

# STUART SCHOOL OF BUSINESS

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## Program Contacts

### Master of Business Administration

M. Krishna Erramilli

### Master of Management

M. Krishna Erramilli

### Master of Public Administration

Roland Calia

### Master of Technological Entrepreneurship

Nik Rokop

### M.S. in Finance

Ricky Cooper

### M.S. in Financial Economics

Ricky Cooper

### M.S. in Management Science and Analytics

Siva K. Balasubramanian

### M.S. in Marketing Analytics

M. Krishna Erramilli

### M.S. in Project Management

M. Krishna Erramilli

### M.S. in Sustainability Analytics and Management

Roland Calia

### M.S. in Technological Entrepreneurship

Nik Rokop

### Ph.D. in Finance

Ricky Cooper

### Ph.D. in Management Science and Analytics

Siva K. Balasubramanian

### 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 is a global leader in bridging technology and business, offering distinctive education that trains students to become outstanding professionals in economics, finance, analytics, marketing, business, public administration, operations, and management.

Business at Illinois Tech has a prestigious history that dates back to the late 1800s, with some of the nation's first courses in "Family and Consumer Science" (including "Home Economics" and "Household Management") being offered by the Lewis Institute, Stuart's original home, and the Institute's subsequent formation of the Department of Business and Economics in 1926. The innovative programs were

created to help society navigate the fast-paced industrialization and urbanization of the time. Combined with the merger of the Lewis Institute with the Armour Institute, and the earlier pioneering works of Philip D. Armour, a merchant financier, Julia A. Beveridge, a librarian turned public administrator, and Frank W. Gunsaulus, an entrepreneurial preacher in the 1880s, the Department Business and Economics ultimately grew into a separate school at Illinois Institute of Technology – the Stuart School of Business, in 1969, with a gift from Lewis Institute alum and renowned financier Harold Leonard Stuart. Harold L. Stuart himself was a national leader in the field of investment banking in the first half of the 20th century, and his Chicago investment bank played a pivotal role in establishing the city as a global financial hub.

Over a period of more than 125 years, harnessing curricular innovations by Julia A. Beveridge and George N. Carman, and incredible scholarly works by trailblazing Illinois Tech scholars Herb A. Simon (author of *Administrative Behavior*, later awarded the Nobel Prize in Economics), Karl Menger (developer of the St. Petersburg paradox in economics) and Abe Sklar (developer of the Copula in financial modeling), the Stuart School of Business has refined education in the disciplines of economics, finance, analytics, business and public administration, marketing, and management.

A long-standing leader in curricular innovation, in 1990, building on the foundational works of numerous Illinois Tech scholars, and Harold L. Stuart's own contributions to finance and the broader business community, the Stuart School of Business established quantitative finance as an academic discipline, with a world's first postgraduate Master's program in Financial Markets and Trading – a program that highlighted a new model for embedding into a postgraduate academic program the emphases on career readiness and connectedness with the business community, and transformed business school education.

Today, the Stuart School of Business continues to be a frontier innovator in accredited education, offering academic programs and co-curricular opportunities that place students on the path to self actualization and career success. Leadership, entrepreneurship, experiential learning, positive societal impact, and connectedness to the business community, combined with a human-centered approach to student development, and an unyielding focus on student success, continue to be core pillars at Stuart. Stuart is accredited by the Association to Advance Collegiate Schools of Business (AACSB) – an accreditation achieved by fewer than 6% of business schools worldwide. Stuart's 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." Situated within Chicago, whose business community is known for its spirit of entrepreneurship and innovation, Stuart benefits from and contributes to the city's status as a global market leader in analytics, economics, finance, marketing, and sustainable enterprise, as reflected in all of the academic programs at Stuart. Our programs:

- Embrace technology, innovation, rigor, and interdisciplinary learning
- Link with industry experts to dynamically evolve and meet the needs of the marketplace
- Offer special learning environments, with smaller class sizes and cohorts – a place to form lifelong relationships with peers, faculty, staff, and industry members
- Focus on experiential learning through hands-on experiences such as internships, student organizations, competitions, and industry-relevant and faculty-guided research
- Place students in phenomenal careers, tapping Stuart's highly connected alumni network

Stuart School of Business offers intellectually rigorous education in core business disciplines at all levels, from baccalaureate to doctoral. Stuart is committed to developing well-rounded students who are equipped with superb skill sets and knowledge, and also possess the interprofessional skills and experiences that are critical to career success. Stuart offers a wide range of challenging programs taught to emphasize career readiness, leadership, analytical skills, and an entrepreneurial mindset.

Stuart offers programs in each of the 3 core areas of Business Administration & Management, Finance & Economics, and Analytics.

At Stuart School of Business, our approach has been refined over 125 years of business education at Illinois Tech, and focuses on hands-on, experiential learning, and, through industry-trained faculty, on entrepreneurship and industry connectedness. This approach prepares students for successful careers in economics, business, analytics, finance, management, marketing, and public administration, with entrepreneurial and leadership mindsets.

Stuart's distinctive programs are designed to provide education that prepares students to solve increasingly complex problems in ever-evolving business environments, offering students superb career growth opportunities, and a readiness to contribute value to any organization on day 1.

Stuart faculty, in addition to their scholarly and teaching activities, are industry veterans and 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, the State Department, the Federal Trade Commission, and the 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 core to each program. Stuart 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 requirement: the Advancing Career and Education (ACE) workplace immersion 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. Graduate classes are regularly offered to accommodate flexibility for both full-time students and working professionals, including weekday daytime, weekday evening, hybrid, and weekend morning and early afternoon. Some graduate courses are offered on a half-semester basis.

## Research at Stuart

Faculty at the Stuart School of Business engage in rigorous, relevant, and interdisciplinary academic and practice-oriented research. Focus areas include economics; strategic, quantitative, corporate, and high-frequency finance; sustainable enterprise; management science; business and marketing analytics; public administration; entrepreneurship; and project management. Stuart's research centers engage with industry partners on research projects and programming to meet the needs of the evolving global marketplace. For more information about research at Stuart School of Business, contact Associate Dean Siva K. Balasubramanian at [sivakbalas@stuart.iit.edu](mailto:sivakbalas@stuart.iit.edu).

### The Center for Corporate Performance

The Center for Corporate Performance (CCP) takes a Big Data approach to analyzing the relationships between corporate organizational structures, governance policies, and economic and financial performance metrics. CCP's objective is to bridge the gap in research in management, organization, policy, economics, and finance at the interface of corporate organization and performance. CCP collaborates with and disseminates its work product to practitioners, producing work that is relevant to both academic scholars and industry executives.

### The Center for Financial Innovation

Financial innovation has been vigorously debated for decades but particularly since the financial crisis of 2008 as well as in the past few years. Situated within the Stuart School of Business – a leader in the area of financial markets and technology – 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 of our global financial systems. The center provides data, video interviews, and an Encyclopedia of Financial Innovation.

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 SPORTS INNOVATION

The Center for Sports Innovation (CSI) at Illinois Tech serves as a hub for research and development of a wide variety of technologically-related sports subjects, including the systems and businesses that impact the world of sports. CSI is positioned as the academic hub for Chicago's sports research, performance and development efforts.

CSI combines academic inquiry, commercial development, and psychological and scientific approaches to assessing athletic performance in order to enhance the sports industry's progress, embracing both technological and physiological improvements.

### The Center for Strategic Finance

The Center for Strategic Finance focuses on strategy in financial markets, building upon foundational concepts drawn from traditional finance, strategic management, game theory, and computer science. CSF fellows research new questions about financial markets, incorporating the quantification and automation of trading, execution, and risk management strategies. The Center develops new theories that are shaping the future of finance. Situated within the Stuart School of Business – a leader in the area of financial markets and technology – and in the City of Chicago, a global hub for the research and development of strategies in financial markets, the Center for Strategic Finance continues in the tradition of scholarly innovation in the finance discipline at Illinois Tech.

## Dual Degree Programs

Stuart offers several dual-degree programs, including programs in which students are eligible to earn a law degree from Chicago-Kent College of Law or a Master of Design degree from the Institute of Design. To help plan a program of study, students are assigned advisers from both programs of study. Simultaneous enrollment is required for varying periods of time, depending on the pairing. Students can 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. Unless they are optional for the program, current GMAT or GRE scores may be required by the Institute of Design and the Stuart School of Business. Interested students should contact program directors from either program to review all requirements.

All graduate programs in business are subject to continuous improvements, including dual-degree programs. Prospective students are strongly encouraged to refer to the Stuart website for the most current descriptions of all programs and degree requirements. Dual-degree programs include but are not limited to the following:

### **M.B.A./M.P.A.**

The Master of Business Administration/Master of Public Administration program is ideal for students who want to excel in management roles that benefit from a stronger understanding of policy and of the public sector.

### **M.B.A./M.S. (CHOOSE FROM M.S. FINANCE, M.S. MARKETING ANALYTICS, M.S. SUSTAINABILITY ANALYTICS AND MANAGEMENT, among others)**

Combine your Master of Business Administration with one of our specialized M.S. degree programs, such as sustainability analytics and management, finance, and marketing analytics.

### **M.B.A./J.D. and M.B.A./L.L.M.**

The Master of Business Administration/Juris Doctorate and Master of Business Administration/Master of Laws program offers a competitive advantage for legal professionals who need a solid understanding of business practices, especially for corporate attorneys or legal/management consultants.

### **M.P.A./J.D.**

The Master of Public Administration/Juris Doctorate degree is particularly valuable for administrators who need a greater understanding of policy and public administration.

### **M.S. SUSTAINABILITY ANALYTICS AND MANAGEMENT/J.D.**

The Master of Science in Sustainability Analytics and Management/Juris Doctorate degree is designed to prepare students for careers in the legal profession with emphasis on understanding and managing environmental issues and sustainable business practices.

### **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 expertise in finance.

### **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.

### **M.P.A./M.DES.**

The Master of Public Administration/Master of Design dual degree program prepares students to effectively address dynamic and complex civic and social challenges with rigor, depth, and creativity. It is ideal for professionals who aspire to lead collaborative, interdisciplinary innovation initiatives within the civic sector.

## **Admission Requirements**

Admission to the Stuart School of Business is competitive. Meeting the minimum requirements does not guarantee admission. Selection factors for all programs may include but are not limited to a combination of undergraduate grade point average (GPA), GMAT or GRE test scores (unless listed as optional), letters of recommendation, CV/Resume, and work experience. Applicants generally must have, or are expected to complete prior to enrollment, a four-year undergraduate degree from an accredited institution. Applications are accepted by specified deadlines throughout the year, and part-time students may enter most programs at the beginning of a semester of their choosing.

Applicants from non-English-speaking countries must submit the result of a Test of English as a Foreign Language (TOEFL), Pearson Test of English (PTE), International English Language Testing System (IELTS), or Duolingo English Test scores, unless they are eligible for a waiver.

Refer to [admission.iit.edu/graduate](http://admission.iit.edu/graduate) for complete details.

## Degrees Offered

- Master of Business Administration (M.B.A.)
- Master of Business Administration: Business Analytics
- Master of Business Administration: Coursera
- Master of Business Administration: Quantitative Finance
- Master of Management
- Master of Public Administration
- Master of Public Administration: Analytics
- Master of Technological Entrepreneurship
- Master of Science in Economics and Data Analytics
- Master of Science in Finance
- Master of Science in Financial Economics
- Master of Science in Management Science and Analytics
- Master of Science in Marketing Analytics
- Master of Science in Project Management
- Master of Science in Sustainability Analytics and Management
- Master of Science in Technological Entrepreneurship
- Doctor of Philosophy in Finance
- Doctor of Philosophy in Management Science and Analytics

## Dual Degree Programs

- M.B.A./Master of Public Administration
- M.B.A./M.S. in Sustainability Analytics and Management
- M.B.A./M.S. in Finance
- M.B.A./M.S. in Marketing Analytics
- Among a number of other combinations

## With the Institute of Design

- Master of Design/Master of Business Administration
- Master of Design/Master of Public Administration

## With the Chicago-Kent College of Law

- Master of Business Administration/J.D.
- Master of Public Administration/J.D.
- M.S. in Sustainability Analytics and Management/J.D.
- M.S. in Finance/J.D.
- Master of Business Administration/L.L.M.

## Accelerated Master's Program Options

### Accelerated Master's Degrees at stuart

Accelerated master's degree programs (AMP) hold some of the highest values to students, enabling students to complete both an undergraduate degree and a graduate degree in as few as five years, possibly less. This approach provides students with the ability to gain greater knowledge and expertise, strengthens their credentials, while at the same time completing fewer credit hours and with significantly better scheduling flexibility than completing the two degrees separately.

Students must maintain a combined 3.0 GPA to be admitted to and remain in an accelerated master's degree program.

The application for the accelerated master's program (AMP) is accessible through the MyIIT portal ([my.iit.edu](http://my.iit.edu)). Under the Academics tab, locate the Undergraduate Academic Affairs channel and then access the link for the AMP application. Students are encouraged to contact the program director of the master's program in which they are interested.

## Graduate Certificate Programs

- Business Management
- Compliance and Pollution Prevention
- Corporate Finance<sup>1</sup>
- Corporate Finance and Valuation
- Economic Development and Social Entrepreneurship
- Emerging Technologies in Business
- Financial Technology
- Financial Toolbox
- Fundamentals of Finance
- Innovation and Emerging Enterprises
- Marketing Analytics
- Marketing Management
- Nonprofit and Mission-Driven Management
- Portfolio Management
- Public Management
- Quantitative Modeling and Trading
- Risk Management
- Risk Management<sup>1</sup>
- Security, Safety, and Risk Management
- Strategic Management
- Sustainable Enterprise
- Trading<sup>1</sup>

<sup>1</sup> Post-graduate

## Course Descriptions

### BUS 510

#### Strategic Management

How do companies outperform their rivals to become market leaders in today's hyper-competitive global business environment? The answer lies in developing great strategies and executing them flawlessly. Strategic Management is the rigorous business process that helps you develop and execute highly effective strategies. The SM process has three major components: Analysis (of external and internal environments), Strategy (business-level, corporate and functional) and Performance (strategic competitiveness and above-normal profits). The course has a strong experiential learning component. With the help of a strategic management computer simulation game, you will run a simulated company in a highly competitive marketplace to outperform your competitors and become market leader. At the end of the course, you will learn business fundamentals, the strategic management process, strategy formulation and implementation, data-driven decision making, and a good understanding of accounting, finance, human resources, marketing and production. This graduate course is suitable for students with or without a business background.

**Lecture: 3 Lab: 0 Credits: 3**

### BUS 532

#### Artificial Intelligence in Business

This course is designed to provide an introduction to the evolving area of AI, with an emphasis on potential business applications and related managerial insights. Artificial Intelligence (AI) is the science behind systems that can program themselves to classify, predict, and offer solutions based on structured and unstructured data. For millennia, humans have pondered the idea of building intelligent machines. Ever since, AI has had highs and lows, demonstrated successes and unfulfilled potential. Today, AI is empowering people and changing our world. Netflix recommends movies, Amazon recommends popular products, self-driving cars learn to navigate safely around other vehicles without human assistance, and programmed robots distinguish trash from dishes that are to be washed. This course focuses on how AI systems understand, reason, learn and interact; learn from industry's experience on several AI cases; develop a deeper understanding of machine learning (ML) techniques and the algorithms that power those systems, and propose solutions to real world scenarios leveraging AI methodologies. The course also presents two key opportunities: first, to earn a globally recognized IBM digital badge in AI; second, to develop a high-quality proposal to plan and execute the deployment of an AI application at a student's future employer.

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

### 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, ANOVA, goodness-of-fit tests, and managerial decision-making under uncertainty. 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**

### BUS 571

#### Entrepreneurship Capstone Studio Course

The BUS 571 Capstone Studio course in the Master of Technological Entrepreneurship program provides students with a hands-on, real-world opportunity to complete a project in one of the three following roles: 1. Startup Founder: Bring your startup ideas to your Capstone project. Identify, investigate and/or evaluate the suitability of a product or service to the marketplace. 2. Creative Researcher/Research Commercialization: Apply your talents to investigate and/or evaluate a research-based technology for suitability as a product or service. 3. Corporate Innovator: Make an impact within a business or organization. Work with an existing company to evaluate and/or investigate a product or service opportunity for the company. Students will either build or join a small team to develop a prototype, engage customers and partners, and identify support and/or funding.

**Lecture: 0 Lab: 3 Credits: 3**

### BUS 572

#### Entrepreneurship Capstone Studio Course

The BUS 572 Capstone Studio course provides students with a hands-on, real world opportunity to complete a project in one of the three following roles: 1. Startup Founder: Bring your startup ideas to your Capstone project. Identify, investigate and/or evaluate the suitability of a product or service to the marketplace. 2. Creative Researcher/Research Commercialization: Apply your talents to investigate and/or evaluate a research-based technology for suitability as a product or service. 3. Corporate Innovator: Make an impact within a business or organization. Work with an existing company to evaluate and/or investigate a product or service opportunity for the company. Students will either build or join a small team to develop a prototype, engage customers and partners, and identify support and/or funding.

**Lecture: 0 Lab: 3 Credits: 3**

**BUS 592****Master of Technological Entrepreneurship Capstone Course**

The BUS 592 Capstone course in the Master of Technological Entrepreneurship program provides students with a hands-on, real world opportunity to complete a project in one of the three following roles: 1. Startup Founder: Bring your startup ideas to your Capstone project. Identify, investigate and/or evaluate the suitability of a product or service to the marketplace. 2. Creative Researcher/ Research Commercialization: Apply your talents to investigate and/or evaluate a research-based technology for suitability as a product or service. 3. Corporate Innovator: Make an impact within a business or organization. Work with an existing company to evaluate and/or investigate a product or service opportunity for the company. Students will either build or join a small team to develop a prototype, engage customers and partners, and identify support and/or funding. Students are required to take BUS 592 in every semester of their program to facilitate application of learning to their project.

**Credit:** Variable

**BUS 595****Special Topics: Business Administration**

Special topics in business administration.

**Lecture:** 0 **Lab:** 3 **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/GHGs) 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 509****Corporate Sustainability Management**

The course addresses “Environmental Protection and Sustainability” in its broadest sense. It examines interactions between economic growth, and the environment (implications of environmental externalities) and 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/GHGs) management and climate change.

**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****Sustainability and ESG Analytics**

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**

**EMS 599****Independent Study in Environmental Management & Sustainability**

Student will conduct independent research on an environmental management and sustainability topic.

**Credit: Variable**

**MAX 501****Digital Marketing**

The course examines digital marketing strategy, implementation and executional considerations for BtoB and BtoC brands and provides a detailed understanding of all digital channels and platforms. Participants will complete the course with a comprehensive knowledge of and experience with how to develop an integrated digital marketing strategy, from formulation to implementation. Using a variety of practical tools and techniques in practical exercises and projects, students will gain an understanding of using digital channels to achieve their marketing goals. Student teams will gain practical experience in usage of channels such as Search – SEO and SEA, Optimization and Marketing Display – Banners, Video and Beyond, Advanced topics Email – Design and Deployment Social – Networks, Media, and Content - Inbound Marketing Mobile and Emerging – Mobile Web, Apps and Ecosystems, Gaming, and beyond.

**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**

Modern Marketing Research reflects the increasing sophistication of Marketing practice and the data rich environment that confronts market researchers. Throughout this course, we develop a basic knowledge of the use of data in order to understand customers and make marketing decisions ~ practical marketing problem solving. This course introduces the tools that managers use to develop consumer-centric marketing strategies and techniques to make better marketing plans, better product designs, and better decisions. Marketing engineering focuses on specific data-driven marketing tools, regression, cluster analysis, conjoint, Principal Component Analysis (PCA), Exploratory Factor Analysis (EFA), etc., and their application to specific marketing problems (segmentation and targeting, new product design, and forecasting) utilizing power of R language.

**Lecture: 1.5 Lab: 1.5 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.

**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 507****Visual Analytics - Data Analytics & Visualization**

This course provides an introduction as well as hands-on experience in data visualization. It introduces students to design principles for creating meaningful displays of quantitative and qualitative data to facilitate managerial decision-making. Analytics involves the extensive use of computer applications, data (both "big" and "small"), and quantitative methods to help drive business decisions. Students will learn essential theories, concepts, methodologies, and use leading computer tools to visualize and analyze real world data.

**Lecture: 1 Lab: 2 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 course examines digital marketing analytics strategies, platforms for data ingestion, preparation, and reporting. The course focuses beyond social media marketing analytics. Digital marketing analytics is foundational to Digital Marketing because analytics is the language used to optimize and connect results across all digital marketing tactics – search, social media, email marketing, display ads, video ads, etc. An effective digital marketer is well versed in data and is a data translator for a business. Becoming well versed in analytics and data requires the cultivation of both technical and soft skills. This course aims to arm students with such skills.

**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 designed to develop each student's financial analysis skill set. Throughout this course, students will be exposed to a variety of companies and industries with the goal of using various quantitative tools and qualitative factors to determine the financial health and risk of a company. The material covered in this course will correspond to various business applications including credit analysis, financial analysis, and investment analysis. During the latter part of this course, students will be exposed to advanced case study analysis using a team-building approach. MBA 501 will also introduce fundamental business concepts that will be used in other MBA courses.

**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 201x; (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.

**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.

**Lecture: 3 Lab: 0 Credits: 3**

**MBA 513****Operations and Process Management**

The course focuses on teaching students how to successfully analyze a business process, research methods of improving a process, and adapt/integrate the improvement methods into the business process in a prioritized and actionable manner.

**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 valve 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 532****Artificial Intelligence**

This course is designed to provide an introduction to the evolving area of AI, with an emphasis on potential business applications and related managerial insights. Artificial Intelligence (AI) is the science behind systems that can program themselves to classify, predict, and offer solutions based on structured and unstructured data. For millennia, humans have pondered the idea of building intelligent machines. Ever since, AI has had highs and lows, demonstrated successes and unfulfilled potential. Today, AI is empowering people and changing our world. Netflix recommends movies, Amazon recommends popular products, self-driving cars learn to navigate safely around other vehicles without human assistance, and programmed robots distinguish trash from dishes that are to be washed. This course focuses on how AI systems understand, reason, learn and interact; learn from industry's experience on several AI cases; develop a deeper understanding of machine learning (ML) techniques and the algorithms that power those systems, and propose solutions to real world scenarios leveraging AI methodologies.

**Lecture: 3 Lab: 0 Credits: 3**

**MBA 534****Blockchain**

Every second of every day, businesses exchange value with suppliers, partners, customers and others. By value, we mean goods, services, money, data and more. Each exchange of value is a transaction. Successful transactions need to be fast, precise and easily agreed on by parties participating in the transaction. Blockchain for business provides a way to execute many more of these transactions – a much better way. Blockchain is an open, distributed ledger technology that establishes trust, transparency and accountability in transactional business processes by creating a shared system of record among business network members, eliminating the need to reconcile disparate ledgers. Data associated with every event or transaction is time stamped, appended to the record preceding it and available to authorized participants in real time, shifting the lens from disparate bits of information held by different owners to an always up-to-date lifetime history of data related to a person, place or thing. Blockchain can do for business what the internet did for communication. The course also gives you the opportunity to earn a globally recognized IBM digital badge in Blockchain.

**Lecture: 3 Lab: 0 Credits: 3**

**MBA 536****Internet of Things**

The Internet of Things (IoT) refers to the growing range of connected devices that send data across the Internet. The IoT is now a reality due to the convergence of several technologies. This course will provide students with a basic understanding of the need, implementation, and business value of Internet of Things. This class will mainly focus on Business applications for IoT along with the introduction of how these systems could be implemented in the 'real world'. The class will consist of a set of theory lectures and hands-on labs. The theory section will cover the business needs for a IoT, the business processes required to create an industrial grade IoT application and the logical steps to design a IoT. The hands-on labs will provide the basic knowledge to become familiar with the IBM Cloud with a focus on IoT applications, how to setup the cloud to receive sensor readings from IoT, and how to create a dashboard to display the reading values over time, and setup 'alarms' for 'out of band' sensor readings. There will be six labs and one final team project. All of these projects will be completed in the IBM cloud based IoT environment. The course also gives you the opportunity to earn a globally recognized IBM digital badge in IoT.

**Lecture: 3 Lab: 0 Credits: 3**

**MBA 540****Data Science for Business**

Adoption of Data Science concepts, methods and tools improve enterprise decision-making and performance. This course will include both the IBM online Data Science and Enterprise Design Thinking courses. Upon successful completion of these courses, IBM Badges for Data Science and Enterprise Design Thinking will be awarded. Additionally, the Python language that is preferred by industry will be taught for developing business analytical models. By the end of the semester, you will be well-prepared to solve business problems and identify opportunities. The primary machine learning tools are IBM WATSON Studio (cloud), Python, Jupyter notebooks and Mural for design thinking. The text, readings, and software lab experience will enhance your personal competitive advantage.

**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 572****New Technology Ventures (Coursera)**

This course is structured to provide students with a rigorous understanding of how to start, grow, and sustain innovative businesses. It begins with cultivating an entrepreneurial mindset and progresses through design thinking, customer discovery, and strategic financial planning. Each module is designed to build on the previous, incorporating elements like global market positioning and ethical business practices. Students will conclude the course by learning to effectively communicate their business ideas through compelling pitches aimed at securing funding and driving business growth.

**Lecture: 3 Lab: 0 Credits: 3**

**MBA 575****Startup Accelerator**

This course is intended for student teams who are working on a project that they believe has startup potential. Student teams admitted to the Startup Accelerator will assume the role of co-founders and build their companies. The aim of this course is to give students the tools needed to assess, develop, and validate a business strategy for an early-stage product or service while learning how to work effectively as a team. Above all, our goal is to have the teams walk away with an entrepreneurial mindset - entrepreneurs are by nature focused on creating value for the world. Obsessed with making progress, they apply a disciplined approach to advance their vision. Finally, entrepreneurs communicate clearly and with purpose, to rally a community to support and bring their vision to life.

**Lecture: 1 Lab: 2 Credits: 3**

**MBA 576****New Technology Ventures (Deep Tech Commercialization)**

The course concentrates on the preparation of business plans, methods for evaluating and screening new venture ideas, formulation and implementation of business strategies for new ventures, and the financing of 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 entrepreneur in the high technology space. Topics discussed will include venture valuation, financing startups, financial planning and strategy.

**Lecture: 3 Lab: 0 Credits: 3**

**MBA 577****Entrepreneurial Finance**

The course Entrepreneurial Finance has been one of the most popular electives for the past quarter century at top graduate business schools. The course is designed for students interested in becoming an entrepreneur, working at an entrepreneurial firm, investing in entrepreneurs and/or anyone interested in the topic of finance and/or entrepreneurship. The course is open to all MBA students. A background in finance is not required. This is a course that focuses on teaching the practical application of the topics mentioned earlier.

**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 590****Digital Transformation**

Designed for leaders focused on implementing new ideas, staying ahead of the competition and aligning their people, data and technology to drive digital transformation. First, we discuss the pace of change, and its impact, implications and opportunities. Next, we provide the context and framework to help you identify key areas to digitize, including strategy, core processes, and technology. The course culminates with a project where participants create an action plan for a challenge at a level that is appropriate for their role or responsibility. After completing the course, students will learn how to build a digital transformation vision, skills and leadership qualities key for the 21st century executive.

**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**

**MBA 701****Competitive Strategy**

"Why do some companies outperform others?" That question is particularly important to ask in industries like the tech sector, which are fiercely competitive. Companies competing in these industries find it difficult to achieve competitive advantage and sustain it over the longer run. In this course, you will learn about 21st century competition, the forces driving it, and the challenges it poses for companies. Using that as the backdrop, you will learn how to analyze a company's external and internal environments and develop powerful strategies that allow companies to gain a sustainable competitive advantage even in fast-cycle markets. The course will describe companies that have successfully outperformed their competitors even in the fiercely competitive markets of the 21st century.

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

**MBA 702****Managerial Economics: Buyer and Seller Behavior**

Why are markets commonly believed to be the best way of allocating resources and organizing economic activity? This course will answer this critical question while examining its implications for pricing, market entry and exit, short-term and long-term business strategies, and the forecasting of key market variables. The course introduces fundamental topics in the economic analysis of markets, and some of the analytical tools used to study them, as a means to build economic intuition and fostering an understanding of a variety of market conditions and market forces.

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

**MBA 703****Mastering Excel Essentials to Enhance Business Value**

Spreadsheets are ubiquitous in today's business environment. The Excel Essentials course is designed to empower beginner and intermediate users to maximize their productivity and enhance the business value of their Excel skills. This course will equip you with the fundamental knowledge to leverage the potential of spreadsheets. Throughout the course, you will embark on a step-by-step journey, starting with the basics and gradually progressing to more advanced topics. Whether you are new to Excel or have been using it for a while, this course will help you refine your skills and uncover hidden features to supercharge your productivity.

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

**MBA 706****Innovation and International Strategy**

In this course, you will learn about Innovation and International Strategies. The course is made up of 5 modules. Modules 1 through 3 cover innovation strategies including topics like technology adoption life cycle, the product life cycle, disruptive innovation and blue ocean strategy. In Modules 4 and 5, you will learn how companies expand into international markets and compete there. You will learn about how companies make decisions like the rationale for going international, international market selection, entry strategies and the different types of international strategies. You will learn how successful companies compete globally and outperform their competitors.

**Lecture: 2 Lab: 0 Credits: 2**

**MBA 707****Business Economics and Game Theory for Decision Making**

Good decision making and strategy do not exist in isolation: the success and profitability of a business depends not only on its own strategic moves but also those that other firms make, especially competitors. Understanding the strategic linkages among firms can therefore be immensely valuable. Economics and Game theory offer tools that can specifically enhance one's understanding and ability to exploit such strategic linkages. This course will layer game-theoretic considerations on top of economic considerations in the marketplace. In doing so, we will identify the key actors, their objectives, potential actions, and predicted outcomes, as well as ways to strengthen the position of a business in the market. We will also demonstrate when to expect governments to intervene in markets, either because markets may have failed or because the government may have been persuaded to intervene by key stakeholders.

**Lecture: 2 Lab: 0 Credits: 2**

**MBA 708****A Comprehensive Excel Masterclass: Unleashing Business Potential**

The Comprehensive Excel Masterclass is designed to provide participants with advanced skills in Excel, focusing specifically on leveraging Excel dashboards to effectively display key performance indicators (KPIs) and support data-driven decision-making. The course combines theoretical concepts with practical exercises and examples to reinforce learning. The course begins by introducing participants to essential finance skills related to loans, project budgeting, and planning. A significant portion of the course is dedicated to Excel dashboards, which are effective tools for visually presenting performance data (KPIs). Participants will learn how to create compelling dashboards using advanced Excel features while engaging in hands-on exercises. They will explore techniques for data visualization, creating interactive charts, and incorporating dynamic elements into their dashboards. Note: This course assumes a basic understanding of Excel functionalities such as creating formulas, working with worksheets, and basic data manipulation.

**Lecture: 2 Lab: 0 Credits: 2**

**MBA 711****Financial Statement Applications**

The primary goal is for the student to develop his/her financial analysis skill set. Throughout this course, students will be exposed to a variety of companies and industries with the goal of using various quantitative tools and qualitative factors to determine their financial health and risk. The material covered in this course will correspond to various business applications including credit analysis, financial analysis, and investment analysis. During the latter part of this course, students will be exposed to advanced case study analysis using a team-building approach.

**Lecture: 3 Lab: 0 Credits: 3**

**MBA 712****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**

**MSC 511****Mathematical Economics I - Microeconomics**

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****Econometrics and Statistics I**

This course provides a comprehensive introduction to econometrics; linear and nonlinear regression, popular probability distributions, confidence intervals, hypothesis testing, sample size and power, endogeneity and instrumental variables estimation, models of panel data, and maximum likelihood estimation. Students will 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****Mathematical Economics II - Microeconomics and Macroeconomics**

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****Econometrics and Statistics 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 519****Time Series Analysis**

This course introduces the econometric theory and practice of time series analysis, with an emphasis on practical skills. Students coming to the class should have some basic knowledge about statistics including hypothesis testing (t-test and F-test), correlation and regression analysis based on ordinary least square estimator. This course develops a portfolio of techniques for the analysis of time series data. This course covers difference equation, modeling with stationary time series, modelling with volatility (ARCH and GARCH), modelling with trend, unit root, and non-linear time series models. Students will be given access large database to practice the skills during the semester. Detailed Course Learning Objectives.

**Lecture: 3 Lab: 0 Credits: 3**

**MSC 544****Equity Valuation**

The primary goal is for students to develop an understanding of equity valuation processes and applications. Topics discussed in class will include dividend discount, free cash flow, residual income, and market-based valuations as well as private and distressed company valuations. Throughout this course, students will apply equity asset valuation topics discussed in class to real world examples and in-class problems/exercises. During the latter part of this course, students will work in a group environment to complete and present an equity research report for a selected U.S. public company. Because this is a "hands on" course, it will require both the student's attendance and participation to learn the core concepts that are necessary to perform well on the class exams and apply to the group equity valuation project.

**Lecture: 3 Lab: 0 Credits: 3**

**MSC 554****Market Risk Management**

The course focuses on market risk of financial institutions. It starts with interest rate risk and asset liability management, and then moves to measurement of VaR for both fixed income securities and equity. The second part of the course focuses on banks' market risk management, earnings at risk, and economic value of equity. Finally, regulation, compliance, and standardized regulatory models are discussed. Background knowledge of valuations and statistics. Financial modeling using Excel and a comfortable ability to handle algebra and arithmetic will be very helpful.

**Lecture: 3 Lab: 0 Credits: 3**

**MSC 555****Credit Risk Management**

The course focuses on the various issues related to credit risk management. These include probability of default modeling; banking institutions' financial management; economic capital analysis, and bank regulations. For bank regulations, we will cover Basel I, II, III, and CCAR. Probability of default estimations and stress testing will be implemented with real 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 will read and implement quantitative models to optimize marketing predictions. 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 interaction with large data sets. 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 515 with min. grade of C and MSC 514 with min. grade of C and MSC 512 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 655****Visual Analytics - Data Analytics & Visualization**

This course has the following objectives: (a) to teach students the link between analytics and business value; (b) to expose students to techniques useful to for visualizing and for drawing insights from complex data; (c) to introduce methods for both gaining insights from historical data (descriptive data mining) and predicting possible future outcomes (predictive data mining); (d) to enable students to use decision analysis to develop an optimal strategy when faced with several decision alternatives given risk-preferences and uncertain event outcomes; and (e) to improve students' critical thinking skills.

**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 finance and the financial markets. Mathematical concepts and methods discussed are precalculus, calculus, and probability and statistics. Applications include simple and compound interest, annuities and mortgages, forward and futures contracts, bond pricing and duration and convexity, option pricing and strategies, solution of equations of value, optimization, volatility, elementary portfolio theory, Black Scholes option pricing, Binomial Option Pricing, and statistical inference. The learning method includes doing problems in class, quizzes, Final Exam, films, supplementary reading of relevant articles.

**Lecture: 3 Lab: 0 Credits: 3**

**MSF 502****Statistical Analysis in Financial Markets**

Statistics is very important and useful for the analysis of financial markets, especially in today's financial world of large data. This course has three sections. The first section reviews the basics of statistics, including Tabular and Graphical tools, Descriptive Statistics, Exploratory Data, and Probability Distributions. The second section turns to the theory and methods of Statistical Inference. It explains Sampling Theory, Estimation, and Hypothesis Testing. The third section puts emphasis on Variance Analysis and Regression Analysis, a widely used statistical technique in finance. To emphasize the applications of statistics in financial market, during lectures I would regularly 1) explain statistical results presented in financial news and articles, 2) demonstrate the usage of financial data in statistical analysis, 3) emphasize statistical techniques that have broad financial applications. Students are expected to understand as much science of the subject as possible without sacrificing learning its applications in finance.

**Lecture: 3 Lab: 0 Credits: 3**

**MSF 503****Financial Modeling**

Modeling using databases and python programming is ubiquitous in the modern financial industry and business in general. In this course, students will learn how to implement quantitative models using Microsoft Excel, SQL, and Python. Models will include those statistical methods, time series, and valuation models most widely used in industry. Numerical techniques including Monte Carlo simulation, optimization, and root-finding will also be covered. Particular attention will also be paid to project management and testing.

**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 and MSF 502 and MSF 503) or (MSC 511 and MSC 512)

**Lecture: 3 Lab: 0 Credits: 3**

**MSF 505****Futures, Options, and OTC Derivatives**

This three-credit foundation course, mainly for Master of Science in Finance (MSF) students, will examine the mechanism, pricing, trading, and risk management of financial derivatives. Specifically, the students will learn options, forwards, futures contracts, swaps, OTC derivatives, arbitrage-free pricing, risk-neutral pricing, binomial trees, the Black-Scholes-Merton approach, and the Monte Carlo simulation for derivatives pricing. Numerical examples in this course are paper-and-pencil-based, spreadsheet-based, or Python-based. Students will implement a simple derivatives trading strategy using trading software. At the end of the semester, a student should know the mechanism, terminologies, and basic properties of futures, options, and OTC Derivatives; be able to implement speculative, hedging, and arbitrage trading strategies using futures and options; be able to determine a price of futures/forward, options, and OTC Derivatives using non-arbitrage arguments, option bounds, a binomial model, Black-Scholes-Merton model, Monte Carlo Simulation, etc.; and understand dynamic delta hedging and other Greeks for financial risk management purposes.

**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**

The primary objective of this course is for the student to develop his/her financial analysis skills. This course will focus on key accounting concepts, financial ratios, forecasting techniques and industry issues which are critical in interpreting and analyzing external financial reports. Additionally, advanced analysis skills will be introduced, which should enable the student to look beyond the numbers (presented in a GAAP/IFRS format) and ultimately obtain a more informed decision regarding the financial strength (value) of the company (security). Throughout this course students will be involved in "hands-on" financial analysis by working on class exercises/problems, discussing special topical readings and completing an assigned case.

**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 534****Corporate Finance**

The primary objective of this course is for students to develop a strong understanding (and interest) of financial management related topics including: cost of capital, capital budgeting, capital structure decisions, working capital management, dividend payout policy, debt and equity financing, mergers & acquisitions, and corporate governance. Throughout this course, students will apply corporate finance topics to current company examples, which will be facilitated by class discussion, in-class exercises/problems, and assigned topic homework problems.

**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 and Venture Capital**

The primary goal is for students to develop an understanding of key investment banking concepts and applications. Students will be exposed to topics such as comparable companies' analysis, precedent transaction analysis, discounted cash flow analysis, leverage buyouts, venture capital, and sell-side and buy-side mergers and acquisitions. During the course, students will interact with real company scenarios and will be required to use investment banking applications to solve in-class examples and problems. In the latter part of this course, students will work on an assigned case pertaining to a specific investment banking topic. This case will include a comprehensive data set and require Excel modeling. Because this is a "hands on" course, it will require both the student's attendance and participation to learn the core concepts that are necessary to perform well on the class exams and apply the necessary material to the assigned case and homework problems.

**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 544****Asset Valuation**

The primary goal is for students to develop an understanding of equity valuation processes and applications. Topics discussed in class will include dividend discount, free cash flow, residual income, and market-based valuations as well as private and distressed company valuations. Throughout this course, students will apply equity asset valuation topics discussed in class to real world examples and in-class problems/exercises. During the latter part of this course, students will work in a group environment to complete and present an equity research report for a selected U.S. public company. Because this is a "hands on" course, it will require both the student's attendance and participation to learn the core concepts that are necessary to perform well on the class exams and apply to the group equity valuation project.

**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****Fixed Income Portfolio Management**

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 and MSF 504

**Lecture: 3 Lab: 0 Credits: 3**

**MSF 546****Quantitative Portfolio Management**

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 547****Machine Learning for Finance and Business**

This class surveys machine learning techniques for empirical research in finance and business, including: 1. Linear machine learning algorithms for prediction and classification, including lasso and ridge regression, logistic regression, linear discriminant analysis. 2. Nonlinear machine learning algorithms, including decision trees, naïve Bayes, k-nearest neighbors, and support vector machines. 3. Ensemble algorithms, including bagging, random forests, and boosting models. 4. Neural networks, including RNNs, LSTM, as well as NLP for sentiment analysis. Students use Python to build scripts that encapsulate the algorithms presented. Various financial and business-related data sources will be used to develop a hands-on understanding of dimension reduction, regression, classification, and clustering. Emphasis will be given to performance evaluation of various models using, for example, confusion matrices, classification reports, and various graphical constructs.

**Lecture: 3 Lab: 0 Credits: 3**

**MSF 554****Market Risk Management**

The course covers various issues related to investment and its risk management, including many statistical techniques around asset returns and asset volatilities. Chief among these is value-at-risk (VaR) analysis, which over the past 20 plus years has become established as the industry and regulatory standard in measuring market risk. Students are required to master spreadsheet modeling of risk models, as well as various backtesting procedures. When time allows, useful R packages and more real-life data examples are also presented, to expose students to a much larger set of quantitative tools.

**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

**Credit:** Variable

**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 introduces the econometric theory and practice of time series analysis, with an emphasis on practical skills. Students coming to the class should have some basic knowledge about statistics including hypothesis testing (t-test and F-test), correlation and regression analysis based on ordinary least square estimator. This course develops a portfolio of techniques for the analysis of time series data. This course covers difference equation, modeling with stationary time series, modelling with volatility (ARCH and GARCH), modelling with trend, unit root, and non-linear time series models. Students will be given access large database to practice the skills during the semester.

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

**Lecture: 3 Lab: 0 Credits: 3**

**MSF 568****Energy Commodities Analytics and Trading**

Energy markets and ESG investment are essential in the real economy and financial markets. Finance/business students interested in trading, analytics, and financial risk management should pay attention to energy markets. In addition, some engineering/science students would like to widen their comfort zone to financial/commodity markets, which may be their future employers. Finally, this course is also for environmental management students who want to expand their comfort zone to finance and entrepreneurship students considering financial solutions for environmental/social problems. This three-credit course, designed for finance, business, engineering, science, environmental management, and entrepreneurship Master's or Upper-year Undergraduate students, introduces Environment, Social, and Governance (ESG) investments and energy markets and provides a systematic exposition of data-driven analytic models for energy prices and other risk factors. First, this course introduces ESG investment and financial solutions for environmental/social problems because these are important current affairs in finance, are closely related to energy markets, and provide context to energy commodities. Then, this course provides an overview of (green) energy markets and well-designed instruction on energy commodity analytics. Through readings, lectures, discussion/analytic homework assignments, a presentation, and peer evaluations, students will understand the basics of these topics and develop expertise. As a part of a term project, a student will present: 1) His/her own proposal for an ESG fund; 2) A financial solution for a specific environmental/social problem of the student's choice; or 3) An energy commodity-related analytic research report carefully designed by the instructor. Even though finance people cannot do much for the COVID-19 pandemic, financiers can contribute to resolutions of environmental or social problems. If you propose an ESG fund, the proposal should recommend a procedure to pick stocks or other securities that will be in the master list of the fund. If you propose a financial solution for an environmental/social problem, you can propose a solution to governments or private-sector investors. After you finish this course, you can use the outcome to participate in an external competition such as Climate Investment Challenge (<https://www.climateinvestmentchallenge.org/>). If a student chooses the analytic research report, the student will work on a carefully-designed practical problem, gain hands-on experience in programming for trading and financial risk management, do a presentation, and can write a white paper if he/she wants. Students may use his/her presentation and supporting materials for his/her job search purposes. After the presentation, the students will provide constructive feedback to classmates through peer evaluation. At the end of this semester, students will be able to research, propose, and implement investment/trading/hedging strategies in energy markets and other ESG-related markets. The learning objectives of this course is related to the social and climate risk (SCR) certificate from the Global Association of Risk Professionals (GARP). This course is a self-contained course which will help motivated, hard-working students develop themselves into a green/responsible/impact investment manager, an entrepreneur, a financial risk manager, an asset optimizer, a trader, a structuring and pricing analyst, a middle office analyst, a quantitative analyst, a data scientist, a quantitative programmer, etc.

**Lecture: 3 Lab: 0 Credits: 3**

**MSF 577****High Frequency Finance and Technology**

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 591****Global Markets and Technology**

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 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 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 values 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.

**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.

**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 515****Fundamentals of Innovative Business**

This course teaches the fundamentals of doing business in technology-intensive industries. Students will not only be exposed to the basics of starting, growing and running a profitable business, but also learn how to compete in industries wherein technological transformation is rapid and business innovation is the basis for competitive advantage. They will learn how companies create and capture value, and how to analyze the business environment, industry, competitors and customers. They will learn about the five major functions of technology companies – R&D, Marketing, Production, Accounting and Finance – and how they can be integrated to generate value for customers and companies. They will learn Strategy – both the conventional approach and the new blue ocean strategy approach. Finally, they will be able to understand the role of business ethics and data-driven approaches to decision-making in business innovation and sustainability.

**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 517****Math with Financial Applications**

This is a graduate level course which describes various topics in Finance and The Financial Markets through Mathematics. The purpose of the course is to be informative (increase knowledge), developed analytical skills (thinking), and to be career enhancing (get a job and make money and add value to an institution and the World). Students will be held to a high level effort and responsibility. The major topics which will be covered are: 1. Simple, Compound, and Continuous Compound Interest 2. Annuities and Mortgages 3. Bond Pricing 4. Forward Contract 5. Option valuation at Expiration and Strategies 6. Duration and Convexity of Bonds 7. The Calculus of Options and the Black Scholes Merton Formula 8. Newton's Method for Solving Equations of Value 9. Volatility 10. Technical Analysis 11. Risk and Reward in a Portfolio 12. The Binomial Model for Option Pricing.

**Lecture: 3 Lab: 0 Credits: 3**

**PA 518****Statistics for Managers**

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**

**PA 520****Analytics for Decision Making**

After completing this course, students will know how to apply the built-in functionality of Microsoft Office Excel 2016 to analyze data, build Operations, Finance and Marketing-related spreadsheet models, formulate optimization models, and perform risk analysis using Monte Carlo simulation. These objectives will be facilitated through the following key tools taught in this course, which are: 1) Advanced Excel functionality; 2) Data Analysis; 3) Spreadsheet modeling; 4) Optimization (resource allocation); and 5) Simulation for risk-analysis and modeling uncertainty.

**Lecture: 3 Lab: 0 Credits: 3**

**PA 521****Statistical Analysis in Financial Markets**

This course teaches statistics and econometric techniques useful for the analysis of business and financial data. It emphasizes fundamentals of business statistics and practical quantitative methods. Data collection, sampling, statistics description, probability models, regression models, and time series analysis are covered. Course project asks you to analyze a financial market issue using real-world data. Pre-requisites: Excel.

**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.

**Lecture: 3 Lab: 0 Credits: 3**

**PA 523****Strategic Planning**

This course will focus on the three sets of key questions: (1) mission and vision ("What areas or activities should we be working in or on?"); (2) strategy and operations ("How can we perform effectively in this area?"); and (3) leadership ("What leadership skills are needed to develop and implement strategies effectively?"). We will cover both strategy formulation ("What should our strategy be?") and strategy implementation ("What do we need to do to make this strategy work?"). All organizations – government agencies as well as non-profit or private companies with a public purpose – face substantial challenges that demand strategic responses, often in uncertain economic, social, or political contexts. To deal effectively with these challenges, managers need knowledge and skills in strategic management and leadership: setting and aligning goals with the organization's mission; handling complex trade-offs between demand for services and resource constraints; defining measures of success; motivating staff and other stakeholders; developing relationships with relevant groups; dealing with crises and environments in transition; and leading organizational change. In short, the course emphasizes the multiple, related requirements of the leader/manager's job: analysis, creativity, and action.

**Lecture: 3 Lab: 0 Credits: 3**

**PA 525****Marketing Strategy**

In this course we will emphasize Market Segmentation, the choice of 'Target Markets'; and the design and integration of the variables in the 'Marketing Mix' to create a 'Positioning': and how these choices 'fit' with each other, the marketing strategy, other functional decisions and the competitive strategy of the Firm/SBU. The course will emphasize how understanding the segmentation of the market and the needs/behaviors of the Customer leads to 'Positioning' the integrated marketing mix to meet those needs over the product life cycle. This is often referred to as the S-T-P model. In addition to the development of a (set of) marketing strategy (ies) that 'positions' the product/service to the needs of one or more target markets (segmentation); the 'execution' of a marketing strategy (often referred to as 'Strategic Marketing Management') will require an economic and financial analysis of the costs and potential profits of the strategy to both the Vendor and the Customer; and an implementation plan including an organizational structure and an Expense Budget. This, combined with the S-T-P Marketing Strategy model; usually becomes the MARKETING PLAN and we will use the GOST (or similar) model to help organize and focus our ideas. Obviously, this will often be an iterative process to find an optimal combination of costs and pricing and volume to maximize profits.

**Lecture: 3 Lab: 0 Credits: 3**

**PA 526****Qualitative and Survey Research Methods**

This course covers a range of qualitative research methods, including in-depth interviews, focus groups, ethnography, digital research, and surveys. Methods for both manual and automated research analysis are explored. The class will be exposed to a range of research applications across marketing, product development, and strategy.

**Lecture: 3 Lab: 0 Credits: 3**

**PA 532****Public Financial Optimization and Management**

The purpose of this course is to introduce students to public budgeting, governmental accounting and related areas of public fiscal administration. The course will give students a basic understanding of the concepts and skills needed to evaluate budget processes and documents and to assess the financial condition of governments. It is also designed to provide students with an understanding of the public finance environment and an opportunity to explore practical challenges in managing government resources. Emphasizing best practice models and case studies, the course will focus primarily on local government finance with some reference to state governmental policies and practices and nonprofit organizations.

**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**

Nonprofit organizations are businesses organized on many of the same principles as for-profit organizations. However, there are many differences, including their mission, financial reporting, donation reporting, reporting to government funding sources, tax reporting, and investment strategies. This course will provide a foundation in the concepts and techniques of financial management for the non-profit sector. It will help students acquire some of the skills necessary to understand, analyze and responsibly guide the complex financial life of a modern nonprofit organization.

**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.

**Lecture: 3 Lab: 0 Credits: 3**

**PA 542****Project Management**

The effective development, planning, execution, and communication of special projects are critical to all types of public service organizations and private sector organizations. Service organizations, healthcare providers, nonprofits, government organizations, and private sector organizations constantly pursue new initiatives and projects to address the demands of their constantly changing environments. This course will offer an introduction to basic concepts and methods for directing projects and will provide students with tools that prepare them for success in project management. Examples in this course will be drawn from both the public and private sector. The course will be divided into the following components: • Project Plan Definition (Purpose, Goals, Objectives, Expectations, Roles, and Quality Management, Approach and Ground Rules) • Scope of the Project (Definition, Costs, Benefits, Risks, Products, Deliverables, Milestone, and Impacted Business Areas) • Assumptions (Specific and Measurable) • Constraints (Limitations to the Project, Related Projects, Critical Dependencies) • Quality Management Approach (Activity Reviews/Walkthroughs, Tools and Techniques, Test Approach, Performance/Quality Standards, Quality Management Roles, and Training) • Project Management Approach (Work Breakdown, Basis of Estimates, Project Effort Estimation, Project Standards, Project Roles and Responsibilities, Change and Issues Management Approach, Communication and Control Approach) • Attachments (Any pertinent work, flow charts, and approvals that need to be added to flesh out the project) • Project Budget • Project Impact Report • Approvals (Sign-off sheets)

**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 and Financing**

A city's built environment begins with its underlying foundation or infrastructure. Historically, infrastructure had been built and financed by individuals and the private sector, but most infrastructure today is in the public domain. Governments plan, budget, and finance their fixed assets or capital facilities. This course will examine the capital budgeting process and its evolution, the linkages between the capital budget and the capital improvement plan, methods and techniques of financing capital improvements, prioritization of capital projects, capital budgeting concepts and investment strategies and evaluation techniques.

**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****Optimization in Policy and Administration**

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 Forecasting and Evaluation**

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 Economic Modeling and Design**

This course considers methods that help design effective Public Policy Design by presenting and examining practical, cost-effective techniques that can be used to make better decisions regarding the allocation of scarce resources. Includes problem identification, goal development, data needs and collection, generation of alternative solutions, projecting impacts, goals-oriented evaluation, and strategies for implementation.

**Lecture: 3 Lab: 0 Credits: 3**

**PA 585****Decision-Making in the Public Sector**

The purpose of this course is to introduce graduate students to a set of analytical concepts for understanding incentive structures, decision-making and barriers to mutually beneficial outcomes, and to introduce innovative tools for analyzing questions relating to public policy. An integral part of this course is to spend time and effort analyzing and discussing these concepts and tools. Students will find many of the tools introduced in class and through the readings will provide them with useful exposure to adapt to their everyday management lives. The course instructor will have the class master the following: • Align their organizational values and resources with targeted strategic objectives; • Employ varied motivational arrows to appeal to a broad spectrum of stakeholders; • Build and manage diverse and often dispersed teams that can learn continuously and collaborate productively; • Improve operations continuously, measure performance and foster organizational learning; and • Transform social networks into coalitions for social change.

**Lecture: 3 Lab: 0 Credits: 3**

**PA 587****Social Policy**

Social Policy is the overarching program that includes aging, education, health, housing, and social welfare policy. Each area represents a major and enduring aspect of public policy concern, in which the need for leadership in public management and policy analysis is critical and can be expected to grow. The Social Policy area of study examines the roles and responsibilities of the public sector in designing, managing, and evaluating human resource programs for at-risk populations in the areas of health, education, and welfare. It is concerned with issues related to distributional equity and equality of opportunity and access, particularly for those least able to help themselves in a market society—the elderly, children, the disabled, the sick and the unemployed. Social policy involves elements of policy analysis, policy design, program evaluation, public management, and program implementation.

**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.

**Lecture:** 3 **Lab:** 0 **Credits:** 3

**SAM 501****Environmental Policy**

Environmental policies, the main tools that governments use to achieve environmental goals, cut across a wide swath of pollutants, industries, 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 more. 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 government often use to address environmental issues, the benefits and drawbacks of various approaches, the political processes involved in the environmental policy-making 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. In addition, the course examines new directions in environmental policy, both policies gaining popularity and those not yet adopted.

**Lecture:** 3 **Lab:** 0 **Credits:** 3

**SAM 502****Environmental Law**

This course will examine the development and implementation of nine U.S. environmental policy initiatives: 1. Conserve ecologically valuable places. 2. Incorporate environmental considerations into government decisions to fund, approve and conduct projects. 3. Save plant and animal species threatened with extinction. 4. Achieve healthy air quality. 5. Ensure a stable atmosphere and climate. 6. Establish unobstructed, fishable and swimmable waters. 7. Prevent the contamination of land and groundwater by regulating waste disposal practices. 8. Remediate historically contaminated sites. 9. Provide opportunities for public participation in the development, implementation and enforcement of environmental laws. The course will explore the genesis of these policy initiatives, the legislation that was enacted to effectuate these policies, and the practical implementation of this legislation.

**Lecture:** 3 **Lab:** 0 **Credits:** 3

**SAM 503****ESG Analytics and Management**

Across the world, businesses have become acutely attuned to the rising opportunities and risks associated with sustainability issues including climate change, biodiversity, diversity and inclusion, social justice and ethical governance. As a result, businesses are integrating sustainability throughout their operations, from purpose-setting and strategy development, through innovation, marketing and supply chain management. This course trains future sustainability managers to assess and respond to growing environmental, social and ethical concerns. We will explore how leading companies are adapting for success over multiple time horizons. Emphasis will be how organizations develop sustainability strategies that enable them to build and sustain competitive advantage utilizing traditional management concepts as well as new sustainability practices.

**Lecture:** 3 **Lab:** 0 **Credits:** 3

**SAM 504****Industrial Ecology and the Circular Economy**

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 concepts and tools such as Material and Energy Flow Analysis, Life Cycle Assessment, Design for Sustainability, Extended Producer Responsibility and Industrial Symbiosis.

**Lecture:** 3 **Lab:** 0 **Credits:** 3

**SAM 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. Environmental markets have proven not only to be drivers of economic growth, jobs and innovation but also powerful agents of social and environmental transformation. Knowledge of environmental risks, compliance obligations and business opportunities from environmental asset class are essential for corporates to stay competitive. The purpose of the course is to introduce environmental finance from a public policy viewpoint and examine its implications to corporations from financial and risk management angle. In doing so, the course will introduce students to fundamental economic concepts underlying environmental markets. Economic concepts involving market failures, externalities and public policy tools will be discussed. 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**

**SAM 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**

**SAM 512****Environmental Risk Assessment**

The SAM 512 course will offer discussion of the basic concepts of Environmental Risk Analysis, Control of Environmental, Work Place Hazards; Industrial Hygiene; and Ecological Risk Analysis. Also discussed are recognition and evaluation of chemical, physical and biological hazards; the human environment; control hierarchies, strategies and technologies; personal protection; criteria and standards; and associated Management and Ethical issues.

**Lecture: 3 Lab: 0 Credits: 3**

**SAM 513****Sustainability and ESG Analytics**

This course provides 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. It also explores the growing importance of using Environmental Social and Governance (ESG) analytics in calculating the impact of climate change.

**Lecture: 3 Lab: 0 Credits: 3**

**SAM 529****Social Entrepreneurship**

This course gives students a practical introduction to the exciting and rapidly growing field of social entrepreneurship - the application of business approaches to solving social, economic, and environmental challenges. The course will begin by introducing students to major social, economic and environmental challenges around the world by highlighting both local and international social ventures that are working on these problems. 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, economic, and environmental impact). We will also examine the challenges faced when creating and operating social enterprises in different parts of the world. The course includes guest lectures and visits with social innovators working in different areas (such as health, education and environment). Students will gain hands-on experience by a) developing a business model concept for a for-profit or non-profit social enterprise to address a specific real-world problem, in Chicago or elsewhere, or b) assisting an existing Chicago- based for-profit or non-profit social venture to improve their impact.

**Lecture: 3 Lab: 0 Credits: 3**

**SAM 532****Environmental and Energy Law Clinic**

The Environmental and Energy Law Clinic offers a clinical opportunity for students in Stuart's SAM 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**

**SAM 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**

**SAM 542****Economics of Energy Systems**

This course addresses the finance and economics of energy and covers the principals 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**

**SAM 543****Environmental Compliance and Regulation**

This course will examine the process for understanding and developing environmental compliance management programs by evaluating the following topics: 1. The source and development of environmental laws and regulations 2. The process of administrative agency decision making 3. The identification of rules applicable to individual facilities through permits. 4. Permit development and procedures in different media areas 5. Regulatory enforcement mechanisms and procedures 6. Monitoring and reporting 7. Developing internal compliance programs.

**Lecture: 3 Lab: 0 Credits: 3**

**SAM 595****Special Topics in Sustainability Analytics and Management**

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**

**SAM 599****Independent Study in Sustainability Analytics and Management**

Student will conduct independent research on a sustainability analytics and management topic.

**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 second 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: 0 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**