

STUART SCHOOL OF BUSINESS

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M.S. in Finance
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M.S. in Management Science
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M.S. in Marketing Analytics
M. Krishna Erramilli

Ph.D. in Management Science
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Faculty with Research Interests

For more information regarding faculty visit the Stuart School of Business website.

Business at Illinois Institute of Technology

Stuart School of Business provides intellectually rigorous business and management education at all levels, from baccalaureate to doctoral. The Stuart School is committed to creating well-rounded students who are equipped with expert academic knowledge, and also possess the interpersonal skills and professional experiences that are critical to academic and career success. The school is dedicated to continuing to offer opportunities to Stuart's diverse faculty, staff, student, and community populations—not only in the Chicago area but also globally. Our mission states: The Stuart School combines rigorous, relevant, and interdisciplinary academic and practice-oriented research and education. Our approach results in thought leadership and advances students' careers in technologically-oriented private and public sector industries worldwide.

Established in 1969 with a gift from Illinois Institute of Technology alumnus and Chicago financier Harold Leonard Stuart, the Stuart School of Business offers a wide range of challenging business and management programs taught from a practical perspective, with an emphasis on analytic skills and the relation between business, management, and technology. AACSB-accredited programs include the M.B.A., Ph.D., several industry-responsive master's programs, and one bachelor of science in business program. Stuart also offers a Master of Public Administration (M.P.A.) degree and co-terminal programs with various undergraduate majors at Illinois Tech.

Stuart faculty, in addition to their scholarly and teaching activities, 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. Many Stuart students are also working professionals from Chicago's preeminent business, public, and finance communities.

Academic support and career development are very important at Stuart. The business school provides academic support through the Office of Academic Affairs and Advising, enables students to find professional success through the Stuart Career Management Center, and provides career readiness training through Stuart's unique co-curricular requirements, the Advancing Career and Education (ACE) workplace immersion program, and the Professional Communication Advancement (PCA) program.

Stuart operates on a semester academic calendar consisting of two semesters beginning in August and January and summer sessions that enroll between May and August. Because many Stuart students work full time, graduate classes are regularly offered on weekday evenings along with some daytime courses.

Research at Stuart

Faculty at the Stuart School of Business engage in rigorous, relevant, and interdisciplinary academic and practice-oriented research. Focus areas include high frequency finance, sustainable enterprise, management science, and marketing analytics. Stuart's research centers engage with industry partners on research projects and programming to meet the needs of the next economy. For more information about research at Stuart School of Business, contact Associate Dean Siva Balasubramanian at sivakbalas@stuart.iit.edu.

The Center for Corporate Performance

The Center for Corporate Performance (CCP) was formed in order to take a "Big Data" approach to understanding the relationships between corporate organization structure, governance policies, and economic and financial performance metrics. CCP's goal is to bridge the gap between research in management, organization, and policy and research in economics and finance. CCP also hopes to bridge the gap between academic research and professional practice, and to be able to speak to both academics and CEO's in a language that both can understand.

The Center for Financial Innovation

Financial innovation has been vigorously debated since the financial crisis of 2008. The Center for Financial Innovation (CFI) takes a comprehensive and objective look at the history of financial innovation, providing a central location for scholars, practitioners, media, and the general public to explore the many innovations that serve as the foundation for our global financial systems. The center will provide data, video interviews, and an Encyclopedia of Financial Innovation through the center's website.

Formerly named the Center for Financial Markets, and established in 1998 as the Center for Law and Financial Markets, the CFI has evolved from the vision of John (Jack) Wing, a financial and educational innovator. Jack Wing served as chairman of Chicago Corp., of ABN AMRO Inc., trustee of Illinois Institute of Technology, and the first director of the Center for Law and Financial Markets.

The Center for Strategic Finance

The Center for Strategic Finance focuses on strategy in financial markets as a new discipline, building upon theoretical concepts drawn from traditional finance, strategic management, game theory, and computer science. CSF fellows are asking new questions about financial markets in light of the quantification (and automation) of trading, execution, and risk management strategies. They are developing new theories that are shaping the future of finance. There is no better place to study strategic finance than Chicago, which is a primary location for the research and development of strategies in financial markets.

Dual Degree Programs

Several dual-degree programs are offered, including programs in which students are eligible to earn a law degree from Chicago-Kent College of Law or a Master of Design from the Institute of Design. 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 the program. 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 or GRE scores are required by the Institute of Design and 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.

All graduate programs in business are subject to continuous improvements including dual-degree programs. Prospective students are urged to refer to the Stuart home page for the most current description of all programs and degree requirements.

M.B.A./M.P.A.

The Master of Business Administration/Master of Public Administration program is ideal for students who want to work in both public and private sector management, and/or who expect to move between business and government positions in their careers. The curriculum consists of twelve M.B.A. and nine M.P.A. courses, reducing degree requirements by six courses.

M.B.A./M.S. (Choose from M.S. Environmental Management and Sustainability, M.S. Finance, M.S. Marketing Analytics)

Combine your Master of Business Administration with one of our specialized M.S. degree programs in environmental management and sustainability, finance, or marketing analytics. Dual enrollment can reduce degree requirements by up to six courses.

M.B.A./J.D.

The Master of Business Administration/Juris Doctorate program offers a competitive advantage for legal professionals who need a solid understanding of business practices, especially for corporate attorneys or legal/management consultants. Dual enrollment can reduce degree requirements by as many as ten courses.

M.P.A./J.D.

The Master of Public Administration/Juris Doctorate degree is particularly valuable for administrators who need a greater understanding of legislation, rules, and judicial decisions. Dual enrollment can reduce degree requirements by up to five courses.

M.S. Environmental Management and Sustainability/J.D.

The Master of Science in Environmental Management and Sustainability/Juris Doctorate degree is designed to prepare students for careers in the legal profession with emphasis on environmental issues and sustainable business practices. Dual enrollment can reduce degree requirements by up to nine courses.

M.S. Finance/J.D.

The Master of Science in Finance/Juris Doctorate degree is designed to prepare students for careers in the legal profession with emphasis on finance. Dual enrollment can reduce degree requirements by up to nine courses.

M.B.A./M.Des.

The Master of Business Administration/Master of Design degree combines advanced methods for exploring new theories of design with an understanding of the business applications of technology and analytic methods. Dual enrollment can reduce degree requirements by up to nine courses.

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 complete 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 semester. 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), PTE (Pearson Test of English), or IELTS (International English Language Testing System) scores, unless they received an undergraduate or graduate degree from an accredited U.S. institution. English language proficiency assessment is required of all international students. Assessment results will determine which, if any, professional communication advancement courses will be required in addition to the main academic program courses for graduation.

Admission to the Master of Public Administration degree requires an essay, two letters of recommendation, official transcripts and a summary of work experience if applicable. GRE or GMAT scores are not required, but may be submitted. The same requirements as for business programs apply for applicants from non-English speaking countries for TOEFL, PTE, or IELTS.

Applicants to the Ph.D. in Management Science must have a competitive score on the GMAT or GRE (316 or above for GRE and 650 or above for GMAT).

The following are additional requirements for each of the four tracks within the Ph.D. in Management Science:

1. M-track with Analytics concentration: a graduate degree considered equivalent to the M.S. in Marketing Analytics degree offered at the Stuart School
2. M-track with Quantitative Finance concentration: a graduate degree considered equivalent to the M.S. in Finance degree offered at the Stuart School
3. UG-track with Analytics or Quantitative Finance concentrations: an undergraduate degree with an outstanding record of academic accomplishments

Refer to admission.iit.edu/graduate for complete details.

Degrees Offered

- Master of Business Administration (M.B.A.)
- Master of Public Administration
- Master of Technological Entrepreneurship
- Master of Science in Environmental Management and Sustainability
- Master of Science in Finance
- Master of Science in Management Science
- Master of Science in Marketing Analytics
- Doctor of Philosophy in Management Science

Dual Degree Programs

- M.B.A./Master of Public Administration
- M.B.A./M.S. in Environmental Management and Sustainability
- M.B.A./M.S. in Finance
- M.B.A./M.S. in Marketing Analytics

With the Institute of Design

- Master of Design/Master of Business Administration

With the Chicago-Kent College of Law

- M.B.A./J.D.
- Master of Public Administration/J.D.
- M.S. in Environmental Management and Sustainability/J.D.
- M.S. in Finance/J.D.

Joint Degree Program

- Master of Mathematical Finance (with Applied Mathematics)

Co-Terminal Options

Bachelor of Science/Master of Public Administration (B.S./M.P.A.)

The B.S./M.P.A. co-terminal degree program allows students to complete both an undergraduate business administration (B.S.B.A.) degree and a graduate public administration degree in five years. This approach enables students to gain greater knowledge in specialized areas while completing fewer credit hours, with better scheduling flexibility than completing the two degrees separately.

Application to and acceptance into the M.P.A. program is open to students who have attained at least junior standing in the B.S. program. Students must maintain a combined 3.0 GPA to be admitted to and remain in a co-terminal degree program.

The application for the B.S./M.P.A. co-terminal program is accessible through the MyIIT portal (my.iit.edu). Under the Academics tab, locate the Undergraduate Academic Affairs channel and then access the link for the co-terminal application.

Other Co-Terminal Programs

- Bachelor of Science in Applied Mathematics/Master of Mathematical Finance
- Bachelor of Science in Business Administration/Master of Science in Finance
- Bachelor of Science in Business Administration/Master of Science in Marketing Analytics
- Bachelor of Science in Chemistry/Master of Science in Environmental Management and Sustainability
- Bachelor of Science in Engineering Management/Master of Public Administration
- Bachelor of Science in Social and Economic Development/Master of Public Administration

Graduate Certificate Programs

- Compliance and Pollution Prevention
- Corporate Finance¹
- Economic Development and Social Entrepreneurship
- Entrepreneurial Finance¹
- Financial Economics¹
- Financial Modeling¹
- Financial Toolbox
- Fundamentals of Finance
- Innovation and Emerging Enterprises
- Investments¹
- Marketing Management
- Nonprofit and Mission-Driven Management
- Public Management
- Risk Management¹
- Security, Safety, and Risk Management
- Sustainable Enterprise
- Trading¹

¹ Post-graduate

Course Descriptions

BUS 510

Fundamentals of Innovative Business

This is an introductory course on the fundamentals of doing business in an increasingly interconnected and hypercompetitive world where rapid information flows, environmental degradation, and societal challenges (e.g., poverty and ethics) can be viewed as both threats and opportunities facing for-profit enterprises. Students will learn that sustainable businesses are also innovative businesses and that sustainability often drives innovation. Students will not only be exposed to the basics of starting, growing, and running a profitable business but also learn how to do so in an environmentally and socially sustainable fashion. They will learn how companies create and capture value and how to analyze the business environment, industry, competitors, and customers. They will be introduced to corporate, business, and functional strategy and learn about different business functions (accounting, finance, operations, marketing, and information management). Students will be introduced to critical challenges of global sustainability and will explore through case studies how leading companies are implementing triple bottom line accounting, sustainable growth, and stakeholder value creation strategies. Finally, they will develop an innovative business idea to start a brand new company that has sustainable growth in its mission statement.

Lecture: 3 Lab: 0 Credits: 3

BUS 550

Business Statistics

This course covers statistics, optimization, and simulation tools that are critical for managers in enabling their firms to have a competitive advantage. The course covers probability, sampling, estimation, hypothesis testing, linear regression, goodness-of-fit tests, linear optimization models, nonlinear optimization models, and managerial decision-making under uncertainty. The models address problems in finance, marketing, and operations and include applications such as media selection, capital budgeting, portfolio selection, advertising effectiveness, facility location, distribution planning, and production planning. The focus of the course is on using business analytics to build models and using software to aid in decision-making.

Lecture: 3 Lab: 0 Credits: 3

BUS 590

Business Strategy Capstone Project

This is a forward-looking and experiential course that helps students understand how companies could successfully compete in the "next economy" through innovation and integrative problem-solving. It aims to integrate all of the key lessons from the M. B. A., M. S. EMS, and M. S. MAC programs to develop innovative solutions to solve real-world problems that actual companies face. The course is heavily project-based. Cross-disciplinary teams of students will act as management consultants to companies to identify and solve problems taking a holistic and integrative perspective. There will be lectures on various aspects of business strategy, sustainability, systems thinking, execution, innovation, and team effectiveness from faculty members and industry experts. Student teams will present their findings to fellow students, faculty members, and client companies. Prerequisite: Students should have successfully completed all of their respective program core courses.

Prerequisite(s): MBA 505 with min. grade of C and MBA 513 with min. grade of C and MBA 509 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

BUS 598

Graduate Workplace Immersion

This course provides graduate students with a supervised, immersive, hands-on experience in a US workplace where they will gain exposure to an industry and practical experience with projects related to their interests. Students will work for a minimum of eight weeks, 32 hours/week. Students will be matched with an organization according to their area of study, related experience, and/or relevant skillset.

Lecture: 0 Lab: 6 Credits: 3

EMS 501

Environmental Policy

Environmental policies, the main tools that governments use to achieve environmental goals, cut across a wide swath of pollutants, industries, academic theory, scientific evidence, politics, and stakeholders. Environmental policies affect the daily activities of every citizen and every business. Governments use environmental policy to protect their citizens' health, develop industries, preserve resources, increase national security, and for hundreds of other goals. This course introduces students to the major rationales for government intervention in environmental affairs, the academic theories on which these interventions are based, the variety of policy approaches that various levels of governments often use to address environmental issues, the political processes involved in the environmental policymaking process, the tools that can be used to evaluate the effectiveness and tradeoffs of policy alternatives, and how these policies may affect government and business competitiveness.

Lecture: 3 Lab: 0 Credits: 3

EMS 502**Environmental Law**

In this course, we will study major U. S. environmental laws which also became the models for environmental laws for many other nations. We will become acquainted with the most important requirements of these laws and explore how they are administered in practice. Using case studies, we will discuss the rights and responsibilities of regulators, regulated entities, and members of the public under these laws. Finally, we will examine how these laws have adapted to address new challenges like global climate change.

Lecture: 3 Lab: 0 Credits: 3

EMS 503**Environmental Pollution Control**

This course examines interactions between economic growth and the environment (implications of environmental externalities) and the application of environmental-economic models and technological innovations for managing environmental pollution resulting from economic development activities. Tools and techniques specific for design of environmental management systems are discussed while emphasizing on the importance of analytic tools for proper process mapping, I/O analysis, data collection/analysis, data interpretation, and pollution mapping/reporting. The importance of technological innovations and entrepreneurial activities such as design of companies within companies (CWC) is presented for sustainable design of environmental pollution prevention/control strategies and policies in the areas of solid waste, water/wastewater, air pollution (both particulate and gases/GHG) management, and climate change. This course emphasizes on the importance of technological innovations, process mapping, and numerical exercises for broadening the insights needed to permit implementation of pollution abatement and control strategies for organizational sustainability.

Lecture: 3 Lab: 0 Credits: 3

EMS 504**Industrial Ecology**

This course introduces students to the emerging field of industrial ecology and examines how this systems-based approach can be used to move society toward a more sustainable future. Industrial ecology is an interdisciplinary field involving technology (science and engineering), public policy, business administration, and, increasingly, the social sciences. The course introduces strategies and tools such as material and energy flow analysis, life cycle assessment, design for the environment, extended producer responsibility, and industrial symbiosis. Both individual assignments and team projects are a significant part of the learning experience in this course.

Lecture: 3 Lab: 0 Credits: 3

EMS 505**Environmental Economics and Finance**

The emerging field of environmental finance involves the art and science of using economic incentives, financial tools and market mechanisms to achieve desired environmental outcomes. This course illuminates the role economic theory and, more broadly, economic thinking can play in informing and improving environmental policy. Economics is central to understanding why environmental problems arise and how and why to address them. An understanding of markets – why they work, when they fail, and what lessons they offer for the design of environmental policies and the management of natural resources – is central to an understanding of environmental issues. But even before we start thinking about how markets work, it is useful to begin with a more basic question: What is environmental economics? The historical evolution and current developments of market-based mechanisms to address environmental issues will be analyzed. Lessons from environmental markets for acid rain and domestic and international greenhouse gas emissions will be discussed at length. Other environmental markets (smog, renewable energy, water, sustainability indices, and biodiversity) will also be covered.

Lecture: 3 Lab: 0 Credits: 3

EMS 511**Solid and Hazardous Waste Management**

The aim of the course is to teach the modern multi-faceted approach of the management of solid and hazardous waste. At the conclusion of class, students should be able to suggest options for waste reduction at source so as to reduce quantities of waste generated, have an array of options to turn waste into economic goods, be able to suggest prevention, treatment, and disposal methods for waste from which the value has been taken out, and have a general feeling for financial aspects in solid and hazardous waste management as well as be able to distinguish the key players in the solid waste field.

Lecture: 3 Lab: 0 Credits: 3

EMS 512**Environmental Risk Assessment**

This course recognizes the necessity for design of strategic management strategies that can create balance between societal welfare and successes of the organizations. Focusing on the design of CSR strategies, this course evaluates tools and techniques applicable to addressing both the positive and negative impacts of business activities on organizations' internal and external stakeholders including, but not limited to, those associated with environmental, occupational, and ecological risks. While analyzing management tools specific to inducing social responsibility throughout the organization, course emphasizes on the alignment between strategic management of employees and community welfare and organizations' business objectives and performance. The need for developing a business case for CSR is highlighted in order to evaluate potential impacts of CSR before investing capitals or making any business decisions. Utilizing specific reporting requirements, course emphasizes the importance of proper reporting and communication of CSR activities and impacts on organizations performance to capital markets, shareholders, and other stakeholders.

Lecture: 3 Lab: 0 Credits: 3

EMS 513**Environmental Economics and Climate Change**

An overview of the modeling market process is provided focusing on externalities, environmental problems, and environmental quality. Economic solutions to environmental problems are discussed using a market approach which includes modeling emission charges, modeling a product charge, modeling per unit subsidy on pollution reduction, and modeling pollution permit trading systems and practice. The course examines institutional economic solutions to address environmental problems such as climate change, global warming, and water scarcity.

Lecture: 3 Lab: 0 Credits: 3

EMS 529**Social Entrepreneurship**

This course gives students a practical introduction to the exciting and rapidly growing field of social entrepreneurship. The course will begin by introducing students to major social and environmental challenges around the world by highlighting both local and international social ventures. It will then turn to key concepts regarding social ventures including entrepreneurship, organizational structures (for profit, non profit, and hybrid), financing, marketing, and performance assessment (economic, social, and environmental impact). We will also examine the challenges that are faced in creating and operating social enterprises in different parts of the world. The course includes guest lectures by social entrepreneurs working in different areas (such as health, education, and environment). Students will gain hands-on experience by either developing a business plan for a social enterprise to address a specific real world problem or assisting an existing social venture to improve their impact.

Lecture: 3 Lab: 0 Credits: 3

EMS 532**Environmental and Energy Law Clinic**

The Environmental and Energy Law Clinic offers a clinical opportunity for students in Stuart's EMS Program. It is also a part of the legal practice of the Chicago Legal Clinic, Inc. Because it is a clinical experience, students will have obligations different from those in most classes. Most important from a professional perspective, clinic cases are professional obligations of the Chicago Legal Clinic, which represents the community organizations for which students are working. Therefore, you have an ethical responsibility to third parties to produce high-quality, timely work product beyond the normal expectations that go along with completing work for a class.

Lecture: 3 Lab: 0 Credits: 3

EMS 541**Sustainable Energy Systems**

This course attempts to identify and evaluate issues and benefits of industrial sustainable transitions and their relations to the flow of energy and money through the economy. The importance of the energy and resources supplied to the economy by energy transformation systems are presented while considering management of the environmental externalities of energy use bound by technological and resource constraints. Development of sustainable energy systems, considerations of the alternative energy production to substitute for fossil fuels, and evaluations of the end use and the upstream effects of the energy demands are considered while supporting the notion of transitional engineering for sustainability.

Lecture: 3 Lab: 0 Credits: 3

EMS 542**Economics of Energy Systems**

This course addresses the finance and economics of energy and covers the principles and tools necessary to conduct sound decision-making and analysis. It will guide students to achieve a strong foundation in leading best practices that apply to the field of energy finance and economics. New energy markets are developing, and environmental regulation is targeting the energy sectors. As a result, it is critical to understand the fundamentals of how these markets operate so that optimal energy policy can be designed. The course is designed into the following sections: an overview of energy finance and economics; financial and economic analysis in the energy industry; and energy risk management and related topics.

Lecture: 3 Lab: 0 Credits: 3

EMS 543**Environmental Compliance and Regulation**

This course is designed to give students a detailed understanding of the requirements and practices involved in carrying out a successful, long term environmental compliance program for industrial and commercial facilities. It builds on students' basic understanding of the underpinning environmental statutes and regulations.

Lecture: 3 Lab: 0 Credits: 3

EMS 550**Business Analytics**

This course covers statistics tools that are critical for managers in enabling their firms to have a competitive advantage. The course includes descriptive statistics, probability, sampling, estimation, hypothesis testing, linear regression, ANOVA, time-series, and goodness-of-fit tests. The models address problems in a variety of business functional areas and business processes. The focus of the course is on using business analytics to build models and using software to aid in decision-making.

Lecture: 3 Lab: 0 Credits: 3

EMS 590**Business Innovation in the Next Economy**

This is the capstone course for the EMS Program. The goal of the course is to help future senior executives understand how firms compete in a global marketplace and society and how they make money by creating sustainable competitive advantage. Essentially, this involves creating an alignment or fit between the organization and trends in the next economy/marketplace, the definition and strategy of the firm, and the firm's organizational structure. We will refer to this as the business model which both tells the story of the business and analyze the numbers to show that the story can make a profit. The course will emphasize an integrated view of the firm and the connections between and among the various functions and levels of activity in the firm as well as its relationships and interactions with other players including rivals, suppliers, customers, regulators, and the public. Most cases will take the point of view from the top management/CEO of the firm, but it is the behavior of the firm that we are interested in.

Lecture: 3 Lab: 0 Credits: 3

EMS 595**Special Topics in Environmental Management and Sustainability**

This course is a client-focused, project-based course in which students apply the knowledge and skills they have acquired throughout the program by working on projects related to the sustainability issues facing the client organization.

Lecture: 3 Lab: 0 Credits: 3

MAX 501**Digital Marketing**

This course analyzes competitors, industries, and customers in the emerging global business environment. Understanding the demographics and psychographics of target audiences is essential to an effective marketing communication strategy. From data to information to insightful strategic marketing, this course covers what's important to know to make more effective marketing decisions. Social, cultural, psychological, and attitudinal factors are explored with particular attention to motivation, how attitudes are shaped and altered, how information is processed, and the role of learning in the formation of purchasing decisions. Theories and models of consumer behavior are examined to develop incisive insight into consumer behavior that can build strong brands. In addition to consumer behavior, the course also covers tools and techniques to identify and analyze competitors and their strengths and weaknesses. Students will also learn a framework to analyze the relative attractiveness of industries and the techniques to analyze the threats and opportunities in the macro environment.

Lecture: 3 Lab: 0 Credits: 3

MAX 502**Analytics for Decision Making**

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.

Lecture: 3 Lab: 0 Credits: 3

MAX 503**Marketing Research and Engineering**

The course is roughly divided into thirds which track the standard market research process: define the problem and design a research plan; develop appropriate primary research tools (primarily survey design and implementation); and execute an analysis and presentation. Marketing engineering focuses on specific data-driven marketing tools, regression, cluster analysis, conjoint, etc., and their application to specific marketing problems (segmentation and targeting, new product design, and forecasting). The market research process will be taught backwards from analysis to data acquisition with the aim that students will have a working understanding of their analytical goals by the time they begin their projects and can therefore establish sensible research objectives with an eye to expected use for the data.

Prerequisite(s): MAX 501 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MAX 504**Marketing Strategy**

This course provides an introduction to the practice and strategy of marketing. Marketing activities are those processes and functions that enable managers and policy-makers to identify and serve the values and needs of a customer given the capacities of the company, activities of competitors, and inherent constraints in the business environment. Marketers typically refer to these concepts as the "four C's." Based on their understanding of the "four C's," students will then learn how to implement strategy by applying the levers of the marketing mix. These elements are known as the four P's (product, price, place/channels of distribution, and promotion). The treatment of marketing constraints and marketing mix will be motivated by essential foundations from economics, sociology, and consumer behavior. Over the course of the semester, students are expected to transition from thinking about these concepts in isolation to a dynamic, integrative framework. This process includes using the marketing strategy framework to assess business and policy problems from a "multiple objective" perspective: that is, the student will be asked to think about how marketing activities along with those of competitors and collaborators will affect the profitability, sustainability, social, and ethical standing of the firm. The synthesis of these concepts will be carried out through the use of case studies, problem sets, classroom lectures, discussions, and a field project. There will also be a midterm and final exam. The pedagogical style of the course emphasizes the students' role in applying the concepts discussed in the lectures to the situations at hand. The role of the instructor is to provide tools to structure thinking and to stimulate and facilitate analysis of the cases.

Prerequisite(s): MAX 501 with min. grade of C and BUS 510 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MAX 505**Strategic Marketing Management**

In this course, we will emphasize both marketing strategy formulation and execution and the management of the marketing function. This includes the integration of marketing mix decisions, the longer-term effects of marketing mix decisions, and changes in the mix over time. For example: "Price" becomes "Price Policy", value-in-use, and price discrimination; "Product" becomes product line breadth and variety and product life cycle choices; "Place" becomes the design and control of single or multiple channels of distribution; and "Promotion" becomes communications, customer loyalty, and brand equity. The course will emphasize segmentation of the market, positioning the marketing mix to meet the needs of the market segment, sustaining an 'integrated' marketing mix over the product life cycle, and organizing the 'Strategic Business Unit' to implement the strategy. In addition to the development of a marketing strategy that 'positions' the product/service to the needs of one or more target markets (segmentation), the execution of a marketing strategy will require a marketing plan that includes the economic and financial analysis of the costs and potential profits of the strategy and an implementation plan including an organizational structure. This will often be an iterative process to find an optimal combination of costs and pricing and volume to maximize profits. This course will use readings, simulations, and cases for about half its content. The other half of the course will be a team consulting project for an external client.

Prerequisite(s): MAX 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MAX 506**Database Design and SQL**

This course covers the fundamentals of relational databases including its design and provides an in-depth coverage of SQL which is the de-facto language used to manipulate relational databases. This course places emphasis on understanding the concepts and principles of both relational database design and SQL in a platform/software neutral manner which equip students to work with most database systems used in the modern workplace.

Lecture: 3 Lab: 0 Credits: 3

MAX 511**Integrated Marketing Communication Strategy**

In this course, students learn how to identify and evaluate the full gamut of competitive strategic alternatives in both business-to-business and business-to-consumer marketing using a wide variety of analytic tools to develop and analyze consumer insights. Based on this 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, psychographic, and attitudinal characteristics and to analyze the style and appeal of messages within campaigns. Students also learn how to develop a balanced marketing communication plan utilizing the multitude of vehicles available to reach a target audience using the latest technological tools and media.

Prerequisite(s): MAX 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MAX 512**Customer Touch Points**

This course focuses the massive transformations based on new technologies that are occurring in today's communication environment and the wide variety of consumer contact points it generates. Students will develop an understanding of how the industry is organized and how marketing communications flow from the source company to the target audience. The course examines the major aspects of developing and evaluating media plans 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 product/service.

Prerequisite(s): MAX 512 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MAX 513**Managing Sustainable Brands**

This is a traditional brand management course applied to green or sustainable brands which are becoming more and more important in the global economy. The most valuable assets that a company has are the brands that it has developed and invested over time. Students will explore the components of a brand, its equity, and emotional benefits and gain an understanding of how to develop a meaningful brand relationship with the customer or prospect to optimize the brand or brand portfolio. The class will also explore the various aspects required to champion a new product or service from development to launch by optimizing the execution through all the marketing efforts of the firm. Students will address positioning, channel strategies, trade promotion, budgeting as a part of the planning process, new product development, packaging and merchandising, and the management of agency relationships. Like people, brands have unique personalities that differentiate them and drive their ability to grow or limit their ability to expand.

Prerequisite(s): MAX 511 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MAX 514**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 to 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.

Prerequisite(s): BUS 550 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MAX 515**Database and Direct Marketing**

This course introduces students to the critical nature of information gathered in real time directly from important constituencies of third party sources. It explores the ability of data-based marketing to match consumers with products based on behaviors. Students learn to access and analyze database information as well as develop programs to elicit a direct and immediate response using a variety of direct-to-consumer/direct-to-business tools including electronic marketing.

Prerequisite(s): MAX 511 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MAX 516**Social Media Mktg Strategy**

The area of online marketing continues to develop at a rapid pace. Social media (including tools like Facebook, Twitter, LinkedIn, blogs, websites, e-mail, etc.) is no longer a passing fad but an essential component of the marketing mix. As the platforms evolve and expand, so do the strategies required to leverage them properly. The increased demand for this specialized knowledge creates abundant opportunities for career development, heightened visibility, and market leadership. Companies that fail to capitalize on social media to attract quality people, penetrate new markets, and engage with customers on a meaningful level will most certainly be left out in the cold. This class will explore the core strategies used by companies today to leverage the marketing power of social media to grow their businesses. Students will learn what makes each platform unique and how they contribute to an overall social media campaign.

Lecture: 3 Lab: 0 Credits: 3

MAX 521**Qualitative Research Methods**

This is an introductory course in qualitative and survey methods relevant to basic and applied research problems in businesses (with a focus on marketing). Although this is an introductory course, students should be prepared to engage seriously in how qualitative research is conceived, conducted, implemented, and interpreted in business contexts. The course does not emphasize statistical methods, and ability to quickly acquire working knowledge of basic statistics is assumed. The instructor will make an effort to work with students to cover essentials. Students will also require a good understanding of substantive business contexts. In short, while the course accomplishes several objectives, it will focus on the skills required to design and conduct research studies using qualitative and/or survey methods.

Prerequisite(s): BUS 550 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MAX 522**Predictive Analytics**

The digital enterprise captures significantly more data about its customers, suppliers, and partners. The challenge, however, is to transform this vast data repository into actionable business intelligence. Both the structure and content of information from databases and data warehouses will be studied. Basic skills for designing and retrieving information from a database (e.g., MS Access) will be mastered. Data mining and predictive analytics can provide valuable business insights. A leading data mining tool, e.g., IBM/SPSS Modeler, will be used to investigate hypotheses and discover patterns in enterprise data repositories. Analysis tools include decision trees, neural networks, market basket analysis, time series, and discriminant analysis. Both data cleaning and analyses will be discussed and applied to sample data. Applications of data mining in a variety of industries will be discussed. Software exercises, case studies, and a major project will prepare the students to use these tools effectively during their careers.

Prerequisite(s): BUS 550 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MAX 523**Social Media Marketing Analytics**

The pervasive adoption of internet technology has created an enormous opportunity to capture and analyze digital content exchanges from social media within and external to organizations. These analyses can provide valuable insights for improving the following: sales; customer service and loyalty; product quality, branding and development; employee satisfaction; and supply chain partner effectiveness. Data mining methods and analyses for websites, search engine results, and social media, e.g., Twitter, Facebook, and blogs, will be addressed. Text mining, GIS, speech analytics, and sentiment analyses will be studied. Both desktop and mobile device tools will be used to conduct these analyses.

Prerequisite(s): BUS 550 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MAX 524**Advanced Predictive Analytics**

This continuation of MAX 522 Predictive Analytics addresses complex data preparation methods and working with an enterprise data base system, e.g., DB2. More advanced variations of models from MAX 522 will be addressed, e.g., neural networks and cluster analysis. New models will be studied, e.g., Bayesian, Support Vector Analysis, and Time Series. Further big data analysis will be included, e.g., streaming sensor data. Web, audio, and video mining applications will be reviewed. More sophisticated visual analytics will be studied to improve the understanding of complex modeling results. A major project will provide a synthesis of the course learnings. Leading edge tools, e.g., IBM/SPSS Modeler, SAS Enterprise Miner, WATSON Analytics, IBM Streams, and Tableau will be used. These methods, models, and exercises will enhance significantly the mastery of predictive analytics.

Prerequisite(s): MAX 522 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MAX 525**Cognitive Computing and AI**

Our complex and dynamic world generates more data and potential information than the human mind alone can recognize, digest, analyze, and offer actionable insights. The IBM WATSON cognitive computing engine can offer significant intelligence amplification for individuals and their organizations to prosper in this challenging environment. This course will provide a complete journey from idea generation to completing a prototype application with WATSON. Student teams will identify a business opportunity, locate the relevant knowledge and load it into WATSON, prepare question-and-answer sets to train WATSON's ability to provide accurate responses to user queries, and develop friendly interfaces for user queries (natural language processing) and WATSON responses. After satisfactory training has been completed, a business and marketing plan for the application will be created. As new knowledge is fed into WATSON and new queries occur, WATSON's response performance will improve. Some experience with an object-oriented programming language is necessary to load knowledge, questions, and answers into WATSON. The commercialization of WATSON applications already has begun. This course provides the concepts, methods, skills, and experience to build a WATSON application that offers business value.

Prerequisite(s): MAX 522 with min. grade of C

Lecture: 2 Lab: 1 Credits: 3

MAX 526**Quantitative Marketing Models**

Over the past few decades, many quantitative models have been developed to analyze fundamental problems in marketing. This course will introduce a selection of important models which are used for marketing tasks such as demand modeling, elasticity analysis, price response analysis, and promotion planning. The underlying econometric theory of these models will be presented with emphasis on gaining hands-on experience in implementing and running these models on real marketing data. This course will provide a solid foundation to perform advanced marketing analytics.

Prerequisite(s): BUS 550 with min. grade of C

Lecture: 2 Lab: 1 Credits: 3

MAX 595**Special Topics in Marketing Analytics**

This course covers contemporary or cutting edge topics in the marketing analytics field offered on an irregular basis typically in a seminar style. Instructor permission is required.

Lecture: 3 Lab: 0 Credits: 3

MAX 597**Independent Study in Marketing Analytics**

Students can conduct in-depth research, usually on an independent and solo basis, under the guidance of a full-time faculty member. Typically, a student signs up with a faculty member who is willing to supervise his/her independent research on a particular marketing analytics-related topic. The student has to complete the independent study form, develop a one-page proposal outlining the purpose, process, and product (expected outcomes) of the independent research project, and submit it to the program director and instructor for approval.

Lecture: 0 Lab: 3 Credits: 3

MBA 501**Financial Statement Applications**

This course is an introduction to the basic financial and managerial accounting topics (GAAP, the major financial statements, accrual accounting, financial reporting alternatives, professional ethics, financial statement analysis, cost behavior, cost systems, short- and long-term decision-making with strategic considerations, and product costing) and a review of environmental accounting.

Lecture: 3 Lab: 0 Credits: 3

MBA 502**International Trade**

The course helps students understand the complexities of the globally-interconnected world of business they will be joining after graduation. It will set the background and context for their entire graduate business education. It will focus on emerging trends happening in six major components of the global business environment: political, economic, socio-cultural, technological, legal, and the natural environment. Special focus will be on ethical considerations in a cross-cultural setting. Students will be exposed to a mix of theories and managerial tools that will help them analyze the opportunities and threats within the global business environment and draw managerial insights.

Lecture: 3 Lab: 0 Credits: 3

MBA 504**Analytics for Decision Making**

This course has the following objectives: (a) to offer a comprehensive presentation of Microsoft Office Excel 2016; (b) to acquaint students with the proper procedures to create workbooks and worksheets suitable for coursework and professional purposes; (c) to enhance and reinforce students' analytical skills and their ability to intelligently use information; (d) to teach the art and science of spreadsheet modeling; (e) to expose students to different approaches, support tools, and analytical methods for decision making; and (f) to improve students' critical thinking skills.

Lecture: 3 Lab: 0 Credits: 3

MBA 505**Microeconomics and Game Theory**

This course applies economic principles to key decisions with organizations and solidifies intuition for understanding the business environments in which organizations operate. A key objective of the course is to develop tools useful in other Stuart courses. Economics is a key foundation for much of what is taught in finance, marketing, business strategy, environmental management, and virtually every other course in the graduate program. Economics is a way of thinking about problems, issues, and decisions that managers face in each of the functional areas of their organization. It stresses the importance of incentives in impacting human decision making and emphasizes the consideration of costs and benefits when making decisions. The course introduces and develops concepts in areas of microeconomics such as competition and market structure, incentive contracts, and pricing. Topics covered range from the most basic demand and supply models to principal-agent models and economics of information. The course will also touch on some of the primary macroeconomic topics (including GDP, inflation, and unemployment), topics in game theory (simultaneous and sequential games), and issues of ethics in economic policy-making pertaining to competitive and oligopolistic markets, pricing, and trade.

Lecture: 3 Lab: 0 Credits: 3

MBA 506**Leadership and Organization Design**

To succeed in today's knowledge intensive organizations managers need to understand how individual differences in personality, learning style and cultural values, group dynamics, organizational culture, and human resource management policies shape employee attitudes and behaviors. This course teaches managers creative problem-solving and ethical decision-making, change management, leadership techniques for enhancing social capital and influencing other organizational members, and management tools for multicultural and geographically dispersed teams. Students will relate management concepts and techniques to real-world situations through the extensive use of case studies and experiential exercises.

Lecture: 3 Lab: 0 Credits: 3

MBA 509**Financial Management**

In this course, the student will learn the concepts and processes that underlie enlightened financial decision making in a global world. Students will explore how to raise debt and equity capital, how to think about what portion of earnings to retain and reinvest and whether to share some earnings with stockholders via dividend payments or repurchase of shares, how to value stocks and bonds, how to distinguish good from bad financial decision rules, how to decide which projects a firm should engage in, how to use futures, options and swaps to manage firm risk, how to ensure good corporate governance, why sustainability can be profitable while still protecting future generations, and how to manage the financial decisions required to effectively operate in a global setting.

Prerequisite(s): MBA 501 with min. grade of C and BUS 510 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MBA 511**Marketing Strategy**

This course provides an introduction to the practice and strategy of marketing. Marketing activities are those processes and functions that enable managers and policy-makers to identify and serve the values and needs of a customer given the capacities of the company, activities of competitors, and inherent constraints in the business environment. Marketers typically refer to these concepts as the "four C's." Based on their understanding of the "four C's," students will then learn how to implement strategy by applying the levers of the marketing mix. These elements are known as the four P's (product, price, place/channels of distribution, and promotion). The treatment of marketing constraints and marketing mix will be motivated by essential foundations from economics, sociology, and consumer behavior. Over the course of the semester, students are expected to transition from thinking about these concepts in isolation to a dynamic, integrative framework. This process includes using the marketing strategy framework to assess business and policy problems from a "multiple objective" perspective: that is, the student will be asked to think about how marketing activities along with those of competitors and collaborators will affect the profitability, sustainability, social, and ethical standing of the firm. The synthesis of these concepts will be carried out through the use of case studies, problem sets, classroom lectures, discussions, and a field project. There will also be a midterm and final exam. The pedagogical style of the course emphasizes the students' role in applying the concepts discussed in the lectures to the situations at hand. The role of the instructor is to provide tools to structure thinking and to stimulate and facilitate analysis of the cases.

Prerequisite(s): BUS 510 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MBA 513**Operations and Technology Management**

The course seeks to help the student develop an understanding of the concepts and skills needed for the design and control of operations in both services and manufacturing organizations. Students will take a strategic and general management approach to the design of an operating system and its supporting organizational structure and infrastructure including information systems, human resource management, and financial policies. The focus is on the strategic role of operations and technology decisions as a source of competitive advantage for the firm with an emphasis on the integration of R & D/Design/Engineering, operations and marketing within the context of the business unit's strategy, and the organizational structure and skills needed to execute and manage the operating system. The overall goal is to create, achieve, and sustain operational effectiveness. The course will emphasize the analytical tools and techniques that are useful in making decisions about projection facilities and capacity, choices of technology and equipment, task and process design, organizational architecture, human resources policies, and the physical and managerial control of operations. Students will gain an understanding of the economics of operations including trade-offs between fixed and variable costs, marginal/incremental analysis to identify relevant versus sunk costs, optimization, and productivity measurements for both capital and labor. Case studies will provide opportunities for students to develop their skills in process design and choice, process mapping, critical thinking, identification of problems versus symptoms, process improvement, and capacity measurement in the context of the business strategy while the simulations will provide an opportunity to practice the management of a particular operating system. Students will also gain an understanding of how human behavior and organizational design, along with quantitative optimization, forms the theoretical underpinning of operations management.

Prerequisite(s): BUS 510 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MBA 518**Ethics & Corporate Social Responsibility**

The corporate scandals and implosions of the past decade, climaxing in the global financial crisis of 2008, have highlighted how critical ethical and socially-responsible decision-making and leadership are to the long-term survival and success of both individual businesses and society. This course will endeavor to teach students why ethics and corporate social responsibility are not just feel-good exercises but are essential for business success in the Next Economy.

Lecture: 3 Lab: 0 Credits: 3

MBA 522**The General Manager**

This course is about general management, general managers, and the challenges of creating and sustaining competitive advantage by maintaining the fit between industry competitive structure, strategy, organization structure, tactics, and activities (execution) at both the corporate and the business unit levels. Students will be concerned with both the problem of choosing what businesses the firm wants to engage in (the portfolio and diversification of risks) and the task of maximizing profits in the specific businesses the corporation has chosen to enter. In some of the case discussions and the CAPSIM game, students will take the choice of business as a given and focus on how to create a strategy and the network of activities or value chain that implements/executes the strategy of the strategic business unit (SBU), taking into account the interactions and trade-offs among marketing, production, finance, engineering, and human resources decisions as the industry structure changes over time and in the context of active competitors. Students will also be looking at the corporate level choices of entering, growing, or exiting various businesses/markets, the tactics/activities used to execute corporate strategy, the organization structure issues of very large multi-business firms, and the relationships among SBUs and between corporate headquarters and the strategic business units. Completion of program core or instructor permission is required.

Prerequisite(s): BUS 510 with min. grade of C and MBA 509 with min. grade of C and MBA 505 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MBA 523**Negotiations and Strategic Decision Making**

This course is designed to foster an understanding of incentives and strategic decision-making as they apply to negotiations. The course has both theoretical and applied components with the objective of addressing both theory and skills as they apply to dyadic and multiparty negotiations, to buyer-seller transactions, to competitors' interactions, to the resolution of disputes, and to the development of negotiation strategies. The theoretical component is focused on an analytical study of strategic interactions using game theory while the applied component is based on a series of simulated negotiations in a variety of contexts including one-on-one, multiparty, and team negotiations. The objectives of the course are to provide an analytical foundation, to show where practice and theory diverge, and to provide a forum where negotiation tools in a variety of business-oriented settings can be actively applied. Instructor permission is required.

Lecture: 3 Lab: 0 Credits: 3

MBA 524**Human Capital Management**

Managerial leadership is one of the primary drivers of an organization's success. Not surprisingly, organizations are demanding effective leadership skills from managers at all levels. This course is designed to enhance students' understanding of leadership in contemporary organizations. Students will develop a conceptual framework of effective leadership in multinational organizations. Besides discussing leadership skills and traits, particular attention will be devoted to exploring the influence of organizational and societal context on leadership. This course will be taught with an experiential learning approach. Through self-assessments, case analyses, and a variety of other exercises, students will augment their leadership skills.

Prerequisite(s): MBA 506 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MBA 526**Supply Chain Management**

We will present models and practices that minimize supply-demand mismatch and therefore maximize companies' own profitability as well as models and practices of collaboration with other companies in a supply chain that minimize risk and environmental costs and therefore maximize the supply chain's sustainability. This course will have an emphasis on the integration of business and technology aspects. We will first introduce an integrated view of the production and logistics functions in organizations such as capacity analysis, inventory management, and logistics management. The course then discusses topics involved in the interaction of a firm with others players in a supply chain such as value of information, supply contracts, and risk sharing. Finally, the course will introduce models/tools enabling sustainability actions plans, for example, reducing waste in the supply chain, both upstream and downstream.

Lecture: 3 Lab: 0 Credits: 3

MBA 528**Management of Innovation and Technology**

Healthcare is one of the most fundamental human problems around the world. Besides food and water, every one of the seven billion people on earth needs healthcare. Yet, the current systems of healthcare delivery have inadequacies in providing quality care to all. In this respect, technological innovations have begun to contribute creative solutions to the many problems that healthcare delivery systems face with access to care, affordability of care, and consistent quality of care. This course focuses on how the management of technology and innovation and business and strategy principles can converge to understand the trends, problems, and potential solutions to the American healthcare delivery system and to other systems around the world. The course aims to acquaint the student with the issues and potential solutions of managing the healthcare delivery system. The healthcare sector has unique characteristics as both a social and business enterprise where private and public organizations and enormous resources are involved. The student will gain knowledge about the structure of the healthcare delivery system and how technology and innovation are contributing to some solutions to its most pressing problems of access, affordability, and quality of care. The student will also gain knowledge about the key technology dimensions and forces that shape the industry.

Prerequisite(s): BUS 510 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MBA 529**Social Entrepreneurship**

This course gives students a practical introduction to the exciting and rapidly growing field of social entrepreneurship. The course will begin by introducing students to contemporary understandings of poverty, its causes, and traditional poverty alleviation strategies. It will then turn to key concepts regarding social ventures including entrepreneurship, organizational structures (for-profit, non-profit, and hybrid), financing, marketing, and performance assessment (social and environmental impact). We will also examine the challenges that are faced in creating and operating social enterprises in different parts of the world. The course includes guest lectures by other Stuart School of Business faculty and social entrepreneurs working in different areas (such as health, education and environment). Students will gain hands-on experience by either developing a business plan for a social enterprise to address a specific real world problem or assisting an existing social venture in developing a business plan geared towards an expansion of its services. It is expected that the plans can be entered into a variety of social venture competitions.

Lecture: 3 Lab: 0 Credits: 3

MBA 554**Project Management**

This course addresses both analytical and behavioral skills for effective project management. You will learn how to select a project portfolio, develop a work breakdown structure, estimate task times and costs, allocate and level resources, prepare Critical Path and PERT analyses, and assess earned value project performance. A leading project management tool, e.g. MS Project, will be used for project management exercises. Much of the course content will be drawn from the Project Management Institute common body of knowledge and certification program. Management of project risks, structure, team building, and conflict will be addressed. A project management simulation game provides an opportunity to apply your team-based skills. A variety of project management cases across industries will be studied.

Prerequisite(s): BUS 510 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MBA 564**Global Business Strategy**

For Western MNCs, some of the most intriguing growth opportunities in the Next Economy exist in low-income segments, the so-called markets at the bottom of the income pyramid, in emerging and underdeveloped countries of the world. Historically, MNCs targeted the customers at the top of the pyramid in these countries because their business models worked well for them. But as these bottom-of-the-pyramid markets become more economically profitable, MNCs need to make a serious attempt to evaluate and target them. In order to successfully compete for customers in these markets, MNCs should design innovative business models that could represent a radical departure from the way they do business in more advanced countries. This course is about such business model innovation. Students will learn tools of international market opportunity analysis, foreign market entry strategies, the social, economical, and ethical factors affecting decisions to serve low income customers, the stringent requirements of the customers at the bottom of the pyramid, and business models to profitably serve these customers.

Prerequisite(s): BUS 510 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MBA 569**Asian & Western Enterprises**

This course helps students understand the economic context within which Asian enterprises and Western enterprises evolved and how they tend to compete on very different factors. While many business principles are universal, the key drivers of competitiveness differ substantially between Asian and Western enterprises. More importantly, within these groups there could be significant nationality-based differences. The course provides an insightful comparative study of companies based in opposite ends of the world and helps students understand why they employ different sets of strategies to compete and succeed on the global stage. Instructor permission is required.

Lecture: 3 Lab: 0 Credits: 3

MBA 570**Business Study Mission Abroad**

China has become a major business destination for companies around the world. The success of managers and entrepreneurs around the world today may depend on how well they do business with Chinese customers, suppliers, and partners. One of the best ways to understand this is through immersion. This course involves a business study mission trip to some of the epicenters of Chinese business, such as Shanghai. Students will be able to visit foreign and local manufacturing and service companies located in China, listen to business leaders and government officials, and enjoy the cultural immersion experiences. Students will attend several briefing sessions prior to the visit and a debriefing session following the visit. Instructor permission is required.

Lecture: 3 Lab: 0 Credits: 3

MBA 575**Creativity and Contemporary Entrepreneurial Opportunities**

Entrepreneurship focuses on the concepts, skills, know-how, information, attitudes, and alternatives that are relevant for start-up and early-stage entrepreneurs, entrepreneurial managers, and the relevant stakeholders. Specifically, this course provides an introductory overview of the knowledge and skills needed for the identification, evaluation, and exploitation of opportunities in a variety of circumstances and environments. It concentrates on the study of various innovative thinking in strategy, identifying and screening a business opportunity, developing business models, preparing business plans, securing financing, and managing high-growth firms. It integrates knowledge gained from the prior core business courses (i.e., management, marketing, finance, and accounting) to sharpen the student's ability to think strategically, innovatively, and entrepreneurially and to form new ventures. Further, it is a course that mixes theory with practices covering industries such as computer, cell phone, biotech, and wireless, to name just a few. Students will be challenged to apply principles, concepts, and frameworks to real world situations, culminating in a formal business plan.

Prerequisite(s): BUS 510 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MBA 576**New Technology Ventures**

The course concentrates on the study of entrepreneurship, preparation of business plans, methods for evaluating and screening new venture ideas, formulation and implementation of business strategies for new ventures, development of a business plan, the financing of new ventures, and venture growth strategies and exits. It integrates knowledge gained from the prior core business courses (i. e., management, marketing, finance, and accounting) to sharpen the student's ability to think entrepreneurially and form new ventures. The course will also focus on identifying, examining, and evaluating various sources of original and growth capital. Emphasis will be on legal, financial, and tax issues related to capital formation as well as specific problems experienced by the small-to-medium-sized firm undergoing rapid growth in the high technology space. Topics discussed will include venture valuation, financing startups, financial planning and strategy, going public, selling out, and bankruptcy. A formal proposal for capital acquisition developed through field research will be required of each student.

Prerequisite(s): BUS 510 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MBA 577**Got Creativity?: Strategies and Tools for the Next Economy**

This class will look at creativity from three broad perspectives: personal creativity (how to think about this as a personal skill to be enhanced and trained); organizational creativity (why it is job #1 for EVERY organization and how we can systematically enhance the innovation outputs of the enterprises we work for); and civic creativity (how to lift creativity and innovation into sustainable policies for our cities and regions). We will mix presentations with performances. We will have experts visit the class. We will get up on their feet and do small group work and creativity exercises. We will visit creativity hot spots around Chicago and learn first-hand from our leaders on how to make environments that nourish innovation. We will learn about and work on 13 distinct personal creativity competencies. Finally, we will work in teams on special projects and present.

Lecture: 3 Lab: 0 Credits: 3

MBA 581**Marketing Research and Engineering**

The course is roughly divided into thirds which track the standard market research process: define the problem and design a research plan; develop appropriate primary research tools (primarily survey design and implementation); and analysis and presentation. Marketing engineering focuses on specific data driven marketing tools, regression, cluster analysis, conjoint, etc., and their application to specific marketing problems (segmentation and targeting, new product design, and forecasting). The market research process will be taught backwards from analysis to data acquisition with the aim that students will have a working understanding of their analytical goals by the time they begin their projects and can therefore establish sensible research objectives with an eye to expected use for the data.

Prerequisite(s): MBA 511 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MBA 586**Strategic Marketing Management**

In this course we will emphasize both marketing strategy formulation and execution and the management of the marketing function. This includes the integration of marketing mix decisions, the longer-term effects of marketing mix decisions, and changes in the mix over time. For example: "Price" becomes price policy, value-in-use, and price discrimination; "Product" becomes product line breadth and variety and product life cycle choices; "Place" becomes the design and control of single or multiple channels of distribution; and "Promotion" becomes communications, customer loyalty, and brand equity. The course will emphasize segmentation of the market, positioning the marketing mix to meet the needs of the market segment, sustaining an integrated marketing mix over the product life cycle, and organizing the strategic business unit to implement the strategy. In addition to the development of a marketing strategy that positions the product/service to the needs of one or more target markets (segmentation), the execution of a marketing strategy will require a marketing plan that includes the economic and financial analysis of the costs and potential profits of the strategy and an implementation plan, including an organizational structure. This will often be an iterative process to find an optimal combination of costs, pricing, and volume to maximize profits. This course will use readings, simulations, and cases for about half its content. The other half of the course will be a team consulting project for an external client.

Prerequisite(s): MBA 511 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MBA 587**Nonprofits and the Public Sector**

Provides an overview of the complex and important relationship between government and non-profits. This course includes a review of the history, funding schemes, the differences between grant and contract funding, recent trends, and much more.

Lecture: 3 Lab: 0 Credits: 3

MBA 588**The Nonprofit Sector**

Considers the role played by the nonprofit sector in the larger American society and economy. Topics include major organizational forms, financial management, human resource policies, leadership, board-executive relations, and private-public connections.

Lecture: 3 Lab: 0 Credits: 3

MBA 589**Regulatory Politics and Contemporary Business**

Regulatory activity remains government's major point of interaction with both business and citizens. Government regulation affects a myriad of activities and is the primary function of public administration. Regulation is a key variable of American economic activity, an issue of global concern, and an expanding field of modern jurisprudence. This course is intended to provide an understanding of regulatory activity as influenced by changing social, technological, and economic conditions within a context of dynamic political culture. It will familiarize students with a range of concepts concerning the role of positive government and the growth of the American administrative state. The course will present regulation as a process and examine the role of government, business, and citizen interest group in regulatory development. It will present various types of regulatory activity and review federal, state, and local regulatory networks and responsibilities. The course will also examine the evolution of constitutional interpretation and the subsequent adaptations of American law to facilitate changing and regulatory actions.

Lecture: 3 Lab: 0 Credits: 3

MBA 595**Special Topics: MBA Program**

Special topics in business administration.

Lecture: 3 Lab: 0 Credits: 3

MBA 597**Independent Study in Business Administration**

Independent study in business administration.

Credit: Variable

MSC 511**Mathematics for Management Science I**

This is the first of a two-semester sequence in advanced-level mathematical economics. It introduces students to economic models, microeconomics theory, equilibrium analysis and optimization problems. The course examines various market settings such as competitive markets, oligopolies, and monopolies; the course addresses contexts involving the firm decision making under uncertainty, and game theory. Focus is on major topics of economic analysis and the tools used to study them. Some mathematics background, particularly calculus and matrix algebra, is essential.

Lecture: 3 Lab: 0 Credits: 3

MSC 512**Statistics for Management Science I**

This course provides a comprehensive introduction to econometrics; linear, nonlinear, semiparametric and nonparametric regression, popular distributions, confidence intervals and joint confidence intervals, hypothesis testing, sample size and power, functional form and structure, endogeneity and instrumental variables estimation, systems of equations, models of panel data, maximum likelihood estimation, likelihood ratio tests, generalized method of moments, simulation based estimation and random parameter models. It will also focus on the mathematics of differential equations, stationary time series models, conditional heteroscedasticity, non-stationary time series, co-integration and non-linear models. Students will also learn techniques like maximum likelihood estimation, likelihood ratio tests, and generalized method of moments estimation. Students will be introduced to stochastic processes and applied probability and become familiar in using STATA and other advanced statistical software and research databases.

Lecture: 3 Lab: 0 Credits: 3

MSC 513**Optimization I**

This course introduces optimization techniques with a focus on linear and integer optimization problems. Topics include: the simplex method and its variants, interior point algorithms, duality and sensitivity analysis, integer linear programming, cutting plane method, branch and bound method, Lagrangian relaxation methods, model formulation with integer variables, large scale optimization, and network flow problems.

Lecture: 3 Lab: 0 Credits: 3

MSC 514**Mathematics for Management Science II**

This is the second course in the two-course sequence in mathematical economics. It focuses on optimization problems in addition to discussing nonlinear programming, Kuhn-Tucker conditions, and dynamic analysis. In addition, it continues discussion on game theory and explores its use in modern economics and business through examinations of classic and current papers. Students are also introduced to models used in modern macroeconomics.

Prerequisite(s): MSC 511 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 515**Statistics for Management Science II**

The course introduces Bayesian estimation, and emphasizes simulation-based inference, statistical computing, discrete choice, limited dependent variables (truncation, censoring and sample selection), time series analysis including advanced forecasting techniques. This course intends to integrate modern theories and empirical applications in a manner that many useful tools will be discussed. The course is heavily project oriented and is organized around Big Data applications and statistical packages. Students will be expected to work with modern statistical packages and large datasets.

Prerequisite(s): MSC 512 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 516**Optimization II**

This course introduces dynamic programming and applications of dynamic programming to deterministic and stochastic decision problems. The course also introduces the theory and computation methods of nonlinear programming, convex analysis, and unconstrained methods; Kuhn-Tucker theory, saddle points and duality, quadratic linearly constrained and nonlinear constrained problems, and penalty and barrier methods.

Prerequisite(s): MSC 513 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 517**Analytics for Decision Making**

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.

Lecture: 3 Lab: 0 Credits: 3

MSC 518**Marketing Research and Engineering**

The course is roughly divided into thirds which track the standard market research process: define the problem and design a research plan; develop appropriate primary research tools (primarily survey design and implementation); and execute an analysis and presentation. Marketing engineering focuses on specific data-driven marketing tools, regression, cluster analysis, conjoint, etc., and their application to specific marketing problems (segmentation and targeting, new product design, and forecasting). The market research process will be taught backwards from analysis to data acquisition with the aim that students will have a working understanding of their analytical goals by the time they begin their projects and can therefore establish sensible research objectives with an eye to expected use for the data.

Lecture: 3 Lab: 0 Credits: 3

MSC 611**Philosophy of Management**

This course introduces doctoral students to the history and evolution of thinking in the management discipline. It focuses attention on theories of leadership and innovation, and showcase contributions of influential thought leaders in management. It also includes epistemological perspectives with substantial potential for enhancing business research. Finally, it will address fundamental approaches and criteria for successful theory development.

Prerequisite(s): MSC 515 with min. grade of C and MSC 512 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 612**Advanced Research Methods**

This course is a required course for all PhD students at the Stuart School of Business. It offers a comprehensive overview of the General Linear Model at both univariate and multivariate research levels. The course will review measurement issues (reliability, types of validity), multiple regression analysis, ANOVA, MANOVA, step-down analysis, factor analysis, structural equation models (exploratory and confirmatory factor analysis), discriminant analysis, redundancy analysis, canonical correlation analysis, repeated measures analysis, categorical data analysis, contingent valuation method, conjoint analysis, cluster analysis, multidimensional scaling, correspondence analysis, choice models, and relatively new areas such as multi-level analysis, meta-analysis, data warehousing, data mining, and neural networks. Additionally, nonlinear models will also be discussed. Students will be introduced to SAS and other software packages.

Prerequisite(s): MSC 611 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 613**Structured Fixed Income Portfolios**

This course will cover the characteristics, valuation and risk management of fixed income instruments. These instruments include bonds, repos, interest rate derivatives, inflation indexed securities, mortgage-backed and asset-backed securities, CDOs and default swaps. The focus will be on understanding how these instruments are structured and used. Term structure modeling and hedging techniques will be presented, with a minimum of mathematics.

Lecture: 3 Lab: 0 Credits: 3

MSC 614**Quantitative Investment Strategies**

This course develops the primary quantitative tools used in the portfolio selection process. The applied focus of the course centers on the process of moving from a data set of historical information to the formulation of a forecasting model, the estimation of mean-variance efficient portfolios, and the testing of efficiency hypotheses within an in-sample and post-sample setting. The course covers the estimation of efficient portfolios, factor models, forecasting models, and risk analysis.

Lecture: 3 Lab: 0 Credits: 3

MSC 615**Predictive Analytics**

The digital enterprise captures significantly more data about its customers, suppliers, and partners. The challenge, however, is to transform this vast data repository into actionable business intelligence. Both the structure and content of information from databases and data warehouses will be studied. Basic skills for designing and retrieving information from a database (e.g., MS Access) will be mastered. Data mining and predictive analytics can provide valuable business insights. A leading data mining tool, e.g., IBM/SPSS Modeler, will be used to investigate hypotheses and discover patterns in enterprise data repositories. Analysis tools include decision trees, neural networks, market basket analysis, time series, and discriminant analysis. Both data cleaning and analyses will be discussed and applied to sample data. Applications of data mining in a variety of industries will be discussed. Software exercises, case studies, and a major project will prepare the students to use these tools effectively during their careers.

Lecture: 3 Lab: 0 Credits: 3

MSC 616**Social Media Marketing Analytics**

Lecture: 3 Lab: 0 Credits: 3

MSC 621**Corporate Finance**

The primary objective of this course is to provide doctoral students an overview of introductory topics in corporate finance including capital structure, agency theory, corporate governance, payout policy, compensation, mergers and acquisitions, diversification, equity issuance, private equity, and financial intermediation. We will focus on both theories and empirics of financial economics in the area of corporate finance. Students should expect a rigorous course with substantial academic rather than applied content, and expect an intensive reading list. Another objective is to train students to read, understand, and present background papers in corporate finance and recognize the interesting/important problems in corporate finance in the "right" institutional structure.

Prerequisite(s): MSC 511 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 622**Enterprise Risk Management**

This course focuses on the 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 rate 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 scenarios analysis, and extreme and tail events modeling.

Prerequisite(s): MSC 631 with min. grade of C and MSC 512 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 623**Investments**

The world of investments is changing rapidly as investment responsibilities and power move into the hands of individuals. This course discusses the properties of investment instruments, different investment theories, and the professional investors. Topics include the characteristics of various financial assets, the time series and cross sectional of returns, asset pricing theory and empirical methods, mutual funds and hedge funds. Moreover, there is a reading list of the most influential academic papers in the investment field, students are required to understand and follow the most advanced development in the investment field.

Prerequisite(s): MSC 511 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 631**Theory of Finance I**

This course is intended as an in depth review of the following areas of finance: (1) utility theory and expected utility valuation techniques; (2) the Markowitz portfolio problem and the CAPM model; (3) the APT theory and general linear arbitrage factor model; (4) single period consumption-based asset pricing models; (5) state preference theoretic approaches; (6) multi-period discrete time utility based models and associated mathematical techniques; (7) equilibrium and price bubbles in the preceding model (the "Lucas" model); (8) basic binomial derivative pricing; and (9) Ito's Lemma, Black-Scholes, and related models.

Lecture: 3 Lab: 0 Credits: 3

MSC 632**International Finance Theory**

International Finance Theory.

Prerequisite(s): MSC 631 with min. grade of C and MSC 605 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 633**Theory of Finance II**

This course is intended as an in depth review of the following areas of finance: (1) continuous time risk neutral pricing; (2) jump diffusion models; (3) continuous time utility optimization modeling (with dynamic programming); (4) consumption CAPM modeling; (5) non-time separable utility modeling; and (6) behavioral finance.

Lecture: 3 Lab: 0 Credits: 3

MSC 651**Quantitative Marketing Models**

This seminar will acquaint students with quantitative models used in marketing research literature. It will survey a variety of econometric models ranging from basic choice models to the latest structural models which have been used to analyze problems in the marketing domain. In summary, the course will provide an overview of the quantitative modeling field in marketing. The emphasis will be on understanding the estimation procedure employed to estimate these models.

Prerequisite(s): MSC 515 with min. grade of C and MSC 512 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 652**Supply Chain Analytics**

This course focuses on modeling and analytical skills by introducing (1) an integrated view of the production and logistics functions in organizations by discussing models such as facility location, capacity allocation, warehousing, transportation, forecasting, inventory management, and risk-pooling models and (2) how firms interact with each other in a supply chain by discussing topics such as value of information, supply chain contracting and coordination, price-based and quantity-based revenue management. In addition to developing quantitative modeling skills, this course focuses on data analytics in the supply chain context and the interface of supply chain analytics and customer analytics. The course will help students (1) gain an understanding of various aspects, issues, and initiatives in contemporary supply chain practice and (2) develop their ability to conduct quantitative research in supply chain management using recent literature published in top tier journals.

Prerequisite(s): MSC 515 with min. grade of C and MSC 512 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 653**Current Topics in Marketing Analytics**

The focus of this course would be to stay up-to-date with cutting edge academic research in the field of marketing analytics. Students would read and discuss current literature that develops and applies methods for optimizing digital marketing communications, evaluating the impact of digital marketing strategies, and performing market research through the analysis of secondary social media data. Students would need to be reasonably well-versed in a variety of analytics approaches coming in and capable of learning new methods that appear in the literature through self-study. The emphasis would be on critical discussion of cutting-edge marketing analytics techniques and application, self-study of methods and current digital platforms to keep pace with trends and breakthroughs in the field, and research idea generation.

Prerequisite(s): MSC 511 with min. grade of C and MSC 512 with min. grade of C and MSC 516 with min. grade of C and MSC 514 with min. grade of C and MSC 515 with min. grade of C and MSC 513 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 654**Social Network Analytics**

This course focuses on the following: (1) analyzing social networks through statistical descriptors of networks (link analysis, centrality, and prestige), network clustering (modularity and community detection), dynamics of information and epidemics spreading (threshold and information cascade models), and network visualization algorithms (spring-like layouts, multidimensional scaling, Gephi). (2) applications of text and document analysis using natural language processing and part-of-speech tagging, sentiment analysis, and topic modeling. (3) assessing collective intelligence using recommender systems, collaborative filtering, and machine learning, in particular deep learning.

Prerequisite(s): MSC 511 with min. grade of C and MSC 512 with min. grade of C and MSC 516 with min. grade of C and MSC 514 with min. grade of C and MSC 515 with min. grade of C and MSC 513 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSC 691**Research and Thesis PhD**

Credit: Variable

MSC 697**Special Research Issues**

This course is in lieu of MSC 691 that PhD-MS legacy students can register for after they have already completed the MSC 691 credit requirements for graduation.

Credit: Variable

MSF 501**Mathematics with Financial Applications**

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, summations, 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).

Lecture: 3 Lab: 0 Credits: 3

MSF 502**Statistical Analysis in Financial Markets**

This course presents and applies statistical and econometric techniques useful for the analysis of financial markets. Ordinary least squares, maximum likelihood, time series analysis, GARCH volatility modeling, and simulation methods are covered. Hypothesis testing is covered in detail. Particular attention is placed on the properties of various estimators when model assumptions do not hold. Students not familiar with matrix algebra and elementary statistics should plan to make up the deficit early in the course. See MSF 501 on these topics.

Lecture: 3 Lab: 0 Credits: 3

MSF 503**Financial Modeling**

Financial modeling in a spreadsheet environment is a pervasive feature of the modern workplace. In this course, students will learn how to implement financial models using spreadsheet modeling and basic programming via Microsoft Excel and VBA. Financial models will include project valuation, bond pricing and hedging, option pricing, and portfolio optimization. The course will also cover basic numerical techniques that are essential to financial modeling including Monte Carlo simulation and linear optimization.

Lecture: 3 Lab: 0 Credits: 3

MSF 504**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. The course places a special emphasis on the relationship between macroeconomic conditions and investment opportunities.

Prerequisite(s): MSF 501 with min. grade of C and MSF 503 with min. grade of C and MSF 502 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 505**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.

Prerequisite(s): MSF 501 with min. grade of C and MSF 503 with min. grade of C and MSF 502 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 506**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(s): MSF 501 with min. grade of C and MSF 503 with min. grade of C and MSF 502 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 524**Models for Derivatives**

The practice of financial engineering requires skill in financial theory and practice, mathematics and programming. This course includes instruction in all of these areas. In this class, students will learn mathematical and computational methods that are applicable to the pricing and risk management of derivatives. The class provides an introduction to options pricing theory, covering stochastic calculus, the Black-Scholes partial differential equation, risk-neutral valuation and hedging portfolio replication. The course will focus on important numerical techniques used in finance, including variance reduction techniques in Monte Carlo Simulation and finite difference methods applied to partial differential equations. These methods will be applied to the pricing of exotic options. In this class, students will learn to program and implement financial models in Matlab.

Prerequisite(s): MSF 505 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 525**Term Structure Modeling and Interest Rate Derivatives**

Upon completion of this course, students should know the strengths, weaknesses, appropriate uses, and ways of implementing the major term structure models that are in common use. The course will begin with bootstrapping of forward curves, principal component analysis, and a review of basic fixed income derivatives (swaps, swaptions, caps, and floors). We will then implement short rate models, such as Ho-Lee, Black-Derman and Toy, and extended Vasicek/Hull-White, followed by the Helath-Jarrow-Morton model and market rate models. Students will implement these term structure models in Excel/VBA and Matlab.

Prerequisite(s): MSF 505 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 526**Computational Finance**

The use of computers makes modern finance possible. Most of the mathematics behind the risk management techniques and pricing models would be of no practical use without automated solvers, scenario builders, and other algorithms. This class concentrates on translating from ideas and mathematics to the practicalities of implementation. We will begin with a brief motivating discussion and then address various kinds of financially relevant algorithms, paying special attention to the two most important features of any scheme: (1) how it can go wrong and (2) how it can be calibrated. Our topic list will include optimizers, quadrature, fast fourier transforms, grid PDE solvers, and Monte Carlo techniques.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 534**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.

Prerequisite(s): MSF 504 with min. grade of C and MSF 506 with min. grade of C and MSF 505 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 535**Investment Banking**

This course covers the financing and formation process of private companies from product concept and angel investors to the Initial Public Offering. Exit strategies for private investments are discussed, including IPOs, mergers and acquisitions. Strategic and financial buyers play a key role in the valuation of a newly public or recently acquired firm. All of the players are discussed, including venture capitalists, entrepreneurs, investment bankers, attorneys, public shareholders, merger partners, institutional investors and private equity/buyout firms. Students will discuss business models; construct staffing and compensation schemes; practice valuation analysis; compare and contrast alternative financial sources; structure business plans; review the types of securities to offer; examine private placement processes; analyze negotiation strategies; and review the implications of financing terms and the role of venture capital and private equity investment in institutional portfolios. The challenges of completing mergers and integrating merged companies are also discussed. Sarbanes-Oxley, anti-trust requirements and other regulatory issues will be presented.

Prerequisite(s): MSF 504 with min. grade of C and MSF 506 with min. grade of C and MSF 505 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 543**Alternative Investments**

Alternative investments include real estate, hedge funds, managed futures, and emerging markets. They are attractive to institutional investors because they exhibit a low correlation with traditional investments in stocks and bonds. However, they must be approached cautiously because of specific difficulties in valuing these assets. This course will explore a variety of alternative investments and their role in investment strategies.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 544**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. It also covers relative valuation measures such as price/earnings and price/sales ratios. The valuation techniques taught in the course will be applied to the valuation of equity shares, corporate bonds, and derivatives such as stock options and convertible bonds. Completion of a comprehensive analysis of a public company is a requirement for the course. This course is recommended for students who are planning on sitting for Certified Financial Analyst (CFA) qualification.

Prerequisite(s): MSF 504 with min. grade of C and MSF 506 with min. grade of C and MSF 505 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 545**Structured Fixed Income Portfolios**

This course will cover the characteristics, valuation and risk management of fixed income instruments. These instruments include bonds, repos, interest rate derivatives, inflation indexed securities, mortgage-backed and asset-backed securities, CDOs and default swaps. The focus will be on understanding how these instruments are structured and used. Term structure modeling and hedging techniques will be presented, with a minimum of mathematics.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 546**Quantitative Investment Strategies**

This course develops the primary quantitative tools used in the portfolio selection process. The applied focus of the course centers on the process of moving from a data set of historical information to the formulation of a forecasting model, the estimation of mean-variance efficient portfolios, and the testing of efficiency hypotheses within an in-sample and post-sample setting. The course covers the estimation of efficient portfolios, factor models, forecasting models, and risk analysis.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 549**Commodities and Managed Futures**

Commodity markets have experienced dramatic growth and increased institutional investment in recent years. This course explores cash and futures markets in energy, grains, metals and soft commodities, as well as equity investments in commodity related firms. Students will explore the role of hedgers, speculators and institutional investors in commodity markets. The value of commodities in the institutional portfolio will be presented, which may allow hedging against inflation and the risks of declining stock and bond prices. Commodity trading advisers, commodity pool operators and the managed futures industry will be discussed. These fund managers initiate both long and short positions in futures markets, typically constructing portfolios from either a systematic or discretionary perspective.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 554**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.

Prerequisite(s): MSF 504 with min. grade of C and MSF 506 with min. grade of C and MSF 505 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 555**Credit Risk Management**

The extensive use of leverage by individuals, corporations, hedge funds and private equity managers has led to a significant increase in the demand for models that analyze credit risk exposures. For many users, the credit risk function has evolved from models used to analyze the quality of an individual borrower to models that aggregate exposure across borrowers, industries and geographic regions. This course provides an extended overview of the exciting and rapidly developing field of credit risk analysis.

Prerequisite(s): MSF 504 with min. grade of C and MSF 506 with min. grade of C and MSF 505 with min. grade of C

Lecture: 3 Lab: 3 Credits: 3

MSF 566**Time Series Analysis**

This course develops a portfolio of techniques for the analysis of financial time series. Distribution theory covers the normal, student T, chi-squared, and mixture of normal 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(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 567**Bayesian 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 deficiency early in the course.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 574**.NET and Database Management**

The course provides students with a comprehensive knowledge of .NET (VB and C#) programming, relational database design and SQL as they apply to quant finance and real-time trading. Specifically, topics covered include the .NET framework and libraries, ADO.NET, OOP, generics, market data feeds, XML and the Unified Modeling Language, as well as an overview of the hardware and network infrastructure necessary to enable electronic trading.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 575**C++ with Financial Markets**

This course presents the C/C++ programming language. Students learn the language from the ground up, from data types, to functions, arrays, classes, dynamic memory management, data structures and the Standard Template Library. Object-oriented programming is also discussed, including a review of commonly used design patterns. The focus is to understand C/C++ as it applies to financial mathematics and several practical examples from computational finance are presented.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 576**OOP and Algorithmic Trading Systems**

In this course, students learn advanced programming topics in .NET for real-time financial applications and automated trading systems, including multithreading, sockets, APIs, synchronization, the FIX and FAST protocols, and object oriented design for event-driven applications. Also, project management and software quality are covered in depth. Lastly, topics related to latency in real-time financial applications and alternative network architectures are also discussed. Students are expected to propose, design, document and develop an original project combining concepts from quantitative finance and trading strategy (presented in other courses) into a working software application.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 577**High Frequency Finance**

High frequency trading is concerned with the development of robotic trading algorithms within a real time market environment. This course will be concerned with the development of high frequency models and the assessment of their performance.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 584**Equity and Equity Derivatives Trading**

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.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 585**Foreign Exchange Market and Fixed Income Strategies**

The foreign exchange market is the largest and most liquid financial market in the world. Some trading strategies utilize foreign exchange as an independent asset class while others utilize foreign exchange as a component of a global strategy in equities and fixed income instruments. This course starts with strategies specific to the foreign exchange market and evolves to include short term interest rate instruments and global bonds. Fixed income trading will focus on yield curve strategies, basis trading, and various types of spread trading. Swaps, swaptions, caps, collars, and floors will be introduced.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 591**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.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 593**Market Microstructure**

Market microstructure is one of the youngest but most rapidly growing areas of finance. It focuses on the organization of traded markets, including those for equities, bonds, money market instruments, foreign exchange and derivatives (including futures, options and swaps). It explores the concepts of liquidity, transparency, the information content of bids, offers and trades, information asymmetries, order flow externalities, principal-agent problems, the design of markets, the rules of markets, the volatility of markets, the failure of markets, the regulation of markets and the costs of trading. Empirical work in this area typically involves huge datasets. Students will leave this course with a thorough understanding of the structure of the markets in which they will likely spend their careers.

Prerequisite(s): MSF 505 with min. grade of C and MSF 504 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 595**Entrepreneurial Finance**

Most new ventures are not created by financial analysts. However, the success of a new venture is vitally dependent upon the strength of its financial controls. Knowledge of finance is also an important determinant of an entrepreneur's ability to convey information about his company to banks, regulators, and potential investors. This course provides entrepreneurs with the financial knowledge that they require to create successful new ventures.

Prerequisite(s): MSF 504 with min. grade of C and MSF 506 with min. grade of C and MSF 505 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 596**The Venture Capital Process**

Venture capitalists are involved with the funding of new enterprises. The funding process begins with the review of a business plan submitted by the enterprise. If the business plan is accepted, the venture capitalist must then decide on the form of financing, the participation in the enterprise, and the compensation structure for the new enterprise. The course will introduce students to the process of venture capital financing and will allow them to participate in the process by reviewing actual business plans submitted by the entrepreneurs. Students will be required to evaluate the business plans and determine the type and quantity of financing to be provided.

Prerequisite(s): MSF 504 with min. grade of C and MSF 506 with min. grade of C and MSF 505 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

MSF 597**Independent Study in Finance**

MSF 597 Independent Study allows students to undertake research projects under the supervision of a full time faculty member.

Credit: Variable

MSF 599**Special Topics in Finance**

Special topics in finance.

Lecture: 3 Lab: 0 Credits: 3

PA 501**Introduction to Public Administration**

This course provides an understanding of the fundamental theories, key practices, and underlying issues that provide the framework for contemporary American public administration. It will discuss the political and administrative values affecting the theory and practice of public administration in the United States; review the historical development of American public administrative systems and processes; examine key issues facing public administrators in the light of both traditional and contemporary values and views; critically evaluate administrative approaches to public service delivery; and explore contemporary strategies to address critical problems in a rapidly changing world, such as new public management, public private partnerships, and strategic competitiveness.

Lecture: 3 Lab: 0 Credits: 3

PA 502**Organizational Behavior**

PA 502 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.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 503**Administration Law**

This course considers the role of statutes, case law, and administrative law in the establishment, operation, and control of public agencies. It also examines how legislation and administrative procedures direct and constrain the exercise of discretion by public managers and how they ensure accountability and the fair treatment of the public.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 505**The Law and the Nonprofit Sector**

This course is an examination of local, state, and federal law as it pertains to the nonprofit sector. This includes such things as the IRS, lobbying, human resources, property, and contracts.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 506**Managerial Economics**

This course examines the behavior of firms and households and the determination of prices and resource allocation in market economy. Topics include empirical demand, production and cost functions, monopoly, oligopoly, and pricing practices.

Lecture: 3 Lab: 0 Credits: 3

PA 510**Managerial Communications**

This course provides hands-on training and practice in the styles of writing and related communications skills needed by all public managers, including memoranda, letters, and formal reports. Emphasis is placed on learning and practicing effective writing and communication related to real-world administrative and managerial situations relevant to the student's particular current or chosen professional position.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 511**Comparative Public Administration**

This course provides an introduction to comparative analysis of systems of public administration in selected nations, including Great Britain, Japan, China, and major non-governmental organizations such as the European Union and the United Nations. The nations and organizations discussed will be compared to each other and to the United States. Areas explored will include: the historical antecedents of current national administrative systems (including the development of the nation-state), public administration models and structure in both developed and developing nations, the relationship between bureaucracies and political systems, the rise of the international nongovernmental organization, and the impact of corruption on public administration. (3-0-3)

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 512**Public Advocacy**

The goal of this course is to assist students functioning as strong advocates in their future careers and to help them prepare for their thesis or final project presentation. This is an advanced research and writing course. Public Advocacy is the study of effective argument. The course is designed to allow students to focus their prior learning experiences through problem analysis and advocacy. Using individual topics, students will address the problems of advocacy including different types of advocacy situations requiring different information, analyses, and presentations. Substantive topics of current interest and controversy will be discussed in the context of developing and advocating a particular position.

Lecture: 3 Lab: 0 Credits: 3

PA 514**Government Management and Information Systems**

A practical introduction to database management programs. Demonstrates the use of a variety of other office automation software tools (including graphics, desktop publishing, telecommunications/file transfer, bibliographic text retrieval, computer-aided instruction, and expert systems). Considers issues relating to effective computer management, including computer ethics, security, needs assessment and training. Prior working knowledge of personal computer operating systems, word processing, and spreadsheet programs is needed .

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 516**Information Technology in Public Administration**

The course has the learning objective of becoming aware of the general management challenges that the use of information technology presents for governments and to be able to develop appropriate policies that address these challenges. Upon completion, students should be able to apply best practices to the management of computer hardware, software, networking, and other technologies in government and appreciate how the use of electronic government technology can transform government and be able to help governments develop and manage effective programs of e-government use.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 522**Human Resource Management**

This course focuses on human resource planning, recruitment, examination, and promotion of procedure. It familiarizes students with the key human resources management factors involved in supervising employees as well as collective bargaining, affirmative action, and employee productivity and performance evaluation. It is directed towards practical applications in dealing with these topics as managers and employees working in their teams or individually and covers employee professional responsibility and behavior. Students in this class will learn to utilize human resource planning, recruiting, interviewing and selection processes to improve organizational outcomes; analyze the legal/cultural aspects of personnel when making organizational decisions; identify the key components of performance management to improve themselves and their direct reports; develop specific solutions to solve critical workplace personnel issues; and apply a variety of motivation and team performance techniques in current and future organizational settings.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 532**Public Financial Management**

Managing Public Financial Resources in a Changing World exposes students to fundamental concepts and strategies of public financial resource management in a rapidly changing fiscal environment. It provides students with the concepts and skills needed to evaluate budget processes and documents, understand the role of politics and planning in financial management, and to evaluate the financial condition of governments. Emphasizing best practice models and case studies, the course will focus primarily on local government finance with some reference to state government policies and practices. Some references also will be made to nonprofit budgeting accounting practices.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 533**Advanced Financial Management for Public and Nonprofit Sectors**

An advanced course focusing on the application of techniques used by financial managers to evaluate government financial condition and performance. Students will conduct case studies in which they apply tools such as performance measurement, budget analysis, priority setting, and financial indicator analysis to evaluate core public financial documents including budgets, capital improvement plans, and audited financial statements.

Prerequisite(s): PA 532* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 534**Financial Management in the Nonprofit Sector**

Nonprofits are business organized on many of the same principle as for-profits, but there are differences including financial reporting to boards of directors, donation accounting, reporting to government funding sources, tax reporting, and even investment strategies (for example program related investing). This course will equip a nonprofit manager to responsibly guide the complex financial life of a modern nonprofit.

Lecture: 3 Lab: 0 Credits: 3

PA 535**Resource Development in the Nonprofit Sector**

Resource Development in the Nonprofit Sector provides insight and learning into fundraising, marketing, and strategic planning in the nonprofit sector. This course offers an in-depth look into finding and securing the resources necessary to the success of nonprofit organizations.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 536**Strategy and Structure: Homeland Security**

This course introduces the student to the National Strategy for Homeland Security and describes the structure under which it was originally designed, the events that have affected the original concept and the various changes that it has undergone since the events of 09/11/2001. The student will become intimately acquainted with the key legal parameters affecting HS and the government components involved in HS operations, enforcement and intelligence. An emphasis on the overall integration of state, local, tribal, and private sectors will enable the student to apply the tenets of HS to their own individual situations. Other topics will include an understanding of how to conduct Threat Assessments as well as a cursory understanding of the Intelligence Cycle.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 537**Crisis Management and Homeland Security**

This course is taught by experts from various disciplines and provides a basic overview of homeland security including a brief history of terrorism. Specifically, the course is intended to provide the issues related to homeland security, awareness on the types of threats (damage to building processing plants, public facilities, etc.), and the type of risks involved. Other relevant aspects include types of weapons used by modern terrorists; how one goes about estimating risk and threat to a facility; how buildings and people respond when subjected to blast and fires; the role of search and rescue operation; weapon effect; building security; facility analysis to identify vulnerable areas given a threat; procedures for minimizing vulnerability; effective fire safety; contingency plans, etc. At the conclusion of this course the student will know how to estimate the risk and threat to a given facility, prepare a basic security audit; develop a basic contingency plan, develop passive/active security system for a given facility and develop post event search and rescue operations.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 538**Information Systems Security and Cyber Crime**

Provides an introduction to information systems security, an in-depth review of topics in cyber-crime issues in the public safety field and identifies methods of preventing cyber-crime in organizations. It includes issues involved with policy and legal issues of enforcement of cyber-crime laws, as well as tools used for network security.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 539**Local Government Management**

Students in this class will acquire the fundamental knowledge to manage functions in local government in such a way as to maximize limited resources for the effective and efficient delivery of public goods and services. Staying true to preserving the public trust and protecting the public interest students will learn what is required to lead a local government agency, department, and or unit of government. The student will gain and demonstrate knowledge regarding:

- The evolution of professional government management.
- The importance of achieving effective community leadership.
- Through critical thinking exercises, identify ways in which to enhance a governing body's effectiveness.
- How effective personnel management is critical to the success of the organization.
- The processes associated with policy implementation, performance measurements, and program evaluation.
- The need for effective intergovernmental relations.
- Why a professional code of ethics is critical to successful local government management.

Lecture: 3 Lab: 0 Credits: 3

PA 540**Alternative Dispute Resolution**

This course will introduce you to the formally accepted varieties of resolving disputes without going to court: negotiation, mediation, fact-finding, mini-trials, court sponsored settlement procedures, and arbitration. We will focus on process: what each term means; how the different processes work and compare with one another; when they can and cannot be used more effectively and how; and what considerations, techniques and/or factors make each kind of process work best. This is a survey course to give a general idea of the different kinds of alternative dispute resolution methods. Although simulations are used it is not equivalent to a full skills training program. Note: This course is also applicable to the nonprofit sector.

Lecture: 3 Lab: 0 Credits: 3

PA 541**Performance Measurement in Nonprofit and Public Management**

Performance management is a process of measuring progress toward specific organizational goals and objectives through the use of quantitative indicators of efficiency, effectiveness and quality. It is an essential tool that can help nonprofit and government leaders and staff plan and manage the programs and services they offer to customers, clients, and the public. This is an applied course which will help students understand performance management concepts, develop specific performance measures, and apply performance management techniques to solve real world problems in both the nonprofit and public sectors.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 543**Public Policy, Nonprofits, and Philanthropy**

This course examines the long history of charitable giving across the globe with special emphasis on the United States. In particular this course will focus on the philosophical roots of philanthropy, organized giving, and the role philanthropy has played in the development of modern public policy as it pertains to health and human services.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 550**Social Entrepreneurship**

This course gives students a practical introduction to the exciting and rapidly growing field of social entrepreneurship. The course will begin by introducing students to contemporary understandings of poverty, its causes, and traditional poverty alleviation strategies. It will then turn to key concepts regarding social ventures including entrepreneurship, organizational structures (for profit, nonprofit, and hybrid), financing, marketing, and performance assessment (social and environmental impact). We will also examine the challenges that are faced in creating and operating social enterprises in different parts of the world. The course includes guest lectures by the Stuart School of Business faculty and social entrepreneurs working in different areas (such as health, education, and environment). Students will gain hands-on experience by either developing a business plan for a social enterprise to address a specific real world problem or assisting an existing social venture in developing a business plan geared towards an expansion of its services. It is expected that the plans can be entered into a variety of social venture competitions.

Lecture: 3 Lab: 0 Credits: 3

PA 551**Public Infrastructure Management**

This course considers the status and operation of public infrastructure facilities in the United States generally and in the Chicago metropolitan area, with particular attention to the responsibilities and roles of the public works manager. Explores the relationship between the engineering, administrative, and political aspects of public works management. Focuses on critical infrastructure issues through case studies.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 552**Human Services Policy and Administration**

This course examines the major issues associated with the administration and operation of social welfare and health services in the United States by governments and nonprofit organizations. It is designed for students who work in such agencies and for those who have regular contact with them or their clientele. Structure, funding, staffing and other operating characteristics are examined.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 553**Public Safety Administration**

This course deals with contemporary public safety and security management in communities for public safety professionals, public administrators, and law enforcement officials who deal with public safety issues existing in post-9/11 American society. Examines the relationship between police/public safety policy, operations, and administration. Addresses various current problems and issues through case studies. Focuses mainly on the City of Chicago and surrounding metropolitan area.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 555**Introduction to Urban and Regional Planning**

The subject of this course is governmental and private sector activities that influence the maintenance and development of the built environment. Students learn both quantitative and qualitative analysis and are introduced to planning systems incorporating fiscal analysis, social analysis, transportation analysis, and demographic and economic analysis. They will also learn about various processes providing participation and citizen input to the development of plans for the built environment. Regulatory tools covered include zoning, comprehensive plans, neighborhood planning, and subdivision regulation.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 556**Public Management Strategies for the 21st Century**

In the United States, an increasing proportion of the goods and services traditionally provided by governmental employees in the context of a governmental bureaucracy are now provided by outside contractors, or through indirect means such as social, economic regulation, tax policy, loan guarantees, vouchers, and manipulation of incentives for the private sector. This course is intended to provide students with an understanding of various tools used by governments throughout the West as the traditional rule-based bureaucracy is replaced by other types of institutions and other means to provide goods and services traditionally provided by government.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 557**Urban and Regional Development**

This course covers materials on infrastructure management and the interrelationship of infrastructure management to urban and regional development. The course acquaints students with the increasing role of the private sector in infrastructure maintenance, development, and management. Students learn various analytic techniques useful for officials responsible for urban and regional development (including development of new infrastructure) and for the continuing maintenance and management of existing infrastructure. Students learn analytic techniques relating to management and planning.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 558**Energy and Environmental Policy**

This course requires successful completion of at least one other course marked with a satisfaction of IIT's Basic Writing Proficiency Requirement. This course places energy and environmental policy in domestic and global contexts. It also traces the economic and political implications of dependence on fossil fuels and the attempt to develop alternate energy sources and promote conservation. It assesses the environmental effects of resource consumption and the effort to control these effects by increased efficiency and regulation of pollution, and explores such problems such as nuclear waste, acid rain, global warming, and deforestation. Finally, it examines national and international attempts at economic, political, and technological solutions.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 559**Issues in Globalization**

Globalization has become a powerful buzzword in social science and in popular discourse. This course utilizes a sociological perspective to examine the economic, socio-political, and cultural aspects of globalization within the context of contemporary debates about the phenomenon.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 560**Political Economy**

This course is an introduction to political economy exploring the relationship between economy and government or political system. Role of the state, role of the market, and impact of economic ideologies on political and economic systems will be examined. Structure of political and economic interests and the mediating effects of institutions on political and economic outcomes will be examined. Normative issues connected to ideal political and economic institutions and appropriate political and economic institutions and outcomes will be examined. The impact of the political and economic institutions on the problems of public administration at both the national and state level will be covered as well as the appropriate role for administrators, elected officials, and private sector leaders in the formulation of political and economic policy.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 561**The Political Process and Administration**

This course addresses the relationship between democratic institutions and processes of American politics and the administrative agencies of government. It also examines obligations of citizenship, influence of private interests (especially economic) on public purposes, and effects of demographic, economic, and technological change on self-government.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 562**Urban and Metropolitan Government**

This course analyzes the decision-making process in urban and metropolitan government. It is designed to emphasize the role of elected and appointed officials, business, organized labor, community organizations, and the electorate. It also focuses on the major problems of city-suburban relations.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 565**The Nonprofit Sector**

This course considers the role played by the nonprofit sector in the larger American society and economy. Topics include major organizational forms, financial management, human resource policies, leadership, board-executive relations, and private-public connections.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 566**Nonprofits and the Public Sector**

Nonprofits and the Public Sector provides an overview of the complex and important relationship between government and nonprofits. This course includes a review of the history, funding schemes, the differences between grant and contract funding, recent trends, and more.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 567**Regulatory Policy and Politics**

This course examines the changing role of government regulation of private and public activities from a political and administrative perspective. It also explores the reasons for growth and reform of economic and social regulation and investigates the regulatory process including standards for rule-making and the involvement of organized groups and the courts.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 568**Strategic Competitiveness in the Public Sector**

This course is a strategy, competitiveness, and leadership laboratory for public sector managers and leaders of the 21st century. Students will gain an understanding of IIT Stuart's unique core concept of strategic competitiveness as well as frameworks from theories of entrepreneurial government, strategic management, and economic competitiveness. Students will critically analyze conventional frameworks for relevance to various contexts across the public sector in the rapidly changing Next Economy. Cases discussing the public sector's efforts to transform its management processes to meet the challenges of the Next Economy and to successfully interact with the business community are emphasized. The course employs a dynamic classroom environment using case method, class discussions, and group projects. Students will appreciate the challenges, complexities, and characteristics needed to effectively lead and be successful in the competitive global economy by delving into questions such as: How do countries, regions, states, and cities compete in the global economy? How do public leaders create innovative economic development strategies by influencing firms' strategic decisions regarding investment and trade? How can public leaders enhance the competitiveness of their business environment by adopting entrepreneurial government strategies? What are best practices for economic development in the Next Economy? .

Lecture: 3 Lab: 0 Credits: 3

PA 570**Social Capital and the Community**

The 21st century confronts the public sector with new challenges and opportunities. Many of these challenges and opportunities will take place on the community level, and many of those challenges and opportunities will be centered on the notion of social capital and the community. Social capital means the building of and use of community assets -- those resources available to the community through its residents or citizens, association, institutions, and economic life. Using an asset-based community development approach, the objective of this course is to help the student understand and use the concepts of asset-based approaches to social capital and community as it relates to public administration.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 577**Topics in Public Management**

This reading and seminar will focus on a contemporary topic in public administration or policy. Subject matter will change in successive offerings of the seminar.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Credit: Variable

PA 578**Planning, Policy-Making, and the Built Environment**

This course introduces students to governmental planning, policy-making, and their impact on the built environment. Using Chicago and nearby municipal areas as examples, the course acquaints students with the basic theories of urban and regional planning and development, and the regulatory tools and techniques used by government to impact the built environment. The course also includes material on housing, environmental protection, brownfields, historic preservation, new-urbanism and growth management, and various policy-making processes that determine governmental policies intended to influence the built environment.

Lecture: 3 Lab: 0 Credits: 3

PA 579**Ethics and Professional Responsibility in Public Service**

This course focuses on the ethical problems and issues faced by individuals in public service organizations. It also examines questions related to corruption, abuse of power, financial impropriety, ethics codes and standards in government and professional fields, whistle-blowing, and other topics related to front-page concerns and individual problems of conscience and judgment. The course traces the growth of concern about the standards of ethical behavior in government in the U.S.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 580**Policy Evaluation Analytics**

This course will present a variety of tools and techniques to evaluate existing programs and policies to determine and measure their most important elements, and to give policy-makers the necessary information to fund, improve or terminate programs based on empirical evidence regarding factors such as cost/benefit, efficiency, effectiveness, equity, and other important characteristics. Evaluation can also allow policy-makers and staff to focus budgets and efforts to best achieve policy or program goals.

Lecture: 3 Lab: 0 Credits: 3

PA 581**Policy Design Analytics**

This course is designed to present practical, cost-effective techniques that can be used to make better decisions regarding the allocation of scarce resources. Topics covered include problem identification, goal development, data needs and collection, generation of alternative solutions, projecting impacts, goals-oriented evaluation, and strategies for implementation.

Prerequisite(s): PA 501 with min. grade of C

Lecture: 3 Lab: 0 Credits: 3

PA 588**Incident Response, Disaster Recovery, and Business Continuity**

Students learn to design and manage key business information security functions including incident response plans and incident response teams; disaster recovery plans; business continuity plans; and crisis management teams and plans. Reporting, response planning, and budgeting are all addressed. Students working in teams will prepare an incident response, disaster recovery, business continuity, or crisis management plan for a real world organization such as a business or a government body or agency.

Prerequisite(s): PA 501* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

PA 590**Internship in Public Administration**

This course provides practical experience in public administration and may be taken only by students lacking extensive work experience in governmental administration.

Prerequisite(s): PA 501 with min. grade of C

Credit: Variable

PA 592**Directed Readings in Public Administration**

This course consists of independent reading and analysis centered on particular problems and supervised by a member of the public administration faculty.

Credit: Variable

PA 597**Special Problems**

The subject matter of this course will vary with the interests and the background of the students and the instructor, and the course may be taken more than once. Instructor permission is required.

Lecture: 3 Lab: 0 Credits: 3

PA 599**Practicum**

PA 599 is a capstone course where students apply concepts and theories they have studied to analyze an organizational or policy problem and deliver a report that normally specifies the problem or task, defines alternatives, and proposes recommended course of action. The recommendation will be supported by reasons and evidence. PA 599 should be taken in the student's last semester.

Prerequisite(s): PA 580* with min. grade of C, An asterisk (*) designates a course which may be taken concurrently.

Lecture: 3 Lab: 0 Credits: 3

SMGT 526**Sustainable Supply Chain Management**

Students will be presented with models and practices that minimize supply-demand mismatch and therefore maximize companies' own profitability as well as models and practices of collaboration with other companies in a supply chain that minimize risk and environmental costs and therefore maximize the supply chain's sustainability. This course will have an emphasis on the integration of business and technology aspects. We will first introduce an integrated view of the production and logistics functions in organizations such as capacity analysis, inventory management, and logistics management. The course then discusses topics involved in the interaction of a firm with others players in a supply chain such as value of information, supply contracts, and risk sharing. Finally, the course will introduce models/tools enabling sustainability actions plans, for example, reducing waste in the supply chain, both upstream and downstream.

Lecture: 3 Lab: 0 Credits: 3

SSB 510**Advancing Career and Education: Foundational Career Competency Development**

The two-semester Advancing Career and Education (ACE) Program is a graduation requirement that complements the graduate business student's academic experience and prepares the student for professional internship placement and the post-graduation job market. Aligned with the Stuart Educational and Professional Development Competency Model, the first semester course (SSB 510) explores topics such as cultural competence, communication skills, ethics, and leadership and teamwork. This course develops students' workplace readiness in the areas of resume development, relationships and communication, workplace etiquette, presentation skills, and time management. During the first semester, students are provided the option of completing the self-selected Career Competency Experience (SSB 511) or applying to the Industry Solutions Experience (SSB 512).

Lecture: 1 Lab: 0 Credits: 0

SSB 511**Advancing Career and Education: Career Competency Experience**

The two-semester Advancing Career and Education (ACE) Program is a graduation requirement that complements the graduate business student's academic experience and prepares the student for professional internship placement and the post-graduation job market. Aligned with the Stuart Educational and Professional Development Competency Model, the second semester course (SSB 511) focuses on internship search and interviewing skills including demonstrating business competencies, LinkedIn strategies and tools, networking and informational interviewing, and understanding employer expectations. To satisfy the experiential component of the ACE Program, students in SSB 511 must select and develop specific competencies from a list of career-relevant skill areas. Students will then participate in a self-selected experiences and write a reflection paper for each experience in which they discuss its relevance to their career objectives and the competencies they selected.

Prerequisite(s): SSB 510 with min. grade of C

Lecture: 1 **Lab:** 0 **Credits:** 0

SSB 512**Advancing Career and Education: Applied Industry Experience**

The two-semester Advancing Career and Education (ACE) Program is a graduation requirement that complements the graduate business student's academic experience and prepares the student for professional internship placement and the post-graduation job market. Aligned with the Stuart Educational and Professional Development Competency Model, the second semester course (SSB 512) focuses on client relationship management, consulting skill development, research application, and problem-solving in addition to internship search and interviewing skills including demonstrating business competencies, LinkedIn strategies and tools, networking and informational interviewing, and understanding employer expectations. To satisfy the experiential component of the ACE Program, students in SSB 512 participate in a team-based workplace experience hosted by a partner organization. Students will receive mentorship from a company representative and an opportunity to present a business solution to the organization.

Prerequisite(s): SSB 510 with min. grade of C

Lecture: 1 **Lab:** 0 **Credits:** 0