### 2013-14 Academic Calendar

<table>
<thead>
<tr>
<th>Event</th>
<th>Dates</th>
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<tr>
<td>City Challenge Week</td>
<td>Monday, August 26 - Thursday, August 29</td>
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<tr>
<td>Labor Day Holiday</td>
<td>Monday, September 2</td>
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<tr>
<td>Fall Classes Begin</td>
<td>Tuesday, September 3</td>
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<tr>
<td>Fall Break - No Classes Scheduled</td>
<td>Monday, October 14</td>
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<tr>
<td>Fall Break - No Classes Scheduled</td>
<td>Tuesday, October 15</td>
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<tr>
<td>Thanksgiving Recess</td>
<td>Thursday, November 28 - Sunday, December 1</td>
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<tr>
<td>Last Day of Classes</td>
<td>Friday, December 13</td>
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<tr>
<td>Fall Semester Exams</td>
<td>Monday, December 16 - Friday December 20</td>
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<tr>
<td>Winter Recess</td>
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<tr>
<td>Spring Classes Begin</td>
<td>Monday, January 27</td>
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<tr>
<td>Holiday: Presidents' Day (No Classes)</td>
<td>Monday, February 17</td>
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<tr>
<td>Spring Recess</td>
<td>Monday, March 17 - Sunday, March 23</td>
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<tr>
<td>Last Day of Classes</td>
<td>Monday, May 12</td>
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<tr>
<td>Spring Semester Exams</td>
<td>Wednesday, May 14 - Tuesday, May 20</td>
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<tr>
<td>NYU Commencement</td>
<td>Wednesday, May 21 (tentative)</td>
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<tr>
<td>Summer Classes Begin</td>
<td>Tuesday, May 27 - Saturday, August 16</td>
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<tr>
<td>Holiday: Memorial Day</td>
<td>Monday, May 26</td>
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<tr>
<td>Holiday: Independence Day</td>
<td>Friday, July 4</td>
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<tr>
<td>Last Day of Classes</td>
<td>Saturday, August 16</td>
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<tr>
<td>Summer Semester Exams</td>
<td>Saturday, August 16</td>
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<tr>
<td>CUSP Commencement</td>
<td>Saturday, August 16 (tentative)</td>
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### CUSP COURSES

**Course Name:** CUSP-GX-5001: Foundations of Urban Science  
**Instructor:** Dr. Geoffrey West, Dr. Michael Batty, Dr. Luis M. Bettencourt, Dr. Jose Lobo, Dr. Steve Koonin, Dr. Constantine Konstokosta  
**Time & Day:** Monday, 9am-11:30am in 2 Metrotech Center  
**Course Description:**  
This course is an introductory course in the program. It explores a systems approach to the operation and growth of cities and describes emerging frameworks for a scientific theory of how a city works. It discusses economic and political theories of the city and emerging models of city function, growth, and the dynamics of complex sociotechnical systems. Topics include spatial growth models, scaling and size distributions, networks and flows, entropy in urban systems, and an introduction to spatial interaction models. Specific applications of urban models to domains, such as transportation and sustainable development, are provided, together with empirical examples. Basic principles of systems analysis are discussed. This course presents the opportunities and constraints of data-driven solutions and problem-solving to urban issues, including the influence of human behavior on outcomes.
COURSE NAME: CUSP-GX-5002: Urban ICT and City Operations
INSTRUCTOR: Dr. Constantine Kontokosta
TIME & DAY: Tuesday, 2:30pm-5pm in 2 Metrotech Center

COURSE DESCRIPTION
This course provides an overview of the role of information and communication technologies in urban operations and introduces students to the full range of urban domains and their interactions. Specific attention is given to energy and building efficiency, transportation, public health and emergency response, waste, water and wastewater, and connectivity and how urban informatics can be used to improve operational and resource efficiencies. In addition, principles and metrics for urban resilience are presented. The role of civic engagement and community participation in the context of open data and citizen science is explored, as well as the evolving relationship between, and influence of, informatics on urban governance. Top-down and bottom-up models of innovative service delivery are discussed and debated in the context of public decision-making. Economic and cost-benefit analysis techniques are introduced with methods to evaluate alternative infrastructure investments and risk scenarios. Case studies and best practice examples are used extensively.

COURSE NAME: CUSP-GX-5003: Principles of Urban Informatics
INSTRUCTOR: Dr. Claudio Silva
TIME & DAY: Thursday, 9am-11:30am in 2 Metrotech Center

COURSE DESCRIPTION
This course is the introduction to the core disciplines of data acquisition and management, integration, and analytics. In this course, the student will learn the major concepts, tools, and techniques for what informatics can do for cities. It includes background in data management, visualization, and data science, and also includes material not usually covered in computer science courses, including how to best handle spatial-temporal data, and issues related to citizen science and participatory sensing. It presents software tools, frameworks for problem-solving and model selection parameters using data science in the urban context, including basic modeling and analytical methods; visualization techniques, including geographic information systems; working with large datasets and understanding data sources, including instrumentation, physical sensors, imagery, and mobile sensing platforms; explores issues of data ethics, privacy, etc.; and provides an introduction to citizen science, crowd-sourcing, and participatory sensing.

FALL 2013 Class Schedule

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<tr>
<th>DAY</th>
<th>MONDAY</th>
<th>TUESDAY</th>
<th>WEDNESDAY</th>
<th>THURSDAY</th>
<th>FRIDAY</th>
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<tr>
<td>MORNING</td>
<td>9-11:30am</td>
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<td>9 - 11:30am</td>
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<td>AFTERNOON</td>
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<td></td>
<td>CUSP-GX-5002: Urban ICT and City Operations</td>
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<td>EVENING</td>
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DISCIPLINE SPECIALIZATION COURSES

Data Mining & Management

CS6083. Principles of Database Systems, 3 credits
This course broadly introduces database systems, including the relational data model, query languages, database design, index and file structures, query processing and optimization, concurrency and recovery, transaction management and database design. Students acquire hands-on experience in working with database systems and in building web-accessible database applications.
Prerequisites: Graduate standing, CS6003 or equivalent, familiarity with basic data structures and operating system principles.

CS6093. Advanced Database Systems, 3 credits
Students in this advanced course on database systems and data management are assumed to have a solid background in databases. The course typically covers a selection from the following topics: (1) advanced relational query processing and optimization, (2) OLAP and data warehousing, (3) data mining, (4) stream databases and other emerging database architectures and applications, (5) advanced transaction processing, (6) databases and the Web: text, search and semistructured data, or (7) geographic information systems. Topics are taught based on a reading list of selected research papers. Students work on a course project and may have to present in class.
Prerequisites: CS 6083 or CS 308 or equivalent, including experience with a relational database system and graduate standing.

INFO-GB.3336 Data Mining for Business Analytics, 3 credits
Businesses, governments, and society leave behind massive trails of data as a by-product of their activity. Increasingly, decision makers rely on intelligent systems to analyze these data systematically and assist them in their decision making. In many cases, automating the decision-making process is necessary because of the speed with which new data are generated. This course connects real-world data to decision making. Cases from finance, marketing, and operations are used to illustrate applications of a number of data visualization, statistical, and machine learning methods. The latter include induction, neural networks, genetic algorithms, clustering, nearest neighbor algorithms, case-based reasoning, and Bayesian learning. The use of real-world cases is designed to teach students how to avoid the common pitfalls of data mining, emphasizing that proper applications of data mining techniques is as much an art as it a science. In addition to the cases, the course features Excel-based exercises and the use of data mining software. Real-world datasets are included as an optional data mining exercise for students interested in hands-on experimentation. The course is suitable for those interested in working with and getting the most out of data as well as those interested in understanding data mining from a strategic business perspective. It will change the way you think about data in organizations.

Visualization & Geographic Information Systems

CS6313. Information Visualization, 3 credits
An introductory course on Information Visualization based on a modern and cohesive view of the area. Topics include visualization design, data principles, visual encoding principles, interaction principles, single/multiple view methods, item/attribute, attribute reduction methods, toolkits, and evaluation. Overviews and examples from state-of-the-art research will be provided. The course is designed as a first course in information visualization for students both intending to specialize in visualization as well as students who are interested in understanding and applying principles and existing techniques.

CS6323. Large-Scale Visual Analytics, 3 credits
Visual analytics combines interactive visual interfaces and information visualization techniques with automatic algorithms to support analytical reasoning through human-computer interaction. People use visual analytics tools and techniques to synthesize information and derive insight from massive, dynamic, ambiguous, and often conflicting data, and to communicate their findings effectively for decision-making. This course will serve as an introduction to the science and technology of visual analytics and will include lectures on
both theoretical foundations and application methodologies. The goals of this course are for students to develop a comprehensive understanding of this emerging, multidisciplinary field, and apply that understanding toward a focused research problem in a real-world application or a domain of personal interest.

CS9073. Human-Computer Interaction, 3 credits
Describing a successful interactive experience or software system takes more than technical savvy and vision—it also requires a deep understanding of how to serve people’s needs and desires through the experience of the system, and knowledge about how to weave this understanding into the development process. This course introduces key topics and methods for creating and evaluating human-computer interfaces/digital user experiences. Students apply these practices to a system of their choosing. The course builds toward a final write-up and presentation in which students detail how they tackled HCI/user experience design and evaluation of their system, and results from their investigations. Teaching combines lecture and discussion with both in-class and out-of-class hands-on experience trying out methods. Students have readings between classes, and short form assignments as well as a longer final project. No prerequisites.

INFO-GB.3306 Data Visualization, 3 credits
This course is an introduction to the principles and techniques for data visualization. Visualizations are graphical depictions of data that can improve comprehension, communication, and decision making. In this course, students will learn visual representation methods and techniques that increase the understanding of complex data and models. Emphasis will be placed on the identification of patterns, trends and differences from data sets across categories, space, and time. Throughout the course, several questions will drive the design of data visualizations some of which include: Who’s the audience? What’s the data? What’s the Task? This is a hands-on course. Students will use several tools to refine their data and create visualizations. These may include: R, Python, ManyEyes, HTML/CSS, JavaScript (D3 Framework), Google Fusion tables, Google Refine, Google Charts, Adobe Illustrator, and Excel. To learn more watch the course preview: http://www.youtube.com/watch?v=frwl-YVtmrs

URPL-GP.4648. Geographic Information Systems in Urban Planning I, 4 credits
The primary purpose of this hands-on introduction to GIS course is to provide students with the knowledge and skills they need to solve problems in urban planning, transportation, housing and neighborhood planning, crime and other areas using spatial analysis and the Geographic Information Systems (GIS) software called ArcGIS. Students will be working with the latest version of ArcGIS (version 10).

Students will be able to apply these new skills immediately in their current work, in their Capstone projects, and in their future public service professional careers.

In this course, students will be introduced to ArcMap, Catalog, ArcCatalog and the ArcToolboxes and to some of the techniques of manipulating and displaying spatial data while working on a several exercises and case studies. Students will also be introduced to the variety of applications of mapping, and to database design and data management concepts. They will learn to manipulate and query spatial data, to prepare map layouts, and to design professional looking maps. They will also learn to embed their maps in written reports and PowerPoints.
Prerequisites: None.

URPL-GP.4649 Geographic Information Systems in Urban Planning II, 4 credits
Geographic Information Systems in Urban Planning II is designed as the second part of GIS in Urban Planning and is also a hands-on course. It covers more advanced GIS methods and techniques that are currently available in ArcGIS 10. The second class builds on and extends the knowledge and skills that students acquired in URPL-GP.4648 or through their hands-on experience using GIS elsewhere. In URPL-GP.4649, Students will be working on a number of small case studies and exercises that are more advanced and challenging than the GIS work covered in the earlier class - URPL-GP.4648.

It is anticipated that by the end of this second GIS course students will have very good working knowledge of spatial analysis, database design and management, and of mapping
with ArcGIS 10. Students will be able to apply the GIS skills and knowledge they acquired in this class immediately in their current work, in their Capstone projects, and in future public service professional careers.

In this class, students will learn to design and execute more advanced real-world GIS projects working on case studies in urban planning, transportation, and housing and neighborhood planning, environmental justice and health, and more.

Prerequisites: URPL-GP.4648

**URPL-GP.2690 Advanced Geographic Information Systems and Data Management, 4 credits**

Advanced Geographic Information Systems and Data Management is a hands-on course that covers a number of advanced GIS methods and techniques that are currently available in ArcGIS 10. Students will plan, design, search for and prepare data, and execute real-world GIS projects in areas such as urban, environmental, and transportation planning. Other areas include housing and neighborhood planning, environmental justice and health, education, crime, emergency management: mitigation, preparedness, response and recovery.

Prerequisites: URPL-GP.4648 and URPL-GP.4649

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**Data Science**

**CS6923. Machine Learning, 3 credits**

This course introduces the field of machine learning and covers standard machine-learning techniques, such as decision trees, nearest neighbor, Bayesian methods, support vector machines and logistic regression. Topics: Basic concepts in computational learning theory including the PAC model and VC dimension. Methods for evaluating and comparing machine learning techniques.

**CS6333. Massive Data Analysis, 3 credits**

Big Data requires the storage, organization, and processing of data at a scale and efficiency that go well beyond the capabilities of conventional information technologies. In this course, we will review the state of the art in Big Data analytics. In addition to covering the specifics of different platforms, models, and languages, we will also look at real applications that perform massive data analysis and how they can be implemented on Big Data platforms. Topics we will discuss include: Map reduce/Hadoop, NoSQL stores, languages such as Pig Latin and JAQL, large-scale data mining and visualization. The course will primarily consist of technical readings and discussions. It will also include programming projects where the participants will prototype data-intensive applications using existing Big Data tools and platforms.

**CSCI-GA-2565. Machine Learning, 3 credits**

This course covers a wide variety of topics in machine learning, pattern recognition, statistical modeling, and neural computation. The course covers the mathematical methods and theoretical aspects but primarily focuses on algorithmic and practical issues.

Prerequisites: undergraduate course in linear algebra and strong programming skills for implementation of algorithms studied in class. Recommended: knowledge of vector calculus, elementary statistics, and probability theory.

**CSCI-GA-3033-006 Probabilistic Graphical Models CSCI-GA-3033-006**

A graphical model is a probabilistic model, where the conditional dependencies between the random variables are specified via a graph. Graphical models provide a flexible framework for modeling large collections of variables with complex interactions, as evidenced by their wide domain of application, including for example machine learning, computer vision, speech and computational biology. This course will provide a comprehensive survey of learning and inference methods in graphical models.
DS-GA-1001: Introduction to Data Science, 3 credits
Introduces students to basic algorithms and software tools, teaches how to deal with data, representing data, and methodology. Provides hands-on experience using Torch, a software system being developed at NYU and other research centers that has a large data science library.

DS-GA-1002: Statistical and Mathematical Methods, 3 credits
This course briefly introduces basic statistical and mathematical methods needed in the practice of data science. It covers basic methods in probability, statistics, linear algebra, and optimization. Course aims and objectives: teach basics of statistics and probability, teach basic methods for solving linear systems and eigensystems, and demonstrate their use in regression and data representation; teach basic methods for multivariate function optimization (e.g. gradient descent), and demonstrate their use in non-linear regression.

INFO-GB.3359. Practical Data Science, 3 credits
This class is an introduction to the practice of data science. The student will leave the class with a broad set of practical data analytic skills based on building real analytic applications on real data. These skills include accessing and transferring data, applying various analytical frameworks, applying methods from machine learning and data mining, conducting large-scale rigorous evaluations with business goals in mind, and the understanding, visualization, and presentation of results. The student will have experience processing “big data,” the latest buzz concept in a field awash with buzz. Specifically, the student will be able to analyze data that are too big to fit in the computer’s memory, and therefore thwart many standard analytical tools. The student will have experience with unstructured data, for example processing text for applications such as sentiment analysis of user-generated content on the web.

Decision models and Simulations

OPMG-GB.2350. Decision Models, 3 credits
This course introduces the basic principles and techniques of applied mathematical modeling for managerial decision making. Students learn to use some of the more important analytic methods (e.g., spreadsheet modeling, optimization, Monte Carlo simulation) to recognize their assumptions and limitations and to employ them in decision making. Students learn to

- 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.
- Translate 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 computer skills, focusing on how to use the computer to support decision making.

The emphasis is on model formulation and interpretation of results, not on mathematical theory. This course is aimed at M.B.A. students with little prior exposure to modeling and quantitative analysis, but it is appropriate for all students who wish to strengthen their quantitative skills. The emphasis is on models that are widely used in diverse industries and functional areas, including finance, operations, and marketing.
Prerequisite: COR1-GB.2314 (B01.2314).

OPMG-GB.2351. Advanced Decision Models, 3 credits
This course is designed for students who have taken Decision Models (B60.2350) and would like develop further their quantitative modeling skills for managerial decision making. Students will learn more advanced modeling tools including: static stochastic optimization, two-stage stochastic optimization with recourse, chance-constrained stochastic optimization, and dynamic programming. We explore their applications in various business domains, such as marketing, finance, inventory management, revenue management, supply chain management, project management, among others. Students will learn how these models can be solved using Risk Solver Platform for Excel, a powerful tool for risk analysis, simulation, and optimization. The emphasis throughout the course will be model formulation, solution methods, and managerial interpretation of the results, rather than on the mathematical algorithms used to solve models. Prerequisite: COR1-GB.2314 (B01.2314).
CSCI-GA-2112. Scientific Computing, 3 credits
Scientific Computing is a graduate-level introduction to problem solving using a combination of mathematical and numerical analysis. It is not a programming course, but will involve a fair amount of practical computing work.
Topics covered include:
- direct methods for systems of linear equations
- matrix eigenvalue problems and SVD decomposition
- numerical interpolation, differentiation and integration
- elementary signal processing, Fourier analysis
- nonlinear systems of equations and unconstrained optimization
- floating point arithmetic, conditioning and stability
- ordinary and partial differential equations
- Monte Carlo methods.

CSCI-GA-2945. Numerical Optimization, 3 credits
A large number---one could even argue the majority---of problems in science, engineering, medicine, and business involve optimization problems in which we seek to minimize or maximize an "objective function" subject to constraints. This course will survey widely used methods for continuous optimization, focusing on both theoretical foundations and implementation as numerical software. Topics include linear programming (optimization of a linear function subject to linear constraints), line search and trust region methods for unconstrained optimization, and a selection of approaches (including active-set, sequential quadratic programming, and interior methods) for constrained optimization.

The course will consider both (i) mathematical analysis of the theoretical properties of optimization problems (such as optimality conditions) and methods (such as convergence); and (ii) numerical issues, such as how to compute the solutions of associated subproblems efficiently and stably.

Social Media and Human Computer Interaction

CS6533. Interactive Computer Graphics, 3 credits
This course introduces the fundamentals of computer graphics with hands-on graphics programming experiences. Topics include: graphics software and hardware, 2D line-segment scan conversion, 2D and 3D transformations, viewing, polygon scan-conversion, hidden-surface removal, illumination and shading, compositing, texture mapping, programmable shaders, ray tracing and radiosity, and so on.

CS6813 Information, Security and Privacy, 3 credits
This course introduces Information Systems Security and covers cryptography, capability and access control mechanisms, authentication models, security models, operating systems security, malicious code, security-policy formation and enforcement, vulnerability analysis, evaluating secure systems. Prerequisite: Competency in Application Development in UNIX and Windows Environments, Graduate status.

INFO-GB.2318. Digital Strategies, 3 credits
The course explores the role of information technology (IT) in corporate strategy with specific attention paid to the Internet. Different Internet business models are identified and are used to explain competitive practices. Cases and lectures illustrate how technology is used to gain and sustain a competitive advantage. The course also describes different Internet technology infrastructures and identifies issues in managing a firm's technology as a strategic asset.

INFO-GB.3322 Design and Development of Web and Mobile Applications, 3 credits
The World Wide Web and the new technologies and standards surrounding it have dramatically changed the way systems are developed and used in organizations and markets. This course covers the issues and concepts in developing data-driven Web sites. Students evaluate a variety of different Web development approaches and architectures, including the
common gateway interface model, Java, Active Server Pages, Dot Net, and Web Services. A variety of alternative development approaches are compared, looking at issues such as the development environment and the security, performance, scalability, and maintainability of systems developed with the different approaches. The class is divided into student teams. Each team implements a small system using one of the supported technologies and evaluates their experience. Students should have the ability to build a simple Web page and be proficient with common Microsoft office business applications, especially ACCESS. There is light programming, which is used as an example of how to build dynamic Web pages for B2C and B2B sites. Assignments include both Active Server Pages as well as J2EE. Unix, Windows 2000, and Linux platforms are available to host projects.

**INFO-GB.3383. Networks, Crowds, and Markets, 3 credits**
This is a course on how the social, technological, and natural worlds are connected, and how the study of networks sheds light on these connections. Topics include: social network structure and its effect on business, culture, and the propagation of information, fads, disease, etc.; the technology, economics, and politics of social networks, Web information, and on-line communities; small worlds, network effects, and "rich-get-richer" phenomena. The power of networks for prediction, including topics like social-network advertising, the power of the network for web search, and the melding of economics, modeling, and technology into "prediction markets." The class will be a combination of lectures based on the textbook, guest lectures from our faculty who are well-known experts on this topic, and guest lectures from outside speakers.

**DOMAIN SPECIALIZATION COURSES**

**TRANSPORTATION**

**NYU-Poly Courses**

**TR6013. Fundamental Concepts in Transportation, 3 credits – Spring Semester**
This course provides the contextual foundations to study urban transportation systems, using performance criteria reflecting the perspectives of system providers/owners, users and communities. The connection between transportation supply, travel demand, service volume and level of service is explored and quantified for various travel modes. The impacts of transportation system performance on travel behavior, communities and the environment is discussed. The role of technology and institutions is examined with case examples. Prerequisite: Graduate status or permission of instructor.

**TR6113. Forecasting Urban Travel Demand, 3 credits – Fall Semester**
The purpose of this course is to study methods and models used in estimating and forecasting person travel in urban areas. The objective is to understand the fundamental relationships between land use, transportation level of service and travel demand, and to apply methods and state-of-the-practice models for predicting person travel on the transportation system. Pre-/Co-requisite: TR 6013 or permission of instructor.

**TR6213. Transportation Economics and Finance, 3 credits – Spring Semester**
This course provides the basic principles of engineering economic analysis and their application to transportation projects. Half of the course covers the concepts of present worth, capital recovery, sinking funds and annual cost applied to economic comparisons and evaluations of alternatives. The second half of the course delves into financing transportation and how government policy on transportation affects the economy and environs at the local, state and federal levels. Historical perspectives on the financing of highway systems, public transportation systems and transportation agencies are presented. Other subjects include privatization, innovative financing methods, business plans. Prerequisite: TR 6013 or permission of adviser.

**TR6223. Intelligent Transportation Systems and Their Applications, 3 credits – Fall semester**
This course introduces the concepts and applications of Intelligent Transportation Systems (ITS) and its growing role in the management of transportation systems. The course stresses
the role of ITS as national policy, as specified in major transportation funding legislation – ISTEA, TEA21 and SAFETY-LU. A systems engineering approach to overall development of ITS technologies is stressed. Major components of ITS are discussed, and examples of their application treated. Coordination and integration of ITS components are treated. Prerequisite: TR 6013 or permission of adviser.

TR6313. Traffic Control and Signalization, 3 credits - Fall semester
Traffic controls are imposed to provide for safe, efficient and orderly movement of people and goods on our nation’s street and highway systems. Traffic control is examined in the urban context in which both vehicles and pedestrians be accommodated. Techniques for quantifying traffic stream behavior are described. Federal, state and local standards for designing and implementing control devices are presented. Selection of control measures, design and timing of traffic signals at individual intersections and in arterial networks is treated in detail. Use and application of current computer tools – HCS++ and Synchro – are illustrated. Prerequisite: TR 6013 or permission of adviser.

TR7123 Transportation Planning and Congestion Management, 3 credits - Spring Semester
This course provides a contextual understanding of urban transportation planning and its component activities. It helps students understand the enabling environment needed to sustain the planning process; to understand the causes of transportation congestion and its impacts on transportation users and communities; to set forth a vision for congestion management; and to develop and evaluate strategies and policies that achieve the vision. Pre-/Co-requisite: TR 6013 or permission of instructor.

Wagner Courses
URPL-GP.2470. Transportation Policy, 4 points
This course will introduce the student to the development and implementation of policy in transportation. It will cover principal issues, programs, concepts, decision-making processes, and institutional relationships. A broad conceptual framework to understand how policy is formed at the federal, state, and local level will be analyzed. Key leaders in the transportation field will participate as guest speakers. The course will also provide an opportunity to analyze policy development and implementation from the perspective of a transportation policy head. Prerequisites: CORE-GP.1022 or URPL-GP.2660

URPL-GP.4631. Transportation, Land Use, and Urban Form, 4 points
This is an introductory course in urban transportation planning that examines the evolution of urban transportation systems and the complex relationships between transportation, land use, and urban form. The content of the course is divided into four parts. The first is a historical look at the planning and development of transportation systems and urban form in the U.S. The second part looks more conceptually and theoretically at the relationships between land use and transportation. The third part examines a number of land use and transportation policy questions facing planners today. And the fourth part explores the normative perspectives and values shaping our views of cities and their transportation systems. Prerequisites: None

PUBLIC HEALTH, SAFETY, AND EMERGENCY RESPONSE
Wagner Courses
URPL-GP.4632. Planning Healthy Neighborhoods, 2 points
This course is designed to introduce students in urban planning to the connections between urban planning and community health, focusing on the neighborhood scale. Although urban planning and public health are closely related in their history and their goals, these fields are typically taught and practiced without reference to each other. The course will examine health issues tied to transportation, land use, urban design, community development, environmental policy, health promotion and disease prevention. This class will involve lectures, discussion, guest speakers, and a field trip. Students will conduct a real world group project that addresses a community health issue tied to neighborhood planning. Prerequisites: URPL-GP 1603 or CORE-GP 1022
HPAM-GP.2836. Current Issues in Health Policy, 4 points.
This course is an introduction to major health policy issues and examines the role of government in the health care system. An important focus of the course is an assessment of the role of policy analysis in the formation and implementation of national and local health policy. Because much of government health policy relates to or is implemented through payment systems, emphasis will be placed on the discussion of the policy implications of how government pays for care. The role of the legal system with respect to adverse medical outcomes, economic rights, and individual rights is also discussed. Proposals for health policy reform at the national and local level are examined throughout the course, as well as Medicare and Medicaid reforms currently being implemented or considered.
Prerequisites: None.

URPL-GP.2645. Planning for Emergencies and Disasters, 4 points
The consequences of disastrous events are escalating in terms of lives lost, injuries, economic costs, adverse social conditions, and environmental destruction. Although the emergency field has a long history, it is undergoing a radical transformation given the global scale of emergencies, their diversity, and scale of their impacts requiring fundamental shifts in how information and services are developed and shared. The rapidity of action required when an emergency arises poses unique challenges to traditional planning and public service-related skills. This course gives students the capacity to understand, diagnose and develop planning and public service skills confront the causes, consequences, mitigation of and adaptation to a wide variety of emergencies and disasters. The events include natural hazards (such as earthquakes, volcanic eruptions, hurricanes, and tsunamis), accidents, terrorism, pandemics, and other extreme events such as climate change that affect and often have devastating impacts on social structures and the built and natural environments. The approach applies land use planning, risk analysis, the spatial representation of hazard areas (including tracking of disasters as they evolve), and statistical analysis of databases to the problems of understanding and reducing disaster consequences. Students will learn how to identify tipping points, i.e., when natural conditions become emergencies and the policy debates surrounding this, develop action timing, e.g., conditions for immediate action to save lives and resources, and use and interpret data on trends and patterns for the frequency, severity, and impacts of the consequences of disasters to assess hazards and their uncertainties. An understanding of effective strategies for resource allocation, social justice, public engagement and for disaster mitigation, response, and recovery are key aspects of the course. The course also includes knowledge of social and individual behaviors that are a foundation for understanding how people act in disasters, what can be done to influence behavior to save lives and property, and how to communicate risks at every stage - before, during and after disasters occur.
Prerequisites: None

Global Public Health Courses

GPH-GU 2440. Emerging Diseases and Bioterrorism, 3 credits
The emergence of new pathogens and drug resistance, as well as increased transmission opportunities caused by human migration, political instability and breakdown of healthcare infrastructure, has led to a rising prevalence of infectious disease. This course aims to provide training in the biology, epidemiology and control of emerging diseases. It will provide the necessary skills to analyze the interplay between human host and pathogen in both evolutionary ecology and statistical epidemiology frameworks. There will be a discussion of "Darwinian Medicine". Specific bioterrorism pathogens will be discussed, as well as methods of identification and predictive modeling of a bioterrorism incident. In addition to lectures, class time will include practical data handling. Discussion of both methodological and substantive epidemiology papers from the recent literature will be led by the students.

GPH-GU 2153. Global Environmental Health, 3 credits
This course is designed to provide students with an introduction to and overview of the key areas of environmental health. Using the perspectives of the population and community, the course will cover factors associated with the development of environmental health problems. Students will gain an understanding of the interaction of individuals and communities with the environment, the potential impact on health of environmental agents, and specific applications of concepts of environmental health. The course will consist of a series of lectures and will cover principles derived from core environmental health disciplines. The sequence of major topics begins with background material and "tools of the trade" (i.e.,
environmental epidemiology and environmental toxicology. The course then covers human activities that lead to exposures to agents of environmental diseases, including chemical, physical, and microbial agents that originate in the environment and can impact human health.

GPH-GU 2110. Global Health Policy and Management, 3 credits
Governments bear significant responsibilities for assuring the health of their people. As our understanding of the social determinants of health has improved, exercising this responsibility calls for national policies that include planning for the personal health care system, addressing broader issues of population health services and links to policies that affect education, economic development, the environment, among other areas. All nations, especially developing countries and those in transition, face challenges to their national health strategies from the effects of globalization and global decision-making on issues that affect health. Government leaders must address not only health problems within their borders, but those that come across their borders. They must also interact with international organizations that affect global health. This course provides students with a comparative, cross-national overview to key issues, concepts and theories related to the planning, evaluation, financing, organization, management and reform of personal care and population-oriented health systems, worldwide.

Stern Courses

ECON-GB 2110. Economics of Healthcare, 1.5 credits
This course is designed to give the student a general understanding of the economics of healthcare. More specifically, the course will allow students: 1) To understand what makes the Economics of Healthcare unique. 2) To understand Healthcare Markets: a) Demand b) Production and Costs c) Supply 3) To understand the market for Healthcare, Market Failure, and the Role of Government 4) Health Insurance, Third Party Payers, and Healthcare Financing. 5) Economic Evaluation in Healthcare: a) Equity, Efficiency, Ethics b) Cost-Benefit c) Measuring Value and Outcomes

Pre-requisites: CORI-GB 1303 - Firms and Markets

ENVIRONMENTAL SUSTAINABILITY

NYU-Poly Courses

CE7223. Hydrology (Urban Water Hydrology), 3 credits - Fall Semester
This course provides an overview of hydroclimatic systems; hydrologic cycle; urban water interactions. Students learn the analysis of precipitation, runoff, unit hydrographs, flood routing and reservoir storage; principles of urban hydrology; time series analysis. An introduction is given to floods forecasting, flood risk management in the context of flood resilient cities. Droughts, and climate change impacts are discussed in the context water supply and increasing water demand. Application of general circulation models, data driven and conceptual simulation techniques are presentation. Prerequisites: Adviser's approval

CE7753. Urban Environmental Systems Management, 3 credits - Spring Semester
This course provides an overview of issues and challenges in environmental systems management including a paradigm shift from supply to demand management. The new challenges discussed in this course include water governance, environmental sustainability, holistic approach to environmental planning, and climate change impacts. Urban water cycle interactions are also described. Students are presented with water, soil, air and noise pollution and waste management issues and different tools and techniques of systems analysis are introduced. Monitoring and the best management practices (BMPs) to improve water and soil pollution are also discussed. Finally, Conflict resolution in resource allocation, water security and principles of preparedness planning are described and case studies are presented. Prerequisites: Adviser's approval

CE7703 Solid Waste Management, 3 credits - Spring Semester
This course covers engineering aspects of municipal solid waste source reduction, collection, transport and disposal, including recycling, incineration, sanitary landfill, composting, recovery and reutilization. Students are presented with Waste management and energy recovery in the context of greenhouse gases/carbon emission reduction. Lifecycle assessment is discussed in the context of energy and raw materials utilized in production, use,
and disposal of products. Also covered are the economics of collection and evaluation of factors affecting selection of disposal methods.
Prerequisites: Adviser’s approval

Wagner Courses

**URPL-GP.2666. Water Sourcing and Climate Change, 4 points**
In the coming decades, water will be the central issue in global economic development and health. With one in six people around the world currently lacking access to safe drinking water (1.2 billion people), and more than two out of six lacking adequate sanitation (2.6 billion people), water is already a critical factor affecting the social and economic well-being of a sizable proportion of the world’s population. However, with the world's population projected to double in over the next fifty years, and with rapidly dwindling water supplies becoming both more scarce and more volatile as a result of global warming, we are likely to face a water crisis so severe it will reshape everything from our governance structures to our modes of economic and agricultural production to our patterns of social interaction. Water will be the axis around which all public policy revolves.

In light of the centrality of water as a current and future public policy issue, this course explores innovative and sustainable solutions for water harvesting and distribution to address the challenges presented by anthropogenic climate change. The field of water harvesting and delivery has generally considered water supplies to be fairly stable, available to be sourced in the same places. As a result, water infrastructure management has traditionally been concerned with efficient methods of water sourcing, delivery, and purification, and with effective methods of cost-recovery for those services. In this course, we will step out of this conventional framework and look at water provision from a new vantage point: instead of taking water supplies as a constant, we will look at how water sources are changing as a function of global warming and increased population pressures, and then will ask what implications these shifts are likely to have for water sourcing and water distribution.
Prerequisites: PADM-GP.2201

**URPL-GP.2615. Environment and Urban Dynamics, 4 points**
The environmental field has evolved in the past century from a popular and political movement to a profession demanding analytical and decision-making skills to solve specific problems or cases often of global and catastrophic proportions. These skills focus on how to assess the impact of human activity on the natural environment and the ability to design policies and plans to manage the human/environment interface effectively and equitably. Urban areas pose particularly unique challenges, where scientific, legal, administrative and political factors converge in unusual ways to shape policies and plans for urban area environments. This course provides students with skills to support planning, policy and management choices about the use and protection of environmental resources in urban areas. These skills are first presented in the context of unique cases to balance environmental conditions with societal needs and priorities. Major substantive environmental areas are then covered to develop expertise in water management, environmentally sensitive natural resources (ecosystems), solid and hazardous wastes, and air quality. Global and trans-national problems, such as global warming, ozone depletion and acid rain, and other cross-cutting themes, including energy, sustainability and security are key overarching areas of emphasis.
Prerequisites: None.

Stern Courses

**ECON-GB.2105. Energy & the Environment, 1.5 credits**
This course is designed to give students an overview of the economics and politics of the interlinked fields of energy and environment. Drawing on topical readings as well as the instructor’s experience, the class will explore the impact of three inter-related forces now driving change:
- The geopolitical consequences of petroleum use, especially as China emerges as an energy-consuming giant
- The economic costs of volatile energy prices, and the prospects for a scarcity induced oil shock
- The environmental implications of growing energy consumption, especially on global warming
Additionally, the course will investigate why change tends to come slowly in these industries, and ask whether the world is at an energy crossroads. The class will look closely at the rapidly
evolving landscape of oil and cars, the symbiotic twins that powered the prosperity seen in the 20th century—but which also contribute mightily to the health, environmental and foreign policy problems associated with energy.

BUILDINGS AND THE BUILT ENVIRONMENT

CUSP Courses

**CUSP XXXX Building Efficiency and Performance (New Course)**

This course provides an advanced introduction to building energy efficiency and the role of data in understanding and impacting building performance. The course explores resources for building data and discusses the role of multiple stakeholders affecting energy consumption and efficiency in buildings. Students are introduced to green building rating and certification programs, as well as the potential of performance and prescriptive-based codes to influence building design and patterns of energy use. The growing significance of building instrumentation and controls is presented in the context of new data sources and techniques for building performance optimization. The course engages students to consider behavioral, financial, and policy-driven feedback loops in the potential for global reductions in energy consumption and improvements in efficiency. Finally, students are challenged to view buildings as a system of systems and to analyze energy efficiency at the building, district, portfolio, and city scale.

**NYU-Poly Courses**

**CE7813. Infrastructure Planning, Engineering and Economics, 3 credits - Spring Semester**

This course covers methods for identifying, formulating, preliminarily appraising and analyzing in detail individual projects and systems of civil engineering projects. Different approaches relevant to government agencies, public utilities, industrial firms and private entrepreneurs are discussed, as well as planning of projects to satisfy single and multiple purposes and objectives, meet local and regional needs and take advantage of opportunities for development. Also covered are financial and economic analyses, including sensitivity and risk analysis; mathematical models for evaluation of alternatives and optimization; and environmental, social, regional economic growth, legal and institutional and public involvement impacts of projects.

**CE6073. Instrumentation, Monitoring and Condition Assessment of Civil Infrastructure, 3 credits - Spring Semester**

This course covers: A systematic approach to planning and executing instrumentation, monitoring and condition assessment programs; strain measurements; civil engineering sensors (static, dynamic, optical); environmental measurements; mechatronic sensors; signal conditioning, information measurements and error analysis; business aspects; advanced-measurement systems.

Prerequisite: Permission of Advisor

**CE7853. Concepts and Implementation of Infrastructure Management Systems, 3 credits - Fall Semester**

This course reviews state-of-the-art performance monitoring and system condition assessment methodologies as part of infrastructure management systems. Emphasis is on information technologies as applied to remote sensing and database development for urban systems management. Infrastructure tools, such as GIS and dedicated databases for condition assessment are represented in a laboratory environment. Invited experts participate in such areas as transportation, water distribution and utilities.

Prerequisite: Permission of Advisor

**CE8803. Infrastructure Planning For Public Works, 3 credits - Spring Semester**

This course deals with the process whereby infrastructure projects are conceived, studied, and implemented. The focus will be on the management and leadership roles of the key players in public works agencies. Lectures, reading assignments, and classroom discussions will deal with both routine procedures and controversial issues. Students will research and report on important public works projects and on special topics in infrastructure planning.

Prerequisite: Permission of Advisor
Schack Institute Courses

**DEVE1-GC2105. Green Building and Sustainable Development, 3 credits**
Focusing on sustainability for building development and construction process, this course will cover the history, financial, regulatory and technical aspects involved with ecologically friendly construction, materials, technology and the art of recycling materials. Using the process to acquire LEEDS certification rating as the backbone for the course structure, students will examine the entire construction process and the life cycle costs and benefits involved in securing various rating levels. The course will also review the latest state energy code requirements and ASHRAE specifications as they relate to good and economical building designs.

**DEVE1-GC2110. Infrastructure and Urban Development, 3 credits**
Infrastructure provides the framework for all urban real estate development. This course discusses the major urban systems: water, sewer, storm drainage, electricity, telecommunication, and transportation including transit. The student will learn, via class and field experience, how these systems function, are crucial to long term sustainability, and impact real estate development in the United States and around the world. The course discusses macro-scale systems such as regional transportation, and also deals with the implications for neighborhoods and specific sites, including aspects of site planning.

Wagner Courses

**URPL-GP.4639. Building Green Housing and Sustainable Communities, 2 credits**
The primary purpose of this course is to teach students to understand the benefits of building green housing and sustainable communities and to appreciate the challenges in developing such communities. The focus will be on the practical aspects of the development of affordable housing and vibrant neighborhoods in the urban environment, with an emphasis on environmental sustainability. New York City will form the backdrop of much of our investigation but this local focus will be framed by larger national policy considerations.

The course will begin with an overview of urban housing development, examining the historical context that has created the current patterns and development costs. We will then look at best concepts and practices that define green housing and sustainable communities. Week Three focus will be on racial and economic inclusion in building sustainable neighborhoods. We will analyze local and regional policies and then compare and contrast these against national policy approaches. And finally, we will review the various elements of building green housing and sustainable communities through actual case studies.

Prerequisites: URPL-GP.1603 or CORE-GP.1022 or permission of instructor.

### ADDITIONAL DOMAIN COURSES

**NYU-Poly courses**

**CE 7843 Introduction to Urban Systems Engineering - Fall Semester**
This course provides a descriptive overview of key infrastructure systems and technologies that must be managed, operated and maintained. Systems treated include buildings and structures, water supply, solid and liquid waste handling and disposal, transportation, power, communications and information systems, health and hospitals, police and preprotection. The course explores the financial, political, administrative, legal and institutional settings of these systems and technologies. A portion of the course features distinguished guest lecturers who are experts in some of the systems and technologies included.

**Wagner courses**

**URPL-GP.2415. Public Policy and Planning in New York City, 4 credits**
This course is designed to provide students with an understanding of New York City's governments and politics. We will examine the role of the mayor and other elected officials, organization of the municipal government, and the way in which state and regional governments affect public services and city policies. The course will explore the way in which political and economic forces affect public policies for planning and physical development, public schools, economic development, disaster management, redevelopment of lower Manhattan, congestion pricing, and waterfront development.
URPL-GP.2612. Adapting the Physical City: Innovations in Energy, Transportation and Water, 4 points
A revolution has been occurring in the way energy, transportation, and water services are provided and used that goes beyond the boundaries of individual buildings and communities. Cities as we know them have relied upon traditional infrastructure to provide energy, transportation, water, and environmental services. Now, new innovations are emerging that present opportunities to reduce resource demand and address problems of resource scarcity, environmental contamination, and social inequities. These innovations have now become the foundation of not only popular movements but business practices also. Students will obtain the knowledge and skills to evaluate the performance, resource demands and impacts of these innovations relative to one another and to conventional infrastructure. The course will also cover ways to incorporate these new technologies and changes in user behavior in order to plan neighborhoods, communities and regions to conserve energy and water resources, promote environmental protection, and reduce the consequences of service disruptions. Communications and information technology often provide vital links for energy, water and transportation and ways to evaluate their influence on these other services are covered. Methods to balance alternative approaches within planning and policy frameworks are also emphasized. This course covers the evolution of physical elements of cities, the environmental consequences, the social adaptations to these new technologies, and challenges cities now face. Transformations in the development and application of planning standards and protocols to accommodate these new systems will be part of the course of study. The course combines separate streams of thought in the areas of smart growth, green cities, and alternative energy, transportation and water.
Prerequisites: None.

URPL-GP.2613. Sustainable Cities in a Comparative Perspective, 4 points
This course examines the social, economic and environmental dimensions of sustainability in cities. Policies and programs that try to address the challenges of sustainability from both developed and developing countries are studied and compared. Opportunities for avoiding unsustainable practices in developing countries through the use of modern technologies are also analyzed. Some of the major themes explored in the context of the sustainability of cities are indicators of sustainability, demographic trends, poverty and income distribution, green building, urban sprawl, air and water quality, global climate change, and sustainable energy and transportation policies.
Prerequisites: CORE-GP.1018 (waiver from instructor)

URPL-GP.4611. Intelligent Cities: Technology, Policy and Planning, 2 points
Global urbanization is driving demand for an estimated $40 trillion in infrastructure over the next two decades, and information technology spreading off the desktop and out of offices and homes into everyday objects. As these two trends collide, a broad range of stakeholders - the information technology industry, real estate developers, technology startups, citizens and civic leaders - are all looking for new opportunities to address both existing and emerging urban problems using "intelligent" systems. This course will cut through the thick hype around intelligent cities by discussing - what are intelligent cities really? Where, why and by whom are they being built? What are the intended and unintended potential consequences? What is the role of urban policy and planning in shaping their evolution? Students are expected to have some basic knowledge of fundamentals of urban planning. This is not a technology or engineering course - technical concepts will be explored during the lectures as needed to explain their significance in urban affairs.
Prerequisites: None

Stern Courses
ECON-GB.3375. Urban Systems, 3 credits
You live in a century of the city. In this century, more people will move into urban areas than in any previous or future century. This surge in urban populations will take place in any case but with the right policy moves, the benefits of urbanization could be much larger and come much sooner. As this process unfolds, individuals will have many more choices government officials will face new policy dilemmas for-profit and non-profit organizations will face unprecedented opportunities. The first word in the title - Urban - tells you the course's content. The second word - Systems - tells you the course's approach. To make any complex entity comprehensible, we break it into sub-systems. Each of these systems is made up of a
few types of components linked by a few types of interactions. Drilling down one level, each component is itself a system with its own internal components and interactions. Pulling up one level, each system is a component that interacts with other components in a larger system. As you learn about cities, you will also learn about types of systems and their properties. For example, in any system, interactions between components can create a positive or a negative feedback loop. In addition, many systems follow predictable scaling laws as the number of components increase.

Pre-requisites: COR1-GB.1303 - Firms and Markets, COR1-GB.2303 - The Global Economy (also requires approval of CUSP Program Director)

ENTREPRENEURSHIP AND INNOVATION LEADERSHIP SPECIALIZATION COURSES

CUSP Courses

CUSP XXXX. Entrepreneurship for Urban Technologies, 3 credits
The purpose of this course is to explore in-depth the numerous facets of new venture creation and growth and to foster innovation in the urban information and technology sectors. This course will leverage the unique relationships CUSP has with its industry partners, the Poly incubator, and, most importantly, the tie-in with the future CUSP commercialization program. Together, these will provide students with a unique opportunity to engage with real start-ups (and hopefully begin their own) while being taught by a leading entrepreneur in the data/IT field. The urban component will be integral to the application and context for new technology development and venture creation, and will be emphasized by the CUSP faculty member teaching the course, whose experience will be in this arena. The emphasis is on bridging theory and practice to learn how to transform ideas into new market opportunities and start-up ventures. Specifically, this course analyzes the unique financial, legal, and organizational issues associated with entrepreneurial venture creation in technology and IT.

Poly Courses

MG6013. Organizational Behavior, 3 credits
The purpose of this course is to increase your effectiveness in understanding and leading behavior in organizations. The course provides you with the opportunity to learn from other course participants, learn from readings (whether inside the course readings or available from external sources), learn from corporate examples, and, above all, learn to think deeply about how you can act to lead people, groups and corporations so that they are more successful and add value to the world in which we live.

To be an effective leader, one needs to develop some specific skills but one also needs to understand the context in which one lives, works and interacts. Thus, during the course, we will not only discuss the individual skills you need to have in order to manage people and work in high-performing teams, but we will also try to understand the organizational context – e.g. organizational culture, how to introduce and manage change in organizations.

This course addresses fundamental management issues, drawing on concepts from the behavioral and social sciences and current organizational research. The course includes reading, case analysis, interactive exercises, class discussion, a team report and presentation, and a group exam. These experiences serve as reflective exercises for you. Use them to challenge yourself and your classmates to become more effective leaders.

MG9753. Exploring Creativity, 3 credits
This course explores creativity and design-led innovation, important notions in today’s world where companies are looking for creative, innovative and collaborative employees. This is an unusual course and, I hope, an enjoyable and practically useful one. It Deals in an applied and original way with the topic of creativity. The basic idea behind this course is that exploring the language of art and design can help you think in different ways and reflect on the creative process and what it involves.
Stern Courses

INTA-GB.3337. Social Problem-based Entrepreneurship, 3 credits
This course is designed to put the idea of teaching social entrepreneurship to its ultimate test—with the objective of incubating a series of social ventures through the course of a semester. Early in the class, teams of three to four students each will be formed. Each team will consist of students of multi-disciplinary backgrounds, as the class will be open to students from a variety of schools (e.g. School of Medicine, Tisch School of Arts, School of Law, School of Business, Wagner, Steinhardt etc.) This way, the start-up teams will be able to work through problems from a creative, technical as well as business point of view more effectively than if they were all from the same background.

CORI-GB.1302. Leadership in Organizations, 3 credits
Organizations of all types face significant challenges. These include the difficulty of coping with highly dynamic business environments, the complexity of managing global enterprises, how to shape a healthy corporate culture, managing politics and conflict between individuals and organizational units, motivating a highly mobile and every changing workforce, managing and harnessing intellectual capital, and so on. Such challenges and how organizational leaders can deal with them are the subject of this course.

The course has two major components. The first is “macro” in nature. It focuses on organizational level issues, such as how an organization should be designed to best achieve its goals, and how culture and control affect organizational dynamics. The second part is more “micro” in nature. It focuses on employee-related challenges, such as how to get things done in politically sensitive environments, evaluate and reward people, and manage teams. The macro component is concerned with overall organizational performance, while the micro component is concerned with managing individual and group effectiveness. And leadership is the linking pin that connects these two.

This course will introduce you to central theories and frameworks in management and organizational behavior, and will help you to understand how to apply those theories and frameworks to understand and address organizational challenges and problems. An understanding of organizations and their management is important for anyone who plans to work within an organization, as career success hinges on one’s ability to accurately read and respond to the organizational context within which one operates. The course will also give you an opportunity to reflect on the skills that are required for being a better manager and leader.

Wagner Courses

PADM-GP.1020. Managing Public Service Organizations, 4 credits
The goal of Managing Public Service Organizations (MPSO) is to enhance your management and leadership skills. The course provides you with the tools you need to diagnose and solve organizational problems, to influence the actions of individuals, groups, and organizations, and to lead high-performing, successful public service organizations.

A key management task is to assemble the skills, talents, and resources of individuals and groups into those combinations that best solve the organizational problems at hand. One must manage people, information, and processes to accomplish organizational goals. One must make things happen, and often not under ideal conditions or timeframes. The successful execution of these goals requires managers to be able to understand what they bring to and need from their organizations, formulate a mission and strategy, make effective decisions, influence and motivate diverse individuals, apply their own skills and abilities to their teams, optimize the structure and culture of their organization, diagnose problems, and drive organizational change.

MPSO prepares you to achieve these objectives by providing you with fundamental tools developed from the behavioral and social sciences and tested by leaders in organizations representing all sectors.

PADM-GP.2186. Leadership and Social Transformation, 4 credits
This course is appropriate for students interested in the role that leadership plays in advancing social innovation and social change in the context of democratic governance.

The course explores the role of leadership in organizational efforts to change thinking,
systems, and policies—taking into consideration the contested process by which the responsibility of addressing intractable problems is distributed among key diverse actors in a shared-power world. Traditional approaches to leadership defined by single heroic individuals who influence followers are contrasted with new perspectives—consistent with the demands of today’s complex problems—particularly when we aspire to inclusive, transparent and democratic solutions. Emergent perspectives reveal leadership as the collective achievement of members of a group who share a vision, and who must navigate the constellation of relationships, structures, processes and institutional dynamics within the larger system in which they are embedded.