to illustrate the workings of pollution control statutes. (3.6, 0, 3.6)

EM 503
Applied Mathematics for Environmental Managers
This course is an overview of the fundamentals of calculus and statistics with applications in solving environmental problems. The course begins with a general discussion of linear and non-linear equations, logarithms and exponents and moves into differential and integral calculus with emphasis on applications. Other modules include linear programming, probability and statistics. (3.6, 0, 3.6)

EM 506
Environmental Risk Assessment and Management
This course presents a multidisciplinary approach for identifying, evaluating, and managing risks from environmental contaminants and technological hazards. The use of risk assessment and risk management as tools for setting scientifically sound, risk-based priorities is evaluated. In addition, a conceptual framework for environmental health risk management is examined as an integrated strategy for addressing multiple sources of risk. (3.6, 0, 3.6)

EM 507
Industrial Ecology
Industrial ecology is the study of the material and energy flows that stem from industrial and consumer activities and the regulatory, political, economic, technical, and social issues that intertwine these activities. By examining these relationships, industrial ecologists strive to bring environmental concerns into harmony with economic development. (3.6, 0, 3.6)

EM 508
Air and Water Pollution Control
This course provides a comprehensive review of the most current and advanced control technologies used for management of air, water, and wastewater pollutants. Prerequisites: EM 500 and EM 503 or consent of instructor. (3.6, 0, 3.6)

EM 509
Solid and Hazardous Waste Management
This course offers a comprehensive review of current and advanced physical, chemical, and biological methods of solid and hazardous waste management and disposal. Prerequisites: EM 500 and EM 503 or consent of instructor. (3.6, 0, 3.6)

EM 511
Industrial Health and Safety
This course is designed to fulfill educational needs for enhancing safety and health, a basic necessity in the industrial workplace. The requirements of the Occupational Safety and Health Administration (OSHA), increased employer liability, and worker awareness of implications of an unsafe and unhealthy work environment, will be discussed. The major elements of hazard evaluation and control, workplace hazard control, worker-machine interaction, occupational injury and diseases, and process alterations are examples of topics covered in this course. (3.6, 0, 3.6)

EM 512
Environmental Monitoring and Compliance
This course is designed to familiarize students with the environmental manager's duties in permitting, reporting, record-keeping, and sampling. It emphasizes a systematic approach to identifying a source's obligations with respect to each regulated media and activity and developing appropriate responses. Obligations under United States environmental laws and their relationship to state and local laws are considered as a model for analysis and response. The role of environmental manager is examined through extensive use of experienced environmental managers as guest lecturers, coupled with a laboratory visit, lectures by the teacher, course materials, research assignments on the computer, and a final project where the course lessons are applied. (3.6, 0, 3.6)

EM 515
Decision Tools Environmental Management
This course will deal directly with innovative methods and technologies to institutionalize systems that allow managers to use their assets—human, financial, physical, and natural—in an optimum manner. Students will apply what they learn to assess problems and propose solutions to manage assets related to business operations, environmental management, and community development. Approximately half of the course will involve hands-on training using mapping technologies and other analytical tools. Work will includes individual study as well as team project assignments. (3.6, 0, 3.6)

EM 520
Contemporary Issues and Global Sustainability
The increasing complexity of environmental problems warrants an integrated multidisciplinary approach to developing management strategies for local, regional, and global sustainability. This course provides an analysis of significant environmental issues currently facing multinational corporations and government agencies. Representative topics include macrosustainable development, pollution prevention, urban sprawl and brownfields, resource efficiency, and global climate change. (3.6, 0, 3.6)

EM 530
Energy, Environment and Economics
This course deals with the linkage of energy, environmental and economic issues. The impact of energy supply and end-use on human well-being and the ecosystem is covered. It also includes a comprehensive approach to the resolution of resource, technical, economic, strategic, environmental, socio- and geopolitical problems of the energy industries. In addition, pathways to a sustainable global energy system are presented. (3.6, 0, 3.6)

EM 590
Business Strategy: The Sustainable Enterprise
Integrates environmental management issues with use of strategic planning tools for assessing and responding to competitive and social forces. The course looks at the challenge of corporations competing in the global economy of the new millennium in such a way that will allow the planet to support them indefinitely. Emphasis is on the company's ability to build and sustain a competitive advantage utilizing traditional management concepts as well as new sustainability practices. Topics include a review of the systems approach, The Natural Step, the "servicizing" concept, base of the pyramid strategy, and various case studies showing how an enterprise can meet its sustainable goals consistent with its financial and market goals. (3.6, 0, 3.6)

ENT 510
Global Future Practices in Entrepreneurial Management
This course is designed to provide a broad perspective of the end-to-end processes that constitute the architecture of successful entrepreneur-founded and managed business. Students will study the history of the business sector in North

America and the contributions of entrepreneurs to the economy. In addition, students will recognize the emergence of "strategy" as the intellectual driving force that networks all activities of the firm into a coordinated, interactive, efficient, and effective force with a high probability of dominating the firm's chosen markets. This course also integrates the narrower perspectives of the core courses and provides a framework for selecting elective courses in areas that relate specifically to each student's career goals.

ENT 520
Forming New Ventures and the Value-Creation Process
This course explores the core of the formation of new ventures: the systematic, structured, iterative process of identification of opportunities to enter markets, dictate market structure, establish a sustainable competitive advantage, and dominate markets. At the beginning, this course focuses on new product development, and then progresses to the concepts of value migration, value creation, and value bundles. These concepts are examined from both a strategic and financial perspective. (Prerequisite: ENT 510.)

ENT 530
Strategic Marketing Management of New Ventures
This course provides students the opportunity to apply their knowledge and skills to the role of a CEO or as a member of a firm's executive management team in the role of a senior decision maker. This is a pure management course that requires the effective and efficient application of all cross-functional and interdisciplinary knowledge and skills associated with the senior management function. The course uses an Internet-based, game theoretical computer simulation as its principle pedagogical tool. The scope and scale of the simulation covers the dynamics and functions of real world markets and firm activities. Traditional strategic analysis, game theory, and the concepts (not the math) underlying real options theory are used to analyze simulation outcomes. Management teams are self-organizing. Teams consist of one to four students. (No prerequisites)

ENT 540
Financing New Ventures and Venture Capital
This is an experiential course that provides students with a basic understanding of the financial market sub-system that are the source of private equity financing for new ventures. The course focuses on the interactions among early stage commercialization processes, early stage entrepreneurship, early stage firm formation, and the private equity markets. All of the ideas, heuristics, concepts, principles, and theories discussed in ENT 540 are studied from a 'systems' perspective that places more emphasis on the interactions between system components than a detailed understanding of the individual components. The course is grounded in concepts developed at Babson College, Stanford Graduate School of Business. Management teams are self-organizing. Teams consist of one to four students based upon student preferences. (No prerequisites)

FIN 520
Corporate Finance
This course builds on the introduction to managerial finance presented in MBA 550. Topics include estimating cash flows, capital budgeting under uncertainty, raising debt and equity capital, financial restructuring, and financial risk management. Prerequisite: MBA 550. (3.6, 0, 3.6)

FIN 521
Investment and Portfolio Management
This course is concerned with security valuation and portfolio management. Topics include security pricing, measurement of risk and return, mean-variance portfolio analysis, the capital asset pricing model, factor models, and arbitrage pricing models. Asset classes and portfolio strategies commonly used by global portfolio managers are also studied. Prerequisite: MBA 550 or consent of instructor. (3.6, 0, 3.6)

FIN 524
Cases in Financial Engineering and Policy
This course surveys the reasons why corporations use financial products. The course prepares students to work either on the sell-side in banks and financial institutions or on the buy-side at corporations and investment funds. Prerequisites: FIN 520, FIN 521. (3.6, 0, 3.6)

FIN 525
Financial Risk Management
This course focuses on recent developments in the management of exposure to market risk, credit risk, operational risk, etc. Also, an introduction to the products used for risk management, including forwards, options, swaps, caps, collars and floors. (3.6, 0, 3.6)

FM 490
Math for Financial Markets
This course reviews pre-calculus and calculus. Topics include algebra, logarithms, analytic geometry, functions, matrices, differentiation, integration, and partial derivatives. Students do problems in class to reinforce theory and examples. Quizzes, homework and a written final exam. (3.6-0-3.6)

FM 491
Statistics for Financial Markets
An introduction to basic concepts of probability and statistics, including data presentation, probability theory, discrete random variables, expected value, variance, correlation, the normal distribution, estimation, confidence intervals, hypothesis testing, and simple linear regression. (3.6-0-3.6)

FM 492
Intro. to C/C++ Programming for Financial Markets
This course presents the ANSI C++ programming language. Students will study program design, including functions, arrays and strings, pointers, dynamic memory management, data structures and the Standard Template Library. Object-oriented design will be discussed, including the design and use of classes, overloading, inheritance and polymorphism. The focus will be to understand OOP concepts as they are applied to financial markets.

FM 500
Global Financial Markets
This course will enable the student to understand the basics of financial markets and how they function in the global arena. The student will learn how the equities market, the bond market, the money market, the foreign exchange market and the derivatives markets are set up and operate. We will focus on the instruments, the players, the jargon, the details of the trade, and the institutional framework for each market. We cover both OTC and exchange-traded markets, and explore the dramatic transformation of these markets. The student will learn how each of these markets operates in the US, but will also learn how practices differ in Europe, Asia and Latin America.

FM 502
Global Market Economics
This course provides the foundation necessary to analyze the impact of economic developments on financial markets and trading strategies. Topics include fiscal and monetary policy; interest rates; central banks; commercial banks; international trade and currency markets; economics statistics including inflation, GDP and unemployment; supply and demand analysis; Keynesian and classical economics; business cycles; business structures and decision making; and economic forecasting. Students write an economic analysis of a current market issue. (3.6-0-3.6)

FM 503
Introduction to Investments
This course focuses on the theoretical basis of finance. The fundamentals of interest rates, present value, and portfolio theory are explored. Included will be a discussion of the ways in which basic cash market instruments and derivative products affect investment return. The topics include intertemporal choice, utility bond theory, the capital asset pricing model, and the dividend discount model. The mathematics of bond pricing and the components of return are discussed. The theories of the yield curve are reviewed. Highlights include the separation theorem and the Modigliani-Miller propositions. (Prerequisites: FM 507 and FM 508.)

FM 505
Futures and Futures Markets
This course provides a comprehensive study of futures and futures markets from a variety of perspectives - theoretical, operational, evolutionary, domestic and global. Students who successfully complete this course will have an understanding of the theory of futures contract pricing, a working knowledge of how these instruments are used for pricing and risk management, and a familiarity with the breadth and diversity of the global futures markets (i.e., the products traded on them, their economic role, the issues faced by market participants and possible developments in the years ahead). Following a discussion of theoretical and operational issues in the first three classes, the remaining classes focus on uses of futures contracts in the principal product groups (i.e.; agricultural/metals/energy, short-term interest rates, long-term interest rates, stock indices and foreign currency.) (Prerequisite: FM 507.)

FM 506
Options and Options Theory
This class presents both a practical and theoretical approach to options markets. Included is an in-depth examination of the most important option pricing models and the factors that determine option prices. Also studied is the role of options in controlling risks, the relationship between an option and its underlying instrument, and the relationship of options to futures and warrants. This course explains the different roles played by investors/ hedgers, speculators and market makers, the different strategies each employs, and the different view each has of risk. The course surveys the international markets for trading options, both on and off exchanges. Prerequisites: FM 507, FM 508. (3.6-0-3.6)

FM 507
Quantitative Methods in Financial Markets
This course explains and puts to use the different mathematical and statistical techniques for understanding the financial markets. The focus of the course is on the quantitative tools necessary to understand investment theory, portfolio analysis, and the modeling of options. The course concentrates on some specific areas in probability and statistics and differential and integral calculus that are important for asset pricing and risk management. Prerequisite: FM 490 if required.

FM 508
Statistical Methods in Financial Markets
This course, a survey of statistical methods and concepts, prepares students for quantitative courses in the FM program. The course focuses on statistical inference and forecasting methodologies, including regression and time series analysis. The course makes extensive use of Excel in solving statistical problems as well as an introduction to using @Risk for Monte Carlo simulation. Prerequisite: FM 491 if required. (3.6-0-3.6)

FM 520
Equity Valuation
This course covers the various models available for equity valuation. It includes discussions of the dividend discount model, Porter analysis, DuPont decomposition of ROE, sustainable growth rates, earnings quality and accounting fraud, and relative valuation measures such as price/earnings and price/sales. The major deliverable for this course is a comprehensive analysis of a public company, modeled after the well-known Merck case study. Also required is a complete analysis of a convertible bond. (Prerequisite: FM 503 and FM 523.)

FM 521
Global Investment Strategy
This course provides an integrated framework describing the investment process in global markets. We start with explanations of what moves the foreign exchange markets and the forecasting techniques to predict currency moves. Discussions include the benefits of international diversification, and studies in global equity markets, emerging markets stocks and bonds, and the global bond markets. The conclusion of the course includes building global portfolios including equities, fixed income instruments, alternative and emerging investments, and currency hedges. Prerequisites: FM 503, FM 508. (3.6-0-3.6)

FM 522
Portfolio Management and Mutual Funds
This course will allow the student the opportunity to add the practical business knowledge of portfolio management to their previous theoretical background. Topics include: mutual fund and hedge fund history, structure and objectives; portfolio management policies for individual and institutional investors; asset allocation, portfolio construction; optimization, reversion and trading, equity and fixed income portfolio management strategies; risk measurement, hedging and the use of derivatives in funds; performance measurement and attribution; industry analysis and sector funds. Prerequisites: FM 503, FM 508. (3.6-0-3.6)

FM 523
Financial Statements and Security Analysis
This course develops financial analysis skills from the view of an outsider using a corporation's publicly available financial statements. Techniques such as common-size statements, ratio analysis, decomposition, and use of the comprehensive DuPont and Z-score models are used as a basis to teach analytical thought processes necessary to make projections for a company based on its financial statements. Nontraditional ratio analysis for an industry, adjustment of financial statements to reflect accounting choices, and forecasting future operating results by business segment are also covered. The student will also learn and work with alternative valuation models, including the dividend discount model and the growth model to value a company. Finally the student will learn about unique industry issues as the case study approach covers three companies in different industries. The use of spreadsheets as an analytical tool will be strongly emphasized, including use of a graphing template to compare a company's ratios to industry ratios. Prerequisite: MBA 510 or consent of instructor. (3.6-0-3.6)

FM 524
Hedge Funds
This course explores hedge funds and how they differ from regulated mutual funds. Topics covered include hedge fund business models and legal structures, performance and fee calculations, and risk management techniques. Further, students practice alternative trading strategies such as distressed investing, event-driven trading, convertible, fixed income, and merger arbitrage, and relative value, equity hedged, and market neutral strategies. Prerequisite: FM 503 or MSF 541. (3.6, 0, 3.6)

FM 525
Real Estate Investment Analysis
This course will introduce students to real estate ownership and financing. The importance of legal issues will be discussed, including zoning, types of ownership, taxes, and development regulations. The course may include several case studies to enhance students' skills in evaluating the economics of proposed real estate development projects. As a part of these studies, students will analyze compound interest, mortgage loans, amortization, and internal rates of return to support their investment decisions. Finally, students will understand the importance of capital markets and institutional investment in real estate, including mortgage-backed securities, conduit, loans, and Real Estate Investment Trusts (REITs). Prerequisite: FM 503. (3.6, 0, 3.6)

FM 530
Visual Basic and Databases for Financial Markets
This course is designed to provide students with a comprehensive knowledge of the VB.NET programming environment that includes object oriented design using the .NET Framework. It will also cover relational database design, SQL, XML and the Unified Modeling Language. These tools will be used to create financial models using real time and historical market data. Students will develop financial applications using advanced Visual Basic tools. (Prerequisite: FM 506.)

FM 532
Equity & Equity Derivatives Modeling
This course focuses on the fundamental and statistical techniques for modeling equity securities, equity options, and equity index futures and options. Students deepen skills in the analysis of price behavior, the valuation of options and the links between financial markets and fundamental economic factor. The course features extensive, hands-on use of Visual Basic and databases. Prerequisites: FM 506. (3.6-0-3.6)

FM 533
Term Structure and Interest Rate Derivatives Modeling
This course focuses on techniques for modeling fixed income instruments and interest rate-sensitive derivative products. Students deepen skills in the analysis of option embedded bonds using OAS models, mean reversion, path dependent securities using multinomial models, swaps principal component analysis and mortgage backed securities. This course also covers term structure theory and several spot rate models. This course is built around a series of laboratory studies. (Prerequisite: FM 506 and FM 508)

FM 536
Financial Time Series Analysis
This course develops a portfolio of techniques for the analysis of financial time series. Students will receive a brief overview of topics associated with technical analysis, including filters, moving averages and channels.

They will then study ARIMA modeling and forecasting and analysis of non-linear time series models. Finally, the course will conduct an indepth review of volatility estimation and forecasting models including the GARCH family and stochastic volatility models. (Prerequisites: FM 503, 507 and 508.)

FM 538
Advanced OOP for Financial Markets
After reviewing C++ programming techniques and object oriented design, students will learn to use Visual C++.NET to build advanced financial applications and automated trading systems. Topics include multithreading, sockets, APIs, synchronization and the Unified Modeling Language. Substantial amounts of homework will be assigned and students will be expected to design and develop an original term project combining, into a C++ application, topics in quantitative finance and trading strategy presented in other courses. (Prerequisites: FM 530 and FM 492 or equivalent.)

FM 543
Market Analysis
Technical analysis is based on the assumption that markets are neither efficient nor random and that valuable information can be found in the study of price movements and changes in volume and open interest. This course will study different charting techniques (candlestick, point and figure, close-to-close, etc.) as well as interpretive methodologies, such as moving averages, market indicators, oscillators, and patterns. If history does repeat itself, it is important to recognize when it is happening. (Prerequisites: FM 505 and FM 506.)

FM 544
Equity Trading Strategies
This course will provide students with an opportunity to learn the latest Equity Trading Strategies used by large banks, brokerages and hedge funds. The instructor will present strategies on equity option trading, pairs trading, program and basket trading, risk arbitrage trading, structured product trading, and dispersion trading (time permitting). Equity trading theory and practical examples will be discussed. Students will be required to structure and adapt equity trading positions based on a range of actual and theoretical market conditions. In addition, students will collaborate with each other and the course instructor to analyze and evaluate the implementation of the above-mentioned strategies. (Prerequisites: FM 503, FM 505 and FM 506.)

FM 546
Fixed Income Trading Strategies
This course will present basic trading concepts related to fixed income instruments. Also covered will be the analysis of repos and fixed income derivatives, such as forwards and futures, options and spreads. Trading strategies will be discussed, including yield curve strategies, basis trading, and various types of spread trading using many different instrument types. Students will make trading decisions and modify their portfolios in order to familiarize themselves with the instruments and techniques introduced. Swaps, Swaptions, Caps and Floors will be introduced, time permitting. (Prerequisite: Both FM 505 and FM 506, or MSF 551)

FM 545
Futures and Options Trading Strategies
This advanced trading course provides students with an opportunity to develop and manage market positions utilizing commodities, currency and fixed income futures and options. Students will research these markets then design, implement and manage market positions based on both current and simulated market data. Students will access market information and implement their positions using the Microhedge trading system. Along with the instructor and classmates, students will track their results and assess trading decisions. Prerequisite: both FM 505 and 506 or MSF 551. (3.6-0-3.6)

FM 592
Enterprise Formation & Finance
This course is a model for entrepreneurs who want to form and finance business enterprises. A team of experienced entrepreneurs, venture capitalists and lawyers guide students as they create vision statements and strategic concepts; design business models; evaluate business incubators; construct staffing and compensation schemes; practice valuation analysis; compare and contrast alternative financial sources; structure business plans; compose offering documents; determine securities to offer; examine private placement processes; analyze negotiation strategies; and review the implications of financing terms. (3.6-0-3.6)

FM 597
Independent Study
This course involves directed research arranged on an ad-hoc basis between a student and a full-time faculty member willing to sponsor the work. Eligible activities must include a substantial academic component and result in a work product, such as a paper or report that can be evaluated for its quality under traditional academic standards. The student and the sponsoring professor must have regular contact during the quarter for which credit is given to evaluate progress. Practical projects, tied to the industry, are welcomed, but the practical, work aspects must be tied to a body of theory and be linked by a work product as described. Credit may vary, depending on the nature of the activity, but may not exceed the number of quarter-hours associated with a regular course. (Prerequisite: Instructor's consent)

HM 500
Management of Health Care
This course is an introduction to the topic of health management. The course covers such areas as the unique attributes of the field of health care, and the basic concepts and practices used by managers in healthcare delivery organizations and in related components of the sector. Some topics of current interest include leadership, organization design, and decision processes in health delivery organizations. (3.6, 0, 3.6)

HM 510
Health Systems and Technology
This course focuses on understanding the role that health and medical technology plays in health organizations. As a major cause of health expenditures, technology is considered a major component of health delivery, management and policy. Topics include: innovations and their impacts on health organizations and the evaluation of medical technologies. (3.6, 0, 3.6)

HM 520
Health Informatics
The use of information technology (IT) in health organizations is the focus of this course. Students learn about IT as an enabler of health delivery and management. Topics include computerized medical records, telemedicine, and other applications of informatics. (3.6, 0, 3.6)

IB 515
International Trade
A survey of major economic issues affecting international trade. Topics include the theory of international economics, tariff protection, foreign investment, balance of payments, commodity agreements, and OPEC and international monetary institutions. (3.6, 0, 3.6)

IB 525
International Finance
A comprehensive study of international financial markets and currencies. Topics include the nature of foreign exchange risk, determination of exchange rates, Eurocurrency markets, international investments, and the use of futures and options contracts to hedge exchange rate risk. Prerequisite: MBA 550. (3.6, 0, 3.6)

IB 560
The Global Enterprise in the Competitive Environment
An analysis of the challenges facing multinational business. Topics include the influence of cultural, political, and economic factors on the decision-making process; the strategy of foreign involvement; the interaction between national industrial policies and global enterprises; and the differences between U.S. multinationals and their counterparts in Europe and Asia. (3.6, 0, 3.6)

IM 510
Strategic Management of Information Technology
This course addresses the use of information technology (IT) to improve global business strategy and performance in this digital age. Topics include leveraging IT for competitive advantage, IT as an enabler of organizational change, the management of business knowledge, applications systems architecture and business processes, and IT governance, structure and outsourcing. Includes the essentials of application development including systems analysis and forms (Web page) design. Case studies and projects reinforce this desired business-technology alignment theme. (3.6, 0, 3.6)

IM 512
Management of Enterprise Data
This course teaches structured management of cross-functional data to improve business operations and decisions. It addresses the design of Web and legacy databases, and data warehouses. Some specific topics include alternative data models, embedded business rules, data validation, and SQL queries. These design issues will be studied through exercises with database software. Prerequisite: IM 510. (3.6, 0, 3.6)

IM 514
Data Mining
The digital enterprise enables significantly more data about customers, suppliers, and partners to be captured. The challenge, however, is to transform this vast data repository into actionable business intelligence. Data mining can provide valuable business insights. A leading data mining tool, e.g., SPSS's Clementine will be used to investigate hypotheses and discover patterns in enterprise data repositories. Both data cleaning and analyses, e.g., decision trees, neural networks, and clustering, will be discussed and applied to sample data. Case studies will address business analytics system implementation and benefit measurement challenges.

IM 516
Marketing in the Networked Economy
Consumer and business buying behavior through the Internet presents new challenges and opportunities. For example, a single Web site including products partnered with other companies provides consumers a new, interactive product category shopping space (e.g., car purchasing with financing, insurance, repair and auto club options). Thus planning for value propositions, pricing, banding, promotion, and sales channels will be re-examined. Web site visitor behavior and e-mail content also offer new sources for market research analyses. Case studies will illustrate these new marketing strategies. Prerequisites: IM 510 or MC 551. (3.6, 0, 3.6)

IM 518
Supply Chain Management
This Course examines the flow of goods, services, and information in a global economy. It introduces and describes the challenges of optimal supply chain management, and presents and integrated framework for analyzing demand, fulfillment, manufacturing, and transportation in any industry. Prerequisite: IM 510. (3.6, 0, 3.6)

IM 520
Emerging Technologies and Competitive Advantage
In this digital age, faster information and communications technology innovations are a significant factor for business survival and growth. Business strategy models, in particular, must be re-examined to blend with the need for a highly adaptive enterprise. Emerging technologies and their impacts on business strategies, processes, employees, and information technology infrastructure will be addressed. Case studies will facilitate discussion of these changes. Prerequisite: IM 510. (3.6, 0, 3.6)

MBA 510
Financial and Managerial Accounting
An introduction to the basic financial and managerial accounting topics: GAAP, the major financial statements, accrual accounting, financial reporting alternatives, financial statement analysis, cost behavior, cost systems, short- and long-term decision-making and product costing. (3.6, 0, 3.6)

MBA 520
Organizational Behavior
Builds awareness and understanding of the behavior of individuals and groups in organizations, preparing managers to be more effective within their organizational contexts. Topics include individual differences in motivation, perception, culture and learning style; group and organizational dynamics; and the impact of organizational structure and culture on behavior. Leadership techniques for influencing other organizational members, creative problem-solving and decision-making, ethics and values-based managing are covered. This course helps students relate basic theories, concepts, and techniques to real-world situations through the extensive use of case studies. (3.6, 0, 3.6)

MBA 530
Managerial Economics
The behavior of firms and households and the determination of prices and resource allocation in a market economy. Topics include empirical demand, production and cost functions, monopoly, oligopoly, and pricing practices. (3.6, 0, 3.6)

MBA 540
Statistical Methods
Statistical methods and their application to managerial decision-making. Topics include probability, sampling, estimation, hypothesis testing, linear regression, and goodness-of-fit tests. (3.6, 0, 3.6)

MBA 550
Managerial Finance
An introduction to the basic concepts and practices used by managers in making financial decisions. Topics include cash flow analysis, capital budgeting, short- and long-term financial planning, cost of capital, financial leverage, and dividend policy. (3.6, 0, 3.6)

MBA 560
Marketing Management
Introduction to marketing concepts, processes, functions and institutions. Topics include economic and behavioral foundations of marketing, market segmentation, product positioning, marketing mix (including product, price, channel, distribution, and communication factors), the product life cycle, and linkages with the company's other functional areas. (3.6, 0, 3.6)

MBA 570
Operations Management
The course focuses on decisions to be made by operating managers in managing the technology, capital, and human resources of organizations in the process of producing goods and services. Topics include: equipment, technology, and process selection; product/process integration and innovation and the basic tools required for process design; work force, materials, and quality management; and aggregate planning and scheduling. (3.6, 0, 3.6)

MBA 580
International Business
A study of the major issues in international business. The main objective of the course is to prepare managers to function effectively in the global business environment. Topics include the sociocultural, economic, and political forces facing business, exchange rate determination, hedging, international sourcing and production, wholesaling, retailing, and commercial documentation. Contemporary issues are analyzed, including the rise of Pacific Rim nations, the European Union, and developments in NAFTA. (3.6, 0, 3.6)

MBA 590
Business Policy
An integrative approach to the role of the general manager and the tasks of creating an effective business unit: crafting strategy; designing and maintaining an organization for implementing strategy; leadership and change management; and corporate governance. The course is designed around a model of the "fit" between industry structure—business strategy, organization design, and financial, operational and behavioral outcomes—and the complex task of maintaining that "fit" over time. Special attention is paid to drivers of change and sources of complexity, such as size, market diversity, and rate of growth. Case studies are used to develop total organization perspectives, to focus on individual leadership and management skills, and to emphasize the linkages between theory and practice. As the capstone course of the MBA program, this course must be taken during the final quarter. Prerequisite: Consent of adviser. (3.6, 0, 3.6)

MC 502
Brand Management
The most valuable assets that company has are the brands that firm has invested in and developed over time. This is true for large conglomerates as well as small start-up companies. Students will learn the concept of organizing marketing activities and P&L responsibility around the introduction, promotion and optimization of brands and brand portfolios. Students will learn how consumer beliefs and attitudes regarding a brand or business often cannot be easily reproduced. Like people, brands have their own individual personality. This differentiation drives the ability for a brand to grow and expand or it could limit a company's potential if not managed effectively. (3.6, 0, 3.6)

MC 504
Account Planning
This will be a course based heavily on the practice of creating insights for advertising strategy through qualitative research and relationship development with the consumer. The end products are well-rounded insightful creative strategies that lead to effective and more dynamic creative. The role of account planning has become an increasingly

primary function in the development of excellent marketing communications. Account planning exists for the sole purpose of creating advertising that truly connects with consumers. Account planners are the strategists that represent the voice of the consumer within advertising agencies. They are a critical link between the client objectives, account management and the creative development team. (3.6, 0, 3.6)

MC 510
Marketing Foundations
This course teaches students how to develop and evaluate marketing plans. Topics include: how to interpret overall company business plans; how products/services are designed, created, tested, produced, priced, positioned and distributed; market segmentation and product life cycles; the economic foundations of marketing; and sales and cost-benefit analyses. Marketing models and case studies are employed. (3.6, 0, 3.6)

MC 511
Healthcare Marketing Strategies
This class sharpens strategic skills to enable students to develop successful strategies to target specific segments of the diverse healthcare audiences. Students will learn to segment the healthcare audience into more manageable universes that permit tailoring the message to the audience; to analyze the purchase cycle dynamics as they apply to the healthcare consumer, the healthcare provider and the healthcare dispenser at wholesale and retail; and to develop a working knowledge of the marketing communication tools available and their strengths and weaknesses in effectively reaching the diverse healthcare target audiences. (3.6, 0, 3.6)

MC 512
Organization Dynamics
In this course, students learn to integrate and manage the people, departments, skills, and activities involved in the marketing communication process. Interpersonal communication, decision-making and perception, and attitude formation are studied. The course guides students through the skills needed to manage an enterprise where working members of a team have different sets of expertise. Case histories and role-playing are employed to illustrate problems and their solutions. (3.6, 0, 3.6)

MC 514
The Marketing Communication Plan
In this course, students learn how to develop and write and to evaluate marketing communication plans that effectively integrate a mix of communication channels. Based on a competitive analysis, the major elements of a communication plan are put in place: media, message, target audiences, testable objectives, and budgets. Students learn to measure consumer and business target audiences by their demographic and psychographic characteristics and to analyze the style and appeal of messages within campaigns. Students learn how to develop a balanced marketing communication plan that includes print and TV ads, as well as sales literature and direct marketing, and promotional and public relations materials. (3.6, 0, 3.6)

MC 516
Marketing and Advertising Research
An introduction to the purposes and methods of research. The course concentrates on how research provides critical information for marketing and communication decisions. Topics include identification of the research problem, research design, data-gathering techniques, sampling procedures, data analysis, and report preparation. The course exposes the student to basic statistical methods. Students learn how to critically read and evaluate a market or consumer research study. (3.6, 0, 3.6)

MC 520
Understanding the Target Audience
Understanding the demographics and psychographics of target audiences is essential to an effective marketing communication strategy. In this course, social, cultural, and psychological factors are explored with particular attention to motivation, how attitudes are shaped and altered, how information is processed, and learning in the formation of purchasing decisions. Theories and models of consumer behavior are examined to learn how to apply behavioral research findings. (3.6, 0, 3.6)

MC 521
The Healthcare Consumer (concentration)
This course covers the segmentation of the healthcare market and how the healthcare consumer is different from consumers generally. Additional topics include: perception and information processing, attitudes toward healthcare issues and values brought to the access process in healthcare, perceived value in healthcare products and services, choice-making and buyer behavior in the healthcare environment.

MC 522
Media Strategy and Implementation
This course focuses on the major aspects of developing and evaluating media plans and on some key factors in efficient media buying. Beginning with the development of media strategies that flow from overall marketing communication goals, the course analyzes various media from the perspectives of cost, targeting, audience characteristics, and the nature of the product/service. The course also includes examinations of information sources, such as Arbitron, Nielsen, and Simmons, and software, such as Manas, IMS, Telmar, Adware, and Tapscan. (3.6, 0, 3.6)

MC 524
Creative Strategies
This course deals with the development and execution of the products of marketing communication: the print, TV, radio, direct mail, Internet, and other advertisements delivered to consumer and business audiences. Based on the development of creative goals and strategies, the major elements of advertising are studied: the central idea to be communicated (unique selling proposition, positioning, brand personality, or campaign theme), the appeal of the creative

concept (informational, news, emotional), and the style or approach of the creative message (slice of life, testimonial, corporate image, celebrity presenter). The creative process is followed from copy platform to the major components of advertisements (headline, body copy, logo, design) to production (printing, photography, video). The role of research is reviewed in the development and assessment of the creative statement. (3.6, 0, 3.6)

MC 526
The Database as Marketing Tool
This course describes how database marketing matches consumers with products and products with consumers, making ongoing relationships with customers possible; and how a company's database can be utilized to develop tactics and strategic planning. Students also learn to access and utilize database information in areas such as competitive product data and in consumer preferences, needs, media habits, demographics, and psychographics. (3.6, 0, 3.6)

MC 528
Writing and Presentation Skills
The ability to present ideas in a clear and convincing manner is a key element in the successful management of a marketing communication enterprise. Persuasion is often the critical factor in the success or failure of a project. Students learn to write and present marketing and media plans, new business proposals, creative proposals, copy platforms, and research findings. In-class delivery of written assignments and presentations. (3.6, 0, 3.6)

MC 530
Direct Marketing
A comprehensive study of the elements of direct marketing and its fit into the strategy to reach target audiences effectively. Topics include comparison of consumer and business-to-business direct marketing techniques, use of databases, circulation planning, creative executions, lists and media, direct mail, catalog marketing, telemarketing, Internet marketing, and response analysis. (3.6, 0, 3.6)

MC 532
Sales Promotion Techniques
This course provides an overview of merchandising and sales promotion tools and the planning and execution of sales promotion programs. The use of sales promotion techniques is studied in a wide variety of product/service marketing strategies. Students learn the sophisticated analysis required to determine the effectiveness of sales promotion events against the costs of media advertising. (3.6, 0, 3.6)

MC 534
Fundamentals of Public Relations
An overview of the applications and techniques of public relations, this course demonstrates how business communicates and participates in society's public forums and identifies the tools of the public relations specialist, including special services and media sources, how to locate them, what they cost, and how they fit into an overall marketing communication plan. Measurement techniques are reviewed and evaluated and special problems in public relations, such as corporate and product crisis management, are carefully studied. (3.6, 0, 3.6)

MC 536
Practicum
This capstone course is designed to integrate all the skills learned in the Marketing Communication program in a practical context. Student teams will compete as mini-agencies with an assignment from a major Chicago area marketer. Briefed in detail by their client, they will develop a marketing plan and a complete, detailed marketing communication plan. Based on secondary research and original research conducted by the teams, the marketing communication plan will include a media plan, a creative program, budget recommendations, and recommendations for the use of public relations, database marketing, promotion, online marketing, event marketing, and so on. Teams will make formal presentations of their plans to client senior management. (3.6, 0, 3.6)

MC 538
International Marketing Communication
A study of major concepts in international marketing. The objective of the course is to prepare marketing communication managers to function effectively in a global environment. Topics include the development of communication strategies in interconnected economies and the impact of cultural differences on those strategies. The student will examine the differences among Pacific Rim nations, the European Union, and others as they relate to marketing problems. (3.6, 0, 3.6)

MC 546
Communication Strategies in the Digital Environment
Advertising on the Internet is only the beginning. Permission e-mail marketing has quickly become a critical tactic and a discipline with its own rather intricate set of rules. Sales promotion in the online environment is a new and different skill set. Database marketing helped shape all of e-commerce marketing, and now e-commerce is reshaping the database business. The public relations specialist is finding that Web sites are among the most critical target media. For the marketing communication professional, these new digital tools and tactics will be essential for success. (3.6, 0, 3.6)

MC 551
Business Strategy in the Network Economy: Best Practices
The explosion of information in the digital economy, and the rise of the Internet as medium, marketplace, and management tool have transformed the ways companies organize themselves and do business. But that transformation is far from complete. This course will acquaint the student with some of the best current thinking and practice among companies that are succeeding in the new environment. It deals with business models, supply chain strategies, value propositions, revenue sources, new ideas about the marketing of information, and how entrepreneurial ventures go about constructing a business plan. It includes presenta-

tions from and conversations with senior managers of e-commerce enterprises, their agencies, and consultants. (3.6, 0, 3.6)

MC 552
Marketing Strategy in the Digital Environment
Both the buyer's behavior and the marketer's opportunities are fundamentally different in the online environment. There are many ways in which digital assets can be substituted for conventional marketing resources. There is a new spectrum of distribution alternatives. Online branding presents its own set of challenges. There are new product development issues in a space where the method of delivery has become part of the product. Digital communities present a new marketing opportunity. New pricing strategies become available. This course will help the digitally-empowered marketer plan, budget, and adapt to a new world. (3.6, 0, 3.6)

MC 554
Customer Relationship Management
In a world where it costs five times as much to acquire a new customer as it does to keep an existing relationship, companies are learning that they must manage those current customer relationships in order to survive. Around this insight, a new discipline has emerged, using some of the tools of database management and some of the new tactics of digital communication to reduce attrition, and maximize the lifetime value of a customer. Customer Relationship Management (CRM) is making fundamental changes in the way companies operate. It is a critical point of merger, where e-business becomes a part of all business. This course will engage the student in the diagnosis of CRM issues, the building of CRM plans, the measurement of their effectiveness, and the new tools available to get all these things done economically, in Internet time. (3.6, 0, 3.6)

MC 563
Web Page Design
The content, organization, presentation, and functionality of Web sites are critical to attracting and retaining customers or members of an audience. Subtle issues of design and organization can have profound consequences on a site's ability to persuade, communicate, compete, and close a transaction. Principles of effective site design will be used to evaluate existing sites. An authoring tool, e.g., Dreamweaver or Frontpage, will be used to build a Web site. (3.6, 0, 3.6)

MC 577
The Healthcare Marketplace
This course examines the components and structure of the healthcare market in the United States and the many components of the healthcare delivery system, involving diverse audiences and needs. Students will be exposed to the history, function and basic principles of public health, and the conceptual and organizational aspects of the U.S. health care system in both the public health sector and the private health sector. They will examine the relationships among health services organizations, health professionals and payment mechanisms, and the impact of changes, as well as identify the major trends, participants, issues, and challenges involved in financing health care in the United States. (3.6, 0, 3.6)

MGT 516
Individual Effectiveness
This course is aimed at preparing the student to better cope with and succeed in organizational life by expanding self awareness, improving personal creativity, sharpening logical reasoning and problem solving skills; and by developing the student's ability to collaborate, lead and communicate with others in wide range of settings. The course covers a variety of topics related to individual performance and effectiveness within organizations, but several common themes are: using written tools and instruments to improve self knowledge, becoming more objective in observing and analyzing behavior (one's own and others'), and applying proven tools and techniques to enhance creative and critical thinking. (3.0-0-3.6)

MGT 545
Business Information and Management Control
In this networked world,successful organizations need innovative management control systems to promote agility and learning. The main theme of this course is the Effective Execution of Business Strategy. How are (1) organizations, processes, *projects,* tasks, and business intelligence structured AND (2) people incented to implement the chosen strategy in a dynamic, not static, business environment? What information and metrics will facilitate recognizing potential problems before the impact occur? What management control systems and practices are needed to comply with regulatory requirements, e.g., Sarbanes-Oxley and NYSE? What type of control system fits best with the adopted business strategy? How does information technology facilitate the analysis of business intelligence and the execution of management controls? Cases and computer exercises provide an opportunity to apply the business intelligence and management control concepts discussed. (3.6-0-3.6)

MGT 551
Organization Design and Theory
Develops insight into how organizational structure and culture affect organizational effectiveness and shifting organizational culture values while building skills for analyzing and designing organizational systems. Specific methods of organizational analysis from many perspectives are covered including systems, the learning organization, knowledge-creating organizations, virtual organizations, etc. Prerequisite: MBA 520. (3.6, 0, 3.6)

MGT 553
Organizational Leadership and Management of Change
Prepares managers to influence the human side of developing and implementing changes in organizations. Theory and exercises help managers

understand the socio-technical perspective of change, to see leadership as invoking "followership," to understand their own ability to influence others, and to understand the leadership success of noted leaders from all walks of life. Exercises allow students to apply course concepts to projects in their interest areas—information systems, marketing, etc. Prerequisite: MBA 520. (3.6, 0, 3.6)

MGT 555
Industry Structure and Competitive Strategy
Study of the structure-conduct-performance model of the economy as a basis for determining business strategy. Topics include: the impact of various microeconomic industry structures on the competitive behavior of firms; techniques for predicting the profitability of an industry and specific competitive strategies over time; economics of pricing, capacity, product and process innovation; and integration decisions. Cases and readings. Prerequisite: MBA 520. (3.6, 0, 3.6)

MGT 556
Legal, Ethical, and Political Issues in Business
An exploration of the social foundation of law and ethics and selected topics of law and public policy. The course covers topics in commercial law (traditional and emerging), legal and social control mechanisms of corporations (antitrust, securities, regulation, corporate responsibilities), and classic and emerging legal issues (employment, environmental, and international law). Readings and discussion. (3.6, 0, 3.6)

MGT 557
Management and Development of Human Resources
Covers a breadth of techniques and skills related to management, motivation, and improving the work of others; especially the many issues which are usually handled by human resource departments. These include such legal and policy issues in the employment relationship as recruiting and selection, affirmative action and diversity, labor relations, international considerations, supervising in various industries, performance evaluation, compensation issues, and downsizing and termination management. Prerequisite: MBA 520. (3.6, 0, 3.6)

MGT 565
Project Management
You will study the analytical, computer-based procedural, and behavioral skills for effective project management. Given well-defined project objectives and requirements, you will learn how to create a project team and work breakdown structure, estimate task times and costs, allocate and level resources, prepare visual Gantt and Critical Path and milestone charts, perform risk analysis, manage team motivation and conflicts, assess earned value, and evaluate time and cost deviations with corrective actions. MS Project will be the project management tool. Project management concepts and methods will be applied through exercises and cases. Prerequisites: MBA 520, MBA 540. (3.6-0-3.6)

MGT 585
Integrated Functional Management
A team-based Business Game Simulation designed to integrate functional and analytical concepts and tools within a framework of strategic management. The course offers a second opportunity (in addition to the required MBA 590 Business Policy course) for students to integrate their learning and practice what they have learned in a "near-real" situation. (3.6, 0, 3.6)

MKT 541
Marketing Research
An overview of the marketing research process, the course focuses on basic principles that permit the decision-maker to understand and make better use of research results. Topics covered include problem identification, research and data instrument design, and sampling. Methods for estimating short- and long-term market potential for new and existing products will also be discussed. Prerequisites: MBA 540, MBA 560. (3.6, 0, 3.6)

MKT 544
Strategic Marketing
An analysis of the problems confronting managers in planning, implementing, and controlling marketing programs. Topics include the development and use of models in market selection, new product development and management, pricing, promotion, channels, and distribution decisions. Prerequisite: MBA 560. (3.6, 0, 3.6)

MKT 545
Industrial Marketing
A survey and analysis of how consumer and business-to-business or organizational purchases are made. Topics include: motivation, consumer information processing, values, and perceptions; economic, social, and cultural influences; decision process models for organizational buying; and implications of all these factors for marketing managers. Prerequisite: MBA 560. (3.6, 0, 3.6)

MKT 548
International Marketing
An examination of the role of international marketing in the development of an overall business strategy. Topics include the design of international pricing, promotion, and product strategies. These concepts will be applied to the markets of specific countries, taking into account the cultural and economic environment. Prerequisite: MBA 560. (3.6, 0, 3.6)

MSC 534
Queueing
Basic queueing techniques used in inventory and manufacturing decisions, and single, multiple and tandem service facilities. Poisson and Erlang input, exponential, uniform and arbitrary output, priority discipline. (3.6, 0, 3.6)

MSC 535
Models for Decision-Making
Models for decision analysis in various functional fields including finance, marketing, and operations. Applications include media selection, capital budgeting, portfolio selection, advertising effectiveness, plant location, distribution planning, and production planning. The focus of the course is building models and using software to aid in decision-making. (3.6, 0, 3.6)

MSC 538
Simulation
Generating random variables for discrete, continuous, and joint distributions for simulation applications. Data analysis, validation of techniques, optimizing response functions, and design of experiments. Prerequisite: MSC 570. (3.6, 0, 3.6)

MSC 545
Spreadsheet Modeling
Spreadsheets are a popular model-building environment for managers. Add-ins and enhancements to Excel have made powerful decision-making tools available to the manager. This course covers how to use the spreadsheet to develop and utilize some of these decision-making aids. Visual Basic for Excel allows the nonprogrammer to create modules for functions, subroutines, and procedures. Topics include forecasting (both regression and time series), decision-making under uncertainty and decision trees, using SOLVER for optimization, and probabilistic simulation using @RISK. (3.6, 0, 3.6)

MSC 549
Advanced Spreadsheet Modeling
This course uses the Excel/VBA environment for developing models. Students will develop spreadsheets and write programs for forecasting, financial price simulation, option pricing, and financial statements. Add-ins are used for optimization, simulation, and decision analysis. (3.6, 0, 3.6)

MSC 550
Topics in Quality Management
The understanding, development, and implementation of total quality management systems with a focus on customer satisfaction and economics of quality. Theoretical and empirical research will be the basis of this course. (3.6, 0, 3.6)

MSC 554
Scheduling Theory
This course introduces students to current research in scheduling: scheduling of new systems, including those based on advanced manufacturing technology; and the use of new methods for analyzing scheduling problems, such as generalized networks, artificial intelligence, neural networks, and complexity theory. (3.6, 0, 3.6)

MSC 560
Optimization Techniques I
Optimization techniques, with the primary emphasis on linear programming, and applications interspersed to illustrate the applicability of the optimization techniques. At least two-thirds of the course will be linear programming techniques, including the simplex-method and its variants, interior point algorithms, and duality and sensitivity analysis. Other types of optimization problems will be introduced, including integer linear programming, nonlinear programming, and dynamic programming. (3.6, 0, 3.6)

MSC 562
Optimization Techniques II
The theory and computational methods of nonlinear programming. Convex analysis and unconstrained methods. Kuhn-Tucker theory, saddle points, and duality. Quadratic, linearly constrained, nonlinearly constrained, penalty and barrier methods. Prerequisite: MSC 560. (3.6, 0, 3.6)

MSC 564
Optimization Techniques III
Development of the theory of computational methods of integer programming: cutting plane, branch-and-bound, and Lagrangian relaxation methods. Model formulation with integer variables. Development of the theory and computational methods of dynamic programming. Application of dynamic programming to deterministic and stochastic decision problems. Prerequisite: MSC 560. (3.6, 0, 3.6)

MSC 570
Probability and Statistics
A survey of the fundamentals of statistics and their applications for problem-solving. Topics include probability, univariate and multivariate random variables, estimation, order statistics, and reliability. (3.6, 0, 3.6)

MSC 571
Advanced Data Analysis
Point estimates, confidence intervals, and tests of hypothesis. Design and analysis of experiments. Linear and multiple regression. Nonparametric statistics, Markov chains, and statistical decision theory. (3.6, 0, 3.6)

MSC 573
Time-Series Analysis
This course covers methods of analysis and forecasting of time series, including smoothing and Box-Jenkins techniques, vector autoregression and innovation analysis, and introduces flexible models, including Markov switching models and nonparametric methods. The course will use the Quantitative Research Lab for short projects devoted to applications of these methods. (3.6, 0, 3.6)

MSC 576
Practicum in Teaching and Curriculum Skills
This course enables Ph.D. students to address overall issues of pedagogy, as well as the development of personal classroom skills. The course covers curriculum development, sources of classroom materials, and use of various teaching methods. (1 credit)

MSC 595
Research Seminar

MSC 596
Special Topics Seminar
This course treats a specific topic, varying from quarter to quarter, in which there is particular student and faculty interest. Topics may include quality management, operations management, technology management, or global business and world trade. Prerequisite: Consent of instructor.

MSF 511
Financial Economics I
This course provides a systematic exposition of the primary mathematical methods used in financial economics. Mathematical concepts and methods include logarithmic and exponential functions, algebra, mean-variance analysis, summa-

tions, matrix algebra, differential and integral calculus, and optimization. The course will include a variety of financial applications including compound interest, present and future value, term structure of interest rates, asset pricing, expected return, risk and measures of risk aversion, capital asset pricing model (CAPM), portfolio optimization, expected utility, and consumption capital asset pricing (CCAPM).

MSF 512
Financial Economics II
This course focuses on the macroeconomic influences on financial markets. The course begins with a discussion of consumption, investment, government expenditure and the trade balance using modern business cycle and growth theory. The focus develops the consumption CAPM as the solution to the intertemporal utility maximization problem and the role of macroeconomic factors in the valuation of equity shares. The course also includes a review of economic modeling of the term structure of interest rates and the exchange rate.

MSF 513
Financial Theory
This course introduces the modern theory of mathematical finance, using primarily discrete time models. Topics include single period and multiperiod consumption and investment models, derivatives pricing for non-interest rate and interest rate instruments, and the mathematical frameworks required to develop a coherent pricing theory. These include utility theory, stochastic processes and martingales, stochastic calculus, contingent claims, complete and incomplete securities markets, fair value calculations for derivatives, binomial and Markov models, portfolio analysis, and VAR. The course objective is to provide the student with basic tools to comprehend journal articles on these topics from Financial Analyst's Journal and Journal of Portfolio Management. (Prerequisite: MSF 511)

MSF 521
Financial Modeling I
This course is the first of three subjects that form the Financial Modeling Sequence. It is designed to provide students with the necessary programming skills necessary to create realistic financial models. It is an essential core subject and must be completed in order to obtain the MSF degree. Modeling I focuses on the implementation of financial models in MS Excel using Visual Basic for Application (UBA).

MSF 522
Financial Modeling II
This course extends the financial ideas and programming techniques introduced in the earlier course Financial Modeling I. It is concerned with the ideas, mathematics and programming code behind the construction of derivative financial models. In order to master this course it will be necessary to understand such ideas as risk-neutral pricing, stochastic calculus, finite difference schemes, binomial and trinomial trees, lattice models and Monte Carlo simulation and their application to the pricing of exotic options. (Prerequisites: MSF 521).

MSF 523
Financial Modeling III
This course extends the financial ideas and programming techniques introduced in the earlier course Financial Modeling II. It describes the ideas, mathematics and programming code behind the construction of derivative interest rate models. Whereas the preceding course focused on equity models and their options while assuming that the interest rate was fixed, this course will relax that assumption to include the possibility of time varying interest rates or the "term structure of interest rates". In order to master this course it will be necessary to comprehend such ideas as portfolio replication, stochastic calculus, implied binomial and trinomial trees, forward rate curves and popular interest rate models like Vasicek, Ho and Lee and HJM. (Prerequisites: MSF 521 and MSF 522)

MSF 532
Corporate Finance
This course is an advanced introduction to modern corporate finance. Topics include cash flow forecasting, optimal dividend policies, mergers and acquisitions, structured finance, capital at risk, and the risk of adjusted return on capital. The philosophical foundation of the course is the concept of shareholder value added. Students will learn how financial decisions can contribute to the value of a modern corporation.

MSF 533
Marketing of Financial Products
Institutional financial products are the final manifestation of an evolutionary process that typically begins with advances in academic research. Examples include the development of index funds as a response to the concept of efficient markets, the development of structured financial products as a response to the concept of arbitrage pricing theory. This course explores the evolutionary process through a series of case studies focusing on companies that have introduced revolutionary financial products.

MSF 541
Valuation and Portfolio Management
The course is a survey of asset pricing theory. The fundamentals of bond and option pricing are covered as well as the CAPM, APT and the Fama French models. Excel spreadsheet modeling is used to illustrate and understand the concepts of Markowitz's Mean Variance Optimization, equity valuation, option pricing, and utility theory.

MSF 542
Structured Fixed Income Portfolios
Fixed income instruments differ from equities because the cash flows from fixed income instruments are known in the absence of issuer default. As a result, fixed income portfolios tend to have a longer time horizon, tend to be more highly leveraged, and tend to use derivatives for hedging relative to equities. This course develops portfolio management procedures for fixed income portfolios. This course

begins at the short end of the curve with multi-currency portfolios of short term non-deliverable swaps. The course then proceeds out the maturity spectrum to consider investment strategies based upon the shape of the yield curve. Concepts developed in the course will be tested using a simulated trading environment.

MSF 543
Quantitative Investment Strategies
This course develops the primary quantitative tools used in the portfolio selection process. The applied focus of the course centers on global asset allocation for equities, bonds, and currencies. The course covers the estimation of efficient portfolios, factor models, forecasting models, and risk analysis. (3.6, 0, 3.6)

MSF 551
Futures, Options and OTC Derivatives
This course provides the foundation for understanding the price and risk management of derivative securities. The course starts with simple derivatives, e.g., forwards and futures, and develops the concept of arbitrage-free pricing and hedging. Based upon the work of Black, Scholes, and Merton, the course extends their pricing model through the use of lattices, Monte Carlo simulation methods, and more advanced strategies. Mathematical tools in stochastic processes are gradually introduced throughout the course. Particular emphasis is given to the pricing of interest rate derivatives, e.g., FRAs, swaps, bond options, caps, collars, and floors. (Prerequisites: Background in calculus, probability and statistics, and knowledge of Excel spreadsheets.)

MSF 552
Market Risk Management
This course introduces the importance of financial risk management by developing practical risk measurement tools. The risk measurement aspect of the course begins with the development of the Value-at-Risk (VaR) methodology for financial instruments traded in open markets including equities, bonds, foreign currencies and their derivatives. The course develops analytic VaR models for instruments with non-linear payoffs and non-normal distributions and it also develops simulation methodologies for risk analysis. Statistical tools in volatility forecasting, tail events, and expected shortfall are introduced as appropriate. The emphasis of the course is on market risk, but in addition to the traditional analysis of trading rooms, the course also considers regulatory and compliance risk, corporate risk and risk analysis for investment managers. (Prerequisites: MSF 551 and Excel programming experience.)

MSF 553
Enterprise Risk Management
This course follows up on MSF 552 (Market Risk Management). It focuses on the other two main silos of risk in the financial industry, namely, credit risk and operational risk. The course will also discuss asset and liability management, interest risk management, integration of credit risk and market risk, regulatory and compliance issues, and performance measurement and capital management. The quantitative aspects of the course include: volatility and correlation modeling, Monte Carlo simulation, stress-testing and scenarios analysis, extreme and tail events modeling. (Prerequisites: MSF 521 and MSF 522)

MSF 561
Financial Time Series Analysis
This course develops a portfolio of techniques for the analysis of financial time series. Distribution theory covers the normal, Student T, Chisquared, and mixture of normals models. Technical analysis covers a variety of trading rules, including filters, moving averages, channels, and other systems. The first two topics are then combined into an analysis of non-linear time series models for the mean. The course concludes with a review of volatility models, including GARCH, E-Garch, and stochastic volatility models. Prerequisite: MSF 562. (3.6, 0, 3.6)

MSF 562
Econometric Analysis
This course presents the major conclusions of the econometric techniques used in finance. Ordinary least squares, maximum likelihood, generalized method of moments, and simulation methods are covered. These tools are presented through computer simulation of the various models, followed by detailed analysis of the distributions of estimators. Hypothesis testing is covered in detail. Particular attention is placed on the properties of various estimators when model assumptions do not hold. For students who qualify, a final project applying econometrics to a financial modeling problem may be chosen. Students not familiar with matrix algebra and elementary statistics should plan to make up the deficit early in the course. Additional lectures will be provided for these students.

MSF 563
Bayesian Inference in Econometrics
Most statistical applications in finance require that the forecasting models be revised in response to the arrival of new information. This course develops the Dynamic Linear Model (DLM) as an updating model based upon Bayesian decision theory. Applications of the DLM, including regressions, autoregressions, and exponential trend models will be covered. Special emphasis will be given to the development of intervention and monitoring systems and the use of simulation methodologies. Students not familiar with matrix algebra and elementary statistics should plan to make up the deficit early in the course. Additional lectures will be provided for these students. (Prerequisite: MSF 562, however, MSF 561 is not required)

MSF 571
Computational Finance I
This course is the first of three subjects which form the Computational Finance Sequence. It is designed to provide students with the necessary mathematical and programming skills necessary to simulate financial models on the modern computational environment. It is a companion

series to the Financial Modeling sequence and extends some of its ideas for the computational evaluation of derivative instruments. The ten-week course describes the concepts, mathematics and Mathematica code behind the construction of partial differential equations required for the evaluation of derivative financial models. In order to master this course it will be necessary to learn to program in the symbolic programming language Mathematica. It will also be necessary to comprehend such ideas as portfolio replication, risk-neutral pricing, stochastic calculus, finite difference schemes, as well as binomial and trinomial trees. This course assumes some prior financial and computational training, as well as familiarity with the program Mathematica. (Prerequisite: MSF 521).

MSF 572
Computational Finance II
This course is the second in the Computational Finance Sequence. The ten-week course follows Computational Finance I, a necessary prerequisite, and closely follows the material met in the earlier course. It describes the concepts, mathematics and Mathematica code behind the construction of partial differential equations required for the evaluation of complex derivative financial models. In order to master this course it will be necessary to program in the symbolic programming language Mathematica. It will also be necessary to comprehend such ideas as stochastic calculus, finite difference schemes, binomial and trinomial trees, supersymmetric trees, Monte Carlo simulation, Stochastic Interest Rate models, elasticity models and the construction of yield curves. (Prerequisite: MSF 571)

MSF 573
Computational Finance III
This course is the final subject in the Computational Finance Sequence. The course is built around the numerical solution of SDEs using the computer. It describes the mathematics and algorithms behind the construction of Stochastic Differential Equations. In order to master this course it will be necessary to comprehend such ideas as stochastic processes, power series expansions, stochastic Taylor series expansions, Ito stochastic calculus, Stratanovich stochastic calculus, ordinary and partial differential equations and computer programming. All of the above topics will be studied using the programming language Mathematica. It will be shown that Stochastic Differential Equations (SDEs) are capable of being simulated on a computer and that most financial problems are expressible in terms of such SDEs and hence can also be simulated computationally. (Prerequisite: MSF 521)

MSF 596
Research Seminar in Finance
The primary focus of this advanced seminar course is on the analysis of credit risk in the financial industry. Credit risk management will cover both corporate banking and investment banking. The course will also review industry applications of credit risk methodology through a review of technical documents and research papers. The course will discuss important and timely classes of credit risk models, e.g., Merton's structural form, reduced form, actuarial, and scoring, in addition to rating techniques provided by the rating agencies. In addition, regulatory guidance and banks' own development in internal ratings systems and credit risk models (expected loss, unexpected loss, default correlation, and loss distributions) will be examined in depth. Students are expected to present recent research and classic papers in the field. (Prerequisites: MSF 521, MSF 551 either Acct 501 or MSF 532 and strong quantitative and programming skills. MSF 552 is strongly recommended.)

OM 510
Operating Systems Design and Management
A survey of the concepts and techniques of design and management of enterprise operating systems. The course includes studies of different topologies for delivery of products and services and of the underlying infrastructure, such as MRP and scheduling and control mechanisms. Performance measures of operating systems, such as flow time, service level, and asset utilization are studied to understand their impact on competitive advantage. Prerequisite: MBA 570 or consent of instructor. (3.6, 0, 3.6)

OM 522
Management of Manufacturing and Service Enterprises
An exploration of contemporary policy, strategy, and management issues in manufacturing and service organizations. The course will focus on an integrated "product delivery" system in the marketplace: how to formulate policy and develop strategy for it and how to design it. The course includes studies of different topologies for delivery of products and services, and of their underlying infrastructure. (3.6, 0, 3.6)

OM 530
Inventory, Logistics and Supply Chain
Forecasting, order size, safety stock, service levels, and SKU's. The production plan, master production schedules, materials requirement planning, capacity planning, and just-in-time. Warehouse planning and management, distribution, transportation, packaging and third party logistics. Costs, design, and management on the inventory flow

between suppliers, manufacturers, warehouses, distribution centers, stores, and customers. Prerequisite: MBA 540, MBA 570. (3.6, 0, 3.6)

QLM 512
Quality Management
This course integrates principles and practices of quality management leading to business excellence. The course focus is on customer delight, employee satisfaction, process excellence, and operational performance. Students will learn about world-class performance from the best-in-class companies. The course should help leaders and general managers to forge ahead of competitors in the global marketplace. Readings, case studies, and final project. Prerequisite: MBA 540. (3.6, 0, 3.6)

TM 510
Strategic Management of Technology and Innovation
A systematic examination of issues relating to the general management of innovation, R&D, and new product-process design and development. Focuses on strategic, behavioral, inter-functional (team) and international considerations. Topics include technology as a source of competitive advantage, promoting creativity in the organization, management of cross-functional activities, technology transfer, entrepreneurship, and project management for accelerating commercial introduction. Readings and case studies. Prerequisite: Core courses or instructor's consent. (3.6, 0, 3.6)