

TECHNOLOGY (TECH-GB)

TECH-GB 2114 Cybersecurity & Privacy (1.5 Credits)

Typically offered occasionally

As the frequency, size and consequences of breaches of customer personal information and corporate intellectual property have grown exponentially, the protection of information held by companies has become a critical business issue for managers, executives and Boards of Directors. Students in this course will develop a fundamental understanding of business, technical, legal and ethical issues and challenges related to cybersecurity and privacy. They will learn how business managers cope with these challenges across different industries by developing robust Information Security and Privacy Management Programs to maintain confidentiality, integrity and availability of the information, networks, computing systems and applications managed by the organization. Upon completing this course, students will be prepared to consider the cybersecurity and privacy risks inherent in a wide range of business decisions and have incisive conversations with cybersecurity and privacy experts about these risks and how they can be mitigated. Examples of topics to be addressed in this course include: (1) The roles of the Board of Directors, executives and business managers in cybersecurity and privacy protection; (2) Strategies to prevent intrusions and theft of data, and to detect intrusions if they do occur; (3) How to conduct risk-based management – to assess and prioritize cybersecurity and privacy risks; (4) How to prepare for a data breach, and necessary actions following a breach, with a focus on critical business decisions that senior corporate management will face; (5) Unique privacy management requirements for marketers, for the financial industry and for the healthcare industry, as well as workplace privacy issues across industries; (6) The realities of cyberespionage; and (7) Lessons from the business and technical mistakes of companies whose security deficiencies left them vulnerable to data breaches with consequential negative impact on their customers, corporate reputation and financial position. This course features lectures, practitioner guest lectures, discussion and analysis of real-world examples/case studies, a data breach simulation game and a final group project.

Grading: Grad Stern Graded

Repeatable for additional credit: No

TECH-GB 2131 High Tech Entrepreneurship (1.5 Credits)

Typically offered occasionally

High-Tech software, whether at a red-hot startup or formidable incumbent, has become the ultimate value-adding force driving much of the modern economy. There's not an exact science behind successful entrepreneurs, intrapreneurs and product managers. Identifying a genuine market need, building a product to address that need, and finding a business model to tie it all together profitably can't be automated. That said, launching successful high-tech software as a new startup or product is no Voodoo either. While there's no process that guarantees success, savvy entrepreneurs employ market-tested best practices to maximize their chances. High-tech software is built by a cross-functional team of software engineers, data scientists and/or user experience designers. Leading this team towards success requires understanding each role, how they solve problems through effective collaboration, and how to structure customers' desires into the specifications these technologists need to deliver customer-delighting software. After the software's launch, continued success means identifying the metrics which matter the most to guide the software's continued evolution continue to match changing customer tastes and maximize profit. This course will equip you with two toolsets. First, techniques for evaluating market demand on the cheap, patterns for maximizing value capture, models for creating growth from network effects, and protocols for the early identification of symptoms of failure will enable you to get the business started. Second, methods and processes for hiring, inspiring and guiding an engineering team to launch and evolve your software product will enable you to grow your business through delighting your customers. Together, these frameworks prepare you to recognize business opportunities uniquely enabled with software products and successfully launch those products, whether that launch creates your first startup or a new product for your firm.

Grading: Grad Stern Graded

Repeatable for additional credit: No

TECH-GB 2134 R Programming for Data (1.5 Credits)

Typically offered occasionally

In this course, students will learn how to program in R and how to use R for effective data analysis and visualization. "Turn raw data into understanding, insight, and knowledge" (Wickham & Grolemund, 2017, p. ix) by using R to import, prepare, understand, and communicate findings from data. The course begins with developing a basic understanding of the R working environment. Next, students will be introduced the necessary arithmetic and logical operators, salient functions for manipulating data, and getting help using R. The common data structures, variables, and data types used in R will be demonstrated and applied. Students will write R scripts and build R markdown documents to share their code others. They will utilize the various packages available in R for visualization, reporting, data manipulation, and statistical analysis.

Grading: Grad Stern Graded

Repeatable for additional credit: No

TECH-GB 2135 Programming in Python (1.5 Credits)*Typically offered occasionally*

This course represents an opportunity for students to learn how to code, regardless of whether or not they possess prior programming experience. The Python programming language will be introduced with a progression of concepts from basic to intermediate. Students will then design and implement practical applications of the Python programming language ranging from basic scripts to intermediate programs. Throughout the semester, students will be immersed in contemporary software development practices and should emerge with marketable technology-related knowledge and skills.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2146 Databases for Business Analytics (1.5 Credits)***Typically offered occasionally*

We capture and store data about pretty much every aspect of our lives. All companies store their data in a database, and to a pre-requisite for any analytics effort is the ability to access and organize the data that are stored in there. In this class, we will explore the basics of relational databases and examine how to use SQL for querying, browsing, and exporting data from databases. We will use a variety of real data sources for our examples, and starting from very basic queries, we will see how to generate increasingly sophisticated results.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2147 Databases for Business Analytics (1.5 Credits)***Typically offered occasionally*

Databases are ubiquitous in all businesses and hold significant information about the business. Every data analysis and report typically starts with an SQL query, as SQL is the lingua franca of all database systems. Therefore, SQL is necessary for anyone who needs to analyze data as part of their job. Many tech companies consider the knowledge of SQL a prerequisite for all their analysts and managers. This database class is designed for absolute beginners and teaches students how databases are structured and how to write SQL queries that retrieve data from a database. The class is heavily hands-on, focusing on developing the necessary skills for writing SQL queries. We will cover the following topics: Basics of Entity-Relationship model, and the connection to databases USE, DESCRIBE queries, to understand the structure of a database Selection queries: *, column, column AS, DISTINCT, ORDER BY, LIMIT Filtering data using "where": Boolean conditions, IN, BETWEEN, LIKE Join queries: Inner and Outer joins, self-joins Aggregation queries: GROUP BY, SUM, AVG, MAX, MIN, etc Subqueries Window queries (if time allows) After this course, students will be able to navigate relational databases, issue queries against databases in an organization, and generate data that can be used for analyses and reports. This course is the first half of the traditional 3cr. version of Dealing with Data (TECH-GB 2346). Students who took TECH-GB 2346 should not take this course.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2148 Dealing with Data (1.5 Credits)***Typically offered occasionally*

The volume of data generated every day continues to grow exponentially. We capture and store data about pretty much every aspect of our lives. Being able to fetch, store, query, analyze, and visualize data is now a fundamental skill for everyone. This class is designed for students who want to learn to handle data programmatically, without being software engineers. The emphasis will be on acquiring, processing, and presenting data analysis results. The course will be hands-on, and we will focus on using Python in class for data handling and analysis tasks, emphasizing exploratory data analysis and visualization. We will be using Jupyter/iPython notebooks heavily: Notebooks are interactive documents, accessible from your browser, which combine text, code, and figures, and are often used to present the process and results of data analysis. This course is the second half of the traditional 3cr. version of Dealing with Data (TECH-GB 2346). Students who took TECH-GB 2346 should not take this course.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2240 Artificial Intelligence, Automation, and the Platform Revolution: Global Perspectives (2.5 Credits)***Typically offered occasionally*

The rapid evolution of artificial intelligence (AI), machine learning and robotics technologies coupled with the emergence of platform-based digital business models are transforming companies across industries and nations as we enter a new automation age. In this course, you will understand the technological, strategic, economic, organizational and ethical foundations of this digital future of work, equipping you to think about and deal with the immediate and long-term implications of the dramatic changes on the horizon. You'll gain a working understanding of what's under the hood of "AI" machine learning and deep learning, analyze emerging business models using digital economics frameworks, unpack the strategic and organizational issues associated with choosing a platform strategy, deploying automation technologies in the organization and planning a workforce transition, gain perspective on the geopolitical implications of the evolving AI battle between the US and China, and debate key societal issues like platform-fueled misinformation, technological inequality and algorithmic bias. The course uses a mix of lectures from the professor, classroom case discussions and guest lectures from industry and policy experts.

Grading: Grad Stern Pass/Fail Executive MBA**Repeatable for additional credit:** No**TECH-GB 2250 Operations in a Digital World (2.5 Credits)***Typically offered occasionally*

The increasingly digital world has changed how businesses operate. It has enabled new business models and upended existing ones. This course is designed to delve into the new operating models that have emerged because of the shift to digital. The course will develop tools and frameworks (e.g., experimentation, dynamic pricing, fully autonomous selling, dark stores, etc.) that are required to digitize a firm's operating model. It will then apply these concepts to analyze the operations and supply chains of online platforms, delivery services, and e-commerce providers. The goal of the course is to help managers identify the challenges and, more importantly, recognize the opportunities from the shift to digital. The course is essential for managers leading their firms' transitions to hybrid or fully digital products or services.

Grading: Grad Stern Pass/Fail Executive MBA**Repeatable for additional credit:** No

TECH-GB 2314 Managing the Digital Firm (3 Credits)*Typically offered occasionally*

The central question addressed in this course is How can managers maximize the business value of IT investments Investment in information technology in the United States and other industrialized countries has risen to 35 percent of all business capital investment 50 percent if various complimentary investments are included These investments in IT are changing the way we manage people and organize business in a global environment Managers of digital firms need to identify the challenges facing their firms discover the technologies that will help them meet these challenges design business processes to take advantage of the technology and create management procedures and policies to implement the required changes This course prepares you to make these important decisions and to manage effectively in a digital environment Cases are drawn from financial service consumer products retail and wholesale distribution and manufacturing firms Speakers from Microsoft IBM SAP Siebel Oracle PeopleSoft AskMecom Google and other firms are an integral part of the course

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2315 Data Analysis & Management (3 Credits)***Typically offered occasionally*

Data Analysis & Management

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2317 Info & Internet Technology (3 Credits)***Typically offered occasionally*

This course introduces the technical concepts underlying current and future conformation systems with an emphasis on Internetrelated technologies It begins with the fundamentals of computer systems databases and networking Special emphasis is given to technologies that underlie the World Wide Web and ecommerce including HTML XML emerging interoperability standards security search information retrieval agent technologies data warehousing and data mining This course provides both a refresher to basic concepts as well as coverage of cuttingedge technologies It assumes no prior knowledge of technology or programming beyond experience with personal computers Course requirements include homework assignments and a term paper

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2318 Digital Strategy (3 Credits)***Typically offered occasionally*

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

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2320 Customer Relation Mgt Sys (3 Credits)***Typically offered occasionally*

Managing customer relationships is increasingly about having the right systems that provide the right electronic and human touch points to customers Customer relationship management CRM systems encompass both software applications and business strategies that anticipate interpret and respond to the needs of current and prospective customers They allow organizations to identify acquire serve and retain profitable customers by interacting with the right customers and providing to them the right offers through the right channel and at the right time To achieve such functionality it is important to have the right mixture of people processes and technologies Modern CRM systems are becoming increasingly more dependent on the right mixtures of technologies and systems that deliver the functionality described above This course focuses in depth on such technologies and systems In particular it covers the systems supporting operational CRM ie the systems that automate frontoffice customer interactions in sales marketing and customer service as well as systems supporting analytical CRM ie the systems that analyze customer activities captured by operational CRM and that provide actionable knowledge about the customers These technologies include databases customercentric warehouses business intelligence personalization data mining decision support customer tracking and profiling technologies The course also examines how all these CRM technologies enable the functionalities and business strategies described above

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2335 Programming in Python and Fundamentals of Software Development (3 Credits)***Typically offered occasionally*

This course provides an introduction to programming languages and to the software design methods The programming language of choice is Python However the course will introduce the students to the fundamental programming concepts appearing in various other programming languages including Java and C that go well beyond the specifics of Python Upon completion of this course the students will be able to acquire practical programming skills in Python and understand the principles of structured software development They will also understand the principles of designing large software systems and what it takes to plan analyze design implement and support large Information Systems throughout their entire System Development Lifecycle

Grading: Grad Stern Graded**Repeatable for additional credit:** No

TECH-GB 2336 Data Science for Business: Technical (3 Credits)*Typically offered occasionally*

THIS IS THE MORE TECHNICAL VERSION OF DATA SCIENCE FOR BUSINESS (MANAGERIAL) SEE TECH-GB 3336 SOME PROGRAMMING EXPERIENCE REQUIRED Businesses, governments, and individuals create massive collections of data as a byproduct of their activity Increasingly data is analyzed systematically to improve decision making We will examine how data analytics technologies are used to improve decision making We will study the fundamental principles and techniques of mining data and we will examine real world examples and cases to place data mining techniques in context to improve your data analytic thinking and to illustrate that proper application is as much an art as it is a science In addition we will work hands on mining data using Python and its data science libraries After taking this course you should Approach problems data analytically Think carefully systematically about whether how data can improve business performance to make better informed decisions Be able to interact competently on business analytics topics Know the fundamental principles of data science that are the basis for analytics processes algorithms systems Understand these well enough to work on data science projects and interact with everyone involved Envision new opportunities Have had hands on experience mining data Be prepared to follow up on ideas or opportunities that present themselves.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2345 Tech and the City: Customer-Centric Digital Entrepreneurship (3 Credits)***Typically offered occasionally*

Have you ever wondered what it's like to run a high-tech startup? This course provides students with immersive experiential learning about digital entrepreneurship through the lens of successful early-stage technology companies. Student teams are each embedded for a semester into different New York City-based startups from the investment portfolios of Union Square Ventures and other leading tech-focused venture capital firms. Over the course of this immersion students work with founders and investors to understand business models assess metrics and their connection to growth and funding and lead a customer centric assessment of the company's products. Weekly critical reflection activities that include structured discussions journal writing and in-class peer presentations coupled with guest sessions from industry experts allow students to deepen their understanding of both their own company as well as the other participating startups. They emerge from the course with an experience-based appreciation of the transformative potential of digital technologies of the vibrant tech entrepreneurship environment of New York City and of the risks faced by high-tech startups that under invest in understanding their customers.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2346 Dealing With Data (3 Credits)***Typically offered occasionally*

The volume of data being generated every day continues to grow exponentially. We capture and store data about pretty much every aspect of our lives. Being able to handle and analyze the available data is now a fundamental skill for everyone. The objective of this course is to challenge and teach students how to handle data that come in a variety of forms and sizes. This course guides students through the whole data management process, from initial data acquisition to final data analysis. The (tentative) list of topics that we plan to cover: Unix tools, Regular expressions, Data formats: XML, JSON, YAML, etc. Accessing data sources: Crawling, parsing HTML, APIs, Data modeling and ER model, Relational databases and SQL NoSQL, databases and MongoDB Data cleaning, Crowdsourcing for data management, Textual data and natural language processing tools, Handling time series, dates, timezones, etc. Handling spatial data, maps, etc. Handling image/audio/video data using signal processing, Handling social media and network data, Basic predictive modeling techniques, Visualization Big Data: Hadoop HBase Pig.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2350 Robo Advisors & Systematic Trading (3 Credits)***Typically offered occasionally*

Do machines make better decisions than humans? This is the question with which the course begins. It considers the *raison d'être* for the emergence of "Robo Advisors" in the marketplace and how they might evolve as alternatives to traditional investment alternatives. The meat of the course addresses how in this age of "big data" we can design machines to make investment decisions automatically. The course covers the basis, evaluation and execution of trading strategies that are commonly used by professionals in financial markets. There is increasing interest in particular, on systematic trading strategies and execution systems because of their consistency in decision making, their transparency, and scalability. The central objective of this course is to understand the essence of systematic trading, key elements of which are the basis for generation of "alpha" or "exotic beta" and how to think about and control the various types of risks associated with systematic trading systems. The strategies are grounded in data of various forms including prices, fundamentals, as well as unstructured data from news sources. The second part of the course creeps into Artificial Intelligence and its exploration in modern decision making systems. The course is grounded in data and takes the following perspective: "in God (and theory) we trust, everyone else please bring data." We will explore strategies with data in Excel, but you will also be given templates in Python in case you want to stray in that direction. Programming experience is not required, but if you have it, feel free to use it for your project. Many students who have taken this course over the last 10 years have gone onto successful careers in trading and investments or into advanced programs in quantitative finance. I'll be happy to put you in touch with them.

Grading: Grad Stern Graded**Repeatable for additional credit:** No

TECH-GB 2384 Climate Science: Realities & Risks of a Changing Climate (3 Credits)*Typically offered occasionally*

This course will focus on climate science - the basics of the earth system, how it is observed and modeled, how has it changed in the recent and distant past, how it might change in the future under natural and human influences, and what impacts those changes might have on ecosystems and society. The most recent US government and UN assessment reports will serve as texts, supplemented by the original research literature and media coverage. Critical thinking will be emphasized throughout.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 2385 Energy- Technologies, Business, Regulations (3 Credits)***Typically offered occasionally*

This course will cover the technologies, economics, and policies of existing energy systems, together with the business and policy frameworks that support them. The opportunities and challenges in developing and deploying "clean", reliable, and affordable energy will also be discussed.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3106 Data Visualization (1.5 Credits)***Typically offered occasionally*

Data visualization is an essential skill required in today's data driven world. With its foundations rooted in statistics, psychology, and computer science, practitioners in almost every field use visualization to explore and present data. This course shows you how to better understand your data, present clear evidence of your findings to your intended audience, and tell engaging data stories that clearly depict the points you want to make all through data graphics. The skills learned in this course offer enormous value for creatives, educators, entrepreneurs, and business leaders in a variety of industries. Whether you are a seasoned visualization designer or just learning about it now, this course will serve as an introduction and reference to becoming visual with data.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3109 Digital Marketing Analytics (1.5 Credits)***Typically offered occasionally*

This course will examine how the digital revolution has transformed marketing strategy and added a 5th P – Participation – to the marketing mix. The course will address strategies used by companies adopting social media and digital marketing, with a focus on analytics: how to make firms more intelligent in how they conduct business in the digital age. We will discuss statistical issues in data analyses, statistical package output interpretation, econometrics-based tools, and experimental techniques that help can tease out causality from correlation.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3135 Electronic Communities (1.5 Credits)***Typically offered occasionally*

Substantial increase in household Internet connections has led to a dramatic rise in the number of people participating in large Internet-enabled groups outside the work context. Many are organized around recreation and entertainment; some are organized around civic and political issues; some around personal needs for support or advice; and some around technical topics. With the publication of Net Gain in 1997 and the growth in Linux and other open-source technologies came the realization that these groups could be shaped into a source of business value. The goals of this course are to introduce students to varieties of electronic communities to provide frameworks for evaluating their usability and sociability and to evaluate alternative business and technology models for electronic communities. Students complete individual assignments based on the readings and complete a group assignment based on an analysis of electronic communities.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3136 Data Science and Predictive Analytics (1.5 Credits)***Typically offered occasionally*

We will study the fundamental principles and techniques for data science and advanced analytics. We will develop conceptual frameworks for thinking through the solving of business problems with data science methods, especially predictive analytics. After taking this course you should be able to: 1. Approach business problems data-analytically, think carefully and systematically about whether and how data can improve business performance, and make better informed decisions for management, marketing, consulting, investment, etc. 2. Interact competently on topics of data science for business analytics and understand the fundamental principles of data science processes: data, algorithms, humans, and systems. You will understand these well enough to interact effectively with CTOs, expert data scientists, data science consultants, etc. and be able to manage data science projects and consult on analytics solution design.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3145 Healthcare Transformation, Data Analytics, and Emerging Technologies (1.5 Credits)***Typically offered occasionally*

This course analyzes the management and operations aspect of the US healthcare industry and how recent events and public policy changes have led to healthcare transformation and growing needs for technology. The goal is to provide an understanding of the use of data analytics and role of AI in present day medicine. Highlights of the most recent challenges and advancements in US healthcare including healthcare digitization, use of modern technology such as telemedicine and newer care delivery models are discussed. A practical approach to using AI tools to create framework for solving healthcare problems is discussed. This course also provides students with an overview of how the recent changes in healthcare have boosted entrepreneurship while also creating challenges such as interoperability, adoption of new technology, and ethical use of data.

Grading: Grad Stern Graded**Repeatable for additional credit:** No

TECH-GB 3147 IT Strategy (1.5 Credits)*Typically offered occasionally*

We are at the early stages of an information revolution where information technologies are redefining business models across industries creating new markets enabling new functionalities and creating a whole new space where new human communities behaviors norms and regulation are just beginning to emerge Information technologies are an increasing part of developing new products and services of integrating business functions and of managing customer relationships These technologies can cause major disruptions in business models in a very short time Decisions about information technology are thus increasingly central to business success The central premise of this course is that an organization will not succeed with IT investments unless these investments are aligned and integrated with a sensible business model This is a crucial premise for industries transformed by IT In more stable industrial age industries business models were relatively stable and the central basis for success with IT investments involved aligning them with complementary organizational and process changes However when IT transforms an industry it realigns the industrys structure and boundaries and changes the fundamental business models that work The course is case oriented The cases have been chosen to cover a range of industries and transformations of business models over the last ten years We also consider Google and the potential impacts of its business model to organize the worlds information and make it easily accessible to society and business The cases and their associated questions are listed in Appendix 1 Since the emphasis of the course is on information technologies in business the course includes a module on the impacts of emerging technologies namely WiMAX and RFID to force us to think through issues of industry and business transformation induced by currently emerging technologies The objective here is to end up with a framework that you will find useful in generalizing to other information technologies You are required to choose one of these two topics and analyze it using the questions in Appendix 2 This course will not make you an IS technical specialist its emphasis is on industry and managerial issues However through an overview of the technologies activities and applications of IS this course will help you to acquire an appreciation for the possibilities created by IT in tomorrows markets organizations and society

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3155 Digital Innovation and Crowdsourcing (1.5 Credits)***Typically offered occasionally*

This course explores new ways in which organizations become innovative and efficient in today's economy by tapping into expertise that exists outside firm's boundaries and its major geographical locations While neither globalization of work nor involving other firms or customers into a firm's innovation processes is new per se there is unprecedented growth of these practices in modern organizations enabled by new technological platforms Yet the practices of opening up the enterprise through offshoring outsourcing and crowdsourcing knowledge work come with certain costs and risks of failure In this course we will discuss how to evaluate risks and benefits of such practices by doing qualitative analysis of cases discussing strategic theories learning decision making tools and engaging in realtime crowdsourcing projects Specific topics covered include 1 strategic considerations of whether an activity should stay within or outside the firm boundaries 2 strategic evaluation of geographical locations for a particular type of knowledge work 3 vendor competencies how to grow them as a provider and how to evaluate them as a client 4 when and how to partner for product innovation 5 how to organize a crowd of customers or experts 6 contracting with and governing of strategic vendors 7 enabling innovation in distributed teams This course is designed to give students a truly multidisciplinary perspective on these issues drawing on theories and practices from international business strategy and innovation management

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3156 Online Privacy (1.5 Credits)***Typically offered occasionally*

Privacy issues have been getting increasing attention from lawmakers regulators and the media As a result businesses are under increasing pressure to draft privacy policies and post them on their Web sites Chief privacy officers are becoming essential members of many enterprises and companies are taking proactive steps to avoid the potential reputation damage of a privacy mistake This course provides an overview of online privacy issues privacy laws and privacy-related technologies and selfregulatory efforts Students study the approaches that companies are taking to address their customers online privacy concerns as well as review recent privacy blunders Students also gain an understanding of both privacy-invasive and privacy-enhancing technologies Students are prepared to assess the privacy practices of organizations in order to document these practices in privacy policies including P3P policies and to evaluate the implications of these practices for the organization

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3157 Computer & Ntwrk Security (1.5 Credits)***Typically offered occasionally*

As enterprises become increasingly reliant on electronic media and communication the protection of data and electronic infrastructure becomes critically important Incidences of security failures in commercial and noncommercial environments are increasing in number and severity Hence it is essential that enterprises continually develop and refine security strategies that reflect the changing uses of information technology This course introduces basic concepts of computer and network security with an emphasis on the threats and countermeasures relevant to Internet and Web services Students are prepared to evaluate the security needs of organizations and to develop strategies to address these needs The requirements and design of security technologies are reviewed and case studies are presented

Grading: Grad Stern Graded**Repeatable for additional credit:** No

TECH-GB 3162 Emerging Technologies (1.5 Credits)*Typically offered occasionally*

The IT revolution is far from over, and, contrary to the well-known claim of Nicolas Carr, IT does matter. In fact, according to Bill Gates, “we’re only beginning to realize computing’s potential” and that “we’re entering an era when software will fundamentally transform almost everything we do,” ranging from the evolutionary to the revolutionary transformations disrupting previously adopted technologies and business models.

This sentiment was shared by Marc Andreessen from the VC firm Andreessen-Horowitz who famously claimed that “software is eating the world.” These IT-driven transformations should create intelligent real-time enterprises that would conduct business in a significantly more effective, efficient and agile manner, and that could adapt to the changing business conditions and grow “smarter” over time by leveraging the future generations of Information Technologies. These technologies can be the greatest friends or the worst foes in building such “smart businesses,” depending on how well they are adopted and deployed in the enterprises. In this course, the students will study various principles of technological innovation driving major business transformations and leading to the creation of more intelligent and agile enterprises. Some of these principles include evolution and generations of emerging technologies, different types of technological trajectories, cycles and path dependencies of these technologies, business-pull and technology push, can-do vs. should-do, the “magic” quadrant, crossing-the-chasm and the beagle-and-the-rocket principles. The course will also cover various technological standards, battles between the competing standards, convergence to one or few dominant standards, and commoditization of technologies.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3170 Independent Study (1.5 Credits)***Typically offered occasionally*

Independent Study

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3206 Data Visualization (2.5 Credits)***Typically offered occasionally*

Data Visualization is an essential skill required to work with data. With its foundations rooted in statistics, psychology, and computer science, practitioners in almost every field use visualization to explore and present information and insights. This course shows you how to understand your data, present clear evidence of your findings to your intended audience, and tell engaging data stories that depict the points you want to make all through data graphics. The skills learned in this course offer enormous value for creatives, educators, entrepreneurs, and business leaders in a variety of industries. Whether you are a seasoned visualization designer or just learning about it now, this course will serve as an introduction and reference to becoming visual with data.

Grading: Grad Stern Pass/Fail Executive MBA**Repeatable for additional credit:** No**TECH-GB 3210 Digital Marketing Analytics (2.5 Credits)***Typically offered occasionally*

From Twitter to Facebook to Google to the smartphone, the shared infrastructure of IT-enabled platforms are playing a transformational role in today’s digital age. This course examines the major trends in digital marketing using tools from business analytics. While there will be sufficient attention given to top level strategy used by companies adopting digital marketing, the focus of the course is also on business analytics: how to make firms more intelligent in how they conduct business in the digital age. Measurement and metrics play a big role in this space. The course is based off cutting-edge projects and consulting assignments that the Professor has been involved in with various companies over the last few years.

Grading: Grad Stern Pass/Fail Executive MBA**Repeatable for additional credit:** No**TECH-GB 3255 Gblztn, Open Innovtn, Crwd (2.5 Credits)***Typically offered occasionally*

GLBLZTN, OPEN INNOVTN, CRWD

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3262 Emerging Tech & Business Innovation (2.5 Credits)***Typically offered occasionally*

In this course, the students will study various principles of technological innovation driving major business transformations and leading to the creation of more intelligent and agile enterprises. Some of these principles include evolution and generations of emerging technologies, different types of technological trajectories, cycles and path dependencies of these technologies, business-pull and technology push, can-do vs. should-do, the “magic” quadrant, crossing-the-chasm and the beagle-and-the-rocket principles. The course will also cover various technological standards, battles between the competing standards, convergence to one or few dominant standards, and commoditization of technologies.

Grading: Grad Stern Pass/Fail Executive MBA**Repeatable for additional credit:** No

TECH-GB 3306 Data Visualization (3 Credits)*Typically offered occasionally*

What is data visualization? Visualization is a kind of narrative, providing a clear answer to a question without extraneous details. –Ben Fry

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. Visualization is a graphical representation of some data or concepts. –Colin Ware

In this course, students will learn visual representation methods and techniques that increase the understanding of complex data and models. Emphasis is placed on the identification of patterns, trends and differences from data sets across categories, space, and time. How does design of information support meaning and knowledge making? Understanding is a path, not a point. It's a path of connections between thought and thought; patterns over patterns, it is relationships. –Richard Saul Wurman

The ways that humans process and encode visual and textual information will be discussed in relation to selecting the appropriate method for the display of quantitative and qualitative data. Graphical methods for specialized data types (times series, categorical, etc.) are presented. Topics include charts, tables, graphics, effective presentations, multimedia content, animation, and dashboard design. The goal of effective visuals is to communicate information to maximize readability, comprehension, and understanding. Information visualization is a combination of many disciplines. Principles are drawn from statistics, graphic design, cognitive psychology, information design, communications, and data mining. 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?

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3310 Digital Marketing Analytics (3 Credits)***Typically offered occasionally*

The emergence of the Internet has drastically changed various aspects of a firm's operations. Some traditional marketing strategies are now completely outdated, others have been deeply transformed, and new digital marketing strategies are continuously emerging based on the unprecedented access to vast amounts of information about products, firms, and consumer behavior. From Twitter to Facebook to Google to Amazon to Apple, the shared infrastructure of IT-enabled platforms are playing a transformational role in today's digital age. The Internet is now encroaching core business activities such as new product design, advertising, marketing and sales, creation of word-of-mouth and customer service. It is fostering newer kinds of community-based business models. Traditional marketing has always been about the 4Ps: Product, Price, Place, and Promotion. This course will examine how the digital revolution has transformed all of the above, and augmented them with the 5th P of Participation (by consumers). While there will be sufficient attention given to top level strategy used by companies adopting social media and digital marketing, the focus of the course is also on analytics: how to make firms more intelligent in how they conduct business in the digital age. Measurement plays a big role in this space. The course is complemented by cutting-edge projects and various business consulting assignments that the Professor has been involved in with various companies over the last few years. We will learn about statistical issues in data analyses, assessing the predictive power of a regression, various econometrics-based tools such as simple and multivariate regressions, linear and non-linear probability models (Logit and Probit), estimating discrete and continuous dependent variables, count data models (Poisson and Negative Binomial), cross-sectional models vs. panel data models (Fixed Effects and Random Effects) and various experimental techniques that help can tease out correlation from causality such as randomized field experiments.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3322 Design and Development of Web and Mobile Applications (3 Credits)***Typically offered occasionally*

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.

Grading: Grad Stern Graded**Repeatable for additional credit:** No

TECH-GB 3332 Introduction to AI & Its Applications in Business (3 Credits)*Typically offered occasionally*

The field of AI will fundamentally transform many industries within the next few years. According to the World Economic Forum report, AI will create 133 million new and displace 75 million old jobs worldwide within the next few years, contributing up to \$15 trillion to the global GDP by 2030, according to PwC. Furthermore, there is an acute AI skills shortage: the worldwide demand for the AI jobs is measured in millions, while there are about 300,000 AI professionals worldwide. Not surprisingly, AI-related jobs are among the fastest growing and the most in-demand today. Furthermore, AI has experienced rapid growth over the last ten years with major advances in Deep Learning, Reinforcement Learning, Natural Language Processing, Computer Vision, Robotics, and other areas. The purpose of this course is to provide the students with a comprehensive introduction to the recent developments in AI through the coverage of fundamental AI concepts, practical business applications and the hands-on experiences with modern AI frameworks, such as Facebook's PyTorch and Google's TensorFlow. Upon completion of this course, the students will be able to:

1. Understand AI's fundamental concepts and methods
2. Acquire working knowledge of modern Deep Learning frameworks, such as PyTorch (or Tensorflow and Keras)
3. Learn how to apply AI-based methods to solving practical business problems
4. Understand implications of AI for business strategies
5. Understand where the AI technologies are heading within the next few years.

The students will acquire this knowledge through the combination of class lectures, class discussions, case studies, assigned readings, and hands-on computing exercises using modern AI frameworks. Periodically, experts from the industry will be invited to share their experiences pertaining to the AI topics covered in class, share their perspectives on the topics with the students, and also discuss current trends and future directions of the AI technologies.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3333 Practical Big Data (3 Credits)***Typically offered occasionally*

The course will explore data engineering aspects as big data technologies and databases. We will cover data cleaning and preprocessing two key elements in the big data projects success. We will then explore modeling aspects focusing on applications of the latest machine learning, econometrics and artificial intelligence technologies. Financial services industry has widely adopted big data analytics to inform better investment decisions with consistent returns. In conjunction with big data, algorithmic trading uses vast historical data with complex mathematical models to maximize portfolio returns. The continued adoption of big data will inevitably transform the landscape of financial services. However, along with its apparent benefits, significant challenges remain in regards to big data's ability to capture the mounting volume of data. The increasing volume of market data poses a big challenge for financial institutions. Along with vast historical data, banking and capital markets need to actively manage tick data. Likewise, investment banks and asset management firms use voluminous data to make sound investment decisions. Insurance and retirement firms can access past policy and claims information for active risk management. Other industries other using big data for marketing and digitalization projects, we will see real life implementations. We will invite guest lecturers to discuss big data applications in different industries like finance, gaming, e-commerce, retail, etc. Students need basic Python (or R) knowledge they will develop more coding skills during the course. We will make available to students Python and R code to implement big data and machine learning models. Course grading will consist of homework assignments, a group project and a midterm and final exam. Big Data is practical science, mastering big data requires mastering the practical aspects of big data that are required to implement successful big data projects.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3335 Electronic Communities (3 Credits)***Typically offered occasionally*

Electronic Communities

Grading: Grad Stern Graded**Repeatable for additional credit:** No

TECH-GB 3336 Data Science for Business: Managerial (3 Credits)*Typically offered occasionally*

Businesses governments and individuals create massive collections of data as a by-product of their activity. Increasingly data is analyzed systematically to improve decision-making. In many cases automating analytical processes is necessary because of the volume of data and the speed with which data are generated. We will examine how data analytics technologies are used to improve decision-making. We will study the fundamental principles and techniques of mining data and we will examine real-world examples and cases to place data-mining techniques in context to improve your data-analytic thinking and to illustrate that proper application is as much an art as it is a science. In addition we will work hands on with data mining software. After taking this course you should: Approach business problems data analytically. Think carefully & systematically about whether & how data can improve business performance to make better-informed decisions. Be able to interact competently on business analytics topics. Know the fundamental principles of data science that are the basis for analytics processes algorithms & systems. Understand these well enough to work on data science projects and interact with everyone involved. Envision new opportunities. Have had hands-on experience mining data. Be prepared to follow up on ideas or opportunities that present themselves by performing pilot studies.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3338 Bus Strat for Digital Ecn (3 Credits)***Typically offered occasionally*

Digital markets have profound differences from traditional markets For instance copies of digital goods can be produced at almost zero cost and online markets enable buyers to easily compare the offerings of many different sellers The goal of this course is to provide students with a fundamental understanding of digital markets and to equip them with the concepts and principles necessary to understand current and future developments in digital markets to separate the value from the hype and to function in and take advantage of these markets The first half of the course focuses on the markets for digital goods such as software news music or movies which can be delivered through the Internet and covers their delivery infrastructure pricing digital rights management and economics The second half of the course focuses on online marketplaces covering consumer search advertising product differentiation and customization competitive dynamics and the impact of the Internet on industry structure organizations markets and business to business commerce

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3339 Being Digital: Search, Social Media and Crowdsourcing (3 Credits)***Typically offered occasionally*

Being Digital: Search, Social Media and Crowdsourcing

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3345 Doctoral Seminar in Digital Economics (3 Credits)***Typically offered occasionally*

This course introduces students to scientific paradigms and research perspectives related to the economics of information technologies. Topics in 2012 include information goods piracy digital rights management network economics sponsored search auctions user-generated content contagion in networks technological innovation It productivity the digital commons and online privacy.

Grading: Grad Stern Graded**Repeatable for additional credit:** No

TECH-GB 3347 Fundamentals of Digital Marketing Technologies (3 Credits)*Typically offered occasionally*

The purpose of the course is to introduce students to the complex world of technology and data enabled marketing and the vast ecosystem that is contributing to its rapid advancement. While the early applications of digital marketing technology may be credited to digital advertising pioneers such as Google, Doubleclick and Yahoo, the scene today reflects even traditional media (television) channels shifting to digital technologies for media planning and buying and as well for audience targeting. To a large degree, the overwhelming success of the internet can be attributed to the network's intrinsic ability to work with data, thus better understanding the needs, attitudes and behavior of its users. This in turn leads to tailoring services and products, fostering innovation on behalf of consumers and businesses and encouraging competition and competitiveness. Probably one of the most important tools that lead to, and continues to aid, this better understanding is marketing's use of digital technologies and analytics to improve consumer experiences with every iteration or web interaction; marketing technologies are currently being used by virtually all websites and online services, and knowledge of how digital marketing works is essentially a prerequisite for any online business. Digital marketing technologies help online assets to accurately deliver the right communications to the right person at the right. Further, it helps determine success against key performance indicators, much in the same way in which a traditional company assesses indicators such as the number of people who enter their store, or anonymously observes and statistically aggregates shopping habits in order to improve customers' experience. Digital marketing technologies inform such critical data points as: # where are visitors/audiences coming from (which country and region or city), in order to understand regional preferences # which sections of the website are most visited or which articles are the most read by different demographics # how much time do people spend online and on webpages # Was the advertising viewable and if so, how much of it was viewed Digital marketing technologies is a key driver of the growth of global markets. Advertising revenue, enabled through digital tools, supports a massive amount of the digital products and services ecosystem. Marketing technologies are not only used for delivery of communications but they also provide the basic function of measuring or counting so that money can change hands on that basis. For example, digital audience measurement seeks to count, at market level, the size of online audience and the media they use. Beyond counting, the success and acceptance of digital advertising depends on the ability to validate the delivery of quality ad impressions to an intended audience. Ideally this should be done in a way that can be compared across different media with a high degree of confidence and transparency. In this context, the field of advertising effectiveness takes into account a series of key aspects such as: ad visibility, reaching the desired target audience, correct geography, ensuring brand safety and avoiding delivery fraud. These topics are others which are fundamental to the digital advertising system will be explored during this course.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3350 Financial Information Systems (3 Credits)***Typically offered occasionally*

As financial markets become more electronic and more liquid a higher degree of knowledge about systems and analytics is required in order to compete. This course teaches students how modern financial markets function as a network of systems and information flows and how to use information technology for decision making in trading and managing customer relationships. Information systems serve two purposes in the financial industry. First they facilitate markets and their supporting services such as payment settlement authentication and representation. Second they facilitate or engage in making decisions such as when and how much to invest in various instruments and markets. The first part of the course describes how systems facilitate various kinds of payment and settlement mechanisms enable financial markets such as exchanges and ECNs and support inter-institution communication. The second part of the course describes how traders analysts and risk managers use systems to cope with the vast amounts of data on the economy markets and customers that flow into their systems each day. It covers automated trading systems and other types of customer-oriented analytic systems that are becoming increasingly intelligent in how they make or support decisions. The course features a mix of case studies Excel-based illustrations and assignments and the latest industry tools. It is particularly suited for finance and marketing students interested in understanding information technologies in financial services from a practical career standpoint.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3351 Risk Management in IT (3 Credits)***Typically offered occasionally*

In today's world of complex financial engineering rising volatility and regulatory oversight prudent management increasingly requires understanding measuring and managing risk Banks securities dealers asset managers insurance companies and firms with significant financing operations all require real-time enterprise-wide risk management systems for handling market credit and operational risk Such systems establish standards for aggregating disparate information including positions and market data and operational risk calculating consistent risk measures and creating timely reporting tools This course is directed toward both finance and technology oriented students who are interested in understanding how large-scale risk systems need to be evaluated acquired architected and managed It identifies the business and technical issues regulatory requirements and techniques to measure and report risk across an organization or market

Grading: Grad Stern Graded**Repeatable for additional credit:** No

TECH-GB 3355 Digital Innovation and Crowdsourcing (3 Credits)*Typically offered occasionally*

This course explores new ways in which large organizations and start-ups become innovative and efficient in today economy by tapping into expertise ideas and solutions that exists outside an organization in a new digital and global economy. While neither globalization of work or open innovation are new phenomena there is unprecedented growth of these practices in modern organizations enabled by new digital platforms. In this course we will discuss how to use these practices effectively and how to evaluate their risks and benefits by doing qualitative analysis of cases discussing strategic theories learning decision making tools and engaging in real-time crowd sourcing projects. Specific topics covered include: strategic considerations of whether an activity should stay within or outside the firm boundaries; strategic evaluation of geographical locations for a particular type of knowledge work; vendor competencies: how to grow them as a provider and how to evaluate them as a client; when and how to partner for product innovation; how to organize a crowd of customers or experts; 6) contracting with and governing of strategic vendors; enabling innovation in distributed teams. This course is designed to give students a truly multidisciplinary perspective on these issues drawing on theories and practices from international business strategy and innovation management.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3356 Business Process Design & Implementation (3 Credits)***Typically offered occasionally*

Business Process Design & Implementation

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3358 Data Governance (3 Credits)***Typically offered occasionally*For sample syllabus go to <http://www.stern.nyu.edu/Academic/Syllabi/Overview>

How much is your data worth What are the probabilities of risk How much should you spend to protect your data from theft fraud abuse and regulatory fines Who is using your data inside your company with business partners outsourcers offshore why and when What policies do you need How do you govern them These are key questions that every business executive needs to answer today because data is the raw material of economic growth and Data Governance is a strategic imperative There are a lot of myths about Governance It is not a technology not something new not very hard to do but hard to do very well Effective Data Governance is a culture of organizational behavior that mitigates risk It is as much about selfcontrol as it is about quality control the rule of law and the architecture of regulation It is the process of balancing appropriate access to information to maximize value creation with control and discipline to manage risk How an organization strikes that balance impacts employees customers business partners citizens political institutions and global networks Governing data well is a critical challenge for businesses today Course Content We will begin by exploring the threats to data including Security Privacy Offshoring Regulations Semantics Fraud and Operational Risks We will then look at methods for assessing the value and inherent liabilities of data from both business and IT perspectives We will explore Operational Risk looking at Basel II definitions and Insurance Professional Liability examples And we will look at different kinds of IT access controls such as Firewalls Roll Based Access Control Identity Management Encryption and Anonymity Course Objectives Understanding Data Governance models Assessing Data Value and Risk Managing regulatory requirements policy and obligations Evaluating data standards and Master Data Management Modeling business processes and controls Measuring and reporting results Creating consistency and good data governance

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3359 Practical Data Science (3 Credits)***Typically offered occasionally*

Practical Data Science

Grading: Grad Stern Graded**Repeatable for additional credit:** No

TECH-GB 3362 Emerging Technology and Business Innovation (3 Credits)*Typically offered occasionally*

This course provides a thorough examination of several key technologies that enable major advances in e-business and other high-tech industries and explores the new business opportunities that these technologies create. For each of these technologies it provides an overview of the space corresponding to this class examines who the major players are and how they use these technologies. Students then study the underlying technologies; examine the business problems to which they can be applied; and discuss how these problems are solved. Key companies in the spaces created by these technologies are also studied: what these companies do; which technologies they use; how these technologies support their critical applications; and how these companies compete and collaborate among themselves. Moreover the course examines possible future directions and trends for the technologies being studied; novel applications that they enable; and how high-tech companies can leverage applications of these technologies. This is an advanced course and it is intended for the students who have already acquired basic knowledge of technical concepts and who want to advance their knowledge of technologies beyond the basics and to further develop an understanding of the dynamics of the spaces associated with these technologies.

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

Independent Study

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3382 Research Seminar on IT and Organizations: Social Perspectives (3 Credits)***Typically offered occasionally*

Research Seminar on IT and Organizations: Social Perspectives

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3383 Networks, Crowds, and Markets: Reasoning About A Highly Connected World (3 Credits)***Typically offered occasionally*

Networks, Crowds, and Markets: Reasoning about a Highly Connected World

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3386 Technical Foundations of Information Systems (3 Credits)***Typically offered occasionally*

The goal of the course is to provide students with sufficient background in a variety of topics in computer science to enable them to understand and possibly conduct research in technical areas of Information Systems. One of the immediate goals of the course is to develop sufficient technical skills so that the students could read intelligently and critically technical IS papers they may encounter in other technical IS courses and later on in their professional lives. To accomplish this goal the course covers a broad range of topics in computer science including set theory computability finite automata Turing machines analysis of algorithms elements of logic databases and information retrieval.

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Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3388 Research Methods (3 Credits)***Typically offered occasionally*

This course covers selected topics in behavioral science research including research design model building measurement data gathering and interpretation Students design and carry out two small research projects

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 3391 Research Seminar: Data Science (3 Credits)***Typically offered occasionally*

Research Seminar: Data Science

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 4210 Corporate Research: Information Systems (2 Credits)***Typically offered occasionally*

This course 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**TECH-GB 5336 Intro Data Science Busine (3 Credits)***Typically offered occasionally*

INTRO DATA SCIENCE BUSINE

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 6050 Financial Information Systems (3 Credits)***Typically offered occasionally*

The financial services industry is being transformed by regulation, competition, consolidation, technology and globalization. These forces will be explored, focusing on how technology is both a driver of change as well as the vehicle for their implementation. The course focuses on payment products and financial markets, their key systems, how they evolved and where might they be going, algorithmic trading, market structure dark, liquidity and electronic markets. Straight through processing, risk management and industry consolidation and convergence will be viewed in light of current events. The course objective is to bring both the business practitioner and technologist closer together. Topics will be covered through a combination of lectures, readings, news, case studies and projects.

Grading: Grad Stern Graded**Repeatable for additional credit:** No**TECH-GB 9901 Graduate Stern Placeholder (1 Credit)***Typically offered occasionally*

Graduate Stern Placeholder

Grading: Grad Stern Graded**Repeatable for additional credit:** No