OPERATIONS MANAGEMENT (OPMG-GB)

OPMG-GB 2150 Decision Models & Analytics (1.5 Credits)
Typically offered occasionally
This course introduces the basic principles and techniques of applied mathematical modeling for managerial decision-making. You will learn about the toolkit of prescriptive analytics, and practice how to employ it for quantitative decision-making. The central theme of the course is learning about optimization modeling. That is, students will learn how to convert business problems into models that can be solved using modern optimization algorithms. More generally, students will: • Develop mathematical models that can be used to improve decision making within an organization. • Sharpen their ability to structure problems and to perform logical analyses. • Practice translating descriptions of decision problems into formal models, and investigate those models in an organized fashion. • Identify settings in which models can be used effectively and apply modeling concepts in practical situations. • Strengthen their analytics skills, focusing on how to use the prescriptive analytics to improve decision-making. For more information visit https://sites.google.com/stern.nyu.edu/sterndma/home
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2250 Decision Models (2.5 Credits)
Typically offered occasionally
One of the most crucial skills for a modern manager is knowing how to use data to make decisions. In Decision Models & Analytics, you will learn how to use modern analytics tools, such as optimization and simulation, to solve complex business problems. Whether you want to pursue a career in finance, consulting, technology, operations or marketing, knowing how to model and solve complex problems will make you a more effective decision-maker and give you a competitive edge. Find out more by visiting sterndma.com.
Grading: Grad Stern Pass/Fail Executive MBA
Repeatable for additional credit: No

OPMG-GB 2306 Supply Chain Management (Business Logistics) (3 Credits)
Typically offered occasionally
The function of supply chain management is to design and manage the flow of material and information, starting from the raw materials until finished goods reach customers. Typically, logistics-related costs account for 20 to 25 percent of firms' total costs. On the revenue side, the supply chain decisions have a direct impact on market penetration and customer service. With the globalization of the economy and advances in information technology, supply chain design and coordination have become important tools for gaining competitive advantage. Therefore, the objectives of the course are to (1) develop an understanding of individual components of the supply chain (such as order management transportation, network design, distribution channel management, after-sales service, and customer service strategy) and their interrelationships with other functions of firms, such as marketing, manufacturing, and accounting; (2) impart analytical and problem-solving skills necessary to develop solutions for a variety of logistics problems; (3) understand the complexity of interfirm and intrafirm coordination in implementing programs such as "quick response" and "vendor-managed inventories" and (4) develop the ability to design logistics systems and formulate integrated supply chain strategy, so that all components are not only internally synchronized but also tuned to fit corporate strategy, competitive realities, and market needs.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2308 Retail Operations & Supply Chain Management (3 Credits)
Typically offered occasionally
A supply chain is comprised of all the parties involved in fulfilling a customer request. The integrated management of this network is a critical determinant of success in today's competitive environment. With increasing competition around the globe, supply chain management is both a challenge and an opportunity for companies. Hence a strong understanding of supply chain management concepts and the ability to recommend improvements should be in the toolbox of all managers. The objective of this course is to introduce you to the key concepts and techniques that will allow you to analyze, manage and improve supply chain processes for different industries and markets, with a special focus on the fashion and apparel industry. At completion of this course, you will have the skills to assess supply chain performance and make recommendations to increase supply chain competitiveness.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2310 Managing for Quality (3 Credits)
Typically offered occasionally
This course introduces the basic principles and techniques of managing for quality Students learn the most important principles and tools by which organizations create value for their customers including quality measurement and assessment quality planning quality control quality improvement and quality strategy Students learn to Understand the historical development of modern quality methods including the unrivalled contributions of New York University to this field Analyze systems with respect to quality using such tools as Six Sigma Pareto analysis statistical process control quality function deployment reliability analysis and design of experiments Apply different philosophies and approaches to quality intelligently including those of Deming Hackman and Oldham Ishikawa Juran Shewhart and Taguchi Make use of the Malcolm Baldrige National Quality Award criteria as well as those of other quality examination certification and evaluation tools The focus is on management planning and decision making not advanced statistical inference This course is aimed at MBA students who have already completed the core requirements in operations marketing and management The emphasis is on methods with wide application across diverse industries and organizations including recent developments in information technology and electronic commerce
Grading: Graded
Repeatable for additional credit: No

OPMG-GB 2312 Operations in Panama: A Man, A Plan, A Canal: Panama (3 Credits)
Typically offered occasionally
This advanced elective from the IOMS department will be a three (3) credit course studying the major businesses operating in Panama. During a one-week visit, students will observe and study the intricacies of the Panama Canal from an operations management point of view. Process techniques and strategies abound within this fascinating operation. Although the canal is certainly the country's major attraction, financial revenues from the canal have allowed Panama to emphasize other developments including extensive real estate projects and major tourism improvements. The specific topics that will be studied include: * The Panama Canal and its effect on the global shipping supply chain, * History of the building of the canal and independence of Panama, * Modern banking and real estate development, * Economic growth in the tourism industry, * Urban development and infrastructure of major cities. All of the classes, tours, speaker sessions and group meetings must be attended by students for course credit. No exceptions. The course will be limited in enrollment. Details will be announced.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2313 Operations in Entertainment: Las Vegas (3 Credits)
Typically offered occasionally
When we think of entertainment, perhaps the most popular location that comes to mind is Las Vegas. Behind the glitter and excitement in Las Vegas are industries dedicated to supplying entertainment to customers. Operations address the supply side of business, including how products are produced and how services are supplied. This course goes behind the scenes in Las Vegas to observe and analyze the operations involved in performing this supply function. This course presents an opportunity to observe and study the entertainment industry including strategy formation and decision-making that are quite unique. The entertainment comes in various forms. The underlying driver is certainly gaming, but the industries surrounding the various forms of gambling have become major profit centers separate from the millions made on the casino floors. During a one-week visit to Las Vegas, students will observe and study some of the major operating industries that comprise the broad scope of entertainment in this city. Although the Operations Management models, techniques and strategies in this field are applicable anywhere; Las Vegas is the epicenter of the industry.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2315 Operations for Financial Services (3 Credits)
Typically offered occasionally
This course focuses on products and processes in financial services It analyzes the design and the operations of the different distribution channels branch ATMs call center www etc and considers productivity measurements as well as performance measurements It goes into quality control issues and analyzes operational risk It concludes with the design and implementation of decision support systems in practice
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2316 Operations Consulting: An Experiential Approach (3 Credits)
Typically offered occasionally
This is an experiential course in operations consulting. Students will learn the foundational consultant frameworks for addressing operations problems for real organizations. The basic approach begins with problem identification, followed by data analysis, solution evaluation, and the proposal of final recommendations. For any business, the production of products and the creation of services require processes that optimize the strategic objectives of the business. Students will analyze the connections between a firm's operations and organizational strategy. Then, during company site visits, students, in the role of consultants, will talk with operations executives to uncover the capabilities required of the firms to employ their operations on location. They will observe, first-hand, the operations processes for services and manufacturing. In an elite, behind-the-scenes view students will study the processes that underlie systems of production, distribution, transportation, logistics, fulfillment, service, and product development for an array of organizations. In context, students will explore the intersection of technology, process, and strategy that enable a competitive advantage in today's global markets. Finally, through a culminating final project, students will identify a business to serve as their consulting project and produce a set of recommendations.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2320 IT in Supply Chains (3 Credits)
Typically offered occasionally
The course presents an introduction into Supply Chain Management from an IT point of view It shows an integrated business framework of modern flexible Supply Chain Management which is based on the principles of demand driven synchronization of supply to demand and network wide visibility and collaboration The underlying corresponding IT systems to support such a business framework namely ERP Supply Chain Planning Event Management incl RFID and Collaboration Systems are explained A focus of the course is Supply Chain Planning where the different planning areas and their integration to each other are explained Latest trends in SCM and IT like Service Oriented Architectures which facilitates the integration of new business processes into an existing Supply Chain Management solution will end the course
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2325 Intro to Ops Research (3 Credits)
Typically offered occasionally
This course has been designed to build the analytical foundations needed for understanding modeling and optimizing the operations of a wide range of systems in the manufacturing service and finance industries The objective of this course is to present at an introductory level the mathematical models that companies daily use to select optimal levels of manufacturing capacity integer programming to design and operate call centers queueing theory to find optimal pricing policies for perishable products yield management and dynamic programming or to price financial derivatives linear programming to name a few examples Introduction to Operations Research is oriented to students with a strong interest on the quantitative aspects of management
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2330 Revenue Mgmt & Pricing (3 Credits)
Typically offered occasionally
REVENUE MGMT & PRICING
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2350 Decision Models and Analytics (3 Credits)
Typically offered occasionally
The course builds on the technique of Linear Programming that we introduced in the core ops course. Decision Models is offered by various faculty members in the Operations department. You will learn how to model business problems and solve them in Excel. In addition, you will learn how to construct and solve optimization and simulation models. The Class is 100% focused on hands-on problem solving. More details available at https://sites.google.com/stern.nyu.edu/sterndma/home.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2351 Decision Making Under Uncertainty (3 Credits)
Typically offered occasionally
This course introduces the basic concepts, principles, and techniques of decision making under uncertainty. You will learn how to model complex business problems that involve risk and uncertainty with the help of spreadsheet models. The course covers analytical models such as Decision Tree, Stochastic Optimization, Simulation & Optimization, and Dynamic Optimization. The course is hands-on. The emphasis will be on model formulation and interpretation of results, not on mathematical theory. This course does NOT require the course "Decision Models and Analytics" (DMA) as a prerequisite. This course emphasizes optimization models with uncertain parameter values. In contrast, the DMA course focuses on various deterministic optimization models and Monte Carlo simulation. You are encouraged to take both courses. Examples covered in this course come from a wide range of business applications, including: · Financial and operational hedging strategies for risk management (currency exchange rate, stock price, etc.) · Option pricing (European options, American options) · Real option approach to the valuation of investment opportunities · Capacity planning for new product development (drugs, cell phones, etc.) · Optimal timing for market entry · Choosing a portfolio of supply contracts that balance risk and cost · Inventory management with random demand
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2354 Decision Analytics for Sports (3 Credits)
Typically offered occasionally
In recent decades, more and more sports organizations have reached out to the application of advanced management methods, in particular statistical, data analysis and operations research/management science techniques. The use of data, and now Big Data, has become entrenched in the business of sport. The analysis of sports data has taken on new dimensions and has become as sophisticated as that of any other endeavor. This course is an examination of the application of those techniques to success in sports. The structure of the course is to examine the use of them to four main areas of interest: player performance measurement, in-game decision-making, player selection/team building, and general administration such as marketing, pricing, contracts, stadium management etc. Emphasis will be place on the use of advanced decision analytics techniques including but not limited to regression analyses, probability models, hypothesis testing, optimization techniques, simulation modeling and others to improve player and team performance. The course will consist of lectures, guest speakers, and field visits. There will be homework assignments using the analytic techniques discussed. Lastly there will be a group project due at the end of the semester.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2360 Real Estate Development and Entrepreneurship (3 Credits)
Typically offered occasionally
This course will introduce students to the broad aspects of real estate development from an operations perspective. It is directed to students interested in real estate development from the point of view of three classes of investors: * an entrepreneurial investor, looking to buy a coop, condo or small property for individual use or rental * a working general partner of a small group of investors, who will actually manage and-or be responsible for overseeing the property after purchase * a passive outside investor, who may be searching for an investment that is limited in liability to the original investment. In real estate development, operating decisions will determine whether or not a deal will be successful and meet overall financial goals. Although most students will not work full-time in the real estate industry, property investments will arise as opportunities to increase passive income and wealth. Understanding how these deals are created and managed will allow investors to choose deals with the highest probability of success. The real estate topics discussed in the course will include all types of development: residential, hotel, office, retail, land and industrial properties. In addition to case studies, class lectures and discussions, some outstanding entrepreneurial developers will be invited as guest speakers to reinforce the ideas taught in class. The class will include a real estate development project, with group presentations to the class and potential outside investors.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 2365 Operational Risk (3 Credits)
Typically offered occasionally
Operational risk is a new branch of risk management that assesses and mitigates the risk of operational errors to affect the profitability or even the existence of a firm financial or not Some examples of these events are flawed data processing legal suits frauds internal and external natural or manmade disasters eg terrorist acts power outages system problems etc Although these issues were always a part of the business with the advent of operational risk management for the first time they are being seen on an integrated framework with specialized teams responsible for its modeling measurement and managementIn the particular case of financial institutions with the sign off of the Basel 2 Accord by the G10 a new set of standards was established that will regulate the industry The new Accord established a new capital charge for operational risk as well as detailed new standards that financial firms need to follow This new environment created a demand for talents with knowledge in the area and the size of operational risk departments has been increasing significantly However as operational risk is such a new concept in the industry there are major gaps in the development of these risk managers This course has the objective to provide the student with an excellent overview of the current industry issues and to give indepth training on the most important techniques used to model measure and manage operational risk The course will provide the students with basic general concepts of risk management techniques It will be shown techniques to identify operational risk in processes as well as modeling techniques and hedging possibilities available in the market The course will be given in 12 classes of 3 hours each in the evenings
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 3255 Operations Strategy (2.5 Credits)
Typically offered occasionally
There is an increasing awareness that operations should contribute to the global competitive stance of a business and not merely be a place where the firm's products or services are produced. This can be done by contributing distinctive competence or capability to the business, and continually improving the products and process of the business. In the OM core course, students study the basic aspects of how firms produce their products and services to gain a competitive advantage, and take a tactical or short-term look at operations. This course is a natural follow-up to the core course. Students examine the strategic and long-term policies of the firm, and learn how the operations strategies and policies are developed to be consistent with corporate and overall business strategies. To do this effectively, students examine, through case studies, how firms' operations play an important role in building and shaping their competitive posture. This course helps students to (1) recognize the strategic and policy implications that can be gained from managing operations; (2) develop a framework for allocating resources and managing the operations function in ways that distinguish firms from their competitors; (3) analyze, develop, and formulate operations strategies to exploit competitive opportunities; (4) visualize how operations strategies can and must be linked to overall business strategies, as well as the financial and marketing strategies; and (5) highlight effective examples involving continuous improvement and implementation of operations strategies.
Grading: Grad Stern Pass/Fail Executive MBA
Repeatable for additional credit: No

OPMG-GB 3321 Stochastic Processes (3 Credits)
Typically offered occasionally
This Doctoral course will serve as an introductory course to stochastic processes We will closely follow the book Stochastic Processes by Ross The course will begin with a one week review of basic concepts in probability and then proceed to the study of Poisson processes renewal processes discrete time Markov chains and finally continuous time Markov chains The are no prerequisites for the course however a calculus based understanding of probability is helpful Courses in analysis and measure theory are not required A tentative course outline is as follows
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 3330 Revenue Management and Pricing (3 Credits)
Typically offered occasionally
REVENUE MGMT & PRICING
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 3335 Operations for Global Entrepreneurs (3 Credits)
Typically offered occasionally
This course deals with international operations and strategy for international business ventures It is intended for current and would be executives entrepreneurs corporate intrapreneurs management consultants and investors in global ventures The discussions are based on current business situations and augmented through presentations by industry partners Integrated learning through cases and readings provides an opportunity to expand the educational experience beyond the theory in the classroom into the local and international business practiceConsider the following questions regarding international existing and new ventures 1 What are the key success factors of a global operations strategy 2 How to sustain and expand global operations 3 What is behind the success of ventures that went international early in the business life cycle 4 How to manage the risks entailed in global operations Students are assigned to work on real cases discussing issues such as 1 Global operations strategy2 Global supply chain management3 Foreign market entrepreneurial entry modes4 Operations financing controls and risk management5 Global outsourcinginsourcing6 International location of facilities and regional headquarters Here are some examples A social network organization joint ventures with operating companies to exploit global markets for goods and services within North America Europe Asia and South America A generic biotechnology company based in the Middle East wants to expand globally and is considering whether to enter North America Europe or Asia as their first step and what the best entry mode would be A medium size telecom equipment company in the US has expanded into Europe through the acquisition of another similar company how do they rationalize the research product development manufacturing marketing and sales operations to accelerate its success globally A hitech company based in Europe is looking to sell its software andor IP to the US market through regional partners how do they choose the right ones and what terms should they pursue A successful medium sized Chinese motorcycle manufacturer wants to sell to the US market but wants to understand how to account for local manufacturing requirements and exchange rate exposure During the course teams of four to six students each will be presented with real life strategic operational challenges through a case or through a presentation of an international business executive Each team will make two presentations the first specifying the business dilemma and the second presenting the results of the analysis Students will have an opportunity to work with their respective groups and meet or videoconference with the project sponsors or executives Prof Ehud Menipaz lectures and conducts research on international business strategy entrepreneurship and derivatives He is a former senior partner with Ernst Young International a cofounder of an international memory devices corporation a chaired professor of entrepreneurship management and the founding chair of the Ira Center of Business He has lectured in academic institutions around the world including Europe Africa South America South East Asia and China In North America he has addressed executives at UCLA and McGill University among others This course is based on two of Menipazs books International Business Theory and Practice Forthcoming Sage Publications and Essentials of Production and Operations Management Prentice Hall as well as on some of his scientific research Prof Menipaz is a national director of the Global Entrepreneurship Monitor GEM project a leading longitudinal in depth study of entrepreneurship worldwide conducted concurrently in sixty countries
Grading: Graded
Repeatable for additional credit: No

OPMG-GB 3355 Operations Strategy (3 Credits)
Typically offered occasionally
There is an increasing awareness that operations should contribute to the global competitive stance of a business and not merely be a place where the firm8217s products or services are produced This can be done by contributing distinctive competence or capability to the business and continually improving the products and process of the business In the OM core course students study the basic aspects of how firms produce their products and services to gain a competitive advantage and take a tactical or shortterm look at operations This course is a natural followup to the core course Students examine the strategic and longterm policies of the firm and learn how the operations strategies and policies are developed to be consistent with corporate and overall business strategies To do this effectively students examine through case studies how firms operations play an important role in building and shaping their competitive posture This course helps students to 1 recognize the strategic and policy implications that can be gained from managing operations 2 develop a framework for allocating resources and managing the operations function in ways that distinguish firms from their competitors 3 analyze develop and formulate operations strategies to exploit competitive opportunities 4 visualize how operations strategies can and must be linked to overall business strategies as well as the financial and marketing strategies and 5 highlight effective examples involving continuous improvement and implementation of operations strategies
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 3357 Service Operations and Strategy (3 Credits)
Typically offered occasionally
This course is designed to prepare students to manage service businesses andor service operations in manufacturing firms The objective is to focus attention on some unique aspects of service businesses and relate these aspects to service operations and strategy For example some of the issues this course covers include the followingWhat impact does intangibility have on corporate and business strategy and operations in service businessesWhat is the impact of simultaneous production and consumption of services on how service delivery systems are designed and managedWhat impact do customers have on service quality and productivity of service firmsWhat unique organizational designs are needed to manage a service businessConsistent with the need to emphasize an integrative multidisciplinary perspective on service operations and strategy students are asked to undertake a project assignment to design a complete service business starting from idea to incorporation
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 3370 Independent Study (3 Credits)
Typically offered occasionally
Independent Study
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 3371 Independent Study (3 Credits)
Typically offered occasionally
Independent Study
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 3392 Operations via Marketplaces (3 Credits)
Typically offered occasionally
In recent years, a new mode of business operations has emerged: operating via a marketplace. While classical models of operations involved procuring and deploying capacity, several of the most successful companies in recent years have instead created private marketplaces where they match demand with external agents on the supply side. In this course, we will explore what are the advantages and disadvantages of this business model, as well as study how to design and run such marketplaces. This will include topics such as market equilibration, decentralization, allocation and pricing mechanisms, market thickness, and credibility of mechanisms.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4101 Research Practicum-Ops I (1 Credit)
Typically offered occasionally
RESEARCH PRACTICUM-OPS I
Grading: Grad Stern Pass/Fail
Repeatable for additional credit: No

OPMG-GB 4102 Research Practicum-Ops 2 (1 Credit)
Typically offered occasionally
RESEARCH PRACTICUM-OPS 2
Grading: Grad Stern Pass/Fail
Repeatable for additional credit: No

OPMG-GB 4103 Research Practicum-OM (1 Credit)
Typically offered occasionally
RESEARCH PRACTICUM-OM
Grading: Grad Stern Pass/Fail
Repeatable for additional credit: No

OPMG-GB 4104 Research Practicum-Ops 4 (1 Credit)
Typically offered occasionally
RESEARCH PRACTICUM-OPS 4
Grading: Grad Stern Pass/Fail
Repeatable for additional credit: No

OPMG-GB 4105 Research Practicum-Ops 5 (1 Credit)
Typically offered occasionally
RESEARCH PRACTICUM-OPS 5
Grading: Grad Stern Pass/Fail
Repeatable for additional credit: No

OPMG-GB 4150 Teaching Practicum-Ops (1 Credit)
Typically offered occasionally
TEACHING PRACTICUM-OPS
Grading: Grad Stern Pass/Fail
Repeatable for additional credit: No

OPMG-GB 4210 Corporate Rsrch: Ops Mgmt (2 Credits)
Typically offered occasionally
Provides advanced doctoral students with exposure to the spectrum of academic-style research pursued by corporate entities, towards gaining an appreciation of the similarities and differences between inquiry undertaken by industry labs/research groups and the corresponding work done within a university setting. The internship provides an opportunity for students to put theory into practice. Students registered for the course will be required to collaborate with a suitably identified industry partner, often in the form of a short internship. Internships are closely supervised by a Stern faculty member, and students will be expected to submit a research paper that summarizes the outputs of the collaboration.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4305 Adv Topics: Optimization (3 Credits)
Typically offered occasionally
This course introduces students to the theory methodologies and applications of optimization We mostly focus on linear programming but we also discuss more variant mathematical programming methods such as integer convex and semidefinite programming We will see the applications of such tools in different areas including but not limited to logistics transportation revenue management network optimization inventory management marketing and finance
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4306 Dynamic Programming & Stochastic Control (3 Credits)
Typically offered occasionally
This course covers the basic models and solution techniques for problems of sequential decision making under a deterministic setting or under uncertainty (stochastic control). We will discuss both finite and infinite horizon models. Most of the contents will be based on the book by D.P. Bertsekas: Dynamic Programming and Optimal Control.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4313 Supply Chain Finance (3 Credits)
Typically offered occasionally
Supply Chain Finance
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4317 Stochastic Inventory Theory (3 Credits)
Typically offered occasionally
This course will provide an indepth study of classical models or inventory management and their extensions We will first study stochastic inventory models and then discuss their applications in the recent research field of operations management
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4321 Choice Models in Operations (3 Credits)
Typically offered occasionally
Choice Models in OperationsUnderstanding how customers make choices is crucial for demand forecasting in several applications in the areas of operations marketing and even online recommendations This graduate level course deals with the theory and applications of choice models The course is divided into three parts The first part is dedicated to the development of choice models from first principles rooted in rationality and utility theory Our development will stitch togetherthrough a unified framework the diverse approaches taken in the literature over the past several decades The aim is to provide a solid understanding of the strengths and limitation of the various model classes The second part of the course will deal with various applications using choice models The primary focus will be on decision problems such as classical assortment and pricing decisionsThe final part of course will focus on some emerging developments and nonclassical applications of choice models in the areas of personalized recommendations voting rank aggregation of sports teams webpages etc The detailed syllabus is available at httppagessternnyuedu~sjagabatSyllabusChoiceModelsInOpspdf
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4325 Submodularity & Applicatns (3 Credits)
Typically offered occasionally
Submodularity has played an important role in combinatorial optimization game theory operations management etc In this course we cover the following selected topics on submodularity i Lattice programming the problem of minimizing submodular functions over sublattices Our focus is on monotonicity of optimal solution in problem parameters We also study the concepts ``substitutes and complements especially in the context of network optimization We discuss applications in stochastic dynamic programming especially stochastic inventory theory ii Game Theory submodular cooperative game and submodular non cooperative game Applications include game theoretical analysis of models in inventory and supply chain management iii Discrete Convexity in particular the Lconvex and Lnaturalconvex functions We discuss its implications in computational complexity of some inventory and scheduling models iv Greedy Algorithms We discuss how submodularity can be used to derive optimality or near optimality of greedy algorithms for many deterministic and stochastic optimization problems Applications to queueing theory and inventory theory will be covered
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4326 Comp Mth Lrg-Scl Dyn Prgm (3 Credits)
Typically offered occasionally
This course offers an introduction to the methodology of largescale dynamic programming with emphasis on computational methods and applications The objective is to provide students in the areas of operations management finance and economics with working knowledge of the dynamic programming methodology and stateoftheart approaches for dealing with the curse of methodology By the end of the course students will have been exposed to stochastic modeling techniques for problems of sequential decisionmaking central concepts and methods in dynamic programming learning methods and theory for dealing with situations where system parameters are unknown including considerations of efficiency and complexity stateoftheart algorithms for largescale dynamic programming based on value function approximation including discussions about errors and performance guarantees and design of approximation architectures stateoftheart algorithms for largescale dynamic programming based on policy approximation including discussions about convergence rates and application of methods in settings with incomplete knowledge of the system staterecent literature with applications in finance economics and operations management such as revenue management dynamic pricing dynamic resource allocation pricing of American options and highdimensional financial derivatives portfolio optimization asset allocation and trading among others The applications illustrate application of the algorithms and theory of largescale dynamic programming for deriving policies performance evaluations and structural insights about the different problems considered The course includes a final project that can be on any subject related to theory algorithms andor applications of largescale dynamic programming Students are encouraged to use their own research as motivation for the project Prerequisites probability and linear algebra Dynamic programming is strongly recommended but not required
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4330 Linear Programming (3 Credits)
Typically offered occasionally
This course introduces students to the theory methodologies and applications of optimization We mostly focus on linear programming but we also discuss more variant mathematical programming methods such as integer convex and semi definite programming We will see the applications of such tools in different areas including but not limited to logistics transportation revenue management network optimization inventory management marketing and finance
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4331 Service Operations Management (3 Credits)
Typically offered occasionally
SERVICE OPERATIONS MGMT
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4333 Advanced Topics in Data-Driven Decision Making (3 Credits)
Typically offered occasionally
Machine learning has become central to decision making in many application areas. This seminar course aims to introduce students to recent literature in using machine learning for data-driven decision making, with a strong emphasis on applications. We will cover recent breakthroughs in using machine learning in diverse areas including healthcare, revenue management, inventory management and social-good. The class will also include several guest speakers who will join us to discuss their contributions in these areas.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4334 Convex Optimization (3 Credits)
Typically offered occasionally
Convex Optimization
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4335 Robust Optimization (3 Credits)
Typically offered occasionally
ROBUST OPTIMIZATION
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4336 Planning and Scheduling: Theory and Applications (3 Credits)
Typically offered occasionally
This course aims at covering optimization topics in deterministic as well as in stochastic planning and scheduling. The objective is to expose the students to optimization techniques as well as techniques that are commonly used for proving properties of interest in deterministic as well as stochastic models, which may turn out to be useful in the models their are analyzing in their own research. The course also focuses on the relationships between stochastic models and their deterministic counterparts.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4337 Theoretical Foundations of Machine Learning and Sequential Decision Making (3 Credits)
Typically offered occasionally
Machine learning has become an indispensable part of many application areas, in science, engineering and business disciplines. But machine learning is not a single approach rather, it consists of a dazzling array of seemingly disparate frameworks and paradigms. This course aims to uncover the common foundational principles underlying this diverse array of techniques. The course has two components: offline learning (before the midterm) and online learning (after the midterm) and will provide students with a solid theoretical foundation in machine learning and allow them to start accessing the expanding literature in related topics.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 4340 Applied Game Theory (3 Credits)
Typically offered occasionally
This course has two objectives teach doctoral students the fundamental concepts in game theory and mechanism design and familiarize the students with how gametheoretical techniques are currently being used in operations management research COURSE CONTENTS The course will cover solution concepts for normal form games Nash Equilibria and rationalizability dynamic games Subgame Perfect Equilibria incomplete information games BayesNash Equilibria and dynamic games with incomplete information Perfect Bayesian and Sequential Equilibria It will also cover the folk theorems for repeated games properties and applications of potential games and Nash bargaining We will also cover mechanism design including both social welfare and revenue maximization Finally we will go over recent papers using game theoretic concepts in OM applications such as supply chain contracting queuing games and revenue management with strategic customers
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 6006 Supply Chain Management (3 Credits)
The function of supply chain management is to design and manage the flow of material and information, starting from the raw materials until finished goods reach customers. Typically, logistics-related costs account for 20 to 25 percent of firms total costs. On the revenue side, the supply chain decisions have a direct impact on market penetration and customer service. With the globalization of the economy and advances in information technology, supply chain design and coordination have become important tools for gaining competitive advantage. Therefore, the objectives of the course are to (1) develop an understanding of individual components of the supply chain (such as order management, transportation, network design, distribution channel management, after-sales service, and customer service strategy) and their interrelationships with other functions of firms, such as marketing, manufacturing, and accounting (2) impart analytical and problem-solving skills necessary to develop solutions for a variety of logistics problems (3) understand the complexity of interfirm and intrafirm coordination in implementing programs such as quick response and vendor-managed inventories and (4) develop the ability to design logistics systems and formulate integrated supply chain strategy, so that all components are not only internally synchronized but also tuned to fit corporate strategy, competitive realities, and market needs.
Grading: Grad Stern Graded
Repeatable for additional credit: No

OPMG-GB 6054 Decision Analytics for Sports (3 Credits)
Typically offered occasionally
In recent decades, more and more sports organizations have reached out to the application of advanced management methods, in particular statistical, data analysis and operations research/management science techniques. This course is an examination of the most advanced applications of those techniques. The structure of the course is to examine the use of them to four main areas of interest: player performance measurement, in-game decision-making, player selection/team building, and general administration such as marketing, pricing, contracts, stadium management etc. Emphasis will be place on not only how the application of Analytics has improved each of these situations, but how those decisions relate to business decisions in any other field of commerce. For example all businesses have to evaluate employees, make tactical and strategic decisions about how they operate, must maintain a good portfolio of assets in particular recruit and retain quality employees, and have to be good at administering the overall business.
Grading: Grad Stern Graded
Repeatable for additional credit: No