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 2149 Data Management and Strategy: Building a Growth-Driven Data Strategy (1.5 Credits)
Typically offered occasionally
It's commonly held that the majority of all digital transformation initiatives fail. Current prediction is that the AI initiative will experience an even higher level of failure. While there are a lot of reasons of this failure rate, the major one is that digital transformation is first and foremost a cultural transformation and that transformation required the understanding by the business leaders of how data and data capabilities directly relate to the company's mission and growth. This course will introduce students to the key data management capabilities and teach the fundamentals of business data management disciplines. At the end of the course, students will # understand the difference between data and data capabilities # learn the framework for creating and executing business data and analytics strategy that truly drives business growth # the purpose and implementation styles of key data management capabilities. After developing a basic understanding of the key topics covered in the class, the students will be prepared to make business decisions that create value from data, digital and analytic assets, avoid common mistakes that lead to high failure rates of digital transformation initiatives, and have incisive conversations with technology, data and analytics experts and be able to ask pertinent questions on a wide range of data and analytics topics. Examples of issues to be addressed in this course: # The pivotal influence of data and AI capabilities on the choice of a company's business growth strategy # How data management capabilities should be evaluated and incorporated into business decisions. # Data management capabilities considerations in M&A. # Unique regulatory data management requirements for the regulated industries (financial services and healthcare) # Applicability of data management to the non for profit and mission critical organizations # Evaluation of data related operational risks and issues and mitigation strategies.
Grading: Grad Stern Graded
Repeatable for additional credit: No

TECH-GB 2160 Applied Technical Foundations for Managers (1.5 Credits)
Typically offered occasionally
This course provides hands-on experience in modern software development through project-based learning and simulated real-world scenarios. Students will develop technical foundations to become more effective managers of technical talent and communicators to business leadership.
Grading: Grad Stern Graded
Repeatable for additional credit: No

TECH-GB 2218 Digital Strategy (2.5 Credits)
Typically offered occasionally
Digital technologies are playing increasingly important roles in today's businesses, markets, economies, and societies worldwide. As digital technologies transform or disrupt organizations' internal operations and external industry ecosystems, business professionals need to acquire an understanding of the dynamic relationship between technologies and strategies. Such knowledge is critical to effectively leading, participating in, or creating any organization in both private and public sectors.
This course is designed to provide a strategic perspective on digital transformation and disruption, and help students develop the knowledge for analyzing, managing, and leveraging digital technologies in diverse settings.
Grading: Grad Stern Pass/Fail Executive MBA
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 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 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 and AI 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'etre 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 courses 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 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 3155 Digital Innovation and Crowdsourcing (1.5 Credits)
Typically offered occasionally
This course explores new ways in which organizations become innovative and efficient in today8217s economy by tapping into expertise that exists outside firm8217s boundaries and its major geographical locations While neither globalization of work nor involving other firms or customers into a firm8217s 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 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 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 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 ticker 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 3336 Data Science and AI 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 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 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
Prerequisites: MBA and COR1-GB.2103 and COR1-GB.2104.

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 it. 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 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 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.
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 4101 Research Practicum-Inf Sy (1 Credit)
Typically offered occasionally
Research Practicum-Inf Sy
Grading: Grad Stern Pass/Fail
Repeatable for additional credit: No

TECH-GB 4102 Research Practicum II (1 Credit)
Typically offered occasionally
Research Practicum II
Grading: Grad Stern Pass/Fail
Repeatable for additional credit: No

TECH-GB 4103 Research Practicum-IS 3 (1 Credit)
Typically offered occasionally
Research Practicum-IS 3
Grading: Grad Stern Pass/Fail
Repeatable for additional credit: No

TECH-GB 4104 Research Practicum IV (1 Credit)
Typically offered occasionally
Research Practicum IV
Grading: Grad Stern Pass/Fail
Repeatable for additional credit: No

TECH-GB 4105 Research Practicum-IS 5 (1 Credit)
Typically offered occasionally
Research Practicum-IS 5
Grading: Grad Stern Pass/Fail
Repeatable for additional credit: No

TECH-GB 4150 Teaching Practicum-IS (1 Credit)
Typically offered occasionally
Teaching Practicum-IS
Grading: Grad Stern Pass/Fail
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