

# Undergraduate Business Administration Courses

## About Course Numbers:

Each Carnegie Mellon course number begins with a two-digit prefix that designates the department offering the course (i.e., 76-xxx courses are offered by the Department of English). Although each department maintains its own course numbering practices, typically, the first digit after the prefix indicates the class level: xx-1xx courses are freshmen-level, xx-2xx courses are sophomore level, etc. Depending on the department, xx-6xx courses may be either undergraduate senior-level or graduate-level, and xx-7xx courses and higher are graduate-level. Consult the Schedule of Classes (<https://enr-apps.as.cmu.edu/open/SOC/SOCServlet/>) each semester for course offerings and for any necessary pre-requisites or co-requisites.

## 70-100 Global Business

Fall and Spring: 9 units

The course is for non-Tepper BA students and provides a comprehensive overview of business, including how enterprises determine goals, strategies and operational tactics in competitive markets and the increasingly global environment. It covers different types of businesses - entrepreneurial and corporate, industries, markets, and economies. Students learn about the role of business in society, the various functional areas that make business work, and how companies develop plans and processes to achieve their goals for customers, shareholders, and employees. The course has special emphasis on providing a broad overview of business to augment students' major area of study for their professional development. Declared Tepper BA students are not eligible to enroll. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

## 70-101 Business Strategy Fundamentals

Fall and Spring: 9 units

This is not simply an introduction to business by giving an overview of business situations. This is a course that provides students with skills to analyze businesses. Why do some firms outperform others? Should our firm have multiple products or focus on one? What societal forces matter in business? When should I enter a new market? If you wanted to take a single course that will help you make sense of businesses broadly, this is your course. If you want to get a strong foundation to understand why some firms are a better investment than others, this is your course. If you want to be able to discipline your logic to better argue with friends about why a company will succeed or fail, this is your course. We will use cases and group work to introduce and put to work key strategic business frameworks.

## 70-104 Business Leadership Endeavor I

Fall and Spring: 3 units

Business Leadership Endeavor (BLE) I is the first mini course in a three-segment series aimed at developing students' behavioral skills for effective leadership. This course focuses on cultivating fundamental habits that contribute to personal and professional growth. Through lectures, discussions, exercises, readings, and projects, students will engage in a transformative learning experience to enhance their interpersonal and leadership abilities. This course uses course material that requires students to pay an additional course fee. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the materials provided and typically ranges from \$13 to \$75.

## 70-106 Business Science

Fall: 9 units

This course is only available for Business Majors. The focus on the class is on the three core "lenses" used to study and advance the science and practice of business. We will study: the mathematics of optimization, economics, and the behavior in and of organizations. These are the foundations of the disciplines of finance, accounting, marketing, ..., that follow in the curriculum. Over the course of the semester, we will tackle complex multifaceted business problems. Think of examples like, bike-share and the "share-economy," international trade and supply chain, AI and the impact on work. For each case, we will work to apply the three lenses. A pillar for the semester is that business problems are not siloed in narrow disciplines, we must draw resources from disciplines across the entire university. The second pillar of our class is solving all problems - across all of society - requires your understanding of business science. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

## 70-110 Business Computing

Spring: 9 units

Students will learn how individuals and organizations use computing technologies to support and improve their businesses. At an individual level, students will build their skills with Microsoft Excel and other personal productivity tools. At an organizational level, the class looks at ways in which businesses of all sizes and types leverage computing technologies to run their businesses more efficiently, make better business decisions, and create new business opportunities. This course is reserved for first-year Business students; others may enroll by special permission from the UBA office only.

## 70-115 Personal Finance Literacy and Management

Intermittent: 6 units

This course equips students with the knowledge and skills to make informed financial decisions in their personal lives and effectively navigate financial considerations related to their careers. Topics include budgeting, saving, investing, credit management, tax planning, and retirement preparation. Students will also explore workplace benefits and gain a deeper understanding of compensation structures. The course emphasizes practical tools and strategies to build financial confidence and resilience.

## 70-122 Introduction to Accounting

Fall and Spring: 9 units

This course provides the knowledge and skills necessary for the student to understand financial statements and financial records and to make use of the information for management and investment decisions. Topics include: an overview of financial statements and business decisions; the balance sheet, the income statement, and the cash flow statement; sales revenue, receivables, and cash; cost of goods sold and inventory; long-lived assets and depreciation, and amortization; current and long-term liabilities; owners' equity; investments in other corporations; an introduction to financial statement analysis and international issues dealing with financial statements. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-204 Business Leadership Endeavor II**

Fall and Spring: 3 units

Business Leadership Endeavor (BLE) II is the second segment of a comprehensive course sequence (BLE) designed to develop essential behavioral skills and traits for effective leadership. This course focuses on cultivating grit, resilience, and a growth mindset, essential for navigating challenges and achieving long-term goals. Through a combination of theoretical frameworks, experiential activities, and real-world applications, students will further refine their leadership abilities. This course uses course material that requires students to pay an additional course fee. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the materials provided and typically ranges from \$13 to \$75.

Prerequisites: 70-104 or 70-105

**70-207 Probability and Statistics for Business Applications**

Fall and Spring: 9 units

Elementary ideas in probability, statistics, and data analysis are presented in the context of their importance to modern business management. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Course Website: <http://tepper.cmu.edu/prospective-students/course-page/70207/probability-and-statistics-for-business> (<http://tepper.cmu.edu/prospective-students/course-page/70207/probability-and-statistics-for-business/>)

**70-208 Regression Analysis**

Fall and Spring: 9 units

This class focuses on the statistical analysis of the relationship between two or more random variables. In particular, we examine the estimation of the conditional mean of the dependent variable as a function of independent variables using linear regression. We draw on statistical theory to determine the precision of our estimates and to conduct inference about the population, and we examine a number of applications to business, finance, and economics throughout the course. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 36-207 or 70-207 or 36-218 or 36-200 or 36-201 or 36-220 or 36-247

Course Website: <http://tepper.cmu.edu/prospective-students/course-page/70208/regression-analysis> (<http://tepper.cmu.edu/prospective-students/course-page/70208/regression-analysis/>)

**70-213 The American Railroad: Decline and Renaissance in the Age of Deregulations**

Intermittent: 6 units

Railroads in the USA are often considered as a subject for nostalgia or public sector failure, an image largely based on passenger service. However, the USA's private sector freight rail industry is considered a model for the world as the result of its renaissance following deregulation in 1980. This is a "stealth" industry whose history and economics are both intertwined and complex. Students will gain a basic understanding of the industry's history and economics and its role in the national transportation network, with special attention to the past half-century. In addition, students will participate in small group research projects in particular areas of special interest - for example, economic history, industry and safety culture, network economics, utility regulation or transportation policy.

**70-244 Contract Law and Strategy for Entrepreneurs**

Intermittent: 6 units

This course explores the legal principles underlying contracts and their strategic implications in business settings. Through case studies, discussions, and practical exercises, students will develop a deep understanding of contract law and its application to real-world business scenarios. Emphasis will be placed on negotiating, drafting, and managing contracts, to further master key legal concepts and their strategic application in related areas of intellectual property, corporate governance, transactions, and risk management. Examining the importance of contracts and other legal issues facing entrepreneurs is critical to anticipating challenges that may arise as a company grows.

**70-246 Innovation & Entrepreneurial Mindset**

Intermittent: 6 units

This course is designed to introduce students to the theory and frameworks used to develop and implement innovative solutions to societal and entrepreneurial problems. The curriculum incorporates the latest on innovative behavioral traits and frameworks with a highly experiential format to expose undergraduate students to out of the box thinking. For example, the instructor would use the lecture section of the class to explain the behavioral techniques that lead to innovative solutions (based on the Innovator's DNA by Clayton Christensen). Teams of 3-6 students each would then examine a problem and be asked to generate 3 potential solutions and a proposed solution, using the techniques presented. Volunteers from the local Carnegie Mellon and entrepreneurial community will serve as mentors and judges, thereby providing a real world learning and networking experience. Ultimately, the best solution will be selected, using a shark tank format. While the selection of a winning solution will be fun for the class, the students will be graded on their having demonstrated the theory and amp; techniques presented in class. Each week will address a new and important topic related to the innovative and amp; entrepreneurial mindset. Weekly format will include one day of lecture and one day of application of the theory introduced in a fun and competitive format. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-257 Optimization for Business**

Fall and Spring: 9 units

This course provides a mathematical foundation for the application of optimization techniques to business problems, as well as the practical implementation of these methods. Mathematical optimization techniques have been applied for decades in the context of logistics, supply chain management, and strategic planning, with great success. In this course, the most important methods and techniques underlying mathematical optimization are studied. These include linear programming, integer programming, and nonlinear programming as basic mathematical methodologies. Based on these, we also consider methodologies for particular problem classes such as network models and traveling salesman problems. During the course we will emphasize mathematical modeling, that is, creating a mathematical description that reflects a given practical problem described in words. Motivated by these mathematical models, we then discuss the necessary mathematical techniques for finding optimal solutions. Lastly, we consider the solution of these problems using optimization software, i.e., we represent the mathematical models in Excel and use Excel Solver to compute an optimal solution. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 21-259 or 21-256 or 21-254

**70-258 Developing Blockchain Use Case**

Intermittent: 6 units

Blockchains, or distributed ledger and consensus technologies, hold tremendous promise for improving markets and organically handling private, secure data. As CMU develops its own blockchain and token and #8212;-CMU Coin and #8212;-a central concern is to determine the set of applications that such technology would be most useful for. This course is designed for students to propose and, potentially, develop applications or use cases for a campus blockchain. <http://tinyurl.com/cmucoincourse> (<http://tinyurl.com/cmucoincourse/>) The course begins with a brief introduction to blockchain using Bitcoin as an example of a blockchain protocol. We will examine the market failure Bitcoin was intended to resolve as well as the role of cryptography and distributed systems in enabling this new technology to create societal value. The course will go on to discuss the boundaries of the role of cryptography in blockchain. Next, we will use these tools to evaluate existing, real-world blockchain use cases with an eye towards developing our own applications of these emerging technologies. Along the way, we will learn practical development skills in distributed ledger technologies to understand blockchain programming and application development. Finally, students will propose their own blockchain use cases for CMU's own proprietary blockchain. No formal prerequisites, but familiarity with programming is highly recommended.

**70-301 Transformational Leadership**

Intermittent: 9 units

In today's rapidly evolving world, the ability to lead effectively is not confined to business professionals alone. Engineers, computer scientists, mathematicians, artists, and individuals from all disciplines can benefit immensely from developing strong leadership and behavioral skills. This course is designed to equip students from diverse academic backgrounds with the essential behavioral skills needed to excel in their professional and personal lives. These skills include but are not limited to communication, teamwork, emotional intelligence, public speaking, and confidence building. While technical expertise is important, it is the ability to effectively interact with others, lead teams, and navigate complex social dynamics that distinguishes great leaders. In an era where technology and AI are rapidly transforming industries, the importance of these human-centric skills has never been greater. Students will engage in interactive workshops, group projects, role-playing exercises, and real-world case studies to apply the concepts learned in class. By the end of this course, students will have developed a robust set of skills for leadership roles in their respective fields. This course may use course material that requires students to pay an additional course fee. The course material is secured by the Tepper School because it is otherwise unavailable and directly provided to each student and is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-302 Restaurant Builder**

Intermittent: 9 units

Create your own on-campus restaurant. Restaurant Builder is the experiential learning platform where our class will build-out a new student-run restaurant concept on campus. This course takes our class through the entire process of starting a restaurant business. We focus on the: concept-development, financials, human resource processes, menu-development, operational efficiencies and supply chain elements of this massive \$1.1 trillion industry in the United States. Throughout the class, students will meet with both successful restaurant entrepreneurs as well as architectural and design professionals, as they apply lessons already learned in their scholastic background, while also learning key fundamentals of entrepreneurship in the hospitality industry. At the end of this class, we will be entering our newly-created restaurant into the Carnegie Mellon Dining program, as a new student-led business.

**70-304 Business Leadership Endeavor III**

Fall and Spring: 3 units

Business Leadership Endeavor (BLE) III is the final segment of a transformative course sequence designed to refine essential soft skills and cultivate everyday leadership attributes. This course focuses on advanced interpersonal skills, conflict management, and influencing others. Through dynamic lectures, interactive discussions, experiential activities, and self-reflective exercises, students will integrate their leadership skills for practical application in diverse contexts. This course uses course material that requires students to pay an additional course fee. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the materials provided and typically ranges from \$13 to \$75.

Prerequisites: 70-205 or 70-204

**70-311 Organizational Behavior**

Fall and Spring: 9 units

This course examines the factors which influence individual, group and firm behavior in the context of the workplace. Topics covered include perception, group behavior, decision making, motivation, leadership and organizational design and change. This course may use course material that requires students to pay an additional course fee. The course material is secured by the Tepper School because it is otherwise unavailable and directly provided to each student. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: 76-102 or 76-101 or (76-107 and 76-106) or (76-108 and 76-106) or (76-107 and 76-108) or 76-245 or 76-331 or 76-347 or 76-327 or 76-102

**70-317 Leading Creativity and Innovation**

Intermittent: 9 units

Businesses that fail to innovate, invariably and inevitably, fail. Innovation is a great driver of an organization's long-term success and growth and as such, it must be a core competency of any great organization and prevalent to the process and culture of the organization and its leadership. Organizations live in an age of constant change. Over the past decades, breakthroughs such as artificial intelligence, machine learning, rapid computing, nano- and biotechnology have significantly accelerated the rate of innovation. Organizations must innovate faster to stay relevant. This is an essential course for students who are interested in developing skills, knowledge, and strategic perspective required for fostering creativity and innovation, and ensuring sustainable personal growth, competitiveness and relevance in a rapidly changing business landscape. The course utilizes class discussions, case studies, simulations, in-class exercises, workshops and team projects to examine concepts and practices of creativity, innovation and leadership. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-318 Managing Effective Work Teams**

Intermittent: 9 units

Over the past decade, managers have greatly expanded their use of teams to accomplish a wide variety of organizational objectives. Teams have emerged as a favorite work arrangement for such ongoing activities as developing new products, providing professional services, and starting new businesses. Temporary groups are frequently assembled for a multitude of purposes, such as making difficult decisions, solving cross-functional problems, generating ideas, or performing unique tasks. Indeed, groups and teams can be found at every level of the organization, from production crews on the shop floor to top management teams in the executive suite. Moreover, advances in communication technology have created the potential for people who are dispersed across the globe to collaborate virtually, creating many new opportunities and challenges for leaders of such teams. Teams are not a panacea, however. Even as they become a way of life in many organizations, widespread myths and misconceptions about teams often stand in the way of effective teamwork. At their worst, teams sometimes create more problems than they solve. The core content of the course is a series of team and group exercises, case analyses, and readings. The exercises are framed and analyzed in terms of readings, lecture, and in-depth class discussions. Much of the learning that occurs in the course will involve exercises, simulations, and cases that draw on students' current experiences in the class as well as their previous experiences in teams and organizations outside of this class.

Prerequisite: 70-311

**70-321 Negotiation and Conflict Resolution**

Intermittent: 9 units

This course will complement the technical and diagnostic skills you have learned in other courses. A basic premise of the course is that, while you will need analytical skills to discover optimal solutions to problems, you will also need a broad array of negotiation skills to implement these solutions and make sure that they are truly effective. Your long-term effectiveness - both in your professional and personal life - is likely to depend on your negotiating abilities. This course will give you the opportunity to develop these skills experientially and to understand the analytical frameworks that underlie negotiations.

Prerequisites: 76-102 or 76-101 or (76-106 and 76-107) or (76-108 and 76-106) or (76-107 and 76-108)

**70-324 Emotions and Decision Making Within and Outside of Organizations**

Intermittent: 9 units

In this seminar-style course, we will examine the role of emotions within and outside of organizations. Topics related to the course are likely to include theories of emotion, positive and negative emotions, emotions and decision making, emotion in teams, emotions in performance, justice violations, workplace attitudes, and revenge. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-332 Business, Society and Ethics**

Intermittent: 9 units

What sorts of ethical obligations do businesses have towards their customers, employees, and the public? This course will explore ethical challenges faced by modern corporations, and frameworks which can be used to develop responsible corporate policy. The course is divided into four main units: (1) autonomy and consent, (2) the scope and locus of corporate responsibility, (3) fair treatment and outcomes, (4) the limits of labor and commodification. This course may use copyrighted material. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 76-102 or 76-101 or (76-106 and 76-107) or (76-108 and 76-106) or (76-108 and 76-107)

**70-333 Communication Design for Business**

Intermittent: 9 units

Communication design is the practice of conveying information visually through graphic elements such as typography, images, and layout. This course explores foundational principles of communication design essential for effective business communication. Through hands-on projects and industry-standard software like Figma, students learn to create visually impactful materials for various business contexts. Topics include understanding the psychology and use of color, studying fonts and their typographic arrangement, curating visual elements for balance and impact, utilizing negative space, and using icons, symbols, and visual storytelling for effective communication. Students will develop a strong visual literacy and personal identity, enabling them to convey complex ideas and enhance understanding in business communications, giving them a competitive edge in the professional world.

**70-334 Ethics of Emerging Technologies**

Intermittent: 9 units

New technologies transform the ways that companies deliver value to consumers, but they also raise important ethical challenges. We will examine these challenges with the goal of developing strong normative arguments for corporate policies. Topics covered include: online data collection, media, and marketing; metaverse and virtual reality platforms; autonomous objects; genetic screening and engineering; neural screening and engineering; narrow and general artificial intelligence. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 76-101 or 76-102 or 70-332 or (76-107 and 76-106) or (76-108 and 76-106) or (76-107 and 76-108)

**70-337 Business of Blockchain**

Intermittent: 9 units

Economics and business strategy is fundamental for the design and development of blockchain use cases. This course will introduce students to foundational economic concepts to help them understand the role cryptocurrencies play in securing blockchains, how different "tokenomics" models impact cryptocurrency prices, the different means to create liquidity or resolve illiquidity in decentralized finance (DeFi) applications such as stablecoins, collateralized-lending, yield farming, or automated market making, the roles of Central Bank Digital Currencies, as well as models to evaluate the value-added of blockchain-based versus traditional business propositions. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: (73-102 Min. grade C or 73-104 Min. grade C) and 73-103 Min. grade C

**70-339 FinTech**

Intermittent: 9 units

The financial services industry is a leader in the use of information technology. Firms in banking, securities, investments, insurance and financial marketplaces are among the most information intensive and innovative users of technology. The course will examine the role and potential of technology in this industry. The course begins with a description of the financial markets, specifically equity, foreign exchange, and derivatives, and the systems that enable them. It considers exchanges, ECNs, ATS's Order Management Systems, Straight through Processing, Fix Protocol, and post trading clearance and settlement. It covers the design, evaluation and execution of popular trading strategies that are used by professionals in the various markets. There is increasing interest, in particular, on systematic trading strategies and execution systems because of their scalability and transparency. The course covers both Algorithmic and High Frequency Trading and analyzes issues regarding latency, scalability, and reliability. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisite: 70-391

**70-340 Business Communications**

Fall and Spring: 9 units

Business Communications develops and sharpens your written, oral, and interpersonal communication, introducing you to common forms of professional writing and speaking in specific business situations. The course explores crucial rhetorical issues that impact your ability to communicate and achieve your objectives as a business leader. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: 76-102 or 76-101 or (76-107 and 76-106) or (76-108 and 76-106) or (76-107 and 76-108)

**70-341 Team Dynamics and Leadership**

Intermittent: 9 units

Organizations have greatly expanded their use of teams to accomplish a wide variety of objectives. Teams develop new products, provide professional services, and start new businesses. Temporary teams are frequently assembled to make difficult decisions, solve cross-functional problems, and generate new ideas. Advances in communication technology allow people dispersed across the globe to collaborate virtually, creating many new opportunities and challenges for leaders of such teams. This course will provide you the knowledge and skills to communicate in teams and to lead them effectively. It will help you better communicate in and lead teams and organizations. You will learn both effective leadership practices as well as how to avoid common leadership mistakes. Our readings reflect both the scientific and practice literatures and class exercises, cases, and projects provide the opportunity to apply what you learn. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: 36-201 or 36-220 or 36-247 or 36-225 or 70-207 or 36-217 or 36-207 or 36-200

Course Website: <http://tepper.cmu.edu/prospective-students/course-page/70341/organizational-communication> (<http://tepper.cmu.edu/prospective-students/course-page/70341/organizational-communication/>)

**70-342 Managing Across Cultures**

Intermittent: 9 units

This course is designed for students who expect to do business in other countries or work with people from other cultures. It provides an intellectual framework for understanding other cultures (and eventually one's own), as well as detailed studies of particular countries. It discusses how culture defines organizations, contracts, personal relationships, attitudes toward authority, time and space, ethics, wealth, and subcultures, and how these affect business. Student teams study a culture of their choice and make presentations, based on interviews and literature research. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: 76-101 or 76-102 or (76-108 and 76-107) or (76-106 and 76-107) or (76-108 and 76-106)

**70-344 Internet Ethics**

Intermittent: 3 units

The use and abuse of social media and other online platforms has become a major global issue. This course provides a conceptual framework for analyzing some of the ethical controversies these practices raise. Controversial practices include collection and selling of personal data, promotion of rumor and misinformation, cyberbullying, manipulation of social media newsfeeds, and electronic surveillance, as well as efforts by Internet platforms to curtail these activities. Student teams will analyze and ethically evaluate the Internet activities of a platform or company of their choice and present their findings to the class.

**70-345 Business Presentations**

Fall and Spring: 9 units

In this course, students prepare, present, discuss, and critique different oral presentations currently practiced in business. Topics include developing your presence in a professional setting; projecting credibility, professionalism, and authority; and planning presentations to influence business audiences. Assignments and cases will cover informative and persuasive presentations, which will vary from term to term and may include talks such as product pitches, team-driven strategic plans, and state-of-the-company addresses. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: 73-270 or 70-340

**70-347 Entrepreneurship Communication**

Fall and Spring: 9 units

This class will give students framework for and practice in communication skills for entrepreneurial careers. (Longer description coming.)

**70-348 Cross-Cultural Business Communications**

Intermittent: 9 units

This course considers cultural behaviors, assumptions, values, and conflicts surrounding business communication across cultures. It will begin with an evolving definition of "culture" and consider several cultural variables that may affect communicative success (i.e. collectivist/individualist cultures, high-/low-context languages, monochronic/polychronic cultures). Students will research and present findings on the characteristics of specific cultures. They will prepare business documents and presentations that build on the knowledge and skills acquired in 70-340, Business Communication, and reflect new sensitivities to the needs of specific cross-cultural audiences. This course is offered only at the Carnegie Mellon-Qatar campus. Prerequisites: 76-270 or 70-340 or 15-221

**70-350 Acting for Business**

Intermittent: 9 units

Perception may or may not be Reality. But Perception is, in fact, what Influences people. This experiential communications course focuses on how you as a Leader can choose to more effectively express yourself and amp; influence others using practical, hands-on tools from Acting in professional, live Theatre. You will choose to effectively Influence your Listeners' perception of you through the use of: "Action"; Assertiveness, Confidence and amp; Expressiveness (ACE); the Visual, Aural and amp; Temporal Communication Tools; and the incorporation of The Seven Steps Of Effective Influence (or core competencies). This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-352 Business Acting**

Spring: 3 units

This is a one-week course that is offered only at CMU in Qatar. This course provides a uniquely broadening educational experience for business students through an exploration and amp; understanding of the process of Acting and amp; the unique performer/audience relationship. Using techniques of Acting, the course will concern itself with: a new self-awareness and amp; greater confidence in public communication; the expansion and amp; diversification of one's range of personal expression; methods to more effectively shape a public performance and amp; of empowering the student to put his/her best Self forward when in contact with an audience; and amp; a re-investment in passion.

**70-353 Financial Regulation in the Digital Age**

Intermittent: 9 units

The course will address the foundations of regulation (why regulate?) from various perspectives within the context of a market economy, highlighting the sources of market failure (such as externalities, adverse selection, and natural monopoly) and potential remedies (such as taxes and fees, disclosure, price regulation, guarantees). The conflicting goals among regulators (and why we have multiple regulators) and their impact on the meaning of regulation will be considered along with regulatory competition/arbitrage. Portions of the course will tackle relatively broad questions such as: Why regulate? What is the law of unintended consequences? What is the objective of a policy advocate? Are regulators and regulatory policies a systemic risk? Are our markets rigged? How can regulators enhance the predictability and credibility of their policies? How costly were government guarantees during the financial crisis? Should we bar insider trading? Should regulations be determined and motivated based upon cost-benefit analysis? How can we evaluate the success or failure of particular regulations and whether they have achieved their objectives? How does the Dodd-Frank Act promote financial stability? What basic aspects of the financial crisis did Dodd-Frank not address? (Lecture, 3 hours). Minimum grade standard of "C" applies only to economics courses. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: (21-112 or 21-120) and (21-259 or 21-268 or 21-269 or 21-256) and 73-230

**70-354 Communication: Social Media in Action**

Intermittent: 6 units

Building upon what you already learned in Business Communications, this course will amplify your ability to successfully work in teams to produce social media content, collaborate via online mediums, and build online communication skills through development of an effective online presence. You will create and deliver social media content for your chosen organizations in this online space. This is a differentiator for you; after this course, you will be able to go into an interview confidently and share your team experience helping the organization build a successful social media presence.

Prerequisites: 70-340 or 73-270

**70-364 Business Law**

Intermittent: 6 units

This course covers the fundamental principles of law that govern business affairs in the United States, with some reference to the laws of other countries. The topics include constitutional sources of business law, administrative agencies, contract law, agency, employment, business forms (corporations, partnerships, limited partnerships, limited liability companies, agency arrangements, franchises), intellectual property and unfair competition, legal liability of professionals, international trade and antitrust.

Prerequisites: 70-340 or 76-102 or 76-101 or (76-106 and 76-107) or (76-106 and 76-108) or (76-107 and 76-108)

**70-365 International Trade and International Law**

Intermittent: 9 units

The course discusses the international legal system and laws that affect international trade. It covers the Foreign Corrupt Practices Act, treaties and concessions, shipping and customs, appointment of foreign sales agents, resolution of trade disputes, international mergers and joint ventures, international competition law, UN sales convention, international trade organizations (IMF, WTO, World Bank, etc.), risk insurance, cultural factors, international E-Commerce and intellectual property.

Prerequisites: 73-100 or 73-102

**70-366 Intellectual Property and E-Commerce**

Intermittent: 6 units

The course is intended to instruct students on the creation of the Internet and the World Wide Web, including the creation of the Domain Naming System. The course will provide an understanding of how the Web operates (from its creation to the present), how the laws of various countries interact with the Web; how issues of privacy are addressed and the role of private parties and government in monitoring privacy. The course will examine how intellectual property is created and protected; who owns the property; and the role of ownership of the intellectual property interacts with antitrust laws. The course examines how contracts are formed and administered on the Web by entities created to minimize taxes and personal liability risks for the owners/shareholders of those entities. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 76-102 or 76-101 or (76-106 and 76-107) or (76-106 and 76-108) or (76-107 and 76-108)

**70-371 Operations Management**

Fall and Spring: 9 units

This course is an introduction to production and operations management that covers both manufacturing and services. It deals with strategic issues (design of flexible supply), planning issues (capacity management), and operational issues (inventory management and information). The linkage between strategy and tactics will be emphasized. The students will learn concepts and tools that will help them to manage from the "boardroom" to the "toolroom." This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 36-220 or 36-247 or 36-225 or 36-218 or 36-200 or 36-201 or 70-207 or 36-207

**70-373 Sustainable Operations**

Intermittent: 9 units

This course explores and defines sustainability in general, and sustainable operations in particular. The course investigates how companies can evaluate and implement sustainability measures, and different motivations for firms to engage or invest in sustainable efforts. Sustainable operations is approached from the value chain perspective, by identifying opportunities for sustainable actions and policies at different phases in the product life cycle. These phases range from research and development to the point where products are discarded by the consumer, for potential reuse or recycling. Quantitative operations models and techniques will be used to analyze and evaluate the viability of these sustainable opportunities. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 70-100 or 70-106

**70-374 Data Mining & Business Analytics**

Intermittent: 9 units

Interest in big data analytics has skyrocketed recently. The recent explosion in large-scale high-resolution data enables managers to ask and answer questions regarding businesses and consumers at a whole new level. Managers are faced with data about businesses and consumers that are growing faster than they can be utilized. Data mining enables business to extract useful consumer behavior and preferences from seemingly tremendous and unorganized data, which then can be utilized for data-driven decision-making and competitive advantage. Applications can be found in e-commerce, sales, marketing, finance, operations, etc. In this hands-on introductory class, you will learn the basic concepts and techniques of data mining in addition to when and how they can be applied to improve many aspects of business and consumers' welfare. Throughout the course, we will use R, a powerful open-source statistical language and one of the main tools in data mining and business analytics, fast becoming a mainstream tool. With this tool, you will learn about variety of exploratory and predictive data analytics techniques such as Naïve Bayes classifier, nearest neighbor approaches, decision trees, clustering algorithms, etc. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 70-208 or 36-202 or 36-225 or 36-208

**70-376 Energy Systems**

Fall: 9 units

This course will provide students with an understanding of the systems and markets that provide energy to businesses and consumers. Students will be introduced to the sources and uses of energy, and how they have evolved and the possible paths over which they may evolve in the next decades. The course places an emphasis on electric energy, the single largest energy source in many industrial economies, but also covers natural gas, oil, and selected other primary energy sources. Students will learn the energy flows in the USA and the world, as well as the business-relevant characteristics of the engineered systems that provide the energy in various forms. Both traditional and emerging energy sources will be discussed, and students will understand the difference between an energy carrier and an energy source. We will also discuss some of the issues that arise without proper management of the physical risks of energy systems. Students will learn some of the history of electric power regulation and the inconsistent subsidy structures that have provided opportunities and challenges for energy companies and investors, including discussion of how emissions restrictions affect fuel, engineering, investment, and project finance choices. The history of electric power markets will be discussed, with an eye to examining the opportunities that market changes create for business.

**70-377 Managing and Assessing Tech Talent and Organizations**

Intermittent: 3 units

In today's technology-driven economy, businesses across industries rely on effective technical teams to drive innovation and success. This course is designed for both technical students preparing for roles in software development, data science, and engineering, as well as business students who will manage, assess, and collaborate with technical teams. Students will learn best practices for hiring and evaluating technical talent, leading software teams, and implementing strategies for effective performance management. The course covers key aspects of technical hiring, including whiteboard coding interviews, system design interviews, and data science assessments—both from the perspective of applicants and hiring managers. Additionally, students will explore agile project management, objectives and key results (OKRs), technical performance reviews, and strategies for improving team effectiveness. By bridging the gap between technical expertise and managerial leadership, this course equips students with the skills needed to successfully lead and assess software teams in dynamic business environments.

**70-378 Business of Healthcare**

Intermittent: 9 units

U.S. healthcare industry promises numerous opportunities for significant improvements. This course uses the lens of business and economics to bring some clarity to the way we think about healthcare and its impact on our nation's wellbeing. We describe the major actors and institutions within the US healthcare system, and the key strategic, managerial, and financial issues facing industry executives and public policy-makers. We start with an initial "big picture" of the healthcare system and lay out some of the principles by which it operates. We introduce a host of "players" and "policy issues". The players are the various healthcare sectors (e.g., provider organizations, medical professions, technology suppliers); the policy issues concern the nagging problems of quality improvement, cost control, improving access, and reducing inequity. The course also covers some of the major intermediaries that connect these segments: insurance companies, pharmacy benefit managers (PBMs), and wholesalers. Finally, we examine the producers of the innovative products in the healthcare industry - pharmaceutical, biotechnology, and medtech sectors- on a global basis.

**70-381 Marketing I**

Fall and Spring: 9 units

An introduction to the nature and fundamentals of marketing and consumer behavior. Topics include an analysis of the economic and psychological factors influencing buyer behavior, marketing research, market segmentation, and the development of marketing programs (new product, price, advertising and distribution decisions). This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 76-102 or 76-101 or (76-107 and 76-106) or (76-108 and 76-106) or (76-107 and 76-108)

**70-385 Consumer Behavior**

Intermittent: 9 units

Marketing, in particular, begins and ends with the consumer from determining consumer needs to ensuring customer satisfaction. In this course, we will explore the most recent scientific research in marketing, psychology, and behavioral economics on judgment and decision-making. We will develop your ability to understand and influence what people want, how people decide what and when to buy, and whether people will be satisfied or dissatisfied with their decisions. These psychological insights are particularly useful for marketing strategy, brand positioning, and marketing communication decisions, but also yield insight into common biases in judgment and decision making, beyond marketing, to which you would otherwise fall prey. Why people are willing to drive across town to save \$5 on a tank of gasoline, for example, when they would not drive a minute to save \$5 on a refrigerator. We will discuss some of these applications in class. In addition, we will examine the methodology of market research (specific to consumer behavior) to build the tools you will need to interpret and base decisions on it. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisite: 70-381

**70-386 Applied Behavioral Decision Making For Business**

Intermittent: 6 units

This course is intended to give future managers, consultants, and policy makers an introduction to the insights and applications of behavioral decision making. Behavioral decision making is the interdisciplinary study of how people make decisions. It draws together research from psychology, economics, political science, and management, among other fields. Topics include heuristics and biases in inference and prediction, risk perceptions and attitudes, and the roles of group and emotional processes in decision making. In this course we will address applications of these findings from the various behavioral sciences to the study of business. This course is offered only at the Carnegie Mellon-Qatar campus. Prerequisites: (70-207 or 36-201 or 36-200) and 73-100

**70-387 Strategy for High-Tech Products and Services**

Intermittent: 9 units

This course will focus on the strategies of technology-based products and services. We will examine how technology products/services differ from non-technology-based products and how the unique attributes of high-technology products/services influence the marketing strategies and tactics of those products. We will cover issues such as pricing of technology products/services including versioning, bundling and dynamic pricing; the impact of network effects within product markets; competition in technology-focused product arenas; the design, launch and governance of platform markets. Examples of technology-intensive industries that we will discuss are computer hardware and software, media and entertainment, telecommunications, e-commerce, and the sharing economy. Students explore the unique economic circumstances facing firms in these industries and identify strategies that enable firms to succeed given these circumstances. This course is ideal for students who want to pursue a career as a product manager for a technology company. This course helps students understand the unique economic characteristics seen in today's technology-intensive markets and how they impact the strategic interactions among firms and consumers. In order for students to understand how firms strategically interact in technology-intensive industries this course will use a combination of simple but rigorous analytical models, emerging theories, and formal case studies.

**70-388 Islamic Finance**

Intermittent: 9 units

This course is designed to introduce students to the basics of Islamic Finance. The course will start with an analysis of the Shariah rules that define Islamic Finance. Students will then look at the main investment structures and map these against the traditional conventional banking products. The course wraps up with a critique of complex project finance structures through a Shariah compliance lens to identify the gaps between theory and practice.

**70-389 Design Thinking with AI**

Intermittent: 9 units

Design thinking is a powerful process for tackling complex challenges through creativity, empathy, and collaboration. Learn how to apply AI technologies like natural language processing (NLP), large language models (LLMs), big data and generative design to enhance creativity and create human-centered solutions. This course introduces design thinking principles, methods, and tools and explores essential techniques and frameworks—from problem framing and creative ideation to prototyping and user testing. We will fuse AI tools with design thinking methods to engage with the UN Sustainable Development Goals to bring positive changes to people and the planet and shape a more prosperous future for all. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-391 Finance**

Fall and Spring: 9 units

Firms create value by making good investment decisions. Finance is the field of management science tasked with making this happen. It is a set of tools with which firms identify good investments and decide how to pay for them. Paying for them ultimately involves getting money from households. Therefore, finance also describes the investment decisions of households and the resulting allocation of the economy's resources across firms and time. This course is the introductory finance course in the undergraduate business program. The main topics covered in the course are Financial Markets, Net Present Value, The Objective of the Firm, Discounted Cash Flow, Portfolio Theory and the Cost of Capital, The Efficient Markets Hypothesis, The Capital Structure of the Firm, and Business Valuation. Time permitting, the course will also provide an introduction to option markets and derivative securities. Upon completing the course a student will be able to consider a large and complex business problem, make some assumptions, structure the firms' cash flows in a spreadsheet, calculate the value of different solutions to the problem, and make a decision. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: (73-104 or 73-102 or 73-100) and (36-225 or 36-200 or 36-220 or 36-218 or 36-217 or 36-235 or 36-207 or 70-207 or 36-201)

**70-395 Funding Entrepreneurial Ventures**

Intermittent: 9 units

So you want to do a startup and you know that you need funding. There are multiple ways to fund a new venture: bootstrapping, economic development, angels, venture capitalists. The question is what are these funders looking for in an early stage investment? What is important to them? How do they decide which companies to invest in and which not? This class looks at funding from the funder's point of view and provides the student with a framework of the investment process: investment criteria, sourcing, selection, due diligence, deal structure, valuation, post investment involvement. Real companies seeking funding are used for the final project in which students will be expected, as investment teams, to make investment decisions and convince their fellow investors (the class) to join them (or not). This is a highly interactive and project class. There will be multiple guest speakers. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-396 Applied Business AI**

Intermittent: 6 units

This mini-semester course explores into the prudent and responsible use of AI assistants in business. In particular, we will emphasize AI applications, benefits, limitations, ethical considerations, and future implications.

The core focus is on employing AI assistants to expedite work without compromising quality (prudent use) while minimizing negative externalities (responsible use). Throughout the course, students will develop and implement a pipeline for prudent and responsible use tailored to specific fields.

Prerequisites: 70-391 or 70-122

**70-398 International Finance**

Intermittent: 9 units

International Finance is an elective course designed to give students the opportunity to analyze real-world problems in international capital markets. Topics covered include: exchange rate determination and quoting, international parity relations, foreign exchange hedging strategies using forwards and options, foreign exchange exposure management, international bond market, currency swap market, global equity market, international portfolio risk assessment and performance measurement. Students develop problem solving and communication skills with presentations and critical discussions of case studies.

Prerequisite: 70-391

**70-401 Management Game**

Fall and Spring: 12 units

This course is designed to integrate the managerial concepts and techniques studied earlier in the curriculum and to focus on elements of organizational structure and behavior. Student teams assume the role of top management of firms competing in an international economy simulated by the Carnegie Mellon University Management Game. Each team is responsible to a Board of Directors comprised of alumni of the MBA program and business masters students. Emphasis is placed on the development and implementation of sound organizational decision structures as well as the formulation of effective competitive strategies. The course is reserved for senior-year business majors and additional majors. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 70-122 and 70-371 and 70-381 and 70-391

**70-409 Innovation and Entrepreneurship in Emerging Markets**

Intermittent: 9 units

This course focuses on the role that innovation-driven entrepreneurship and market-creating innovation play in the development of economies in emerging markets. The course will explore the potential economic development opportunities brought forward by market-creation innovations in emerging markets and will seek to understand the unique challenges and opportunities of innovation which face entrepreneurs in emerging markets.

**70-412 Advanced Business Communications: Power, Persuasion, and Problem-solving**

All Semesters: 9 units

Challenges such as communicating leadership and expertise to a newly formed team, receiving unclear expectations, limited time to complete a complex problem, persuading a reluctant colleague, showcasing yourself in a crucial performance review all occur in business. This advanced course digs deeper into how leaders and successful professionals navigate the complex workplace of surprise, ambiguity, crisis, and diversity. You'll explore varied, often high-stakes workplace scenarios to build your persuasive ability, linguistic skill, communicative flexibility, agility, and confidence.

Prerequisites: (70-345 and 70-340) or 73-270

**70-415 Introduction to Entrepreneurship**

Fall and Spring: 9 units

This course is an introductory course designed to provide an overview of entrepreneurship, develop an entrepreneurial frame of mind and learn the fundamentals of lean startup development. Students, Sophomore year or higher, interested in founding or contributing to a start-up venture, regardless of areas of discipline (engineering, design, business, computer science, music, drama, and more), are welcome. Students can expect to gain a basic understanding of functional areas such as customer discovery, sales, business planning, risk management, venture funding, and more. This class also features "The Sprint: An Entrepreneurship Competition," which affords the students the opportunity to gain experience selling their choice of product in a real-world and competitive environment. The class is a discussion- and project-based class. Class sections feature either a combination of lectures, class discussions, and activities or applied workshops in small groups. Students will be learning a mental framework for evaluating and developing any startup and then applying said framework and techniques to analyze and execute real-world business opportunities. Interdisciplinary teams will generate ideas and explore their potential as viable businesses. Numerous student teams have completed this class with real-world opportunities. Guest speakers, case studies, and exercises will also be integrated. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course. Students enrolled in the course will be required to pay the University the associated additional course materials fee for the third-party course material provided (\$13 to \$75)

**70-416 New Venture Creation**

Intermittent: 9 units

This course exposes students to the nuances of financing new ventures, getting them started legally and marketing their products or services. Students pull together all the ideas and information from different functional aspects of their projects into coherent and persuasive mini-business plans that serve as roadmaps for building their businesses; and useful instruments to find sufficient financing for the new ventures, so that they can convince the outside world that these opportunities are viable, with substantial potential for success.

Prerequisites: 70-414 Min. grade C or 70-415 Min. grade C or 70-420 Min. grade C or 70-421 Min. grade C or 15-390 or 70-425

**70-417 Topics in Entrepreneurship**

Intermittent: 9 units

This course covers Design Thinking, Artificial Intelligence (AI), and Entrepreneurship. This course covers the emergence of 5 new bodies of knowledge that will be increasingly important to society and to new job creation. These bodies of knowledge concern "Design Thinking, Artificial Intelligence (AI), Collective Intelligence, Secrets of Highly Successful Teams, and Entrepreneurship.

**70-422 Managerial Accounting**

Intermittent: 6 units

The purpose of this course is to prepare students to make sensible business decisions using accounting information. An essential topic in the course is the measurement and allocation of costs to assist decision making in organizations. The course covers standard topics in cost accounting, such as cost behavior and relevant costs, and connect these to broader issues in microeconomics, decision theory, corporate finance, and operations management. Classes contain a mixture of conventional lectures, problem solving, business cases, and simulations.

Prerequisites: 70-122 and (36-201 or 36-200 or 70-207 or 36-207)

**70-423 Technology-Based Entrepreneurship**

Spring: 9 units

This course is offered only at Carnegie Mellon's campus in Qatar. This course is designed as an introduction to entrepreneurship and basic business concepts for engineering and science students. There are no prerequisites. Students learn basic business concepts, business models, entrepreneurial thinking, idea generation, opportunity recognition, and the basics of accounting, marketing and strategy development. There is no final examination. Instead, students, working in teams, generate an original idea for a startup business and prepare a business plan and an investor presentation, which sets forth the basic strategies, business models and evaluates the opportunity afforded by their original idea. This course also is consistent with the broad mission of Carnegie Mellon University in Qatar's entrepreneurship program, which is described below. The broad mission of the entrepreneurship program at Carnegie Mellon University in Qatar is three-pronged: a. To encourage and develop entrepreneurial and innovative thinking in a business setting, whether or not it is a startup company; b. To obtain the basic skills to start a new venture; c. To stimulate self-evaluation for life direction.

**70-424 Corporate Financial and Sustainability Reporting**

Intermittent: 9 units

This course is designed to strengthen your ability to understand and use both financial and sustainability data reported by corporations. For the past five centuries, massive and rich financial data has been generated and intensively used to aid investment decisions in capital markets and business strategies by corporations. More recently, the realm of financial reporting has been significantly augmented along the new dimension of sustainability reporting due to the rapidly growing trend of sustainability-oriented investing and investors' demand for sustainability-related data. The course is aimed at anyone whose career might involve working with financial and sustainability data and should be especially useful for those interested in investing, banking, and consulting careers. Throughout the semester, we will discuss the regulatory and corporate environments that govern the generating process of financial and sustainability data and how understanding such data-generating process helps with drawing implications from the financial and sustainability data about corporate valuations, business strategies, etc. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisite: 70-122

Course Website: <http://tepper.cmu.edu/prospective-students/course-page/70424/corporate-financial-reporting> (<http://tepper.cmu.edu/prospective-students/course-page/70424/corporate-financial-reporting/>)

**70-427 Modern Banks: Strategy and Regulation**

Intermittent: 9 units

What is the main role that banks play in the economy? Are banks safe and trustworthy? What are the main business areas of a modern full service bank and how does it make profit in each area? What are the main risks that they face and how do they manage those risks? How can the public assess the risks a bank faces and measure its performance? Does the regulation governing banking address these risks effectively? The main goal of this course is to examine these and related questions by focusing on the analysis of banks' financial reports. Students will learn how accounting and disclosure rules for financial instruments and institutions convey detailed information that is useful to evaluate their risks and performance. Potential limitations of the current financial reporting requirements facing banks will also be discussed. The course covers crucial topics in modern banking strategy and regulation such as interest rate risk, provision on loan losses, fair value accounting for financial instruments, repos, securitization, capital requirements, and derivative and hedge accounting. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 70-122 and 70-391

**70-428 Financial Statement Analysis**

Intermittent: 9 units

This course is about fundamental analysis using financial statements. We develop and apply technologies for understanding and identifying firm activities that generate shareholder value and for developing valuation benchmarks. The ultimate goal of such analysis is to aid the security valuation and risk analysis exercises. This course is intended to help students establish a good foundation and introduce students the basics of equity and debt analysis techniques. Taking Finance (70-391) before this course is recommended, though not a formal prerequisite. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisite: 70-122

**70-429 Accounting for Financial Institutions**

Fall: 9 units

The banking sector is important because it drives the financial growth of an economy. This sector accepts deposits from the public and issues loans, and thus the banking sector expands in response to positive changes in retail, corporate and government business demand. Similarly, if a slowdown occurs this results in a reduction in demand for banking sector services. As a result, the important starting point for a financial analyst, who wants to assess current and future economic growth, are the financial statements of banks and the information they contain. To extract this information, however, requires being able to read and interpret the financial statements of a bank. These statements are very different from reading traditional corporate financial statements. As a result, the first objective of this course is to learn how to read financial statements generated from the banking sector including how to interpret and evaluate these statements. The banking sector in Qatar is unique because it has two important and separate subsectors and #8212;- Islamic and conventional banking. Each of these subsectors have a different banking business model which in turn generate differences in their financial statements. As a result a second important objective for this course is to learn how to read and evaluate the financial statements from each of these subsectors. Prerequisite: 70-122

**70-430 International Management**

Intermittent: 9 units

This course uses the case method to examine the strategic and operational issues in management practice and decision-making that are important in operating a business that spans national borders. Topics include political and economic risk assessment, technology transfer, cultural analysis, negotiation, social responsibility, organization structure, supply chain management and trends in foreign direct investment and their impact on developing strategies for entering and becoming successful in international markets.

**70-432 Diversity, Equity, & Inclusion and Business Strategy**

Intermittent: 9 units

In an increasingly multicultural society with many layers of intersectionality, matters of Diversity, Equity, and Inclusion (DEI) impact businesses both in the workplace and the marketplace. This course will focus on business strategies in particular: how they are formulated within organizations and how they play out in the competitive space, through a DEI lens. We will move through multi-levels of analysis to examine how DEI within organizations impact the way strategies are developed, are potentially manifested as competitive advantage, and the implications of those strategies on society more broadly. It will therefore touch on topics across the management domain including, organizational behavior, human resource management, entrepreneurship, international business, and strategic management. The course will draw on this body of knowledge in the field of management as well as the real-world situations businesses face today. It is open to upper-level business and non-business majors. The course will be taught at an advanced level, where students will be expected to use knowledge gained in their foundational courses to make substantive contribution to lecture discussions and group work. All are also invited to contribute their own life experiences and cultural richness to the discussion. Interactive lectures, real-world cases and videos, self-assessments, guest speakers, and team projects are all learning methods that students can expect to experience in this course.

**70-433 Leading Innovation**

All Semesters: 3 units

Organizations (startups and mature businesses alike) live in an age of constant change (i.e., technology evolution/revolution, globalization, deregulation). Over the past decades, breakthroughs such as artificial intelligence, machine learning, rapid computing, nano- and biotechnology have significantly accelerated the rate of innovation. The internet and digital connectivity have transformed information dissemination and global collaboration. The development cycle for new products and services have shortened, consumer demands becoming more dynamic and volatile. Organizations must innovate faster to stay relevant as the future becoming furthermore intelligent and dynamics. Innovation is not merely about creating something entirely new. It can also involve incremental changes or adaptations that significantly improve existing products, processes, or services. It often requires creativity, critical thinking, problem-solving, and a willingness to challenge the status quo. People are the agents of innovation. Managers of an organization are responsible for diagnosing challenges, analyzing applications, formulating strategies, building innovative teams, leveraging innovation for competitive advantages and sustained success. It is therefore essential for managers to develop necessary leadership skills that will enable them to successfully manage innovation. These skills are manifested through a firm understanding of the dynamics of innovation process. Leading Innovation is an essential course for managers to develop the skills, knowledge, and strategic perspective required to foster innovation within their organizations, ensuring sustainable growth, competitiveness, and relevance in a rapidly changing business landscape.

**70-437 Strategic Management and Innovation**

Intermittent: 9 units

This course focuses on how organizations deliver value in changing business environments, using analytical techniques to evaluate business situations and develop strategies that improve organizational performance. By focusing on the organizational perspective, you will develop practical skills in evaluating and designing ways for firms to achieve key strategic outcomes like growth and innovation, which determine the firm's chances of success in dynamic environments. This course is particularly useful if you are interested in careers such as consulting, business development, investment banking, private equity, entrepreneurship, or simply want a better understanding of how their firm can develop a more innovative outlook. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: 76-101 or 76-102 or (76-107 and 76-106) or (76-108 and 76-106) or (76-107 and 76-108)

**70-438 Commercialization and Innovation**

Intermittent: 9 units

The course is targeted at entrepreneurs and innovators who are interested in introducing innovations to the marketplace through start-up, emerging and established organizations. Class participants will learn how to evaluate, develop and implement opportunities for innovation, using an emergent or iterative approach (the lean methodology). Students will also learn a variety of methodologies to identify opportunities for innovation including how to identify unserved customers, identifying what jobs customers need to do, and how to incorporate innovations originating from end users, suppliers, materials manufacturers, and other entities outside the firm. Students will learn how to develop a Business Model, identify a Minimum Viable Product, and a Market Entry Point. The course is divided into two parts. In the first half students will be exposed to theories and strategies of innovation through readings and case studies. In the second half students will identify and develop their own product concept utilizing concepts developed in the first part of the course, and step-by-step develop their business model, organizational plan, strategic partners, marketing message, sales plan, and financing strategy. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: (73-102 or 73-104 or 73-100) and (70-414 or 70-425 or 70-415 or 15-390 or 70-420 or 70-421)

**70-439 Applied Data Science for Business**

Intermittent: 9 units

The objective of this project class is to expose students to cutting-edge data science tools applied to a real-world problem. This project course fulfills several academic goals, by applying business analytics and leadership to an actual industrial application. These include: Team management: Learn how to interact and engage with your team members, set goals, and manage the project. Leadership: The project contains different elements, such as coding, writing, and presenting, which allows students to take ownership and lead that part of the project. Analytics: The project contains several analytical components including data analysis and predictive modeling. Product Management: Learn how data and analytics can bring value to a new product.

**70-440 Corporate Strategy**

Intermittent: 9 units

This course is designed to provide the student with a general management perspective and an understanding of the total business enterprise. It builds upon previous course work in functional areas and provides insights and analytical tools which a general manager should have in order to plan and implement successful business strategy. The student will analyze complex business problems and formulate realistic strategic solutions. Emphasis is placed on the practical application of business theory by the student in their business career.

**70-443 Digital Marketing and Social Media Strategy**

Intermittent: 9 units

This course explores issues related to digital and social media marketing. This is a hands-on class where students utilize real world data. Specifically, we study the following topics: (a) Search Engine and Sponsored Search Optimization: how search engines, keyword auctions, retargeting, mobile marketing, social network marketing and search engine marketing work, and how to optimize pay per click advertisement efforts. (b) Econo-Mining: how firms are getting or can get useful information from user generated content using text mining and opinion mining capabilities to drive their product development, placement, and advertisement decisions. (c) Social Media/Viral Marketing: how to design a social media marketing campaign; the key ingredients that make such campaigns successful; how to run a campaign for a viral product; measuring the success of a social media campaign (d) Wisdom of the Crowds: how to design crowdsourcing contests; what and how to crowdsource; prediction markets and how to design them for success and the kinds of questions are best suited for prediction markets. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-447 Client Consulting Project: Strategic Management of the Enterprise**

Intermittent: 12 units

This is a project course for senior business majors offered in partnership with real-world client companies; students must apply for the course and enrollment is by special permission. Students will learn about the challenges of the multi-dimensional and complex issues faced by managers, including learning the concepts and skills to handle ambiguity, perform a persuasive data analysis, and communicate the findings effectively. Students will develop a deeper understanding of how organizations can co-ordinate and leverage synergies across a range of disciplines by effective deployment of technologies and organizational structures and processes. Teams will have an opportunity to work with clients on a wide mix of problems spanning multiple functions, including strategy, operations, technology and marketing. Specifically, teams will address issues such as big data, mobile application strategies, supply chain, digital media, complexity management, health care delivery models and healthcare marketing strategy. Regular meetings with the instructor will be scheduled to guide teams during client engagement and co-ordinate with the executives at their client company. The deliverables will be in the form of a report/prototype and a final presentation to the client's executive team. No classes to attend, but weekly team meetings with times to be determined. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 70-381 and 70-311 and 70-371 and 70-391 and 70-122

**70-449 Social, Economic and Information Networks**

Spring: 9 units

Interaction is a fundamental part of social science: firms market products to consumers, people share opinions and information with their friends, workers collaborate on projects, agents form alliances and coalitions. In this course, we will use the emerging field of social networks to put structure on this diverse mass of connections. Using a mixture of theoretical, empirical, and computational methods, we will learn about the structure and function of social networks. We will look at how an individual's position in a social network reflects her role in the community. We will learn to identify tastemakers and trendsetters by looking at how information moves through our increasingly connected society. We will consider how our own position in the social network affects our behavior, opinions, and outcomes. And we will explore where social networks come from, and what affects their structure. The material in this course will be interdisciplinary, drawn from the fields of math, computer science, physics, sociology, political science, and economics. By the end of the course, you will have the tools and knowledge needed to analyze social networks on your own. The course is capped with a project where you will use your skills to answer your own questions. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: (36-200 or 73-230 Min. grade C or 36-201) and (36-201 or 36-207 or 70-207)

**70-452 Introduction to Product Management**

Intermittent: 9 units

This course introduces the role and responsibilities of the Product Manager in a technology-intensive product or services company. The over-arching goal of the course is to give you the knowledge and tools you need to make good product decisions so that your team can ship the right product, to the right customers, through the right channels, at the right price. To that end, you will learn to apply tools and techniques for building and managing a product roadmap, prioritizing development requests, evaluating tradeoffs, and modeling the financial implications of different business models, operating models, pricing, and packaging options. Along the way, we will look at many of the core activities and tasks that an effective Product Manager needs to master, including: Understanding value propositions and customer priorities, Identifying and selecting customer and market segments, Packaging and bundling capabilities and benefits into a cohesive set of offerings, Selecting pricing models and setting specific prices, Estimating the likely benefits and costs of proposed product enhancements, Modeling and evaluating the financial implications of product choices, Managing the full product life cycle, from conception to sunset. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-453 Business Technology for Consulting**

Intermittent: 9 units

In this course, you will learn to how to effectively lead and undertake information system analysis and design projects. In doing so you will develop your 'intellectual toolbox' for business technologies consulting by learning to apply specific tools and techniques such as BPMN and Agile development methodologies. You will practice applying these techniques on a variety of case studies, examples, and a substantial semester-long project. Beyond the concrete analysis and design techniques, you will develop a set of work practices and habits of thought that should serve you well in your consulting career. This will be a very hands-on course in which you will largely learn by doing. Most class sessions will include a combination of some presentation by the instructor, some discussion (possibly of a case study), and exercises to practice working with the day's tools and concepts. Homework assignments, in-class presentations, and a semester-long term project are essential parts of the course.

Prerequisites: 70-110 or 70-451

**70-455 Data Management Fundamentals**

Intermittent: 9 units

Data drives modern business. Transactional data systems keep the world's economy operating smoothly by tracking and processing the movement of bits, money, atoms, and attention across the planet. Analytic systems help managers understand and optimize their businesses. Robotic systems (both physical machines and software bots) are automating a tremendous amount of the work that has historically been done by people. In this course you will learn to use a set of data management tools to capture, manage, analyze, and understand data so to help your organization do business better, faster, and cheaper. This course was previously titled Modern Data Management. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 15-110 or 70-110 or 15-112 or 15-104

**70-457 International Consulting Experience**

All Semesters: 6 units

This experiential course is a unique opportunity to combine general and strategic management consulting with international experience. The course is designed to facilitate a real-world experience by organizing the class in groups of students from the Qatar and Pittsburgh campuses and connecting them with companies (based in the Middle East) for a consulting experience with the following learning outcomes: Learn how to scope and execute a consulting plan (discovery and identification of problem(s) with client, design of deliverables plan, execute plan); Strengthen data collection and analytical skills related to real world problems; Enhance collaboration and professional skills with culturally diverse team members across the globe; Utilize broad business knowledge to build solution(s) for real world client; Reflect on their professional growth, teamwork, and application of knowledge with an external client. The course requires travel to Doha, Qatar and Pittsburgh, PA with regular meetings throughout mini 3 with the international team and client.

Prerequisites: 70-381 or 70-371 or 70-311 or 70-391

**70-458 Advanced Data Management**

Intermittent: 9 units

There's a lot of data out in the world. A LOT. It's not only being generated, captured, stored, and analyzed at a rate unlike anything seen in human history, but the rate at which all of this is happening is accelerating. Rapidly. For better and for worse, a lot of this data does not fit nicely into the clean, precise, and carefully structured tabular formats perfected by computer scientists and IT professionals in the latter part of the 20th century. Rather, this data (you've probably heard it called "Big Data", "Unstructured Data", "Loosely-Structured Data", "4k Video", etc.) comes in all sorts of shapes and sizes, and in volumes that are so large they require new ways of thinking about capturing, managing, and working with it. In this course, you will learn to work with big, loosely-structured data sets to better understand the world and make better decisions as you operate within it. We will explore a wide variety of different approaches to representing data (graphs, data documents, and It;key,value and gt; pairs, geo-polygons, Big Tables, massive text indices, etc.) and the tools that use those data stores to uncover insights and help you make good business decisions.

Prerequisites: 70-455 or 67-272

**70-460 Mathematical Models for Consulting**

Intermittent: 9 units

This course will cover a wide variety of mathematical models and techniques that are used by consultants and lie at the heart of modern decision-support systems. We will discuss the benefits and limitations of different models and follow a practical spreadsheet-based approach to provide hands-on experience with Excel Solver. The course will build on the knowledge you have gained from the prerequisite courses; we will develop your model-building skills, explore some technique-oriented skills such as linear, integer, and nonlinear programming, and experiment with heuristic solution methods. While going through different models and techniques, we will also see real-world examples of how these models are actually used in practical business environments. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 70-257 or 21-257 or 21-292

**70-462 Uncertainty and Risk Modeling**

Intermittent: 9 units

This course takes the perspective of the consultant whose job is to analyze existing or potential business processes and provide recommendations for managerial decision-making. Recognizing that most businesses are subject to high levels of variability, risk and uncertainty, it will adopt a stochastic approach to characterize the behavior of business systems and processes, and explore the effects of alternative decisions in this context. Two modeling methodologies will be covered: (i) stochastic modeling, and (ii) stochastic simulation. Examples are drawn from different managerial domains, such as supply chain management, risk management, marketing, and project management. The lectures, homework assignments, exam and term project will focus on modeling, computational, and analytical skills. Computational implementations will be done in Excel using the @Risk add-in (during the first half of the course to build simple simulation models) and the Arena software (during the second half of the course to build more complex models based on discrete-event simulation). This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 36-225 or 70-207 or 36-220 or 36-207 or 36-200 or 36-201

**70-464 AI & Emerging Economies**

Intermittent: 12 units

The unique course design offers students the opportunity to work in project teams with to gain a better understanding of different perspectives and approaches towards AI. AI and contemporary tools like ChatGPT, experiential learning, data, and a diverse set of case studies will help inculcate critical and creative thinking as well as novel problem-solving approaches. You will work on practical projects that apply your newfound knowledge to real-world scenarios. By the end of the course, you will have a deep understanding of the opportunities and challenges of AI in emerging economies, as well as the skills and experience necessary to work effectively in global teams. The course is multi-disciplinary and germane to budding technologists, entrepreneurs, and policy influencers. This is an opportunity not to be missed.

**70-465 Technology Strategy**

Intermittent: 9 units

This course is about business strategy for technology-intensive industries. Examples of such industries are computer hardware and software, media and entertainment, telecommunications and e-commerce. We will explore the unique economic circumstances facing firms in these industries and identify strategies that enable firms to succeed given these circumstances. You will learn to analyze pricing strategies including versioning and bundling; product standardization decisions; managing product complements; exploiting network effects; managing platform competition. This course will help you understand the unique economic characteristics seen in today's technology-intensive markets and how they impact the strategic interactions among firms and consumers. We will study, for example: Why firms in the IT industry give away their best products for free. Why makers of video gaming consoles subsidize end users (but tax game developers) while computer operating system makers subsidize software developers (but overcharge end users). Why Sony won the Blu-Ray format war against HD-DVD which was sponsored by a whole array of companies. In order to understand how firms strategically interact with consumers in technology-intensive industries this course will use a combination of simple but rigorous analytical models, emerging theories, and formal case studies.

Prerequisites: 21-120 and (21-256 or 21-259) and 73-100 and 73-230

**70-467 Machine Learning for Business Analytics**

Intermittent: 9 units

This course introduces students to the machine learning tools and software that drive modern predictive analytics in business settings. Students will gain an understanding of a variety of popular machine learning algorithms including linear and logistic regression, random forests, and neural networks. Each algorithm will be introduced with real-world business applications, and students will learn to implement these algorithms on data. The course is taught in the programming language R (prior programming experience is not required). This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: (21-254 or 21-256 or 21-259) and (36-225 or 36-200 or 36-220 or 70-207)

**70-468 Advanced AI and Business Strategy**

Intermittent: 6 units

This course explores the dynamic intersection of leading-edge Artificial Intelligence (AI) technologies and business strategy, equipping students with the knowledge and skills to harness the transformative potential of advanced AI for organizational success. In an era characterized by data-driven decision-making, AI-driven innovation, and evolving market landscapes, businesses need strategic leaders who can navigate the complexities of AI adoption effectively. This course is designed for students with a background in technology, business, policy, management, or related fields who aspire to become strategic leaders in organizations leveraging AI. We will combine lectures, case studies, group discussions, hands-on labs and projects, and industry guest speakers to provide with a holistic understanding of AI's role in shaping business strategy. If students are interested in a career as data scientists or data analysts, this class will help students understand how these data roles impact a company's business or policies. If students are interested in more managerial or business roles, this class will provide them with a foundation to understand data and analytics processes so that they may interface with these roles in their organizations.

**70-469 End to End Business Analytics**

Intermittent: 9 units

Deriving value from business data is an integrative process. It requires putting together the virtuous pipeline of using the data to derive descriptive and diagnostic inferences, building explainable predictive models and incorporating them in prescriptive decision making. This course charts this process end-to-end by describing and integrating common tools for modeling uncertainty, machine learning, and optimization in the context of common applications from finance, marketing and operations. The coursework is based on data-driven cases that will have students analyzing data from real business applications to derive their own insights, predictions and decisions and communicating them effectively. The course will prepare students for careers in consulting and any form of business data analysis in any functional area. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: (36-225 or 36-220 or 36-200 or 70-207) and (70-257 or 21-257 or 21-292)

**70-471 Supply Chain Management**

Intermittent: 9 units

This course will discuss basic issues in supply chain management to answer how a company should design its supply chain and how a company should administer its operations policy to satisfy the company's business strategy. We will also examine how firms interact with other entities within the supply chain, and how one can turn the system/network of entities across the supply chain to its own advantage by capturing economic surplus effectively. Special attention will be paid to analyzing the strengths and weaknesses of supply chains from a strategic, qualitative level. At the same time, we will also learn how to make effective trade-offs in operational decisions from a tactical, quantitative level. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisite: 70-371

**70-477 Real Options: Creating Value Beyond NPV**

Intermittent: 9 units

Real options analysis is an approach to the management of operational assets that exploits managerial flexibility in decision-making and combines it with market-driven valuation of cash flows. It is thus particularly useful when managing projects that involve dynamic and state-contingent choices among alternatives (options), especially of a strategic nature. The valuation of financial options is the conceptual basis of real options management (but this course does not assume prior knowledge of this topic). Real options analysis extends this fundamental market-driven valuation approach to a much broader spectrum of business applications that feature dynamic decision-making. It thus contrasts the standard net present value rule used by static discounted cash flow analysis. The resulting managerial decisions and asset valuations can be very different when real options analysis is used rather than static discounted cash flow analysis. The course learning objectives are to (i) develop the students ability to take an unstructured problem and implement real options analysis in a structured manner; (ii) integrate market-driven valuation and dynamic decision-making techniques into a practical, yet rigorous, business analytics toolkit; and (iii) provide examples of successful practice and applications in a variety of industries. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-480 International Marketing**

Intermittent: 9 units

This course is designed to provide students with a basic understanding of global marketing opportunities, key issues, and strategies. It introduces the main characteristics of international markets and addresses the impact of global environmental factors (economic, social, legal, and cultural) on marketing decisions such as market entry, product development, pricing, promotion, and distribution. The objective of the course is to help students acquire knowledge of major international marketing concepts and develop cross-cultural sensitivities and skills that would enable them to identify, analyze, and solve international marketing problems. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-481 Marketing Research**

Intermittent: 9 units

The purpose of this course is to teach multiple research techniques used in marketing. This course is an applied marketing course that gives insight into how various techniques are used in marketing research firms. There are three projects and a final. The first project is designed to teach students about research survey methods. The second is an experiment in which the whole class is involved. The third, an individual project, is designed to teach quantitative research techniques. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: (36-202 or 70-208) and 70-381

**70-482 Pricing Strategy**

Intermittent: 9 units

Pricing is a critical marketing decision which enables a firm to translate customer value into profit. This course provides a first survey of pricing concepts. Instead of discussing pricing in isolation, we focus on the interplay between pricing and other aspects of marketing, such as positioning, branding and advertising. To this end, we provide a formal treatment of pricing concepts in the framework of game theory. Finally, we also discuss non-pricing tools that firms can use in order to capture customer value. Specifically, we cover cases wherein firms generate a profit while keeping their services free, a phenomena that is widely observed among Internet firms. This course has no formal prerequisite, but a willingness to study formal (i.e., mathematical) models is assumed. Any previous exposure to microeconomics analysis and game theory will be helpful.

**70-483 Advertising and Marketing Communications**

Intermittent: 9 units

It is critical that marketers understand the limitations of marcom tactics as well as how to best leverage and integrate marcom tactics for the strongest, most consistent and authentic brand voice in the targeted marketplace. The entire IMC process is driven by the customer, and in the case of our discussions in this class, the consumer. The course is designed to help students understand the integrated marketing communications model, the strategy and tools of the marketing mix and what makes an iconic brand. The course is designed in five sections: Part One focuses on understanding brands - iconic brands, terminology and types of branding. Part Two focuses on the understanding of consumer behavior - one of the, if not the most critical part of understanding marketing. Brands are built and defined in the minds of consumers. Part Three focuses on IMC and the framework used by brand management to develop strategy, and understand audience segmentation and brand positioning to drive IMC. Part Four focuses on understanding the IMC tactics available to marketers including advertising, social media and digital marketing, events and public relations. Part five concludes with the deeper study of an iconic brand. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisite: 70-381

**70-484 Data Science for Finance**

Intermittent: 9 units

This course first reviews the fundamentals of Financial Data Science with Python. The course then introduces several financial applications that rely heavily on data analytics, including 1) Algorithmic Trading, 2) Quantitative portfolio management, and 3) "Smart" beta and performance analysis. The class uses tools from statistics, machine learning and natural language processing. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: 70-391 and (36-202 or 36-208 or 70-208)

**70-485 Brand Management**

Intermittent: 9 units

Product managers are essentially the "CEO" of the product line. Brand and product management provides strategic vision and leadership for the product and service, both 1) understanding the market opportunity and what must be done for successfully delivering on the brand promise and 2) leading across the organization, often without authority, to achieve that success. Product/service success in a dynamic market is subject to many factors, including marketplace needs, reactions and activities of competition, the strategy and change within one's own firm, operating and financial constraints, demand forecast uncertainty, and more. By taking this course, you will learn the principles of product and brand management and understand what it is like and what it takes to be a successful marketing leader. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisite: 70-381

**70-488 Marketing Digital Media**

Spring: 6 units

(Formerly titled "Interactive Marketing") In this course we analyze how marketing practice changes when products are distributed and consumed in digital formats. This course focuses on several areas where digitization is likely to have the most profound affect on the field of marketing. These areas include promotion, competitive strategy, channel conflict, pricing, and identifying and differentiating customers. We will use both lectures, cases, and analysis of real-world datasets to analyze these issues. Prerequisite: 70-381

**70-490 Big Data in Finance and Machine Learning**

Spring: 12 units

This course deals with the financial decisions of corporations. The focus is on learning through ?hands-on? experience of the corporate world, supplemented by a discussion of theoretical concepts and analysis of data. This ?hands-on? experience is in computerized lab games that simulate the corporate world, in which students participate as CEO's, investors, and directors. Topics to be covered include the following: dividend policy; financial reporting; CEO compensation; and valuation. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75. Prerequisites: 70-122 and 70-391

**70-491 Private Equity**

Intermittent: 6 units

This course serves as an introduction to private equity, including its development as an industry, key participants, organizational structure, and common contract terms. The course will address how private equity investors create value, including financial, governance, and operational engineering, in addition to common exit strategies for investments. The course will also describe the leveraged buyout model for evaluating potential investment targets. Prerequisite: 70-391

**70-492 Investment Analysis**

Intermittent: 9 units

Investment analysis provides you the concepts and tools used to analyze publicly traded securities, and you will learn how to these tools to real world situations. The course is organized as a tour of the different kinds of securities used in the financial markets. You will analyze how security prices are determined, the relations between the prices of different securities, their risks and returns, and how to choose a portfolio or strategy from different asset classes. Prerequisites: 21-370 or 70-391

**70-493 Valuation and Financial Modeling**

Intermittent: 9 units

This course focuses on valuing companies. Students will learn theoretical valuation frameworks and then apply them practically. The class will cover a range of valuation approaches including discounted cash flow analyses, price multiples, real options and the venture capital method. The class will be very hands-on - we will be building valuation models in excel in-class and in case assignments using real-world data such as company financial statements and stock prices. This is particularly useful for students considering careers in investment banking and private equity. We will focus not just on learning valuation methods but also understanding the assumptions that underlie them. We will ask when such assumptions are trivial and when they can lead to large errors. We will value a variety of companies including Ferrari, WhatsApp and Snap Inc. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisite: 70-391

**70-495 Corporate Finance**

Intermittent: 9 units

Students develop an advanced financial perspective on how firms make investment, financing, and management decisions. The course starts with simple net present value rules and builds the theoretical framework to address more sophisticated issues and problems including risk management, mergers, acquisitions, executive compensation, corporate governance, and dividend payout policies. Theory is supplemented with numerous case study examples. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 70-391 or 21-370

**70-496 Venture Capital**

Intermittent: 6 units

This course serves as an introduction to venture capital, including its development as an industry, key participants, organizational structure, and common contract terms. The course will address how performance is measured, including how this relates to venture capitalists' compensation, in addition to common exit strategies for investments. The course will also describe the venture capital method and other approaches for valuing potential investment targets.

Prerequisite: 70-391

**70-497 Derivative Securities**

Intermittent: 9 units

This course has two goals. The first goal is to help you to master the tools to price and hedge and understand the risk exposures of any contingent claim on any underlying variable. The second goal in this course is to practice using these pricing and hedging tools in derivative structuring and sales. The focus here is on designing and pricing derivative securities to trade on specialized market views and to hedge customized risk exposures. The course also highlights practical issues about model calibration, model risk, and dynamic and static hedging. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

Prerequisites: 21-370 or 70-391

**70-498 Business Language Analytics: Mining Financial Texts and Graphs**

Intermittent: 9 units

This course provides students with accounting concepts and tools to create structures in financial data and some hands-on experience in applying economic, statistical, and data-mining tools to analyze corporate business language, both text and numbers, used in formal documents written following specific accounting language rules. Accounting numbers: Accounting numbers such as those in published corporate financial statements obey a basic double-entry bookkeeping structure leading to a matrix or graph representation beyond the typical numerical data structure. After a basic introduction of using corporate financial data, much of the course covers the concepts and tools that process corporate accounting data using the graph representation. Accounting texts: While texts in accounting documents are written in natural language, they must obey regulatory disclosure requirements in both substance and form. The remaining part of the course shows students how data in text form from accounting disclosures such as annual reports can be examined systematically using textual analysis techniques to gain further insight and knowledge about firms and industries beyond those inferred from non-textual data.

Prerequisite: 70-122

**70-499 Internship**

All Semesters: 3 units

Students doing a business-related internship for academic credit may enroll in this course for three units with a pass/no pass grade. Students must submit an internship agreement form to the instructor for approval prior to the start of the internship. A summary writing assignment must be submitted after the internship in order to receive credit. Enrollment with special permission. This course may use third-party course material that is not available for individual purchase from the publisher. If so, the third-party course material will be secured and provided by the Tepper School to students enrolled in the course, and students enrolled in the course will be required to pay to the University the associated additional course materials fee for the third-party course material provided. The amount of the course materials fee is dependent on the University's cost of the particular materials provided, and typically ranges from \$13 to \$75.

**70-500 Honors Thesis I**

Fall and Spring

Business students with outstanding academic records may undertake an Honors Thesis. The topic is of the student's choice but must have some original aspect in the question being explored, the data set, or in the methods that are used. It must also be of sufficient academic rigor to meet the approval of a faculty advisor with expertise in the project's area. Students enroll each semester in a 9-unit independent study course with their faculty advisor for the project (70-500 in the fall and 70-501 in the spring). Students and their faculty advisor develop a course description for the project and submit it for approval as two 9-unit courses to the BA department. Enrollment by permission of the BA Program.

**70-501 Honor Thesis II**

Fall and Spring

Business students with outstanding academic records may undertake an Honors Thesis. The topic is of the student's choice but must have some original aspect in the question being explored, the data set, or in the methods that are used. It must also be of sufficient academic rigor to meet the approval of a faculty advisor with expertise in the project's area. Students enroll each semester in a 9-unit independent study course with their faculty advisor for the project (70-500 in the fall and 70-501 in the spring). Students and their faculty advisor develop a course description for the project and submit it for approval as two 9-unit courses to the BA Director. Enrollment by permission of the BA Program.

**70-509 Independent Study in Entrepreneurship**

All Semesters

Students with a special interest in entrepreneurship and innovation not covered by a formal business course may develop an Independent Study Course in that area. Readings and work to be completed are by agreement between the student and an individual faculty member. Enrollment by permission of the BA Program.