Managerial Economics

15.000 Explorations in Management
Prereq: None
U (Fall)
2-0-1 units

Broad introduction to the various aspects of management including analytics, accounting and finance, operations, marketing, entrepreneurship and leadership, organizations, economics, systems dynamics, and negotiation and communication. Introduces the field of management through a variety of experiences as well as discussions led by faculty or industry experts. Also reviews the three undergraduate majors offered by Sloan as well as careers in management. Subject can count toward the 9-unit discovery-focused credit limit for first year students.

J. Orlin

15.002 Sloan Intensive Period Requirement
Prereq: None
G (Fall, IAP, Spring, Summer)
Units arranged [P/D/F]

Units assigned to MBA students upon completion of the Sloan Intensive Period requirement. Restricted to Sloan MBA students. Consult D. Gormley

15.003 Analytics Tools
Prereq: None
G (Fall, IAP, Spring, Summer)
2-0-1 units

Units assigned to Master of Business Analytics students upon completion of the Analytics Tools requirement. Restricted to Master of Business Analytics students. Consult D. Gormley

15.010 Economic Analysis for Business Decisions
Prereq: None
G (Fall)
4-0-5 units
Credit cannot also be received for 15.011, 15.0111

Introduces principles of microeconomics as a framework for making more informed managerial decisions. Discusses the supply and demand paradigm with applications to digital marketplaces, innovation, sources of market power, and strategic pricing. Provides an introduction to game theory to study competition and cooperation both within and between firms. Restricted to first-year Sloan MBA students.

J. Doyle

15.011 Economic Analysis for Business Decisions
Subject meets with 15.0111
Prereq: None
G (Fall)
4-0-5 units
Credit cannot also be received for 15.010

Introduces principles of microeconomics as a framework for making more informed managerial decisions. Discusses the supply and demand paradigm with applications to digital marketplaces, innovation, sources of market power, and strategic pricing. Provides an introduction to game theory to study competition and cooperation both within and between firms. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details. Intended for non-Sloan graduate students.

J. Doyle

15.0111 Economic Analysis for Business Decisions
Subject meets with 15.011
Prereq: None
U (Fall)
4-0-5 units
Credit cannot also be received for 15.010

Introduces principles of microeconomics as a framework for making more informed managerial decisions. Discusses the supply and demand paradigm with applications to digital marketplaces, innovation, sources of market power, and strategic pricing. Provides an introduction to game theory to study competition and cooperation both within and between firms. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
15.012 Applied Macro- and International Economics
Prereq: None
G (Fall)
3-0-6 units

Uses case studies to investigate the macroeconomic environment in which firms operate. Subject develops the basic tools of macro and international economics: monetary and fiscal policy, growth theory and exchange rates. Discusses recent emerging market and financial crises, examining their causes, how best to address them, and how to prevent them from recurring in the future. Evaluates different strategies of economic development, including an understanding of growth and development and the role of debt and foreign aid.
R. Rigobon

15.013 Economics for Strategic Decisions
Prereq: 15.010 or 15.011
G (Fall)
3-0-6 units

Applies principles of economics most relevant for corporate strategy to analysis of particular industries. Topics include market structure and its determinants; rational strategic behavior in small numbers situations; strategies for price and nonprice competition; dynamic pricing, output, and advertising decisions; entry and entry deterrence; competition with network externalities; investments under uncertainty; R&D and patent licensing; and the growth and evolution of industries.
R. Pindyck

15.014 Applied Macro- and International Economics II
Prereq: 15.012 or 15.015
G (Spring; first half of term)
4-0-2 units

Establishes understanding of the development processes of societies and economies. Studies several dimensions of sustainability (environmental, social, political, institutional, economy, organizational, relational, and personal) and the balance among them. Explores the basics of governmental intervention, focusing on areas such as the judicial system, environment, social security, and health. Builds skills to determine what type of policy is most appropriate. Considers implications of new technologies on the financial sector: internationalization of currencies, mobile payment systems, and cryptocurrencies. Discusses the institutional framework to ensure choices are sustainable across all dimensions and applications.
R. Rigobon

15.015 Macro and International Economics
Prereq: Permission of instructor
G (Fall; first half of term)
Not offered regularly; consult department
2-0-4 units

Focuses on the policy and economic environment of firms. Subject divided in two parts: study of the closed economy and how monetary and fiscal policy interacts with employment, GNP, inflation, and interest rates; and study of the open economy with discussion of recent financial and currency crises in developed and emerging markets. Restricted to Sloan Fellows.
A. Cavallo

15.017[J] Engineering, Economics and Regulation for Energy Access in Developing Countries
Same subject as 6.934[J]
Prereq: None
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring)
3-0-9 units

Examines the technical, economic, political and social trade-offs inherent in designing energy solutions that can ensure universal access to electricity - as well as modern technologies for heating and cooking - in developing countries. Presents the characteristic features of the power sectors in these countries and how they need specific technical, financial and regulatory approaches. Focuses on the identification and design of viable business models that can attract the large volume of private investment needed to achieve universal energy access. Covers adequate power sector regulation and computer-aided electrification planning techniques in detail. Students make use of these models and discuss practical case examples.
I. Perez-Arriaga, R. Stoner

15.018 Current Debates of Macroeconomics and Public Policy (New)
Prereq: None
G (Spring)
3-0-6 units

Deep dive into some of the most important public policy and macroeconomic policy discussions in developed nations. Topics include health care provision; pension system; education; environmental regulation; public choice and public preferences; international trade; AI; and the work of the future. Students develop an understanding of the underlying economic phenomena and propose solutions from the macroeconomic perspective.
R. Rigobon
15.020 Economics of Energy, Innovation, and Sustainability
Prereq: 14.01 or 15.011
G (Fall)
3-0-9 units
Credit cannot also be received for 14.43[J], 15.0201[J]
Covers energy and environmental market organization and regulation. Explores economic challenges and solutions to transforming energy markets to be more efficient, accessible, affordable, and sustainable. Applies core economic concepts - consumer choice, firm profit maximization, and strategic behavior - to understand when energy and environmental markets work well and when they fail. They also conduct data-driven economic analysis on the trade-offs of real and proposed policy interventions. Topics include renewable generation sources for electricity, energy access in emerging markets, efficiency programs and fuel efficiency standards, transitioning transportation to alternative fuels, measuring damages and adaptation to climate change, and the effect of energy and environmental policy on innovation. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
J. Li

15.0201[J] Economics of Energy, Innovation, and Sustainability
Same subject as 14.43[J]
Prereq: 14.01 or 15.011
U (Fall)
3-0-9 units. HASS-S
Credit cannot also be received for 15.020
Covers energy and environmental market organization and regulation. Explores economic challenges and solutions to transforming energy markets to be more efficient, accessible, affordable, and sustainable. Applies core economic concepts - consumer choice, firm profit maximization, and strategic behavior - to understand when energy and environmental markets work well and when they fail. They also conduct data-driven economic analysis on the trade-offs of real and proposed policy interventions. Topics include renewable generation sources for electricity, energy access in emerging markets, efficiency programs and fuel efficiency standards, transitioning transportation to alternative fuels, measuring damages and adaptation to climate change, and the effect of energy and environmental policy on innovation. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
J. Li

15.021[J] Real Estate Economics
Same subject as 11.433[J]
Prereq: 14.01, 15.010, or 15.011
G (Fall)
4-0-8 units
See description under subject 11.433[J].
W. C. Wheaton

Same subject as 12.848[J]
Subject meets with 12.348[J], 15.026[J]
Prereq: (Calculus II (GIR), 5.60, and (14.01 or 15.010)) or permission of instructor
G (Spring)
Not offered regularly; consult department
3-0-6 units
Introduces scientific, economic, and ecological issues underlying the threat of global climate change, and the institutions engaged in negotiating an international response. Develops an integrated approach to analysis of climate change processes, and assessment of proposed policy measures, drawing on research and model development within the MIT Joint Program on the Science and Policy of Global Change. Graduate students are expected to explore the topic in greater depth through reading and individual research.
R. G. Prinn

15.024 Applied Economics for Managers
Prereq: Permission of instructor
G (Summer)
3-0-6 units
Credit cannot also be received for 15.722
Develops facility with concepts, language and tools of micro economics. Primary focus on the analysis of markets, strategic interactions among firms and game theory as applied to firms. Emphasizes integration of theory, data, and judgment in the analysis of a wide range of corporate decisions, both between and within firms. Restricted to Sloan Fellow MBAs.
T. Suri
15.025 Game Theory for Strategic Advantage
Subject meets with 15.0251
Prereq: 14.01, 15.010, 15.011, or 15.024
G (Spring)
3-0-6 units
Develops and applies principles of game theory relevant to managers' strategic decisions. Topics include how to reason about strategies and opponents; strategic commitment and negotiations; reputation and seemingly irrational actions; bidding in auctions; and the design of auctions, contests and markets. Applications to a variety of business decisions that arise in different industries, both within and outside the firm. Meets with 15.0251 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
G. Cisternas

15.0251 Game Theory for Strategic Advantage
Subject meets with 15.025
Prereq: 14.01 or 15.0111
U (Spring)
3-0-6 units
Develops and applies principles of game theory relevant to managers' strategic decisions. Topics include how to reason about strategies and opponents; strategic commitment and negotiations; reputation and seemingly irrational actions; bidding in auctions; and the design of auctions, contests and markets. Applications to a variety of business decisions that arise in different industries, both within and outside the firm. Meets with 15.025 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
G. Cisternas

Same subject as 12.348[J]
Subject meets with 12.848[J], 15.023[J]
Prereq: (Calculus II (GIR), 5.60, and 14.01) or permission of instructor
U (Spring)
Not offered regularly; consult department
3-0-6 units
Introduces scientific, economic, and ecological issues underlying the threat of global climate change, and the institutions engaged in negotiating an international response. Develops an integrated approach to analysis of climate change processes, and assessment of proposed policy measures, drawing on research and model development within the MIT Joint Program on the Science and Policy of Global Change. Graduate students are expected to explore the topic in greater depth through reading and individual research.
Staff

15.027 Opportunities in Developing Economies
Prereq: None
G (Spring; first half of term)
3-0-3 units
Investigates the role of the private sector in developing economies, highlighting how solving market failures can improve overall welfare. Covers constraints faced by firms in developing economies: contract enforcement, corruption, political risk, human rights, IP and infrastructure. Uses case studies to discuss successful firms and innovative solutions to these constraints, including public-private partnerships, the role of technology, the role of finance and impact investing.
T. Suri

15.032[J] Engineering, Economics and Regulation of the Electric Power Sector
Same subject as 6.695[J], IDS.505[J]
Subject meets with IDS.064
Prereq: 14.01, 22.081[J], IDS.060[J], or permission of instructor
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring)
3-0-9 units
See description under subject IDS.505[J].
I. Perez-Arriaga

15.034 Econometrics for Managers: Correlation & Causality in a Big Data World
Subject meets with 15.0341
Prereq: None
G (Spring)
4-0-5 units
Introduces econometrics as a framework to go beyond correlations and get to causality, which is crucial for investment decisions in finance, marketing, human resources, public policy, and general business strategy. Through labs and projects, students get experience in many relevant applications. Students gain a deeper understanding of modeling using multivariate regression, instrumental-variable regression, and machine learning tools including regression trees, random forest, LASSO, and neural networks. No prior knowledge is necessary. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
J. Doyle
15.0341 Econometrics for Managers: Correlation and Causality in a Big Data World
Subject meets with 15.034
Prereq: None
U (Spring)
4.0-5 units
Introduces econometrics as a framework to go beyond correlations and get to causality, which is crucial for investment decisions in finance, marketing, human resources, public policy, and general business strategy. Through labs and projects, students get experience in many relevant applications. Students gain a deeper understanding of modeling using multivariate regression, instrumental-variable regression, and machine learning tools including regression trees, random forest, LASSO, and neural networks. No prior knowledge is necessary. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
J. Doyle

15.036[J] Dimensions of Geoengineering (New)
Same subject as 1.850[J], 5.000[J], 10.600[J], 11.388[J], 12.884[J], 16.645[J]
Prereq: None
G (Fall; first half of term)
2.0-4 units
See description under subject 5.000[J]. Limited to 100.
J. Deutch, M. Zuber

15.037[J] Energy Economics and Policy
Same subject as 14.44[J]
Prereq: 14.01 or 15.0111
U (Spring)
4.0-8 units. HASS-S
Credit cannot also be received for 14.44(J), 15.038(J)
See description under subject 14.44(J). Limited to 60.
C. Knittel

Same subject as 14.444[J]
Prereq: 14.01 or 15.0111
G (Spring)
4.0-8 units
Credit cannot also be received for 14.44[J], 15.037[J]
See description under subject 14.444[J]. Limited to 60.
C. Knittel

15.039[J] Organizational Economics
Same subject as 14.26[J]
Subject meets with 14.260
Prereq: 14.01
U (Spring)
4.0-8 units. HASS-S
See description under subject 14.26[J]. Limited to 60.
R. Gibbons

Operations Research/Statistics

15.053 Optimization Methods in Business Analytics
Prereq: 1.00, 1.000, 6.0001, or permission of instructor
U (Spring)
4.0-8 units. REST
Introduces optimization methods with a focus on modeling, solution techniques, and analysis. Covers linear programming, network optimization, integer programming, nonlinear programming, and heuristics. Applications to logistics, manufacturing, statistics, machine learning, transportation, game theory, marketing, project management, and finance. Includes a project in which student teams select and solve an optimization problem (possibly a large-scale problem) of practical interest.
J. Orlin

15.054[J] The Airline Industry
Same subject as 1.232[J], 16.71[J]
Prereq: None
G (Fall)
3.0-9 units
See description under subject 16.71[J].
P. P. Belobaba, H. Balakrishnan, A. I. Barnett, R. J. Hansman, T. A. Kochan

15.060 Data, Models, and Decisions
Prereq: Permission of instructor
G (Fall, Summer)
3.0-6 units
Credit cannot also be received for 15.730
Introduces students to the basic tools in using data to make informed management decisions. Covers basic topics in data analytics, including introductory probability, decision analysis, basic statistics, regression, simulation, linear and discrete optimization, and introductory machine learning. Spreadsheet exercises, cases, and examples drawn from marketing, finance, operations management, and other management functions. Restricted to first-year Sloan master's students.
J. Vielma, R. Freund, G. Perakis
15.062[J] Data Mining: Finding the Models and Predictions that Create Value
Same subject as IDS.145[J]
Subject meets with 15.0621
Prereq: 15.060, 15.075[J], or permission of instructor
G (Fall; second half of term)
2-0-4 units
Introduction to data mining, data science, and machine learning, which assist in recognizing patterns, developing models and predictive analytics, and making intelligent use of massive amounts of data collected via the internet, e-commerce, electronic banking, point-of-sale devices, bar-code readers, medical databases, and others. Topics include logistic regression, association rules, tree-structured classification and regression, cluster analysis, discriminant analysis, and neural network methods. Presents examples of successful applications in credit ratings, fraud detection, marketing, customer relationship management, investments, and synthetic clinical trials. Introduces data-mining software focusing on R and Python. Term project required. Meets with 15.062[J] when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
_R. E. Welsch_

15.0621 Data Mining: Finding the Models and Predictions that Create Value
Subject meets with 15.062[J], IDS.145[J]
Prereq: 15.075[J] or permission of instructor
U (Fall; second half of term)
2-0-4 units
Introduction to data mining, data science, and machine learning, which assist in recognizing patterns, developing models and predictive analytics, and making intelligent use of massive amounts of data collected via the internet, e-commerce, electronic banking, point-of-sale devices, bar-code readers, medical databases, and others. Topics include logistic regression, association rules, tree-structured classification and regression, cluster analysis, discriminant analysis, and neural network methods. Presents examples of successful applications in credit ratings, fraud detection, marketing, customer relationship management, investments, and synthetic clinical trials. Introduces data-mining software focusing on R and Python. Term project required. Meets with 15.062[J] when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
_R. E. Welsch_

15.066[J] System Optimization and Analysis for Operations
Same subject as 2.851[J]
Prereq: Calculus II (GIR)
G (Summer)
4-0-8 units
Introduction to mathematical modeling, optimization, and simulation, as applied to manufacturing and operations. Specific methods include linear programming, network flow problems, integer and nonlinear programming, discrete-event simulation, heuristics and computer applications for manufacturing processes, operations and systems. Restricted to Leaders for Global Operations students.
Staff

15.068 Statistical Consulting
Prereq: 15.060
G (Spring)
3-0-6 units
Addresses statistical issues as a consultant would face them: deciphering the client’s question; finding appropriate data; performing a viable analysis; and presenting the results in compelling ways. Real-life cases and examples.
A. I. Barnett

15.070[J] Discrete Probability and Stochastic Processes
Same subject as 6.265[J]
Prereq: 6.431, 6.436[J], 18.100A, 18.100B, or 18.100Q
G (Spring)
3-0-9 units
Provides an introduction to tools used for probabilistic reasoning in the context of discrete systems and processes. Tools such as the probabilistic method, first and second moment method, martingales, concentration and correlation inequalities, theory of random graphs, weak convergence, random walks and Brownian motion, branching processes, Markov chains, Markov random fields, correlation decay method, isoperimetry, coupling, influences and other basic tools of modern research in probability will be presented. Algorithmic aspects and connections to statistics and machine learning will be emphasized.
G. Bresler, D. Gamarnik, E. Mossel, Y. Polyanskiy
15.071 The Analytics Edge
Prereq: 15.060
G (Fall, Spring)
4-0-8 units
Credit cannot also be received for 15.0711, 15.072

Examines how data analytics is used to transform businesses and industries, using examples and case studies in e-commerce, healthcare, social media, high technology, sports, the internet, and beyond. Demonstrates the use of analytics methods such as linear regression, logistic regression, classification trees, random forests, text analytics, social network analysis, time series modeling, clustering, and optimization. Uses R programming language. Includes team projects. Meets with 15.071 and 15.072 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.

R. Freund

15.0711 The Analytics Edge
Prereq: 15.053 and 15.0791
U (Spring)
4-0-8 units
Credit cannot also be received for 15.071, 15.072

Examines how data analytics is used to transform businesses and industries, using examples and case studies in e-commerce, healthcare, social media, high technology, sports, the internet, and beyond. Demonstrates the use of analytics methods such as linear regression, logistic regression, classification trees, random forests, text analytics, social network analysis, time series modeling, clustering, and optimization. Uses R programming language. Includes team projects. Meets with 15.071 and 15.072 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.

R. Freund

15.072 Advanced Analytics Edge
Prereq: Permission of instructor
G (Fall)
4-0-8 units
Credit cannot also be received for 15.071, 15.0711

More advanced version of 15.071 introduces core methods of business analytics, their algorithmic implementations and their applications to various domains of management and public policy. Spans descriptive analytics (e.g., clustering, dimensionality reduction), predictive analytics (e.g., linear/logistic regression, classification and regression trees, random forests, boosting) and prescriptive analytics (e.g., optimization). Presents analytics algorithms, and their implementations in data science. Includes case studies in e-commerce, transportation, energy, healthcare, social media, sports, the internet, and beyond. Uses the R and Julia programming languages. Includes team projects. Meets with 15.071 and 15.0711 when offered concurrently. Preference to Sloan Master of Business Analytics students.

A. Jacquillat

Same subject as 1.203[J], IDS.700[J]
Prereq: 6.041B or 18.600
G (Spring)
3-0-9 units

A vigorous use of probabilistic models to approximate real-life situations in Finance, Operations Management, Economics, and Operations Research. Emphasis on how to develop a suitable probabilistic model in a given setting and, merging probability with statistics, and on how to validate a proposed model against empirical evidence. Extensive treatment of Monte Carlo simulation for modeling random processes when analytic solutions are unattainable.

A. Barnett
15.0741 Predictive Data Analytics and Statistical Modeling
Prereq: 6.041B
U (Spring)
Not offered regularly; consult department
4-0-5 units

Provides a brief review of statistics and regression drawn from advanced topics, such as bootstrap resampling, variable selection, data and regression diagnostics, visualization, and Bayesian and robust methods. Covers data-mining and machine learning, including classification, logistic regression, and clustering. Culminates with time series analysis and forecasting, design of experiments, analysis of variance, and process control. Uses statistical computing systems based on application add-ins and stand-alone packages. Case studies involve finance, management science, consulting, risk management, and engineering systems. Term project required.
R. E. Welsch

15.075[J] Statistical Thinking and Data Analysis
Same subject as IDS.013[J]
Prereq: 6.041B or 15.0791
U (Spring)
3-1-8 units. Institute LAB
Credit cannot also be received for 18.650[J], 18.6501, IDS.014[J]

Introduces a rigorous treatment of statistical data analysis while helping students develop a strong intuition for the strengths and limitations of various methods. Topics include statistical sampling and uncertainty, estimation, hypothesis testing, linear regression, classification, analysis of variation, and elements of data mining. Involves empirical use of hypothesis testing and other statistical methodologies in several domains, including the assessment of A-B experiments on the web and the identification of genes correlated with diseases.
R. Mazumder

15.076 Analytics for a Better World (New)
Prereq: Calculus I (GIR)
U (Spring)
4-0-8 units

Introduces predictive and prescriptive analytics methods to solve problems that contribute to the welfare of society. Emphasis on using machine learning and optimization methods in innovative ways using real world data. Methods used include: linear and discrete optimization, linear and logistic regression, optimal classification and regression trees, deep learning, random forests, and boosted trees. Projects utilize Julia, Jump, and TensorFlow. Assessment based on projects, including a capstone project. Restricted to undergraduates.
D. Bertsimas

15.077[J] Statistical Machine Learning and Data Science
Same subject as IDS.147[J]
Prereq: Permission of instructor
G (Spring)
4-0-8 units

Advanced introduction to theory and application of statistics, data-mining and machine learning using techniques from management science, marketing, finance, consulting, and bioinformatics. Covers bootstrap theory of estimation, testing, nonparametric statistics, analysis of variance, experimental design, categorical data analysis, regression analysis, MCMC, EM, Gibbs sampling, and Bayesian methods. Focuses on data mining, supervised learning, and multivariate analysis. Topics chosen from logistic regression; principal components and dimension reduction; discrimination and classification analysis, trees (CART), partial least squares, nearest neighbors, regularized methods, support vector machines, boosting and bagging, clustering, independent component analysis, and nonparametric regression. Uses statistics software R, Python, and MATLAB. Grading based on homework, cases, and a term project.
R. E. Welsch

15.079 Introduction to Applied Probability
Prereq: Calculus I (GIR)
G (Fall)
Not offered regularly; consult department
4-0-8 units
Credit cannot also be received for 6.041, 6.431, 15.0791, 18.600

Presents probability from the perspective of applied mathematics, with strong emphasis on an intuitive overview of key theorems and continuing demonstrations of their usefulness. Covers the laws of probability and numerous important discrete and continuous random variables, both individually and in combination. Introduces simulation. Draws applications from economics, finance, engineering, marketing, public policy, operations management, and operations research. Meets with 15.0791 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
A. Barnett, R. Larson
15.0791 Introduction to Applied Probability
Prereq: Calculus I (GIR)
U (Fall)
4-0-8 units. REST
Credit cannot also be received for 6.041, 6.431, 15.079, 18.600
Presents probability from the perspective of applied mathematics, with strong emphasis on an intuitive overview of key theorems and continuing demonstrations of their usefulness. Covers the laws of probability and numerous important discrete and continuous random variables, both individually and in combination. Introduces simulation. Draws applications from economics, finance, engineering, marketing, public policy, operations management, and operations research. Meets with 15.079 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
A. Barnett, R. Larson

15.081[J] Introduction to Mathematical Programming
Same subject as 6.251[J]
Prereq: 18.06
G (Fall)
4-0-8 units
See description under subject 6.251[J].
J. N. Tsitsiklis, D. Bertsimas

15.083 Integer Programming and Combinatorial Optimization
Prereq: 6.251[J] or permission of instructor
Acad Year 2020-2021: G (Spring)
Acad Year 2021-2022: Not offered
4-0-8 units
In-depth treatment of the modern theory of integer programming and combinatorial optimization, emphasizing geometry, duality, and algorithms. Topics include formulating problems in integer variables, enhancement of formulations, ideal formulations, integer programming duality, linear and semidefinite relaxations, lattices and their applications, the geometry of integer programming, primal methods, cutting plane methods, connections with algebraic geometry, computational complexity, approximation algorithms, heuristic and enumerative algorithms, mixed integer programming and solutions of large-scale problems.
D. J. Bertsimas, A. S. Schulz

15.084[J] Nonlinear Optimization
Same subject as 6.252[J]
Prereq: 18.06 and (18.100A, 18.100B, or 18.100Q)
G (Spring)
4-0-8 units
See description under subject 6.252[J].
R. M. Freund, P. Parrilo, G. Perakis

15.085[J] Fundamentals of Probability
Same subject as 6.436[J]
Prereq: Calculus II (GIR)
G (Fall)
4-0-8 units
See description under subject 6.436[J].
J. N. Tsitsiklis, D. Gamarnik

15.086 Engineering Probability
Prereq: Calculus I (GIR) and permission of instructor
G (Summer; first half of term)
1-0-2 units
Introduction to applied probability. Makes real-life problems central to the pedagogy and aims for an intuitive understanding of probability as well as mastery of key probabilistic concepts and methods. Preference to first-year Leaders for Global Operations students.
A. Barnett

15.087 Engineering Statistics and Data Science
Prereq: Calculus II (GIR), 15.086, 18.06, and permission of instructor
G (Summer)
4-0-8 units
Develops ideas for making principled decisions and recommendations based on data, providing an introduction to statistical inference and statistical learning. Covers data displays and summary statistics for quantitative and qualitative data, the law of large numbers for means and empirical distributions, the normal distribution and the central limit theorem, confidence intervals, statistical hypothesis tests for the population mean and differences between population means, simple and multiple regression with quantitative data, model selection, the bias-variance tradeoff, logistic regression for binary outcomes, CART, random forests, gradient boosting, and deep learning. The statistical programming language R is used for in-class demonstrations and for out-of-class assignments. Preference to first-year Leaders for Global Operations students. No required textbook.
Staff
15.089 Analytics Capstone  
Prereq: None  
G (Fall, IAP, Spring, Summer)  
Units arranged  
Can be repeated for credit.  
Practical application of business analytics problems within a real company. Teams of 1-2 students, matched with company projects, visit companies to define project and scope. In class, students refine and improve on projects and devise methods for solving problems for their select companies. Mentors are assigned to each team. The culmination of the program is summer, on-site, practical training. Restricted to Master of Business Analytics students.  
D. Bertsimas, C. Simone

15.093[J] Optimization Methods  
Same subject as 6.255[J], IDS.200[J]  
Subject meets with 6.215  
Prereq: 18.06  
G (Fall)  
4-0-8 units  
Introduces the principal algorithms for linear, network, discrete, robust, nonlinear, and dynamic optimization. Emphasizes methodology and the underlying mathematical structures. Topics include the simplex method, network flow methods, branch and bound and cutting plane methods for discrete optimization, optimality conditions for nonlinear optimization, interior point methods for convex optimization, Newton's method, heuristic methods, and dynamic programming and optimal control methods. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.  
D. Bertsimas, P. Parrilo

15.094[J] Robust Modeling, Optimization, and Computation  
Same subject as 1.142[J]  
Prereq: 18.06 or permission of instructor  
G (Spring)  
4-0-8 units  
Introduces modern robust optimization, including theory, applications, and computation. Presents formulations and their connection to probability, information and risk theory for conic optimization (linear, second-order, and semidefinite cones) and integer optimization. Application domains include analysis and optimization of stochastic networks, optimal mechanism design, network information theory, transportation, pattern classification, structural and engineering design, and financial engineering. Students formulate and solve a problem aligned with their interests in a final project.  
D. Bertsimas

15.095 Machine Learning Under a Modern Optimization Lens  
Prereq: 6.251[J], 15.093[J], or permission of instructor  
G (Fall)  
3-1-8 units  
Develops algorithms for central problems in machine learning from a modern optimization perspective. Topics include sparse, convex, robust and median regression; an algorithmic framework for regression; optimal classification and regression trees, and their relationship with neural networks; how to transform predictive algorithms to prescriptive algorithms; optimal prescriptive trees; and robust classification. Also covers design of experiments, missing data imputations, mixture of Gaussian models, exact bootstrap, and sparse matrix estimation, including principal component analysis, factor analysis, inverse co-variance matrix estimation, and matrix completion.  
D. Bertsimas

15.096 Prediction: Machine Learning and Statistics  
Prereq: None  
G (Spring)  
Not offered regularly; consult department  
3-0-9 units  
Gives a practical background and theoretical foundation to machine learning algorithms and Bayesian analysis. Includes an overview of the top ten algorithms in data mining. Covers frameworks for knowledge discovery, a unified view of support vector machines, AdaBoost and regression based on regularized risk minimization; generalization bounds from statistical learning theory based on covering numbers, VC dimension, and the margin theory; as well as basic Bayesian analysis and notes on the history of machine learning and statistics.  
C. Rudin

15.097 Seminar in Statistics and Data Analysis  
Prereq: Permission of instructor  
Acad Year 2020-2021: Not offered  
Acad Year 2021-2022: G (Fall)  
Units arranged  
Group study of current topics related to statistics and data analysis.  
C. Rudin
**15.098 Seminar in Applied Probability and Stochastic Processes**  
Prereq: 6.431  
G (Fall)  
Not offered regularly; consult department  
2-0-4 units  
Can be repeated for credit.  

Doctoral student seminar covering current topics in applied probability and stochastic processes.  
*D. Gamarnik, D. Shah*  

**15.099 Seminar in Operations Research**  
Prereq: 6.251[J]  
Acad Year 2020-2021: Not offered  
Acad Year 2021-2022: G (Spring)  
Units arranged  
Can be repeated for credit.  

Doctoral student seminar covering current topics related to operations research.  
*D. Bertsimas, R. Freund, J. Orlin, G. Perakis*  

**Health Care Management**  

**15.124[J] Evaluating a Biomedical Business Concept**  
Same subject as HST.973[J]  
Prereq: None  
G (Fall)  
3-0-6 units  
See description under subject HST.973[J]. Enrollment limited.  
*R. J. Cohen*  

**15.128[J] Revolutionary Ventures: How to Invent and Deploy Transformative Technologies**  
Same subject as 9.455[J], 20.454[J], MAS.883[J]  
Prereq: Permission of instructor  
G (Fall)  
2-0-7 units  
See description under subject MAS.883[J].  
*E. Boyden, J. Bonsen, J. Jacobson*  

**15.132[J] Medicine for Managers and Entrepreneurs Proseminar**  
Same subject as HST.972[J]  
Prereq: None  
Acad Year 2020-2021: Not offered  
Acad Year 2021-2022: G (Spring)  
3-0-6 units  
Provides students with basic business-oriented clinical and technological knowledge related to health, healthcare and medicine through engagements with clinical and industry experts. Each session focuses on a specific field of medicine. Speakers include a basic science and/or clinical expert and a CEO or other senior executive involved in cutting-edge innovation in each area.  
*R. J. Cohen*  

**15.136[J] Principles and Practice of Drug Development**  
Same subject as 10.547[J], HST.920[J], IDS.620[J]  
Prereq: Permission of Instructor  
G (Fall)  
3-0-6 units  
Description and critical assessment of the major issues and stages of developing a pharmaceutical or biopharmaceutical. Drug discovery, preclinical development, clinical investigation, manufacturing and regulatory issues considered for small and large molecules. Economic and financial considerations of the drug development process. Multidisciplinary perspective from faculty in clinical; life; and management sciences; as well as industry guests.  
*S. Finkelstein, A. J. Sinskey, R. Rubin*  

**15.137[J] Case Studies and Strategies in Drug Discovery and Development**  
Same subject as 7.549[J], 20.486[J], HST.916[J]  
Prereq: None  
Acad Year 2020-2021: Not offered  
Acad Year 2021-2022: G (Spring)  
2-0-4 units  
See description under subject 20.486[J].  
*A. W. Wood*
15.141[J] Economics of Health Care Industries
Same subject as HST.918[J]
Prereq: None
G (Spring; first half of term)
3-0-3 units

Uses economics as a framework to consider healthcare issues, including differences between health care and other industries, the role of health insurance, regulatory issues and incentives for innovation, data analytics to measure value, personalized/stratified medicines, strategic issues in pricing and marketing, use of e-commerce and information technology, and formation and management of various alliances. Provides a better understanding of the US healthcare landscape, and considers incentives for global health investments. Visiting speakers from industry and academia provide multiple expert viewpoints on these topics.

J. Doyle

Global Economics Management

15.216 Central Banks, Monetary Policy and Global Financial Markets
Prereq: None
G (Spring)
3-0-6 units

Explores the role of central banks and monetary policy in the global economy and the effects of their policies on countries, companies and global financial markets. Reviews the decision-making process and policy implementation, and provides conceptual tools for analyzing and predicting central bank decisions and assessing their likely impact. Covers monetary policy, bank regulation and crisis management, drawing on the experience of the Federal Reserve, the ECB and other central banks in advanced and emerging market economies.

A. Orphanides

15.217 Blockchain Lab
Prereq: None
G (Spring)
3-6-3 units

Project-based course designed to involve students in the latest developments as companies attempt to integrate blockchain technology into viable business models. With faculty guidance, students form teams and work with the Digital Currency Initiative (MIT Media Lab) member companies on hand-picked projects. Course is a partnership among the DCI, MIT Sloan, and leading, global, forward-looking companies across various industries. Students are responsible for running the projects in a detailed and effective manner with the teaching team providing mentorship and overall structure for learning. Preference to graduate students and undergraduates with strong technical preparation.

G. Gensler, S. Johnson, N. Nerula

15.218 Global Economic Challenges and Opportunities
Prereq: None
G (Spring)
3-0-6 units

In-depth analysis of the major risks and opportunities in the global economy. Analyzes key economic forces and policy responses that shape the business environment, such as financial crises, monetary and fiscal policy, trade wars, unsustainable debt, rise of emerging markets, financial contagion, and international institutions. Discusses current global economic issues to develop the tools and frameworks to be able to predict and plan for how governments will respond to different challenges in the future. Some background or coursework in international economics recommended.

K. Forbes
Same subject as 11.267[J]
Prereq: None
G (Spring)
Not offered regularly; consult department
3-0-9 units
Credit cannot also be received for 11.167[J], 14.47[J], 15.2191[J], 17.399[J]
Focuses on the ways economics and politics influence the fate of energy technologies, business models, and policies around the world. Extends fundamental concepts in the social sciences to case studies and simulations that illustrate how corporate, government, and individual decisions shape energy and environmental outcomes. In a final project, students apply the concepts in order to assess the prospects for an energy innovation to scale and advance sustainability goals in a particular regional market. Recommended prerequisite: 14.01. Meets with 15.2191[J] when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details. V. Karplus

Same subject as 11.167[J], 14.47[J], 17.399[J]
Prereq: None
U (Spring)
Not offered regularly; consult department
3-0-9 units. HASS-S
Credit cannot also be received for 11.167[J], 15.219[J]
Focuses on the ways economics and politics influence the fate of energy technologies, business models, and policies around the world. Extends fundamental concepts in the social sciences to case studies and simulations that illustrate how corporate, government, and individual decisions shape energy and environmental outcomes. In a final project, students apply the concepts in order to assess the prospects for an energy innovation to scale and advance sustainability goals in a particular regional market. Recommended prerequisite: 14.01. Meets with 15.2191[J] when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details. Preference to juniors, seniors, and Energy Minors. V. Karplus

15.220 New Models for Global Business
Prereq: None
G (Fall; second half of term)
Not offered regularly; consult department
3-0-3 units
Explores international dimensions of strategic management, and equips students to design strategies and structures that work effectively in an increasingly complex world economy. Focuses on a range of industries, from technology-based firms with global roots to emerging market multinationals. Topics include managing and leveraging big data, social and peer-to-peer networks, technology, and talent across national borders to develop capabilities and enhance competitive advantage. Includes a final group project in which students apply class concepts to evaluate strategic options for a startup or established global company of their choice. No final exam. V. Karplus

15.221 Global Strategy and Organization
Prereq: None
G (Spring; first half of term)
Not offered regularly; consult department
3-0-3 units
Focuses on the international dimensions of strategy and organization, and provides a framework for formulating strategies in an increasingly complex world economy, and for making those strategies work effectively. Topics include the globalization of industries, the continuing role of country factors in competition, organization of multinational enterprises, building global networks, and the changing managerial tasks under conditions of globalization. Restricted to Sloan Fellows in Innovation and Global Leadership. Staff

15.223 Global Markets, National Policies and the Competitive Advantages of Firms
Prereq: None
G (Fall; second half of term)
3-0-3 units
Examines opportunities and risks firms face in today’s global market. Provides conceptual tools for analyzing how governments and social institutions influence economic competition among firms embedded in different national settings. Public policies and institutions that shape competitive outcomes are examined through cases and analytical readings on different companies and industries operating in both developed and emerging markets. Priority to Sloan Fellows MBAs. S. Johnson
15.225 Modern Business in China: China Lab
Prereq: None
G (Spring)
3-0-9 units
Provides integrated approach to analyze the economy of China through action learning. Classroom portion covers modern history, economics, and politics in China that shape the business environment, cases of companies entering or operating in the Chinese market, and project-related issues and personal and learning reflections. Onsite portion involves working with a host company in China. Students work in teams to tackle a real world business problem with an entrepreneurial Chinese company and produce a final deliverable for the host company. Requires a mid-semester trip during SIP and Spring Break to China to work onsite with the host company. Projects focus on dynamic sectors such as artificial intelligence, the sharing economy, social media, health care, energy, and manufacturing, and examples include creating a business plan for fundraising, developing a new market strategy, and assembling financial models. Limited to graduate students who participate in China Lab.
V. Karplus, J. Grant

15.226 Modern Business in India: India Lab
Prereq: None
G (Spring)
3-0-9 units
Provides integrated approach to analyze the economy of India through action learning. Classroom portion covers modern history, economics, and politics in India that shape the business environment, cases of companies entering or operating in the Indian market, and project-related issues and personal and learning reflections. Onsite portion involves working with a host company in India. Students work in teams to tackle a real world business problem with an entrepreneurial Indian company and produce a final deliverable for the host company. Requires a mid-semester trip during SIP and Spring Break to India to work onsite with the host company. Projects focus on dynamic sectors such as artificial intelligence, the sharing economy, social media, health care, energy, and manufacturing; examples include creating a business plan for fundraising, developing a new market strategy, and assembling financial models. Limited to graduate students who participate in India Lab.
Y. Huang, V. Karplus

15.227 - 15.229 Seminar in International Management
Prereq: None
G (Spring)
Not offered regularly; consult department
Units arranged
Can be repeated for credit.
Group study of current topics related to international business.
Staff

15.230 Public Policy and the Private Sector
Prereq: None
G (Spring)
3-0-6 units
Explores the intersection of public policy and the private sector. Senior level guests, who have been deeply involved in public policy, will join this discussion-based course weekly focusing on key economic policy choices - touching on technology, trade, tax, financial, macro-economic and competitions policies. Provides a deep understanding of the process by which policy comes to life. Examines how the private sector affects - and sometimes shapes - public policy. Taught through the lens of US policy decision-making; also covers international dimensions.
G. Gensler, S. Johnson

15.232 Breakthrough Ventures: Effective Business Models in Frontier Markets
Prereq: None
G (Spring; first half of term)
3-0-3 units
Examines how new approaches to operations, revenue, marketing, finance, and strategy enable improved social outcomes in resource-limited settings across Africa, Latin America, and Asia. Draws on system dynamics, design thinking, and strategic analysis. Explores success and failure in attempts to innovate and scale in product and service delivery. Analysis of novel business models draws on case studies, videos, industry reports, research, and guest speakers. Students present their assessments of innovative base-of-the-pyramid enterprises that aim to do more with less. Students who have not taken at least three management or business classes must apply to the instructor for permission to enroll before the first day of class.
A. Sastry
15.233 Global Health Lab
Prereq: None
G (Spring)
Not offered regularly; consult department
3-0-9 units

Pairs faculty-mentored student teams with enterprises on the front lines of health care delivery in sub-Saharan Africa and South Asia. Custom-designed projects in strategy, business model innovation, operations, marketing, and technology designed to tackle specific barriers identified by each partnering organization. Interactive cases, practical exercises, and conversations with experts, all designed to support project work before, during, and after an intensive two-week onsite collaboration with entrepreneurs, leaders, staff, and stakeholders. Assignments include a portfolio of host deliverables, a foundational toolkit designed to support each project, and a distillation of learning from the field. Enrolled students must be available to work on site in Africa or South Asia for the entire weeks of SIP and Spring Break. Preference to students who have taken 15.232. Admission by application and interview in the prior November and December. Graduate students only.
A. Sastry

15.234[J] Scalable Civic Action
Same subject as MAS.720[J]
Prereq: None
G (Fall)
2-1-3 units

Project-based subject in which students deploy research-based civic, political and organizational engagement tools and analyze their impact and effectiveness. Sample application areas include addressing voter suppression, voter mobilization, and civic group organization. Addresses topics such as randomized controlled testing methods, political campaign techniques, behavioral optimization, and assessment metrics. Students form teams and perform real-world interventions using systems under development in the Media Lab. Open to undergraduates with permission of instructor.
S. Johnson, A. Lippman

15.235 Blockchain and Money
Prereq: None
G (Fall)
3-0-6 units

Explores blockchain technology’s potential use—by entrepreneurs and incumbents—to change the world of money and finance. Begins with a review of the technology’s initial application, the cryptocurrency Bitcoin, giving students an understanding of the commercial, technical and public policy fundamentals of blockchain technology, distributed ledgers and smart contracts in both open-sourced and private applications. Focuses on current and potential blockchain applications in the financial sector. Includes reviews of potential use cases for payment systems, central banking, venture capital, secondary market trading, trade finance, commercial banking, post-trade possessing, and digital ID. Also explores the markets and regulatory landscape for cryptocurrencies, initial coin offerings, other tokens, and crypto derivatives. Open to undergraduates with permission of instructor.
G. Gensler

15.236 Global Business of Artificial Intelligence and Robotics (GBAIR)
Prereq: Permission of instructor
G (Spring)
2-2-2 units

Discussion based-course examines applications of artificial intelligence and robotics in the business world. Emphasizes understanding the likely direction of technology and how it is likely to be used. Students examine particular applications to deepen their understanding of topical issues. Also focuses on how global economies will change in light of this wave of technology. Preference to Sloan graduate students.
S. Johnson, J. Ruane, L. Videgaray

15.237[J] China's Urbanization, Digital Technology and Innovation Market
Same subject as 11.366[J]
Subject meets with 11.066[J], 15.2371[J]
Prereq: None
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring; first half of term)
3-0-3 units

See description under subject 11.366[J].
Z. Tan, J. Grant, Y. Huang
15.237[J] China's Urbanization, Digital Technology and Innovation Market
Same subject as 11.066[J]
Subject meets with 11.366[J], 15.237[J]
Prereq: None
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: U (Spring; first half of term)
3·0·3 units
See description under subject 11.066[J].
Z. Tan, J. Grant, Y. Huang

Same subject as 11.257[J]
Subject meets with 11.157[J], 15.239[J]
Prereq: None
G (Spring; second half of term)
3·0·3 units
See description under subject 11.257[J].
Y. Huang, S. Zheng, Z. Tan

Same subject as 11.157[J]
Subject meets with 11.257[J], 15.239[J]
Prereq: None
U (Spring; second half of term)
3·0·3 units
See description under subject 11.157[J].
Y. Huang, S. Zheng, Z. Tan

15.248 Israel Lab: Startup Nation’s Entrepreneurship and Innovation Ecosystem
Prereq: None
G (Fall, IAP; second half of term)
3·0·6 units
Practical study of Israel’s innovation and entrepreneurial ecosystem. On-campus component provides context about the country and its social and geopolitical issues as they pertain to business in Israel; REAP Stakeholder Model, entrepreneurship lessons, Israeli business culture, and team dynamics. During IAP, student teams work at the Israeli host organizations in Tel Aviv on complex problems in critical areas, such as big data/analytics, computing technologies, life sciences, robotics, Fintech, and cybersecurity, with an emphasis on early stage ventures and their growth. Provides students an opportunity to engage directly with startup CEOs and venture capitalists. Limited to graduate students and Sloan undergraduates, application required for Sloan undergraduates.
J. Cohen

History, Environment and Ethics

15.268 Choice Points: Thinking about Life and Leadership through Literature
Prereq: None
G (Spring)
3·0·6 units
Explores decision making and leadership. Analyzes the dilemmas and decisions characters face in a selection of plays, stories, and films. Provokes reflection on what constitutes effective and moral reasoning in critical moments of both life and leadership. Restricted to Sloan Fellow MBAs.
Consult J. DiFabio

15.269 Leadership Stories: Literature, Ethics, and Authority
Prereq: None
G (Fall)
3·0·6 units
Explores how we use story to articulate ethical norms. The syllabus consists of short fiction, novels, plays, feature films and some non-fiction. Major topics include leadership and authority, professionalism, the nature of ethical standards, social enterprise, and questions of gender, cultural and individual identity, and work/life balance. Materials vary from year to year, but past readings have included work by Robert Bolt, Michael Frayn, Timothy Mo, Wole Soyinka, H.D. Thoreau, and others; films have included Crouching Tiger, Hidden Dragon, Hotel Rwanda, The Descendants, Motorcycle Diaries, Three Kings, and others. Draws on various professions and national cultures, and is run as a series of moderated discussions, with students centrally engaged in the teaching process.
L. Hafrey

Communication

15.270 Ethical Practice: Leading Through Professionalism, Social Responsibility, and System Design
Prereq: None
G (Spring; second half of term)
3·0·3 units
Introduction to ethics in business, with a focus on business management. Students explore theoretical concepts in business ethics, and cases representing the challenges they will likely face as managers. Opportunity to work with guest faculty as well as business and other professional practitioners. Individual sessions take the form of moderated discussion, with occasional short lectures from instructor.
L. Hafrey
15.276 Communicating with Data  
Prereq: None  
U (Fall, Spring)  
3-0-9 units  
Equips students with the strategies, tactics, and tools to use quantitative information to inform and persuade others. Emphasizes effective communication skills as the foundation of successful careers. Develops the skills to communicate quantitative information in a business context to drive people and organizations toward better decisions. Focuses heavily on the cycle of practicing, reflecting, and revising. Students receive extensive, personalized feedback from teaching team and classmates. Limited to 25; priority to 15-2 and 6-14 majors.  
L. Breslow

15.277 Seminar in Communications  
Prereq: None  
G (Spring)  
Not offered regularly; consult department  
Units arranged  
Can be repeated for credit.  
Group study of current topics related to communication.  
J. Yates

15.278 Seminar in Communications  
Prereq: None  
G (Spring)  
Not offered regularly; consult department  
Units arranged [P/D/F]  
Can be repeated for credit.  
Group study of current topics related to communication.  
J. Yates

15.279 Management Communication for Undergraduates  
Prereq: None  
U (Fall, Spring)  
3-0-9 units  
Develops writing, speaking, teamwork, interpersonal, social media, and cross-cultural communication skills necessary for management professionals. Assignments include creating persuasive memos, writing in response to cases, and giving presentations. Major project involves the production of a team report and presentation on a topic of interest to a professional audience.  
L. Breslow

15.280 Communication for Leaders  
Prereq: Permission of instructor  
G (Fall)  
3-1-5 units  
Credit cannot also be received for 15.710  
Students develop and polish communication strategies and methods through discussion, examples, and practice. Emphasizes writing and speaking skills necessary for effective leaders. Includes several oral and written assignments which are integrated with other subjects, and with career development activities, when possible. Schedule and curriculum coordinated with Organizational Processes. Mandatory one hour recitation in small groups. Restricted to first-year Sloan graduate students.  
N. Hartman, L. Breslow, V. Healy-Tangney, K. Blackburn, M. Kazakoff, J. Yates, B. Shields

15.281 Advanced Leadership Communication  
Prereq: 15.279, 15.280, or permission of instructor  
G (Spring)  
3-0-6 units  
Introduces interactive oral and interpersonal communication skills critical to leaders, including strategies for presenting to a hostile audience, running effective and productive meetings, active listening, and contributing to group decision-making. Includes team-run classes on chosen communication topics, and an individual analysis of leadership qualities and characteristics. Students deliver an oral presentation and an executive summary, both aimed at a business audience.  
N. Hartman, K. Blackburn, B. Shields, J. Yates, V. Healy-Tangney

15.282 EnActing Leadership: Shakespeare and Performance  
Prereq: None  
G (Spring)  
3-0-6 units  
Uses Shakespeare to challenge students' views of leadership and provide them with a deeper understanding of their performance as a leader. While performing shortened versions of Shakespeare's plays, students consider the serious questions they raise about the nature of leadership, power, and ambition, and explore their own leadership presence. Uses acting to strengthen speaking ability and personal presence.  
C. Kelly
15.283 Social Media Management: Persuasion in Networked Culture
Prereq: None  
G (Spring)  
3-0-6 units
Explores how organizations and leaders can maximize the business value of social media platforms. Provides a framework and best practices for social media management, enhances understanding of strategic communication within the social media context, and improves social media communication skills. Assignments include case analysis, weekly content creation, and a final group project on social media strategy and content.

B. Shields

15.284 Strategic Leadership Communication  
Prereq: None  
G (Fall; partial term)  
3-0-3 units
Introduces the essentials of how individuals and organizations develop and implement effective communication strategies, focusing on persuasion, audience analysis, communicator credibility, message construction, and delivery. Includes oral presentations and writing assignments with feedback to help students improve their communication effectiveness. Provides instruction to create communication strategies, develop and present clearly organized and powerful presentations, expand personal oral delivery and writing styles, and enhance presentations through effective visual aids. Restricted to Sloan Fellow MBAs.

N. Hartman, L. Breslow

15.285 Sports Strategy and Analytics (New)  
Prereq: None  
G (Spring; second half of term)  
3-0-3 units
Explores how leaders and organizations apply data and analytics to gain a competitive edge in the multibillion-dollar global sports industry. Provides context on the structure and dynamics of the sports industry, discusses best practices in data-driven decision making both on- and off-the-field, and improves students’ skills in analyzing and communicating data. Assignments include a decision analysis paper and a final team project in which students apply their skills to solve a problem in sports.

B. Shields, R. Reagans

15.286 Communicating with Data
Prereq: 15.280, 15.284, or permission of instructor  
G (Spring; first half of term)  
3-0-3 units  
Credit cannot also be received for 15.287, 15.721
Focuses on structuring the oral and visual communication of data. Introduces these concepts and a methodology of self-reflection to help one accelerate his or her life-long learning process. Improves students’ ability to develop strategic communications that use data to persuade others to take action. Primary focus is on reducing barriers to action by making data as easy as possible for others to absorb through clear structure, clear design, and clear delivery. Significant time will be devoted to practice. Students give and receive substantial feedback on their work.

M. Kazakoff

15.287 Communication and Persuasion Through Data
Prereq: None  
G (IAP)  
2-0-1 units  
Credit cannot also be received for 15.286, 15.721
Focuses on the strategic and tactical use of data to move others to take (the correct) action. Sharpens communication skills via practice and real-world examples. Students spend significant time writing, speaking and designing visuals for a professional audience. Intended for students who expect to communicate quantitative information with non-experts inside and outside of their organizations, as well as students seeking to improve communication skills in general. Restricted to Sloan Master of Business Analytics students.

A. Telio, N. Hartman, B. Shields, L. Breslow

15.289 Doctoral Seminar: Communication Skills for Academics
Prereq: Permission of instructor  
Acad Year 2020-2021: Not offered  
Acad Year 2021-2022: G (Spring)  
3-0-3 units
Focuses on the communication skills needed for a career in academia. Topics include writing for academic journals, preparing and delivering conference papers and job talks, creating your professional presence on social media, peer reviewing for journals and conferences, and teaching. Participants are expected to work on a written project and deliver an oral presentation based on their current research. Limited to 20; priority to Sloan doctoral students who have completed their first year.

J. Yates, L. Breslow
**Work and Organizational Studies**

**15.301 People, Teams, and Organizations Laboratory**  
Prereq: None  
U (Fall)  
3-3-9 units. Institute LAB  
Surveys individual and social psychology and organization theory interpreted in the context of the managerial environment. Laboratory involves projects of an applied nature in behavioral science. Emphasizes use of behavioral science research methods to test hypotheses concerning decision-making, group behavior, and organizational behavior. Instruction and practice in communication includes report writing, team projects, and oral and visual presentation. 12 units may be applied to the General Institute Laboratory Requirement. Shares lectures with 15.310.  
*J. Carroll, P. Osterman*

**15.304 Being Effective: Power and Influence**  
Prereq: None  
G (Spring)  
3-0-6 units  
Discusses how to map power and interest patterns in organizations, how to understand your own interests and objectives, and how to operate effectively in organizational environments. Provides frameworks as well as a range of practical tools to address these goals. Utilizes a wide range of material drawn from the business and public worlds.  
*P. Osterman*

**15.305 Leadership and Management**  
Prereq: Permission of instructor  
U (Fall, Spring)  
3-0-6 units  
Explores leadership from the military perspective taught by professors of military science from the Army, Navy and Air Force. Survey of basic principles for successfully managing and leading people, particularly in public service and the military. Develops skills in topics such as oral and written communication techniques, planning, team building, motivation, ethics, decision-making, and managing change. Relies heavily on interactive experiential classes with case studies, student presentations, role plays, and discussion. Also appropriate for non-management science majors.  
*S. Ott*

**15.307 Leadership and Ethics**  
Prereq: None  
Acad Year 2020-2021: Not offered  
Acad Year 2021-2022: G (Fall)  
2-0-0 units  
Foundations, pillars, principles and mantras of outstanding leadership introduced through in-class discussions and case studies presented by senior industry leaders (LGO and non-LGO alumni). Alumni also share their personal leadership experiences with the class. Leaders for Global Operations students only.  
*Staff*

**15.309 Leadership Lessons Learned from the Military**  
Prereq: None  
G (IAP)  
2-0-1 units  
Prepared and taught by veterans in various Sloan programs, under the supervision of MIT Sloan faculty. Focuses on the nature of military leadership and its relevance to the civilian professional and organizational experience.  
*D. Ancona, L. Hafrey*

**15.310 People, Teams, and Organizations**  
Prereq: None  
G (Fall)  
2-1-6 units  
Surveys social psychology and organization theory as interpreted in the context of the managerial environment. Covers a number of diverse topics, including motivation and reward systems, social influence, groups and teams, leadership, power, organizational design and culture, and networks and communication patterns. Similar in content to 15.311; shares lectures with 15.301. Preference to non-Course 15 students.  
*J. Carroll, P. Osterman*
15.311 Organizational Processes
Prereq: Permission of instructor
G (Fall)
2-3-4 units
Enhances students’ ability to take effective action in complex organizational settings by providing the analytic tools needed to analyze, manage, and lead the organizations of the future. Emphasizes the importance of the organizational context in influencing which individual styles and skills are effective. Employs a wide variety of learning tools, from experiential learning to the more conventional discussion of written cases. Centers on three complementary perspectives on organizations: the structural design, political, and cultural “lenses” on organizations. Major team project to analyze an actual organizational change, with oral and written reports. Restricted to first-year Sloan master’s students.
E. Kelly, K. Kellogg, C. Turco

15.312 Organizational Processes for Business Analytics
Prereq: None
U (Fall)
3-0-9 units
Develops appreciation for organizational dynamics and competence in navigating social networks, working in a team, demystifying rewards and incentives, leveraging the crowd, understanding change initiatives, and making sound decisions. Provides instruction and practice in written and oral communication through presentations, and interpersonal and group exercises.
R. Reagans, L. Breslow

15.316 Building and Leading Effective Teams
Prereq: None
G (Summer)
3-1-0 units
An intensive one-week introduction to leadership, teams, and learning communities. Introduction of concepts and use of a variety of experiential exercises to develop individual and team skills and develop supportive relationships within the Fellows class. Restricted to first-year Leaders for Global Operations students.
J. S. Carroll

15.317 Leadership and Organizational Change
Prereq: None
G (Spring, Summer; second half of term)
Units arranged
Can be repeated for credit.
Course spans the entire two-year Leaders for Global Operations (LGO) program, with a focus on leadership that blends theory and practice. During their first summer in the program, students reflect on exemplary leaders’ stories in cases, the arts, journalism, philosophy, and social science, and evaluate their own previous leadership experience. During the succeeding four semesters, they apply the lessons they have learned in class to their off-campus internship and other activities at Sloan, and intensively review that experience as they reach the end of the program. Classes take the form of moderated discussion, with the expectation that students will participate fully in each session; students also submit short, written deliverables throughout the program.
L. Hafrey

15.318 Discovering Your Leadership Signature
Prereq: None
G (Fall; second half of term)
3-0-6 units
Credit cannot also be received for 15.739
Provides the tools to better understand an individual's unique way of leading, i.e., one’s leadership signature. Involves intensive self-assessment and interactive exercises aimed to identify the leadership patterns that help and hinder one’s ability to make change happen. Focuses on identifying core leadership strengths and weaknesses, immunity to change, and developing one’s leadership signature. Explores alternative leadership approaches in order to determine capabilities to emulate and plan changes in behavior moving forward. Readings from psychology, family systems, developmental psychology, and leadership literature augment analyses.
D. Ancona
15.320 Strategic Organizational Design
Prereq: None
G (Fall)
3-0-6 units
Focuses on effective organizational design in both traditional and innovative organizations, with special emphasis on innovative organizational forms that can provide strategic advantage. Topics include when to use functional, divisional, or matrix organizations; how IT creates new organizational possibilities; examples of innovative organizational possibilities, such as democratic decision-making, crowd-based organizations, and other forms of collective intelligence. Team projects include inventing new possibilities for real organizations.
T. Malone

15.321 Improvisational Leadership: In-the-Moment Leadership Skills
Prereq: None
G (Fall, Spring; second half of term)
3-0-3 units
Designed to provide a practical understanding of the skills of improvisation and their application to leadership. Examines the essential elements of successful leadership, including creativity, emotional intelligence, adaptability, and the capacity to develop effective influence strategies and build strong teams. Cultivates students' ability to respond to the unexpected with confidence and agility. Each class offers a highly experiential learning laboratory where students practice a wide variety of improvised business scenarios, interactive exercises, and simulations.
D. Giardella

15.322 Leading Organizations
Prereq: None
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Fall; first half of term)
3-0-3 units
Credit cannot also be received for 15.716
Analyze through lectures, discussions, and class exercises, the human processes underlying organizational behavior. Restricted to Sloan Fellow MBAs.
J. Van Maanen

15.323 Leading from the Middle
Prereq: None
G (Spring; second half of term)
2-0-1 units
Students and Leaders for Global Operations (LGO) alumni develop and present case studies that focus on the challenges and opportunities of leading from positions in the middle of an organization. Restricted to Leaders for Global Operations program students.
L. Hafrey

15.324 Practical leadership
Prereq: None
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring; second half of term)
3-0-3 units
Strengthens leadership capacities through reflection, practice and feedback. Students use readings, role plays, experiential exercises, self-reflection, and reviews of their own videos, as well as focused coaching and feedback, to optimize their own leadership capabilities. Focuses on individual leadership growth. Culminates with submission of a written summary of students’ reflections and experiences around leadership from throughout the term.
P. Bentley

15.325 Seminar in Leadership I
Prereq: None
G (Fall; second half of term)
2-0-1 units
Provides students opportunities to meet senior executives of private and public institutions, and discuss key management issues from the perspective of top management. Students prepare detailed briefings identifying and analyzing important management issues facing these organizations. Restricted to Sloan Fellow MBAs.
Consult Staff

15.326 Seminar in Leadership II
Prereq: 15.325
G (Spring; second half of term)
2-0-1 units
Continuation of 15.325, providing students opportunities to meet senior executives of private and public institutions, including current or former policymakers, and discuss challenges associated with the management of country and global affairs. Restricted to Sloan Fellow MBAs.
Staff
15.328 Seminar in Organizational Studies
Prereq: None
G (Summer)
Units arranged
Can be repeated for credit.
Group study of current topics related to organizational studies.
Consult D. G. Ancona

15.329 Seminar in Organizational Studies
Prereq: None
G (Spring)
Not offered regularly; consult department
Units arranged
Can be repeated for credit.
Group study of current topics related to organizational studies.
Consult D. G. Ancona

15.339 Developing Leadership Capabilities
Prereq: Permission of instructor
G (IAP)
2-0-4 units
Focuses on the key leadership capabilities needed in today’s increasingly decentralized organizations: sensemaking, relating, visioning, and inventing. Through conceptual discussions, small group exercises, and self-reflection in a workshop setting, students examine a model of leadership, assess their leadership strengths and weaknesses, articulate their values and aspirations, and practice developing leadership capabilities in interaction with class members. Admission by application.
T. Malone, W. Orlikowski

15.341 Individuals, Groups, and Organizations
Prereq: Permission of instructor
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring)
3-0-9 units
Covers classic and contemporary theories and research related to individuals, groups, and organizations. Designed primarily for doctoral students in the Sloan School of Management who wish to familiarize themselves with research by psychologists, sociologists, and management scholars in the area commonly known as micro organizational behavior. Topics may include motivation, decision making, negotiation, power, influence, group dynamics, and leadership.
J. Curhan

15.342 Organizations and Environments
Prereq: Permission of instructor
G (Fall)
3-0-9 units
Provides an introduction to research in “organizations and environments,” an interdisciplinary domain of inquiry drawing primarily from sociology, and secondarily from economics, psychology, and political science. Seeks to understand organizational processes and outcomes in the surrounding economic, cultural, and institutional context in which they are situated. Also provides an introduction to the main groups that together form the Behavioral Policy Sciences (BPS) area of MIT/Sloan, including economic sociology, organization studies, work and employment, strategic management, global management, and technology, innovation, and entrepreneurship. Consists of four modules taught by faculty from each of the four BPS groups, as well as integrative sessions taught by the main instructor. Preference to first-year doctoral students in BPS.
R. Reagans

15.345 Doctoral Proseminar in Behavioral and Policy Sciences
Prereq: Permission of instructor
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring)
2-0-4 units
Can be repeated for credit.
A professional seminar for doctoral students to report on their research, work on their thesis proposals, and practice their job talks. Also addresses general professional issues such as publishing, searching for jobs, the academic career, etc.
J. Carroll

15.347 Doctoral Seminar in Research Methods I
Subject meets with 21A.809
Prereq: Permission of instructor
G (Spring)
3-0-9 units
Introduces the process of social research, emphasizing the conceptualization of research choices to ensure validity, relevance, and discovery. Includes research design and techniques of data collection as well as issues in the understanding, analysis, and interpretation of data.
M. Amengual
15.348 Doctoral Seminar in Research Methods II
Prereq: 15.347 or permission of instructor
G (Fall)
3-0-6 units
Builds on 15.347 to examine contemporary social research methods in depth. Focuses on making students familiar with the most important quantitative methods (e.g., logit/probit models, models for ordinal and nominal outcomes, count models, event history models).
E. J. Castilla

Technology, Innovation and Entrepreneurship

15.350 Managing Technological Innovation and Entrepreneurship
Prereq: None
G (Spring)
Not offered regularly; consult department
3-0-6 units
Focuses on the challenges inherent in attempting to take advantage of both incremental innovation and more radical or breakthrough changes in products, processes and services. Highlights the importance of innovation to both new ventures and to large established firms and explores the organizational, economic and strategic problems that must be tackled to ensure innovation is a long term source of competitive advantage. Discussions and class presentations cover non-technical as well as technology-based innovation. Restricted to MIT Sloan Fellows in Innovation and Global Leadership.
Staff

15.351[J] Introduction to Making
Same subject as 2.351[J]
Prereq: Permission of instructor
G (Fall, Spring)
3-0-3 units
Provides basic skills and knowledge with a set of core maker technologies that form a broad foundation for creating prototypes. Fosters an understanding of how to make the abstract concrete. Includes a large experiential component that builds skills in the various elements of making. Enrollment limited; application required.
M. Culpepper, M. Cameron, A. Jay

15.356 Product and Service Development in the Internet Age
Prereq: None
G (Spring; second half of term)
4-0-5 units
Explains both the theory behind novel innovation development methods, and how they can be profitably used in practice. Covers lead user searches, internet-based crowdsourcing, design by customers using innovation toolkits, and more. Includes visits from industry experts who present cases that illustrate the art required to implement each method.
E. A. von Hippel

15.357 Economics of Ideas, Innovation and Entrepreneurship
Prereq: None
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Fall)
3-0-6 units
Advanced subject in the economics of technological change. Covers the micro-foundations of the knowledge production function (including the role of creativity and the impact of Science), the impact of institutions and strategic interaction on the commercialization of new technology, and the diffusion and welfare impact of ideas and technology. Includes a mixture and explicit comparisons of both theoretical and empirical research. Students should have adequate preparation in microeconomic theory and econometrics. Primarily for PhD students.
P. Azoulay, S. Stern

15.358 Platform Strategy and Entrepreneurship
Prereq: 15.900 or 15.902
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring)
3-0-6 units
Considers key strategic concepts and ideas useful for managers and entrepreneurs, especially the distinction between a product versus a platform strategy as well as product versus a service strategy. Takes a relatively deep dive into various hardware and software technologies that have stimulated new platforms and business models as well as applications and startup companies in a variety of fields. Topics may include enterprise Software as a Service, blockchain, Gig/sharing economy ventures, AI/ML in self-driving technology and other enterprise applications, cybersecurity, Industrial Internet of Things, and Quantum Computing. Classes consist of lectures, case studies, guest lectures, videos, and weekly student team presentations as well as final papers.
M. Cusumano
15.359[J] Engineering Innovation: Moving Ideas to Impact
Same subject as 6.901[J]
Prereq: None
U (Fall)
3-3-6 units
Provides students the perspective of a Chief Technology Officer of a start-up, large corporation, or a not-for-profit. Details the innovation process, from an idea's inception through impact in the economy, regardless of organizational setting. Explores how solutions are developed to become ready for broader market deployment. Includes testing and development of the problem-solution fit, probing of solutions for robustness, and testing of both technical and operational scaling of proposed solutions. Examines the human aspects of innovation, specifically issues of team building and readiness. Considers the broader system for innovation, including the role of key stakeholders in shaping its success in order to arrive at an impactful solution. Addresses intellectual property, the effect of regulations and social and cultural differences across varied global markets, and the personal skillset necessary to align and manage these issues.
V. Bulovic, F. Murray

15.360 Introduction to Technological Entrepreneurship
Prereq: Permission of instructor
G (Fall)
2-0-1 units
Provides an overview of entrepreneurial knowledge for founding, developing and growing new enterprises, primarily focused on companies with a technological base. Aimed at students who are enthusiastic about possible careers as entrepreneurs or "joiners" in early-stage firms. Weekly lectures and discussions by academic and practitioner faculty in the MIT Entrepreneurship Program and by leaders of related MIT entrepreneurship activities, e.g., Trust Center for MIT Entrepreneurship, Deshpande Center, and Venture Mentoring Service, as well as by successful entrepreneurs and venture capitalists. Includes student Open Mic presentations and discussion of new business ideas, as well as project study of existing young companies. Enrollment in Silicon Valley Study Tour for the following spring term is required. No listeners; restricted to students in Sloan Entrepreneurship and Innovation (EI) MBA track.
E. Roberts

15.361 Executing Strategy for Results
Prereq: None
G (Fall; first half of term)
Not offered regularly; consult department
3-0-6 units
Credit cannot also be received for 15.711
Provides students an alternative to the mechanistic view of strategy execution that reframes an organization as a complex network of teams continuously adjusting to market conditions and to other teams. Introduces the Flexible Execution Model, consisting of seven elements: strategy for execution, shared context, goals 2.0, resource re-allocation, distributed leaders, top leaders, and execution culture that together shape how well an organization executes its strategy. Discusses a set of practical tools, based on research and field-tested, that help leaders achieve their organizations' strategic priorities. Explores novel ways to use data including surveys, Glassdoor reviews, and other sources to measure strategy execution and identify what is and is not working. Preference given to Master of Business Administration students.
D. Sull

15.363[J] Strategic Decision Making in the Life Sciences
Same subject as HST.971[J]
Prereq: None
G (Spring)
3-0-6 units
Surveys key strategic decisions faced by managers, investors and scientists at each stage in the value chain of the life science industry. Aims to develop students' ability to understand and effectively assess these strategic challenges. Focuses on the biotech sector, with additional examples from the pharmaceutical and medical device sectors. Includes case studies, analytical models, and detailed quantitative analysis. Intended for students interested in building a life science company or working in the sector as a manager, consultant, analyst, or investor. Provides analytical background to the industry for biological and biomedical scientists, engineers and physicians with an interest in understanding the commercial dynamics of the life sciences or the commercial potential of their research.
J. Fleming, A. Zarur
15.364 Innovation Ecosystems for Regional Entrepreneurship Acceleration Leaders (iEco4REAL)
Prereq: None
G (Spring)
3-0-6 units
Credit cannot also be received for 15.3641

Aimed at students seeking an action-oriented understanding of innovation ecosystems, such as Silicon Valley, Greater Boston, Singapore, Lagos, and other sites across the globe. Provides a framework for analyzing these critical innovation economies from the perspective of key stakeholders: large corporations, governments, universities, entrepreneurs, and risk capital providers. Outlines the design and delivery of policies and programs (e.g., hackathons, accelerators, prizes, tax policy, immigration policy) intended to accelerate innovation-driven entrepreneurship in an ecosystem. Focuses on how these programs can be used to drive corporate innovation and entrepreneurship and build stronger cultures of innovation. Meets with 15.3641 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.

P. Budden, F. Murray

15.366 Energy Ventures
Prereq: 15.910, (5.00[J] or 22.811[J]), and (10.807[J] or 15.390)
G (Fall)
3-0-9 units

Project-based approach to innovation and venture creation in the energy sector. Explores how innovation and entrepreneurial concepts apply (or do not apply) to the significant opportunities in the industry. Working in teams, students create new ventures specifically for the energy sector. Lectures guide teams through key elements of their projects. Concurrent enrollment in 15.933 recommended.

T. Hynes, F. O’Sullivan

15.367[J] Healthcare Ventures
Same subject as HST.978[J]
Prereq: None
G (Spring)
3-0-9 units

See description under subject HST.978[J].

M. Gray, Z. Chu

15.368 Disciplined Entrepreneurship Lab
Prereq: None
G (IAP)
1-0-5 units

Project-based course offering the opportunity to experience startup life in a low stakes environment while contributing strategic value to early-stage ventures. Students secure a startup project of their choice or work with a startup pre-selected by the action learning team. Startups represent a range of industries and, while concentrated in the Boston area, may also come from other parts of the US. Students cannot drop course once project commences.

B. Aulet

15.369 Seminar in Corporate Entrepreneurship
Prereq: 15.310 or 15.311
G (Spring)
3-0-6 units

Addresses the practical steps that can be taken to make existing organizations (corporations, non-profits, government, etc.) become more entrepreneurial. Uses a systematic approach to integrate lectures, exercises, guest speakers, and a team project. Application required.

E. Chen, B. Aulet
**15.371[J] Innovation Teams**  
Same subject as 10.807[J]  
Prereq: None  
G (Fall)  
4-4-4 units  
Introduces skills and capabilities for real-world problem solving to take technology from lab to societal impact: technical and functional exploration, opportunity discovery, market understanding, value economics, scale-up, intellectual property, and communicating/working for impact across disciplines. Students work in multidisciplinary teams formed around MIT research breakthroughs, with extensive in-class coaching and guidance from faculty, lab members, and select mentors. Follows a structured approach to innovating in which everything is a variable and the product, technology, and opportunities for new ventures can be seen as an act of synthesis. Teams gather evidence that permits a fact-based iteration across multiple application domains, markets, functionalities, technologies, and products, leading to a recommendation that maps a space of opportunity and includes actionable next steps to evolve the market and technology.  
*L. Perez-Breva, D. Hart*

**15.372 Experimental Innovation Lab**  
Prereq: None  
G (Fall)  
Not offered regularly; consult department  
3-3-3 units  
Develops the skills needed to run randomized experiments (from design through analysis) in business settings in order to help firms innovate and shape their strategy. Provides foundational knowledge related to the basic structure of a good experiment, analysis methods, randomization, and reasons why even well-planned experiments may fail. Working in small teams, students design, run, and present the results of randomized trials with partner companies. Application required.  
*D. Sull, N. Thompson*

**15.373[J] Venture Engineering**  
Same subject as 2.912[J], 3.085[J]  
Prereq: None  
U (Spring)  
3-0-9 units  
Provides an integrated approach to the development and growth of new innovative ventures. Intended for students who seek to leverage their engineering and science background through innovation-driven entrepreneurship. Emphasizes the concept that innovation-driven entrepreneurs must make a set of interdependent choices under conditions of high uncertainty, and demonstrates that venture engineering involves reducing uncertainty through a structured process of experimental learning and staged commitments. Provides deep understanding of the core technical, customer, and strategic choices and challenges facing start-up innovators, and a synthetic framework for the development and implementation of ventures in dynamic environments.  
*S. Stern, E. Fitzgerald*

**15.374 Organizing for Innovation**  
Prereq: None  
G (Fall; second half of term)  
3-0-3 units  
Builds an understanding of what it means for an organization to ‘manage’ innovation. Subject has four parts: the sources of innovation (from the research lab, to local innovation ecosystems, to open innovation); motivating technical or/and creative professionals (incentives, structure, and culture); organizing the innovation process (from the study product development processes to R&D portfolios to building an experimental capacity); and emphasizing the connection between the management of innovation and competitive strategy.  
*P. Azoulay*

**15.375[J] Development Ventures**  
Same subject as EC.731[J], MAS.665[J]  
Prereq: Permission of instructor  
G (Fall)  
3-0-9 units  
See description under subject MAS.665[J].  
*J. Bonsen, A. Pentland, C. Breazeal*
15.376[J] AI for Impact: Solving Societal-Scale Problems
Same subject as MAS.664[J]
Prereq: None
G (Spring)
3-0-6 units
Can be repeated for credit.
See description under subject MAS.664[J].
R. Raskar, J. Bonsen A. Pentland

15.378 Building an Entrepreneurial Venture: Advanced Tools and Techniques
Prereq: Permission of instructor
G (Fall, Spring)
3-1-8 units
Credit cannot also be received for 15.3781

Intensive, project-based subject intended for startup teams already working on building a new, high-impact venture. Applies advanced entrepreneurial techniques to build and iterate a venture in a time-compressed manner. Includes weekly coaching sessions with instructors and peers, as well as highly interactive and customized sessions that provide practical, in-depth coverage on key topics in entrepreneurship. Topics include venture creation, primary market research, product development, market adoption, team and culture, and scaling processes with constrained resources. Meets with 15.3781 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details. Application required; consult instructor. No listeners.
C. Chase, K. Arnold, J. Baum

15.3781 Building an Entrepreneurial Venture: Advanced Tools and Techniques
Prereq: 15.3901 or permission of instructor
U (Spring)
3-1-8 units
Credit cannot also be received for 15.378

Intensive, project-based subject intended for startup teams already working on building a new, high-impact venture. Applies advanced entrepreneurial techniques to build and iterate a venture in a time-compressed manner. Includes weekly coaching sessions with instructors and peers, as well as highly interactive and customized sessions that provide practical, in-depth coverage on key topics in entrepreneurship. Topics include venture creation, primary market research, product development, market adoption, team and culture, and scaling processes with constrained resources. Meets with 15.3781 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details. Application required; consult instructor. No listeners.
C. Chase, K. Arnold, J. Baum

15.382 Managing Innovation in Financial Institutions (New)
Prereq: None
G (Fall)
3-0-6 units
Provides a practical guide to managing financial service firms, such as mutual funds, sovereign funds, banks, insurance companies, and pension plans. Focuses on strategies for adopting innovative products and responding to problems as well as developing appropriate public policies.
R. Pozen

15.385 Innovating for Impact
Prereq: None
G (Fall; first half of term)
3-0-3 units
Provides a structured approach to innovation and entrepreneurship that creates business value while solving social and environmental problems. Covers physical domains of sustainability, e.g., waste, water, food, energy, and mobility, as well as social and human capital domains, such as health and education. Students explore case studies of critical decisions made in the early stages of an enterprise that help determine its impact. Considers perspective and tools applicable to the startup context or to new lines of business in existing enterprises.
J. Jay

15.386 Leading in Ambiguity: Steering Through Strategic Inflection Points
Prereq: None
G (Fall, Spring; second half of term)
3-0-3 units
Develops the skills required to think and lead at the senior, enterprise level of an organization. CEOs and senior leaders from a wide variety of organizations, both public and private, profit and non-profit, large and small, present complex real-life situations. Students are asked to take a position about how they might approach each situation, perhaps using management frameworks they have studied previously. Executives then discuss what they did, or are doing, and reflect on their own journeys as enterprise-level leaders. No listeners.
C. Chilton
15.387 Entrepreneurial Sales
Prereq: None
G (Fall, Spring)
3-0-9 units
Instruction provided in basics of technology sales - making a sales call, designing sales compensation plans, and hiring, managing, and firing sales representatives. Also discusses negotiating large sales transactions, managing international sales organizations, integrating sales teams in acquisitions, and selecting the best go to market model for a company. Considers what comprises a 'startup sales toolkit.'
L. Shipley, K. Arnold, J. Schuchart

15.389 Global Entrepreneurship Lab
Prereq: None
G (Fall)
3-1-8 units
Experiential study of the climate for innovation and determinants of entrepreneurial success. Students work in teams of four with the top management of a company to address a real world business challenge, gaining insight as to how companies build, run, and scale a new enterprise. Focuses primarily on start-ups operating in emerging markets. Restricted to graduate students.
S. Johnson, M. Jester

15.390 New Enterprises
Prereq: None
G (Fall, Spring)
2-2-8 units
Credit cannot also be received for 15.390
Covers the process of identifying and quantifying market opportunities, then conceptualizing, planning, and starting a new, technology-based enterprise. Topics include opportunity assessment, the value proposition, the entrepreneur, legal issues, entrepreneurial ethics, the business plan, the founding team, seeking customers and raising funds. Students develop detailed business plans for a start-up. Intended for students who want to start their own business, further develop an existing business, be a member of a management team in a new enterprise, or better understand the entrepreneur and the entrepreneurial process. Meets with 15.3901 when offered concurrently. Students taking graduate version complete additional assignments.
B. Aulet, C. Catalini, W. Sanchez

15.3901 New Enterprises
Prereq: None
U (Fall, Spring)
2-2-8 units
Credit cannot also be received for 15.390
Covers the process of identifying and quantifying market opportunities, then conceptualizing, planning, and starting a new, technology-based enterprise. Topics include opportunity assessment, the value proposition, the entrepreneur, legal issues, entrepreneurial ethics, the business plan, the founding team, seeking customers, and raising funds. Students develop detailed business plans for a start-up. Intended for students who want to start their own business, further develop an existing business, be a member of a management team in a new enterprise, or better understand the entrepreneur and the entrepreneurial process. Meets with 15.390 when offered concurrently. Students taking graduate version complete additional assignments.
B. Aulet, C. Catalini, W. Sanchez

15.392 Scaling Entrepreneurial Ventures
Prereq: 10.807[J] or 15.390
G (Spring; first half of term)
3-0-3 units
Surveys the personal, institutional and operational challenges involved in scaling an entrepreneurial venture. Discusses both effective and ineffective solutions. Addresses topics such as leadership, culture, operations, governance, and human resources. Includes case studies, site visits, movies, simulations and guest speakers.
E. Cohen, B. Halligan

15.393 The Nuts and Bolts of New Ventures
Prereq: None
G (IAP)
1-0-2 units
Designed to foster an understanding of how to start a new venture (for-profit and social/development). Details the process from an idea's inception to the development of a successful new venture to deliver products and services enabled by the idea. Explores customer identification, the business/economic models, financial projections, legal and operational issues, and financing alternatives and sources. All sessions taught by persons who have actually launched or have been involved in successful ventures.
J. Hadzima
15.394 Entrepreneurial Founding and Teams
Prereq: None
G (Spring)
3-0-6 units
Credit cannot also be received for 15.3941
Explores key organizational and strategic decisions in founding and building a new venture. Through a series of cases, readings, and activities, students examine the trade-offs and consequences of early founder decisions: whom to include in the founding team, how to allocate equity among co-founders, how to determine founder roles, how to hire and motivate early-employees, and whether to involve external investors. Aims to equip students with tools and frameworks to help them understand the implications of early decisions, and to build enduring resources that enable the venture to execute even if the original plan changes substantially. Meets with 15.3941 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
K. Hickey, E. Scott

15.3941 Entrepreneurial Founding and Teams
Prereq: None
U (Spring)
3-0-6 units
Credit cannot also be received for 15.394
Explores key organizational and strategic decisions in founding and building a new venture. Through a series of cases, readings, and activities, students examine the trade-offs and consequences of early founder decisions: whom to include in the founding team, how to allocate equity among co-founders, how to determine founder roles, how to hire and motivate early-employees, and whether to involve external investors. Aims to equip students with tools and frameworks to help them understand the implications of early decisions, and to build enduring resources that enable the venture to execute even if the original plan changes substantially. Meets with 15.3941 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
K. Hickey, E. Scott

15.395 Entrepreneurship Without Borders
Prereq: None
G (Fall; first half of term)
Not offered regularly; consult department
3-0-3 units
Examines opportunities and problems for entrepreneurs globally, including Europe, Latin America, and Asia. Covers linkages between the business environment, the institutional framework, and new venture creation. Special focus on blockchain technology. In addition to discussing a range of global entrepreneurial situations, student groups pick one particular cluster on which to focus and to understand what further development would entail. Classroom interactions based primarily on case studies.
S. Johnson

15.396 Seminar in Entrepreneurship
Prereq: None
G (Spring)
Not offered regularly; consult department
Units arranged
Group study of current topics related to entrepreneurship.
W. Aulet

15.397 Seminar in Entrepreneurship
Prereq: None
G (Fall)
Not offered regularly; consult department
Units arranged
Can be repeated for credit.
Group study of current topics related to high-tech entrepreneurship.
Staff

15.398 Corporations at the Crossroads: The CEO Perspective
Prereq: None
G (Fall, Spring)
2-0-4 units
Focuses on the role of the CEO and the need, as leader, to successfully navigate crossroads (often created by new technologies). Provides a unique opportunity for students to interact with some of the world’s leading CEOs who are invited to participate in each class. The CEOs offer advice and answer questions related to topics such as the responsibilities of the CEO, corporate strategy, career learnings, and advice.
P. Kurzina
**15.399 Entrepreneurship Lab**  
Prereq: None  
G (Fall, Spring)  
2-9-1 units  
Credit cannot also be received for 15.3991

Project-based subject, in which teams of students from MIT and Harvard work with startups on problems of strategic importance to the venture. Popular sectors include software, hardware, robotics, clean technology, and life sciences. Meets with 15.3991 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details. In addition to the regular MIT registration process, students should register at the subject website one month before start of term to facilitate formation of student teams and matching of teams with startup companies.  
*C. Catalini, J. Dougherty*

**15.3991 Entrepreneurship Lab**  
Prereq: None  
U (Fall, Spring)  
2-9-1 units  
Credit cannot also be received for 15.399

Project-based subject, in which teams of students from MIT and Harvard work with startups on problems of strategic importance to the venture. Popular sectors include software, hardware, robotics, clean technology, and life sciences. Meets with 15.399 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details. In addition to the regular MIT registration process, students should register at the subject website one month before start of term to facilitate formation of student teams and matching of teams with startup companies.  
*C. Catalini, J. Dougherty*

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**Finance**

**15.401 Managerial Finance**  
Prereq: None  
G (Fall, Spring)  
4-0-5 units  

Introduction to finance from the perspective of business people and finance professionals. Designed to build effective decision-making skills based on sound financial knowledge, focusing on areas such as day-to-day operational issues and management, launching a startup, or negotiating option bonuses. Provides a firm grounding in the modern financial analysis underlying any decision, through three core themes: determining the value of a project, deciding how to finance a project, and managing its risk. Students also hone their ability to negotiate skillfully and speak intelligently about finance. Meets with 15.417 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.  
*Consult K. Nixon*

**15.402 Corporate Finance**  
Prereq: 15.401  
G (Fall, Spring)  
3-0-6 units  
Credit cannot also be received for 15.418

Provides instruction in the tools and techniques of corporate financial management, from the perspective of the CFO. Primarily uses case studies to present the financial tools needed to make value-enhancing business decisions: how to decide which projects to invest in, how to finance those investments, and how to manage the cash flows of the firm. Topics include capital budgeting, investment decisions and valuation; working capital management, security issues; dividend policy; optimal capital structure; and real options analysis. Meets with 15.418 when offered concurrently.  
*C. Palmer, P. Asquith*

**15.403 Introduction to the Practice of Finance**  
Prereq: None  
G (Fall)  
2-0-1 units  

Explores various career paths within the finance industry, from private equity to public policy, FinTech to social impact, investment banking to investment management, corporate finance to venture capital. Students engage with industry professionals about the challenges they face and how their part of the industry is changing. They also network with peers to discover the challenges and rewards associated with various careers, and explore how coursework connects with industry practice. Restricted to first year MBA students in the Finance Track.  
*T. Bertsekas*
15.414 Financial Management
Prereq: 15.511
G (Fall)
3-0-6 units
Credit cannot also be received for 15.724
Provides a rigorous introduction to corporate finance and capital markets, with an emphasis on applications vital to corporate managers. Exposes students to the major financial decisions made by leaders within a firm and to the ways the firm interacts with investors, with a focus on valuation. Topics include project and company valuation, measuring risk and return, stock pricing, corporate financing policy, the cost of capital, and risk management. Presents a broad overview of both theory and practice. Restricted to Sloan Fellow MBAs.

Staﬀ

15.415 Foundations of Modern Finance
Prereq: None
G (Summer)
6-0-9 units
Core theory of capital markets and corporate finance. Topics include functions and operations of capital markets, analysis of consumption-investment decisions of investors, valuation theory, financial securities, risk analysis, portfolio theory, pricing models of risky assets, theory of eﬃcient markets, as well as investment, ﬁnancing and risk management decisions of ﬁrms. Provides a theoretical foundation of ﬁnance and its applications. Restricted to students in the Master of Finance Program.
L. Kogan, J. Wang

15.417 Laboratory in Investments
Prereq: None
U (Spring)
3-3-9 units. Institute LAB
Introduction to ﬁnance with a lab component that puts theory into practice. Designed to build effective decision-making skills for business and to develop hands-on analytical techniques that are used by investment managers and traders. Lectures provide a ﬁrm grounding in ﬁnancial analysis—determining the value of a decision, deciding how to ﬁnance a project, and assessing its risk. Lab sessions introduce students to modern tools and methods used in ﬁnancial markets. Through team projects, students develop and test asset-pricing models, forecasting methods, and investment strategies using real-world market data. Provides instruction in writing and speaking from a ﬁnancial perspective. Meets with 15.401 when offered concurrently.
P. Mende

15.418 Laboratory in Corporate Finance
Prereq: None. Coreq: 15.501
U (Fall)
4-2-9 units. Institute LAB
Credit cannot also be received for 15.402
Covers the tools and techniques of corporate ﬁnancial management, including investment decisions and valuation; working capital management; ﬁnancing decisions, including security issues; dividend policy; optimal capital structure; and real-options analysis. Laboratory sessions are organized around team projects. Recent projects include valuation of an oil ﬁeld and analysis of a potential merger between two public ﬁrms. Projects require extensive use of ﬁnancial databases. Laboratory sessions also provide instruction on writing and speaking on ﬁnancial topics. Meets with 15.402 when offered concurrently.
S. Myers

15.425 Corporate Finance
Prereq: 15.415
G (Fall)
3-0-6 units
Foundational, applied course providing instruction in the tools and techniques of corporate ﬁnancial management from the perspective of the CFO. Case studies present the ﬁnancial tools needed to make value-enhancing business decisions: how to decide which projects to invest in, how to ﬁnance those investments, and how to manage the cash ﬂows of the ﬁrm. Topics include capital budgeting, investment decisions and valuation; working capital management, security issues; dividend policy; optimal capital structure; and real options analysis. Restricted to students in the Master of Finance Program.
D. Thesmar

15.426[J] Real Estate Finance and Investment
Same subject as 11.431[J]
Prereq: Permission of instructor
G (Fall)
4-0-8 units
See description under subject 11.431[J]. Limited to graduate students.
D. Geltner

15.427[J] Real Estate Capital Markets
Same subject as 11.432[J]
Prereq: 11.431[J] and (15.402 or 15.414)
G (Spring; ﬁrst half of term)
2-0-4 units
See description under subject 11.432[J].
D. Geltner
15.428[J] Tools for Analysis: Design for Real Estate and Infrastructure Development
Same subject as 11.434[J], IDS.720[J]
Prereq: None
G (Spring; second half of term)
2-0-4 units

See description under subject 11.434[J].
D. Geltner, R. de Neufville

15.429[J] Securitization of Mortgages and Other Assets
Same subject as 11.353[J]
Prereq: 11.431[J], 15.401, or permission of instructor
G (Spring)
3-0-6 units

Investigates the economics and finance of securitization. Considers the basic mechanics of structuring deals for various asset-backed securities. Investigates the pricing of pooled assets, using Monte Carlo and other option pricing techniques, as well as various trading strategies used in these markets.
W. Torous

15.431 Entrepreneurial Finance and Venture Capital
Prereq: 15.402, 15.414, or 15.415
G (Fall)
3-0-6 units

Credit cannot also be received for 15.4311, 15.719

Examines the elements of entrepreneurial finance, focusing on technology-based start-up ventures, and the early stages of company development. Addresses key questions which challenge all entrepreneurs: how much money can and should be raised; when should it be raised and from whom; what is a reasonable valuation of a company; and how funding, employment contracts and exit decisions should be structured. Aims to prepare students for these decisions, both as entrepreneurs and venture capitalists. In-depth analysis of the structure of the private equity industry. Meets with 15.431 when offered concurrently. Expectations and evaluation criteria for graduate students will differ from those of undergraduates; consult syllabus or instructor for specific details.
M. Rhodes-Kropf, A. Schoar

15.4311 Entrepreneurial Finance and Venture Capital
Prereq: None
U (Fall)
3-0-6 units

Credit cannot also be received for 15.431, 15.719

Examines the elements of entrepreneurial finance, focusing on technology-based start-up ventures, and the early stages of company development. Addresses key questions which challenge all entrepreneurs: how much money can and should be raised; when should it be raised and from whom; what is a reasonable valuation of a company; and how funding, employment contracts and exit decisions should be structured. Aims to prepare students for these decisions, both as entrepreneurs and venture capitalists. In-depth analysis of the structure of the private equity industry. Meets with 15.431 when offered concurrently. Expectations and evaluation criteria for graduate students will differ from those of undergraduates; consult syllabus or instructor for specific details.
M. Rhodes-Kropf, A. Schoar

15.433 Financial Markets
Subject meets with 15.4331
Prereq: 15.401, 15.414, or 15.415
G (Fall)
3-0-6 units

Provides students with a solid understanding of key financial markets and the empirical skills and tools used to support decision making. Employs an in-depth, empirically-driven exploration of markets, including equity, fixed income, and derivatives. Students apply real-world financial data to test and understand financial models, focusing on key risk factors and risk management concerns in these markets, along with the quantitative tools used to analyze risk. Discusses major institutions and players involved in each market, the evolution of the markets, and issues such as liquidity. Meets with 15.4331 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
Staff
15.4331 Financial Markets
Subject meets with 15.433
Prereq: 15.417
U (Fall)
3-0-6 units

Provides students with a solid understanding of key financial markets and the empirical skills and tools used to support decision making. Employs an in-depth, empirically-driven exploration of markets, including equity, fixed income, and derivatives. Students apply real-world financial data to test and understand financial models, focusing on key risk factors and risk management concerns in these markets, along with the quantitative tools used to analyze risk. Discusses major institutions and players involved in each market, the evolution of the markets, and issues such as liquidity. Meets with 15.433 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details. Preference to Course 15 students.

E. Matveyev

15.434 Advanced Corporate Finance
Prereq: 15.402, 15.414, or 15.415
G (Fall)
3-0-6 units
Credit cannot also be received for 15.434

In-depth application of tools and techniques of corporate financial management. Provides exposure to unique situations faced by modern CFOs that demand a higher level of acumen. Covers complex valuations, static and dynamic capital structure, risk management, and real options. Also considers security design, restructuring, bankruptcy, project financing, corporate control and governance, dividend policy, and international finance issues. Meets with 15.434 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.

E. Matveyev

15.436 Corporate Financial Strategy
Prereq: 15.402 or 15.414
G (Fall, Spring)
3-0-6 units

Case-based subject that bridges theory and practice in corporate finance, exploring the connection between finance and strategy. Covers a range of transactions and financial engineering steps used by companies to pursue their strategic goals, such as carve-outs, spin-offs and related tools to break up and refocus business assets; special purpose vehicles to raise non-traditional capital and reconfigure corporate assets and operations; diversification as a financial strategy; companies with control setups, such as dual class shares; security issuance decisions; and recapitalizations and strategic use of debt leverage. Students work in study groups to complete regular homework assignments and prepare for class discussion. 15.434 recommended.

N. Gregory
15.437 Options and Futures Markets
Prereq: 15.401, 15.414, or 15.415
G (Spring)
3-0-6 units
Credit cannot also be received for 15.4371

Students develop the economic intuition and technical skills necessary to understand how to use derivatives for investment and risk management purposes, and how to hedge and price them. Topics include determinants of forward and futures prices, hedging and synthetic asset creation with futures, uses of options in investment strategies, relation between puts and calls, option valuation using binomial trees and Monte Carlo simulation, advanced hedging techniques, exotic options, and applications to corporate securities and other financial instruments. Meets with 15.4371 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
D. Lucas

15.4371 Options and Futures Markets
Prereq: 15.417
U (Spring)
3-0-6 units
Credit cannot also be received for 15.437

Students develop the economic intuition and technical skills necessary to understand how to use derivatives for investment and risk management purposes, and how to hedge and price them. Topics include determinants of forward and futures prices, hedging and synthetic asset creation with futures, uses of options in investment strategies, relation between puts and calls, option valuation using binomial trees and Monte Carlo simulation, advanced hedging techniques, exotic options, and applications to corporate securities and other financial instruments. Meets with 15.4371 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
D. Lucas

15.438 Fixed Income Securities and Derivatives
Prereq: 15.401, 15.414, or 15.415
G (Spring)
3-0-6 units

Develops an overall familiarity with fixed income markets and instruments, and a sophisticated understanding of tools - for valuation, and for quantifying, hedging, and speculating on risk. Topics include duration; convexity; modern approaches to modeling the yield curve; interest rate forwards, futures, swaps and options; credit risk and credit derivatives; mortgages; securitization; with applications to recent market and financial policy developments.
D. Lucas

15.439 Investment Management
Prereq: 15.401, 15.414, or 15.415
G (Spring)
3-0-6 units

Focuses on implementing successful investment strategies - blending academic finance with the practice of investment management employed by the world’s most sophisticated (quantitative) investors. Covers the dynamics of behavioral finance and their effects on markets; investment strategies in current use, and how to build and test your own quantitative strategies; portfolio construction and trading, considering transaction costs, risk management, and efficient trade execution; and current trends and regulatory changes. Includes guest lecturers. Requires an understanding of basic statistical and financial concepts.
M. Rothman

15.445 Mergers, Acquisitions and Private Equity
Prereq: 15.515 or 15.516; Coreq: 15.402, 15.414, or 15.415
G (Spring)
3-0-6 units
Credit cannot also be received for 15.4451

Uses case studies to explore the financial aspects of a wide range of corporate mergers and buyout transactions: classic stock and cash mergers; minority squeeze-outs; company sale process and auction design; hostile takeover law and strategy; the structuring, financing and valuation of leveraged buyouts; the structure, history and returns of private equity buyout funds; publicly traded private equity firms; and more. Includes guest lectures on the practices and tools used in private equity and M&A. Students participate in group work, both in and out of class, including a full-term project involving the mock sale of a company. Meets with 15.4451 when offered concurrently. Expectations and evaluation criteria for graduate students will differ from those of undergraduates; consult syllabus or instructor for specific details.
N. Gregory
15.4451 Mergers, Acquisitions, and Private Equity  
Prereq: 15.501; Coreq: 15.418  
U (Spring)  
3-0-6 units  
Credit cannot also be received for 15.445  
Uses case studies to explore the financial aspects of a wide range of corporate mergers and buyout transactions: classic stock and cash mergers; minority squeeze-outs; company sale process and auction design; hostile takeover law and strategy; the structuring, financing and valuation of leveraged buyouts; the structure, history and returns of private equity buyout funds; publicly traded private equity firms; and more. Includes guest lectures on the practices and tools used in private equity and M&A. Students participate in group work, both in and out of class, including a full-term project involving the mock sale of a company. Meets with 15.445 when offered concurrently. Expectations and evaluation criteria for graduate students will differ from those of undergraduates; consult syllabus or instructor for specific details.  
N. Gregory

15.447 International Capital Markets  
Prereq: 15.401, 15.414, or 15.415  
G (Spring)  
3-0-6 units  
Provides a strategic framework for current and future finance leaders - with domestic or multinational startups, established companies, investment banks or asset management firms - for investing and operating in international capital markets. Includes currency markets; measuring and managing exchange rate exposure; exchange rate determination and forecasting; international financial instruments and institutions; international trading strategies; and the dynamics of global financial crises. Incorporates real-world events into interactive discussions.  
J. Parker

15.448-15.449 Seminar in Finance  
Prereq: None  
G (Fall)  
Not offered regularly; consult department  
Units arranged  
Can be repeated for credit.  
Group study of current topics related to finance.  
Staff

15.450 Analytics of Finance  
Prereq: 15.401, 15.414, or 15.415  
G (Spring)  
5-0-7 units  
Credit cannot also be received for 15.457  
Introduces a set of modern analytical tools that specifically target financial applications. Topics include statistical inference, financial time series, event study analysis, and basic machine learning techniques for forecasting. Focuses on how to apply these tools for financial and macro forecasting, quantitative trading, risk management, and fintech innovations such as Kenso’s “financial answer machine” and big-data lending platforms. 15.457 is a more advanced version of 15.450. Students with solid background in statistics and proficiency in programming are encouraged to register for 15.457.  
H. Chen

15.451 Proseminar in Capital Markets/Investment Management  
Prereq: 15.401, 15.414, or 15.415  
G (Fall)  
2-0-4 units  
Provides a unique opportunity to tackle original research problems in capital market analysis and investment management that have been posed by leading experts from the financial community. Students are assigned to teams, and each team is assigned one such problem. Teams present their solutions at a seminar which is attended by representatives of the sponsoring organization and open to the entire MIT community. Not open to students from other institutions.  
M. Kritzman

15.452 Proseminar in Corporate Finance/Investment Banking  
Prereq: 15.402, 15.414, or 15.415  
G (Fall)  
3-0-3 units  
Action learning experience provides an opportunity to bring theory into practice by tackling problems provided by executives in corporate finance or investment banking. Students work in multi-disciplinary teams (combining MFin, MBA, and Sloan Fellows) to analyze and problem-solve, culminating in reports which the teams present in a group setting for evaluation and feedback. Tests and hones skills at capturing the core of a real-world finance problem and developing a creative and insightful solution that is sensitive to the full context. Students build key communication skills, presenting difficult concepts clearly, concisely, and persuasively. Not open to students from other institutions.  
Staff
15.453 Finance Lab
Prereq: 15.401, 15.414, or 15.415
G (IAP, Spring; first half of term)
3-0-6 units

Bridges theory and practice, providing students with an immersive research and analysis experience during IAP followed by a classroom segment in the first half of spring term. Students work with leading industry practitioners and a diverse cross-section of students on collaborative teams, focusing on topical, real-world finance research questions posed by the practitioners. Teams then deliver a nuanced analysis and report findings, gaining insight and coaching from the experts. Practitioners represent a range of financial institutions, including investment management, hedge funds, private equity, venture capital, risk, and consulting. Examples of project topics include equity and fixed income research, trading, risk analysis, venture capital valuation, private equity due diligence, and fundamental industry analysis. Application required; restricted to MIT students.
G. Rao

15.454 Financial Mathematics
Prereq: None
G (Summer)
3-0-3 units

Covers fundamental mathematics essential for the study of modern finance: probability, stochastic processes, linear algebra, statistics, optimization, and basic programming in R. Restricted to students in the Master of Finance Program.
Staff

15.455 Advanced Mathematical Methods for Financial Engineering
Prereq: None
G (Summer)
3-0-3 units

Covers advanced mathematical topics essential for financial engineering and quantitative finance: linear algebra, optimization, probability, stochastic processes, statistics, and basic programming in R. Covers topics at a more advanced level and at a faster pace than 15.454. Restricted to students in the Master of Finance Program.
P. Mende

15.456 Financial Engineering
Prereq: 15.401, 15.414, or 15.415
G (Fall)
4-0-5 units

Exposes students to the cutting edge of financial engineering. Includes a deep immersion into 'how things work,' where students develop and test sophisticated computational models and solve highly complex financial problems. Covers stochastic modeling, dynamic optimization, stochastic calculus and Monte Carlo simulation through topics such as dynamic asset pricing and investment management, market equilibrium and portfolio choice with frictions and constraints, and risk management. Assumes solid undergraduate-level background in calculus, probability, statistics, and programming and includes a substantial coding component. Students are encouraged but not required to use R for coursework.
L. Kogan, J. Wang

15.457 Advanced Analytics of Finance
Prereq: 15.401, 15.414, or 15.415
G (Spring)
5-0-7 units
Credit cannot also be received for 15.450

Introduces a set of modern analytical tools that specifically target finance applications. Topics include statistical inference, financial time series, event study analysis, and basic machine learning techniques for forecasting. Focuses on how to apply these tools for financial and macro forecasting, quantitative trading, risk management, and fintech innovations such as Kensho’s “financial answer machine” and big-data lending platforms. 15.457 is a more advanced version of 15.450. Students with solid background in statistics and proficiency in programming are encouraged to register for 15.457.
H. Chen

15.458 Financial Data Science and Computing
Prereq: 15.401, 15.414, or 15.415
G (Fall)
3-0-6 units

Covers methods of managing data and extracting insights from real-world financial sources. Topics include machine learning, natural language processing, predictive analytics, regression methods, and time series analysis. Applications include algorithmic trading, portfolio risk management, high-frequency market microstructure, and option pricing. Studies major sources of financial data, raw data cleaning, data visualization, and data architecture. Provides instruction in tools used in the financial industry to process massive data sets, including SQL, relational and multidimensional databases. Emphasizes computer implementations throughout.
P. Mende
15.466 Functional and Strategic Finance
Prereq: 15.433 or 15.437
G (Spring)
3-0-6 units
Ideal for students pursuing careers in financial services, banking, the public-sector (central banks, ministries of finance) and academics. Applies finance science and financial engineering tools and theory to the design and management of global financial institutions, markets, and the financial system to better understand the dynamics of institutional change and financial product/service design. Focuses on foundational analytical tools students will rely upon throughout their careers - derivative pricing and risk measurement, portfolio analysis and risk accounting, and performance measurement to analyze and implement concepts and new product ideas. Examines the needs of government as user, producer, and overseer of the financial system, and how tools are applied to measure and manage risks in financial crises (e.g., 1973-1975 vs. 2007-2009). A high comfort level working through rigorous mathematical analyses is recommended. Preference to MBA and MFin students. 
R. Merton

15.467 Asset Management, Lifecycle Investing, and Retirement Finance
Prereq: 15.433
G (Spring)
3-0-6 units
Built for students focused on financial services careers - professional asset management, financial product design, trading, sales, consulting, or regulatory oversight of the financial industry. Applies finance science and financial engineering tools and theory to asset management, lifecycle investing, and retirement finance. Focuses on foundational analytical tools students will rely upon throughout their careers - derivative pricing and risk measurement, portfolio analysis and risk accounting, and performance measurement to analyze and implement concepts and new product ideas. Students should be familiar with basic portfolio-selection theory, CAPM, options, futures, swaps and other derivative securities. Preference to MBA and MFin students.
R. Merton

15.470[J] Asset Pricing
Same subject as 14.416[J]
Prereq: None
G (Fall)
4-0-8 units
L. Kogan, L. Schmidt

15.471[J] Corporate Finance
Same subject as 14.441[J]
Prereq: None
G (Spring)
3-0-9 units
Provides an introduction to the basic theoretical and empirical contributions in corporate finance. Exposes students to the key methodological tools in modern corporate finance. Covers capital structure, corporate governance, agency problems, incomplete financial contracting, the market for corporate control, product market corporate finance interactions, corporate reorganization and bankruptcy, banking, and other selected topics. Primarily for doctoral students in finance, economics, and accounting.
A. Schoar, D. Thesmar

15.472[J] Advanced Asset Pricing
Same subject as 14.442[J]
Prereq: None
G (Fall)
3-0-9 units
Focuses on solving, estimating, and empirically evaluating theoretical models of asset prices and financial markets, as well as their microeconomic foundations and macroeconomic implications. Discusses theory and econometric methods, the state of the literature, and recent developments and empirical evidence. Covers topics such as cross-sectional and time-series models, consumption-based and intermediary-based models, financial institutions, household finance, housing, behavioral finance, financial crises, and continuous-time tools and applications. Students complete a short term paper and a presentation. Primarily for doctoral students in finance, economics, and accounting.
A. Verdelhan
15.473[J] Advanced Corporate Finance
Same subject as 14.440[J]
Prereq: None
G (Spring)
3-0-9 units

This course builds on 15.471[J] and considers further topics that are at the frontier of corporate finance research. Topics covered include: structural estimation of corporate finance models, financial intermediation, corporate taxation, aggregate effects of financing frictions, corporate finance with irrational managers or irrational investors and entrepreneurial finance (young firm dynamics, venture capital and private equity). Primarily for doctoral students in finance, economics, and accounting.
D. Thesmar, A. Schoar

15.474[J] Current Topics in Finance
Same subject as 14.448[J]
Prereq: None
G (Spring)
3-0-9 units
Can be repeated for credit.

Faculty present their current research in a wide variety of topics in finance. Provides a rapid overview of the literature, an in-depth presentation of selected contributions, and a list of potential research ideas for each topic. Faculty rotate every year to cover new topics. Primarily for doctoral students in accounting, economics, and finance.
Staff

15.475[J] Current Research in Financial Economics
Same subject as 14.449[J]
Prereq: Permission of instructor
G (Fall, Spring)
3-0-3 units

Advanced seminar intended for PhD students interested in finance. Topics and papers vary by term, following the latest research in academia and in correlation with the weekly finance faculty research seminar. Each week, students will critically review the contributions, method of analysis, and presentation of evidence of existing research; one session is devoted to preparing for the finance seminar, while the other session discusses further work on the same topic. Restricted to doctoral students.
Staff

15.480[J] Science and Business of Biotechnology
Same subject as 7.546[J], 20.586[J]
Prereq: None. Coreq: 15.401, permission of instructor
G (Spring)
3-0-6 units

Covers the new types of drugs and other therapeutics in current practice and under development, the financing and business structures of early-stage biotechnology companies, and the evaluation of their risk/reward profiles. Includes a series of live case studies with industry leaders of both established and emerging biotechnology companies as guest speakers, focusing on the underlying science and engineering as well as core financing and business issues. Students must possess a basic background in cellular and molecular biology.
A. Lo, H. Lodish

15.481[J] Financial Market Dynamics and Human Behavior
Same subject as 6.935[J]
Prereq: 15.401, 15.414, or 15.415
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring)
4-0-5 units

Drawing on the latest research in psychology, evolutionary biology, neuroscience, and artificial intelligence, as well as in behavioral and mainstream financial economics, provides new perspectives and insights into the role that human behavior plays in the business environment and the dynamics of financial markets and institutions. Incorporates practical applications from several industries including finance, insurance, biotechnology, pharmaceuticals, and government policy. Students apply ideas from this perspective to formulate original hypotheses regarding new career opportunities and disruptive technologies in their industry of choice.
A. Lo

15.482 Healthcare Finance
Prereq: 15.401, 15.414, 15.415, or permission of instructor
G (Fall)
3-0-6 units

Covers the role of finance in the biotech and pharmaceutical industries; specifically, the application of novel financing methods and business structures to facilitate drug discovery, clinical development, and greater patient access to high-cost therapies. Topics include basic financial analysis for the life-sciences professional; risks and returns in the biopharma industries; the mechanics of biotech startup financing; capital budgeting for biopharma companies; and applications of financial engineering in modern healthcare investment strategies and institutions. Develops a systemic framework for addressing the biggest challenges in the biomedical ecosystem.
A. Lo
15.483 Consumer Finance and FinTech
Prereq: 15.401, 15.414, or 15.415
G (Spring; first half of term)
3-0-6 units
Explores consumer finance and the ways in which financial innovation and new technologies disrupt the financial services industry, leading to material change in business models, product design and customer user interfaces. Provides a solid understanding of rational and behavioral aspects of consumer decision-making and how the players, products, funding markets, regulatory frameworks, and fundamentals all interact to shape ever-changing consumer financial markets, including consumer debt, investment, transactions, and advising markets. Covers past and current innovations and technologies ranging from peer-to-peer lending, AI, deep learning, cryptocurrencies, blockchain technology, and open API’s, to the role of FinTech startups. A combination of case studies, guest speakers and group discussion provide real-world insight and interactivity, while special review sessions help hone technical skills.
G. Gensler, J. Parker

15.492 Practice of Finance: Crypto Finance
Prereq: None
G (Spring; second half of term)
3-0-3 units
Explores the markets for cryptocurrencies, such as Bitcoin. Begins with the basics and economics of crypto assets’ underlying blockchain technology and then turns to the trading and markets for cryptocurrencies, initial coin offerings, other tokens and crypto derivatives. Students gain an understanding and comparison to traditional finance of the market structure, participants, regulation and dynamics of this relatively new and volatile asset class.
G. Gensler

15.493 Practice of Finance: Perspectives on Investment Management
Prereq: 15.402, 15.414, or 15.415
G (Fall, Spring; second half of term)
3-0-3 units
Provides an overview of the investment management industry and an introduction to business fundamentals and valuation. Students read company analyst reports, write papers analyzing various companies, and complete an in-depth company analysis as a final paper. Includes presentations by outside speakers in the investment management industry. Class attendance is mandatory.
J. Shames

15.496 Practice of Finance: Data Technologies for Quantitative Finance
Prereq: 15.401, 15.414, or 15.415
G (Fall)
Not offered regularly; consult department
4-0-5 units
Introduces students to financial market data and to data architecture and design, with applications to asset pricing, quantitative investment strategies, algorithmic trading, portfolio management, and risk management. Studies how data relationships are structured and how to use modern tools and technologies to manipulate, manage, and analyze large-scale financial data sets. Uses real-world data, applications, and cases to illustrate principles and provide practical experience.
P. Mende

15.497 FinTech Ventures
Prereq: None
G (Fall)
3-0-6 units
Designed for entrepreneurial types interested in the FinTech space, this course presents a unique opportunity to work through the nuts and bolts of developing, investing in or acquiring a FinTech startup. Bring your idea and/or team, or find both at class and develop your plan for the final “Demo Day” in front of a group of investors. In each class a new speaker (entrepreneurs, legal experts, venture capitalists) is welcomed who addresses relevant topics, while students present progress reports and receive advice and feedback. Students with an interest in being part of a FinTech startup, regardless of background (legal, financial, computer science, operations, etc.) should apply, individually or as part of a team. JD students from Harvard Law School and technical students from MIT are encouraged to apply. Enrollment by application only. Consult R. Kissinger

15.499 Practice of Finance: Social Impact Investing
Prereq: 15.401, 15.414, 15.415, or permission of instructor
G (Spring; second half of term)
2-0-4 units
Introduces students to social impact investing - an approach intentionally seeking to create financial return and positive social impact that is actively measured. Imparts a solid analytical framework for evaluating the spectrum of social impact investments. Students gain experience in structuring different types of investments, and critically compare and contrast these investments with traditional mainstream investments, with a view to understanding structural constraints. Designed for students interested in the intersection of finance and social impact. Provides career guidance and networking opportunities.
G. Rao
Accounting

15.501 Corporate Financial Accounting
Prereq: None
U (Fall, Spring)
3-0-9 units
Credit cannot also be received for 15.516

Preparation and analysis of financial statements. Focuses on why financial statements take the form they do, and how they can be used in evaluating corporate performance and solvency and in valuation of corporate securities. Introduces concepts from finance and economics (e.g., cash flow discounting and valuation) and explains their relation to, and use in, accounting. Students taking the graduate version complete additional assignments.

15.511 Financial Accounting
Prereq: Permission of instructor
G (Summer)
3-0-6 units
Credit cannot also be received for 15.515, 15.720

Introduces concepts of corporate financial accounting and reporting of information widely used in making investment decisions, corporate and managerial performance assessment, and valuation of firms. Students perform economics-based analysis of accounting information from the viewpoint of the user (especially senior managers) rather than the preparer (the accountant). Restricted to Sloan Fellow MBAs.

J. Weber

15.515 Financial Accounting
Prereq: Permission of instructor
G (Fall)
4-0-5 units
Credit cannot also be received for 15.511, 15.720

An intensive introduction to the interpretation of financial information. Adopts a decision-maker perspective of accounting by emphasizing the relation between accounting data and the underlying economic events generating them. Class sessions are a mixture of lecture and case discussion. Assignments include textbook problems, analysis of financial statements, and cases. Restricted to first-year Sloan master’s students.

J. Core, R. Verdi

15.516 Corporate Financial Accounting
Prereq: Permission of instructor
G (Fall, Spring, Summer)
3-0-9 units
Credit cannot also be received for 15.501

See description under subject 15.501. If subject is oversubscribed, priority is given to Course 15 students.

15.518 Taxes and Business Strategy
Prereq: 15.501, 15.511, 15.515, or 15.516
G (Spring)
3-0-6 units
Credit cannot also be received for 15.5181

Provides conceptual framework for thinking about taxation and decision-making. Topics include taxation of various investments and types of compensation; retirement planning; considerations for choosing organizational form when starting a business; methods of merging, acquiring, divesting business entities; international tax planning strategies; and high wealth planning and estate tax. Applies current debates on tax policy options and recent tax law changes to class discussions. Intended to show how taxes affect individual investment as well as business decisions. Meets with 15.5181 when offered concurrently. Expectations and evaluation criteria for graduate students will differ from those of undergraduates; consult syllabus or instructor for specific details.

M. Hanlon

15.5181 Taxes and Business Strategy
Prereq: 15.501
U (Spring)
3-0-6 units
Credit cannot also be received for 15.518

Provides conceptual framework for thinking about taxation and decision-making. Topics include taxation of various investments and types of compensation; retirement planning; considerations for choosing organizational form when starting a business; methods of merging, acquiring, divesting business entities; international tax planning strategies; and high wealth planning and estate tax. Applies current debates on tax policy options and recent tax law changes to class discussions. Intended to show how taxes affect individual investment as well as business decisions. Meets with 15.518 when offered concurrently. Expectations and evaluation criteria for graduate students will differ from those of undergraduates; consult syllabus or instructor for specific details.

M. Hanlon
15.521 Accounting Information for Decision Makers
Prereq: None
G (Fall, Spring; first half of term)
3.0-3 units
Focuses on how organizations use granular-level information from their accounting systems on a day-to-day basis for two purposes - making decisions and evaluating those decisions after the fact. Emphasizes practical skills that can be applied across various functional areas within organizations.
C. Noe

15.522 Security Design and Corporate Financing
Prereq: 15.401, (15.402 or 15.414), and (15.433 or 15.434)
G (Spring)
Not offered regularly; consult department
3.0-6 units
Examines how corporations choose securities and markets to finance themselves. These are decisions which the firm must make after it has determined its financial policies including capital structure and dividend policy. Subject discusses recent trends in corporate financing including globalization, secularization, and transformation. Explores new securities and institutional factors, particularly tax and accounting factors that affect their design.
P. Asquith

15.535 Business Analysis Using Financial Statements
Prereq: 15.501, 15.511, 15.515, or 15.516; Coreq: 15.401, 15.414, 15.415, or 15.417
G (Fall, Spring)
3.0-6 units
Focuses on the strategic, financial, and accounting analysis of a company by means of historical financial statement data. Also studies financial statement forecasting along with a specific application of forecasting - valuation. Concepts are applied to a number of decision-making contexts, including securities analysis, credit analysis, merger analysis, and company performance assessment.
C. Noe

15.539 Doctoral Seminar in Accounting
Prereq: 15.515
G (Fall, Spring)
Units arranged
Can be repeated for credit.
Designed primarily for doctoral students in accounting and related fields. The reading list consists of accounting research papers. Objective is to introduce research topics, methodologies, and developments in accounting, and train students to do independent research.
J. Weber

15.540 Theory Studies in Accounting Research (New)
Prereq: None
G (Fall, Spring, Summer)
3.0-3 units
Can be repeated for credit.
Exposes PhD students to theoretical foundations of cutting-edge research in accounting. Rotating modules cover topics on disclosure, contracting, compensation, asset pricing, and investments.
E. So, R. Verdi

Information Technologies

15.561 Information Technology Essentials
Prereq: None
G (Spring)
3.0-6 units
Emphasizes programming in scripting languages (e.g., Python, R, spreadsheet) within the context of emerging trends underlying current and future uses of information technology (IT) in business. Provides a solid grasp of programming basics and foundations of computing. Other topics include web technologies, database systems, digital experimentation, crowdsourcing, and machine learning.
A. Almaatouq
15.564 IT Essentials II: Advanced Technologies for Digital Business in the Knowledge Economy
Prereq: None
G (Spring)
Not offered regularly; consult department
3-0-6 units
Technologies and concepts for next generation knowledge management and web e-business, including semantic web and web services. Business applications for use in the next two to seven years, including: e-commerce, marketing, finance, trust/security, health/biomedical, mobile. Strategic impacts and entrepreneurial opportunities. Core skills for identifying and evaluating technologies and their business potential, and for managing innovative IT-dependent projects. Overall emphasis on business process automation and e-services.
S. Madnick

Same subject as IDS.345[J]
Prereq: Permission of instructor
G (Fall)
Not offered regularly; consult department
3-0-6 units
Examines the evolution from Web 2.0, with its emphasis on interactivity through online collaboration and sharing among users (primarily through social networking sites, wikis and communication tools), to Web 3.0, which focuses on high proactivity, transforming the Web into a database, and the leveraging of artificial intelligence technologies, such as the Semantic Web. Introduces Management 3.0 and the range of new Web technologies, applications, and business opportunities and challenges that it supports. Addresses topics such as big data, cloud computing, and cybersecurity. Includes case studies, industry and academic speakers, discussion of basic principles, and a team project.
S. Madnick

15.567 The Economics of Information: Strategy, Structure and Pricing
Prereq: Permission of instructor
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring; first half of term)
3-0-3 units
Analysis of the underlying economics of information with business implications. Studies effects of digitization and technology on business strategy and organizational structure. Examines pricing, bundling, and versioning of digital goods, including music, video, software, and communication services. Considers the economic and managerial implications of data-driven decision-making, search, platform competition, targeted advertising, personalization, privacy, network externalities, and artificial intelligence. Readings on fundamental economic principles provide context for industry speakers and case discussions.
E. Brynjolfsson

15.569 Leadership Lab: Leading Sustainable Systems
Prereq: Permission of instructor
G (Fall, IAP)
Not offered regularly; consult department
6-0-9 units
Addresses key sustainability challenges faced by business and society. Explores alternative ways to view organizations that draw attention to cross-boundary interdependencies and help leaders at all levels develop their capacity to collaborate for systemic change. Develops skills to help students surface and reflect on mental models and practices that keep organizations stuck in unproductive system dynamics. Weaves together theory, experiential practices, guest speakers, and action learning projects that enable teams of students to work with organizations on systemic change initiatives.
P. Senge, W. Orlikowski

15.570 Digital Marketing and Social Media Analytics
Prereq: 15.809, 15.814, or permission of instructor
G (Fall; second half of term)
3-0-3 units
Provides a detailed, applied perspective on the theory and practice of digital marketing and social media analytics in the age of big data. Covers concepts such as the difference between earned and paid media, predictive modeling for ad targeting and customer relationship management, measuring and managing product virality, viral product design, native advertising, and engaging the multichannel experience. Stresses the theory and practice of randomized experimentation, AB testing and the importance of causal inference for marketing strategy. Combines lectures, case studies, and guest speakers with relevant industry experience that speak directly to the topics at hand.
S. Aral
15.571 Enterprise Transformations in the Digital Economy
Prereq: None
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring)
3-0-6 units

Designed to help students understand how the digital economy forces companies to rethink their business strategies - and architect their processes, products, and information. Explores how firms use technology to create new value propositions and new organizational designs. Includes case studies about large enterprises using IT to transform how they do business; guest executives from those enterprises respond to student discussions. Student teams present to company executives the results of their debates on the options available for applying technology in ways that cut costs, enhance products, and engage customers.

J. W. Ross

15.572 Analytics Lab: Action Learning Seminar on Analytics, Machine Learning, and the Digital Economy
Prereq: Permission of instructor
G (Fall)
2-0-7 units

Student teams design and deliver a project based on the use of analytics, machine learning, large data sets, or other digital innovations to create or transform a business or other organization. Teams may be paired up with an organization or propose their own ideas and sites for the project. Culminates with presentation of results to an audience that includes IT experts, entrepreneurs, and executives.

S. Aral, E. Brynjolfsson

15.575 Economics of Information and Information Technology
Prereq: Permission of instructor
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Fall)
3-0-9 units

Builds upon relevant economic theories and methodologies to analyze the changes in organizations and markets enabled by digital technologies. Examines information economics, labor economics, industrial organization and price theory, growth theory, intangible asset valuation, incomplete contracts theory, and design of empirical studies. Extensive reading and discussion of research literature explores the application of these theories to business issues with relevant guest speakers. Students will complete a final research paper and presentation. Primarily for doctoral students.

E. Brynjolfsson

15.576 Research Seminar in Information Technology and Organizations: Social Perspectives
Prereq: Permission of instructor
Acad Year 2020-2021: G (Spring)
Acad Year 2021-2022: Not offered
3-0-9 units

Examines the assumptions, concepts, theories, and methodologies that inform research into the social aspects of technology. Extensive reading and discussion of research literature aimed at exploring the multiple social phenomena surrounding the development, implementation, use and implications of information technology in organizations. Primarily for doctoral students.

W. J. Orlikowski

15.579 Seminar in Information Technology
Prereq: None
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Fall)
Units arranged
Can be repeated for credit.

Group study of current topics related to information technology.

S. Aral, S. E. Madnick, T. W. Malone

15.579-15.580 Seminar in Information Technology
Prereq: None
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring)
Units arranged
Can be repeated for credit.

Group study of current topics related to information technology.

S. E. Madnick, T. W. Malone, W. Orlikowski

15.599 Workshop in Digitization
Prereq: Permission of instructor
G (Fall)
Not offered regularly; consult department
2-0-4 units
Can be repeated for credit.

Presentations by faculty, doctoral students, and guest speakers of ongoing research relating to current issues in digitization, technology and the changing economics of work, as well as discussions of key research papers in the field. Specific topics determined by the interest of participants and by new and important directions in digitization, information technology and information economics. Background readings, regular assignments and active participation by students expected. Preference to doctoral students.

E. Brynjolfsson
Law

15.615 Essential Law for Business
Prereq: None
G (Fall, Spring)
3-0-6 units

Provides a solid grounding in what managers need to know about how law shapes opportunities and risks for the businesses they manage and their own careers. Enhances leadership skills for navigating critical law-sensitive junctures that managers encounter in young and mature companies. Explores the legal frameworks of organizing a new venture; contracts and deals; litigation and liability; employment and changing jobs; regulation and criminal sanctions; complex transactions, including public and private mergers and acquisitions; finance and private equity; distress, reorganization, and bankruptcy; and effective use of IP and cutting-edge technologies. No prior knowledge of law expected.

J. Akula, L. Rodriques

15.616 Basic Business Law, Tilted Towards Key Emerging Issues
Prereq: None
G (Fall)
Not offered regularly; consult department
3-0-6 units

Broad-gauged introduction to business law designed to prepare managers to exercise judgment and leadership when confronting key law-sensitive issues of importance to their organizations and their own careers. Topics include contracts, liability, employment, changing jobs, intellectual property, business disputes, bankruptcy and reorganization, acquisitions, regulatory compliance, and corporate crime. The distinctive feature of 15.616 is an additional focus on newly-emerging, law-sensitive issues of key significance to business. Those topics vary from year to year; some recent examples include doing business in the BRIC nations, and the legal framework of social media.

J. Akula

15.617 Deals, Finance, and the Law
Prereq: None
G (Spring)
Not offered regularly; consult department
3-0-6 units
Credit cannot also be received for 15.6171

Addresses law-sensitive issues arising in the overlapping contexts of complex deals and financial services and products. Covers financial services regulation, employment and job changes, and civil and criminal accountability. Develops managerial skills for handling law-sensitive situations at individual and organizational levels. Meets with 15.6171 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.

J. Akula

15.6171 Deals, Finance, and the Law
Prereq: None
U (Spring)
Not offered regularly; consult department
3-0-6 units
Credit cannot also be received for 15.617

Addresses law-sensitive issues arising in the overlapping contexts of complex deals and financial services and products. Covers financial services regulation, employment and job changes, and civil and criminal accountability. Develops managerial skills for handling law-sensitive situations at individual and organizational levels. Meets with 15.617 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.

J. Akula

15.618 Entrepreneurship, Innovation, Startups and the Law
Prereq: None
G (Fall, Spring)
2-0-4 units
Credit cannot also be received for 15.6181

The legal framework of entrepreneurship and innovation. Key law-sensitive junctures in launching and growing a startup: assembling a team, organizing a business entity, ownership and compensation, early financing, managing contracts and employees, business distress and winding down, and selling a company. Cutting-edge technologies and intellectual property rights. Designed for those who may start or work in such ventures; or are engaged in research with potential for commercial or social impact; or are otherwise attempting to advance an innovation from idea to impact. No prior knowledge of law expected. Meets with 15.6181 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version.

J. Akula
15.6181 Entrepreneurship, Innovation, Startups and the Law
Prereq: None
U (Fall, Spring)
2-0-4 units
Credit cannot also be received for 15.618

The legal framework of entrepreneurship and innovation. Key law-sensitive junctures in launching and growing a startup: assembling a team, organizing a business entity, ownership and compensation, early financing, managing contracts and employees, business distress and winding down, and selling a company. Cutting-edge technologies and intellectual property rights. Designed for those who may start or work in such ventures; or are engaged in research with potential for commercial or social impact; or are otherwise attempting to advance an innovation from idea to impact. No prior knowledge of law expected. Meets with 15.6181 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version.

J. Akula

15.620 Patent Law Fundamentals
Prereq: None
G (IAP)
1-0-2 units

Intensive introduction to the basic provisions of US patent law, emphasizing the requirements for patentability and the process of applying for a patent. Topics include requirements of utility, novelty, and non-obviousness; eligible subject matter; applying for a patent, including patent searches and the language of patent claims; infringement, defenses, and remedies; comparison of patents with other forms of intellectual property (copyrights, trade secrets, and trademarks). Reading materials include key sections of the US patent statute (Title 35, US Code) and related judicial decisions.

J. Meldman

15.621 Your Career and the Law: Key Junctures, Opportunities and Risks
Prereq: None
G (Fall; second half of term)
2-0-4 units

Explores legal opportunities and risks in employment from the perspectives of both employees and managers. Special attention to issues faced by tech-savvy employees and tech-intensive ventures; employees starting competing ventures; compensation and equity arrangements; the challenges of the gig economy; employee privacy; and discrimination, gender and other inclusion-related issues in the workplace. Led by former practicing attorneys, focuses on how employment law issues play out in the real world. Utilizes realistic scenarios and documents, such as offer letters and non-competition and invention assignment agreements. No prior knowledge of law expected.

J. Akula, L. Rodriques

15.622 The Law of AI, Big Data & Social Media
Prereq: None
G (Spring)
2-0-4 units
Credit cannot also be received for 15.6221

Focuses on the emerging legal framework of cutting-edge digital technologies, including AI and machine learning, big data and analytics, blockchain, and the internet and social media. Discusses how the law impacts the development, application and commercialization of these technologies, and how emerging legal principles are being shaped by the policy and ethical debates raised by the technologies’ profound economic, political and cultural impacts, both beneficial and mischievous. Addresses intellectual property rights in innovations. Special attention to the perspectives of those planning careers built on cutting-edge skills or innovations, and managers and commercial and social entrepreneurs engaged in efforts to bring innovations from ideas to impact. Meets with 15.6221 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.

J. Akula, L. Rodriques
15.6221 The Law of AI, Big Data & Social Media
Prereq: None
U (Spring)
2-0-4 units
Credit cannot also be received for 15.622
Focuses on the emerging legal framework of cutting-edge digital technologies, including AI and machine learning, big data and analytics, blockchain, and the internet and social media. Discusses how the law impacts the development, application and commercialization of these technologies, and how emerging legal principles are being shaped by the policy and ethical debates raised by the technologies’ profound economic, political and cultural impacts, both beneficial and mischievous. Addresses intellectual property rights in innovations. Special attention to the perspectives of those planning careers built on cutting-edge skills or innovations, and managers and commercial and social entrepreneurs engaged in efforts to bring innovations from ideas to impact. Meets with 15.622 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
J. Akula, L. Rodriques

15.647-15.649 Seminar in Law
Prereq: None
G (Fall)
Not offered regularly; consult department
Units arranged
Can be repeated for credit.
Group study of current topics related to law.
J. L. Akula

15.655[J] Law, Technology, and Public Policy
Same subject as IDS.435[J]
Prereq: None
G (Fall)
3-0-9 units
See description under subject IDS.435[J]. Permission of instructor required for freshmen and sophomores.
N. Ashford, C. Caldart

15.657[J] Technology, Globalization, and Sustainable Development
Same subject as 1.813[J], 11.466[J], IDS.437[J]
Prereq: Permission of instructor
G (Fall)
3-0-9 units
See description under subject IDS.437[J].
N. Ashford

Industrial Relations and Human Resource Management

15.660 Strategic Human Resource Management
Prereq: 15.311
G (Spring)
Not offered regularly; consult department
3-0-6 units
Design and execution of human resource management strategies. Two central themes: How to think systematically and strategically about aspects of managing the organization’s human assets, and what really needs to be done to implement these policies and to achieve competitive advantage. Adopts the perspective of a general manager and addresses human resource topics (including reward systems, performance management, high-performance human resource systems, training and development, recruitment, retention, equal employment opportunity laws, work-force diversity, and union-management relationships) from a strategic perspective.
E. J. Castilla

15.661 Building Successful Careers and Organizations
Prereq: None
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring; first half of term)
3-0-3 units
Designed to help students learn more about their strengths, and how they can utilize these strengths to manage their career. Draws on the latest research and practices, experiential exercises, and cases studies, and includes guest speakers. Covers the most important aspects of talent (and career) management. No listeners.
E. Castilla

15.662[J] People and Profits: Shaping the Future of Work
Same subject as 11.383[J]
Prereq: None
G (Spring)
2-2-2 units
Examines managing work in the 21st century as technological advances transform the organization of the firm. Students interview workers and explore leading-edge firms who apply human- and worker-centered design to augment rather than replace people. Draws on materials from the MIT Task Force on Work of the Future and the online course Shaping Work of the Future.
T. Kochan, B. Dyer
15.663[J] Environmental Law, Policy, and Economics: Pollution Prevention and Control
Same subject as 1.811[J], 11.630[J], IDS.540[J]
Subject meets with 1.801[J], 11.021[J], 17.393[J], IDS.060[J]
Prereq: None
G (Spring)
3-0-9 units
See description under subject IDS.540[J].
N. Ashford, C. Caldart

15.665 Power and Negotiation
Prereq: Permission of instructor
G (Fall, Spring)
3-0-6 units
Credit cannot also be received for 15.672, 15.6721, 15.673, 15.6731, 15.712
Provides understanding of the theory and processes of negotiation as practiced in a variety of settings. Designed for relevance to the broad spectrum of bargaining problems faced by the manager and professional. Allows students an opportunity to develop negotiation skills experientially and to understand negotiation in useful analytical frameworks. Emphasizes simulations, exercises, role playing, and cases.
J. Curhan

15.667 Negotiation and Conflict Management
Prereq: Permission of instructor
G (Spring)
Not offered regularly; consult department
3-0-6 units
Applies negotiation theory strategies and styles to problems managers and professionals commonly encounter in the workplace. Emphasizes sources of power in negotiation, self-assessment of personal negotiating strengths/weaknesses, and practice in negotiations via role-plays and simulations of common workplace conflicts. Covers conflict management as a direct party and as a manager helping others resolve their conflicts through mediation, investigation, arbitration, and helping the system itself to change as a result of a dispute. Special cases include bullying, harassment, dealing with difficult people, cross-cultural negotiations, and collective actions.
T. Kochan

15.668 People and Organizations
Prereq: None
U (Spring)
Not offered regularly; consult department
3-0-6 units
Examines the historical evolution and current human and organizational contexts in which scientists, engineers and other professionals work. Outlines major challenges facing the management profession. Uses interactive exercises, simulations and problems to develop critical skills in negotiations, teamwork, and leadership. Focuses on practical application of these skills in a professional context. Introduces concepts and tools to analyze work and leadership experiences in internships, school activities, and fieldwork. Preference to Management minors and other undergraduates not majoring in Management Science.
T. Kochan, P. Osterman

15.669 Strategies for People Analytics
Prereq: 15.311 or permission of instructor
G (Fall; second half of term)
3-0-3 units
Focuses on the strategies used to successfully design and implement people analytics in one’s organization. Draws on the latest company practices, research projects, and case studies - all with the goal of helping students deepen their understanding of how people analytics can be applied in the real world. Covers the most important aspects of human resource management and people analytics. Demonstrates how to apply those basic tools and principles when hiring, evaluating and rewarding performance, managing careers, and implementing organizational change. No listeners.
E. Castilla

15.671 U-Lab: Transforming Self, Business and Society
Prereq: None
G (Fall; first half of term)
3-0-3 units
Experiential opportunity to practice new leadership skills, such as deep listening, being present (mindfulness), and generative dialogue. In weekly coaching circles, each student has one full session to present their current leadership edge and receive feedback from peer coaches. Includes an additional action learning project.
O. Scharmer
15.672 Negotiation Analysis
Subject meets with 15.6721, 15.673, 15.6731
Prereq: Permission of instructor
G (IAP)
1-0-2 units
Credit cannot also be received for 15.665, 15.712

Presents analytical frameworks and strategies to handle a variety
of negotiation situations. Includes simulations, games, videos,
lectures, discussion, and multiple opportunities to practice and hone
negotiation, communication, and influence skills with extensive
personalized feedback. Intended for students with a broad spectrum
of backgrounds and experience levels. Six-unit version includes
additional class time and outside work. Expectations and evaluation
criteria differ for students taking graduate version. Limited to 80 via
lottery; consult class website for information and deadlines.
J. Curhan

15.6721 Negotiation Analysis
Subject meets with 15.672, 15.673, 15.6731
Prereq: Permission of instructor
U (IAP)
1-0-2 units
Credit cannot also be received for 15.665, 15.712

Presents analytical frameworks and strategies to handle a variety
of negotiation situations. Includes simulations, games, videos,
lectures, discussion, and multiple opportunities to practice and hone
negotiation, communication, and influence skills with extensive
personalized feedback. Intended for students with a broad spectrum
of backgrounds and experience levels. Six-unit version includes
additional class time and outside work. Expectations and evaluation
criteria differ for students taking graduate version. Limited to 80 via
lottery; consult class website for information and deadlines.
J. Curhan

15.673 Negotiation Analysis
Subject meets with 15.672, 15.6721, 15.6731
Prereq: Permission of instructor
G (IAP)
2-0-4 units
Credit cannot also be received for 15.665, 15.712

Presents analytical frameworks and strategies to handle a variety
of negotiation situations. Includes simulations, games, videos,
lectures, discussion, and multiple opportunities to practice and hone
negotiation, communication, and influence skills with extensive
personalized feedback. Intended for students with a broad spectrum
of backgrounds and experience levels. Six-unit version includes
additional class time and outside work. Expectations and evaluation
criteria differ for students taking graduate version. Limited to 80 via
lottery; consult class website for information and deadlines.
J. Curhan

15.6731 Negotiation Analysis
Subject meets with 15.672, 15.6721, 15.673
Prereq: Permission of instructor
U (IAP)
2-0-4 units
Credit cannot also be received for 15.665, 15.712

Presents analytical frameworks and strategies to handle a variety
of negotiation situations. Includes simulations, games, videos,
lectures, discussion, and multiple opportunities to practice and hone
negotiation, communication, and influence skills with extensive
personalized feedback. Intended for students with a broad spectrum
of backgrounds and experience levels. Six-unit version includes
additional class time and outside work. Expectations and evaluation
criteria differ for students taking graduate version. Limited to 80 via
lottery; consult class website for information and deadlines.
J. Curhan

15.674][J] Leading Creative Teams
Same subject as 6.928][J], 16.990][J]
Prereq: Permission of instructor
G (Fall, Spring)
3-0-6 units
See description under subject 6.928][J]. Enrollment limited.
D. Nino

15.675 Negotiation Seminar
Prereq: None
G (IAP)
3-0-3 units
Provides understanding of the theory and processes of negotiation
as practiced in a variety of settings. Designed for relevance to the
broad spectrum of bargaining problems faced by the manager
and professional. Allows students an opportunity to develop
negotiation skills experientially and to understand negotiation in
useful analytical frameworks. Emphasizes simulations, exercises,
role playing, and cases. Restricted to Sloan Fellow MBAs.
J. Curhan
15.676 Work, Employment, and Industrial Relations Theory
Prereq: Permission of instructor
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring)
2-0-7 units

Historical evolution and assessment of different theories and disciplinary perspectives used in research on work, employment, and industrial relations. Introduces doctoral students to the field and explores where their research interests fit within the broader field. First part compares the normative assumptions, theories, and methodologies used by economists, historians, sociologists, psychologists, political scientists, and legal scholars from the latter nineteenth century to the present. Final portion explores strategies for advancing research on topics of current interest to participants.
T. Kochan, P. Osterman, E. Castilla, O. Sharone, M. Amengual

15.677[J] Urban Labor Markets and Employment Policy
Same subject as 11.427[J]
Prereq: Permission of instructor
Acad Year 2020-2021: G (Spring)
Acad Year 2021-2022: Not offered
3-0-9 units

Discusses the broader trends in the labor market, how urban labor markets function, public and private training policy, other labor market programs, the link between labor market policy and economic development, and the organization of work within firms.
P. Osterman

15.678[J] Political Economy I: Theories of the State and the Economy
Same subject as 14.781[J], 17.100[J]
Prereq: Permission of instructor
G (Fall)
3-0-9 units
See description under subject 17.100[J].
M. Piore, S. Berger

15.679[J] USA Lab: Bridging the American Divides
Same subject as 11.651[J]
Prereq: None
G (Spring)
3-1-5 units

Practical exploration of community revitalization in America's small towns and rural regions. Focuses on work, community, and culture. Consists of rigorous classroom discussions, research, and team projects with community development organizations. Site visit over SIP week and spring break required for project field work.
B. Dyer, L. Hafrey, T. Kochan

15.681 From Analytics to Action
Prereq: None
G (Fall, Summer)
3-o-3 units

Develops appreciation for organizational dynamics and competence in navigating social networks, working in a team, demystifying rewards and incentives, leveraging the crowd, understanding change initiatives, and making sound decisions. Restricted to Master of Business Analytics students.
R. Fernandez, R. Reagans

15.690 Diversity as Discovery (New)
Prereq: None
U (Fall; first half of term)
3-o-3 units

Aims to help students discover who they are as individuals and members of a community. Course operates under two basic assumptions: that we can accomplish more together than alone, and that a significant part of who we are as individuals is left out of most organizational settings. Confronts the lack of tools and frameworks for dealing with the wealth of diversity among populations, and discusses the value diversity could potentially create.
R. Reagans

15.691 Research Seminar in Work, Employment and Industrial Relations
Prereq: Permission of instructor
G (Fall)
Not offered regularly; consult department
Units arranged
Can be repeated for credit.

Discusses important areas for research in work, employment and industrial relations; frameworks for research, research techniques, and methodological problems. Centered mainly on staff research and the thesis research of advanced graduate students and invited guests.
Consult T. A. Kochan

15.698 Seminar in Industrial Relations and Human Resource Management
Prereq: None
G (Fall)
Not offered regularly; consult department
Units arranged
Can be repeated for credit.

Group study of current topics related to industrial relations and human resource management.
Consult P. Osterman
Executive MBA Subjects

15.700 Leadership and Integrative Management
Prereq: Permission of instructor
G (Fall)
3-0-6 units

Investigates the different perspectives a general manager must take, how to integrate those perspectives, and the role of leadership in setting and realizing goals. Students work intensively in teams and with multiple faculty, using a deep dive into the challenges faced by a major global firm operating in complex global markets. Restricted to Executive MBA students.
Consult J. Hising DiFabio

15.701 Innovation-Driven Entrepreneurial Advantage
Prereq: None. Coreq: 15.714; or permission of instructor
G (Fall, Spring)
6-0-6 units

Exposes students to the content, context, and contacts that enable entrepreneurs to design and launch successful standalone ventures, ventures inside established corporations, and ventures in partnership with established corporations based on new innovations. Students examine the critical entrepreneurial and innovation challenges facing entrepreneurs inside new and established firms, and develop frameworks that allow them to identify, evaluate, iterate, and integrate their ideas effectively. Case-based discussions complemented by visits to key actors in MIT labs, as well as live case studies with successful entrepreneurs. Specially designed team projects provide practical experience in entrepreneurial strategy, innovation management, and the workings of the MIT entrepreneurial ecosystem. Restricted to Executive MBA students.
Consult J. Hising DiFabio

15.702 Leading in a Global Context: Macroeconomics and Global Markets
Prereq: Permission of instructor
G (Fall)
6-0-6 units
Can be repeated for credit.

Intensive module on the global economy, combining the key perspectives of macroeconomics and global economic strategy. Focuses on the policy and economic environment of firms, as well as on the development of a more international market in products, services, and capital, and how this affects trade and industries. Presents insights into national economic strategies for development, and into the evolving rules and institutions governing the international economic order. Develops an actionable appreciation for managers of the international dimensions of economic policy and strategy in an increasingly complex world economy. Restricted to Executive MBA students.
Consult J. Hising DiFabio

15.703 Leading with Impact
Prereq: Permission of instructor
G (Spring)
3-3-3 units

Student teams work with the leadership of local not-for-profits to solve a pressing problem faced by that organization. The problems will vary with the organization in question, as will the skills and capabilities students draw on to appropriately address them. Culminates with group reflection on what it means to be a principled innovative leader who improves the world.
Consult J. Hising DiFabio

15.704 IDEA Lab
Prereq: 15.701
G (Spring)
6-0-9 units

Opportunity to work with interested organizations or on a startup to explore and leverage innovation ecosystems, build greater strength in innovation-driven entrepreneurial advantage, and build a stronger culture of corporate innovation. Faculty and students co-create projects along one of two tracks: the innovation track, focused on organizations wishing to become more innovative and/or engage the ecosystem; or the entrepreneurship track, principally for students with startup enterprises/ventures. Further explores themes of innovation ecosystems, stakeholders, and the innovation loop of experimentation and evaluation. Innovation projects are team-based and can be Boston-based. Entrepreneurship projects can be a solo enterprise, but teams are also encouraged. Restricted to second year Executive MBA students.
F. Murray, P. Budden
15.705 Organizations Lab  
Prereq: Permission of instructor  
G (Fall)  
3-0-9 units  
Preparation for an organizational change project. Emphasis on applying tools of organizational, operational, and systems analysis in order to effect change. Includes a focus on the challenges and opportunities presented by issues of leadership and organizational behavior. Each student leads a change project in his or her own organization, focusing on fixing a broken or ineffective process. Examples of possible initiatives include a strategic reorientation, organizational restructuring, introduction of a new technology, a worker participation program, etc. Restricted to Executive MBA students.  
Consult J. Hising DiFabio

15.707 Global Strategy  
Prereq: Permission of instructor  
G (Fall)  
3-0-3 units  
Provides students with the evidence, concepts and models for understanding company performance in a global world and the issues facing executives in the early 21st century. Prepares students to manage effectively in today’s interconnected world by understanding this changing environment, principles of global strategy, and the relation between global strategy and organization. Focuses on the specificities of strategy and organization of the multinational company. Restricted to Executive MBA students.  
Consult J. Hising DiFabio

15.708 Global Organizations Lab  
Prereq: Permission of instructor  
G (Spring)  
6-0-9 units  
Helps students discover and develop new and effective ways of managing and working together across national borders; also helps accelerate development of the context awareness and integrative management skills needed to lead in a globalized world. Involves intensive team engagement with a firm where students integrate their understanding of the relevant global and national economic and institutional contexts, industry dynamics, the firm’s strategic position and capabilities, and its management organization and processes to provide the management sponsor with insight and effective recommendations. Includes a week-long site visit for research. Restricted to Executive MBA students.  
Consult J. Hising DiFabio

15.709 Key Decisions for Corporate Boards  
Prereq: None  
G (IAP)  
1-0-2 units  
Designed to help students understand the fundamental rules and practices of corporate boards in three key areas: the audit committee, the compensation committee, and corporate takeovers. Includes discussion related to case studies, with short lectures at the start and end of each session to highlight the differences and similarities in practices by boards in the US and abroad. Restricted to MIT Executive MBA and Sloan Fellows students.  
Consult J. Hising DiFabio

15.711 Executing Strategy for Results  
Prereq: None  
G (IAP)  
1-0-2 units  
Credit cannot also be received for 15.361  
Condensed version of 15.361 that introduces a comprehensive framework to understand how leaders can execute strategy more effectively. Presents case studies of companies that excel at execution, and a series of practical tools that can be applied immediately to boost performance. Intended for owner-operators and managers in complex organizations (more than 200 employees, multiple functions or units), particularly those competing in volatile markets. Restricted to Executive MBA and Sloan Fellows students.  
Consult J. Hising DiFabio

15.712 Negotiation and Influence  
Prereq: Permission of instructor  
G (Spring)  
3-0-3 units  
Credit cannot also be received for 15.665, 15.672, 15.6721, 15.673, 15.6731  
Provides understanding of the theory and processes of negotiation as practiced in a variety of settings. Designed for relevance to the broad spectrum of bargaining problems faced by the manager and professional. Allows students an opportunity to develop negotiation skills experientially and to understand negotiation in useful analytical frameworks. Emphasizes simulations, exercises, role playing, and cases. Restricted to Executive MBA students.  
Consult J. Hising DiFabio
15.713 Principles of Fundamental Analysis
Prereq: None
G (IAP)
1-0-2 units
Defines the role of general managers in the capital markets system and highlights their interactions with such players as equity research analysts, investment bankers, and consultants as they seek to create value by increasing the company’s intrinsic value. Covers basic and more advanced topics in finance and financial reporting from a high-level, practical standpoint. Restricted to MIT Executive MBA and Sloan Fellows students. Consult J. Hising DiFabio

15.714 Competitive Strategy
Prereq: Permission of instructor
G (Spring, Summer)
3-0-6 units
Credit cannot also be received for 15.902
Introduces a variety of modern strategy frameworks and methodologies to develop the skills needed to be a successful manager. Cases and readings explore a range of strategic problems, focusing particularly on the sources of competitive advantage and the interaction between industry structure and organizational capabilities. Emphasizes the perspective of the general manager in ensuring the firm’s success. Encourages awareness of both the external (market) and internal (organizational) forces that shape firm performance. Restricted to Executive MBA students. Consult J. Hising DiFabio

15.715 Entrepreneurial Strategy
Prereq: None
G (Fall, IAP; second half of term)
1-0-2 units
Credit cannot also be received for 15.911
Provides an integrated strategy framework for innovation-based entrepreneurs. Students examine the core strategic choices facing start-up innovators, and discuss a synthetic framework for the development, implementation and scaling of entrepreneurial strategy in dynamic environments over time. Identifies the types of choices that entrepreneurs must make to take advantage of a novel opportunity, and studies the logic of particular strategic commitments and positions that allow entrepreneurs to establish competitive advantage. Restricted to MIT Executive MBA and Sloan Fellows students. Consult J. Hising DiFabio

15.716 Leading Organizations
Prereq: None
G (Summer)
3-0-6 units
Credit cannot also be received for 15.322
Promotes awareness of and strategies to meet the key challenges leaders face today (and tomorrow). Acquaints students with some of the psychological and sociological dynamics that regularly operate in organizational settings - the less visible but quite powerful "forces" that shape the way employees and managers respond (or don’t respond) to a changing world. Restricted to Executive MBA students. Consult J. Hising DiFabio

15.717 Organizational Processes
Prereq: Permission of instructor
G (Fall)
3-0-6 units
Designed to enhance students’ ability to take effective action in complex organizational settings by providing the analytic tools needed to analyze, manage, and lead the organizations of the future. Emphasizes the importance of the organizational context in influencing which individual styles and skills are effective. Employs a wide variety of learning tools, from experiential learning to the more conventional discussion of written cases. Centers on three complementary perspectives on organizations: the strategic design, political, and cultural “lenses” on organizations. Restricted to Executive MBA students. Consult J. Hising DiFabio

15.718 Introduction to Disciplined Entrepreneurship
Prereq: None
G (Fall, IAP; second half of term)
1-0-2 units
Fast-paced introduction to the disciplined entrepreneurship approach to enhancing entrepreneurial skills needed to be more productive at work, start a new venture, interact and evaluate new ventures, and understand what entrepreneurship is and is not. Interactive, action-oriented workshops build skills to apply knowledge imparted by the books <em>Disciplined Entrepreneurship: 24 Steps to a Successful Startup</em> and the <em>Disciplined Entrepreneurship Workbook</em>. Restricted to Executive MBA and Sloan Fellow MBA students.

B. Aulet
15.719 Entrepreneurial Finance
Prereq: None
G (IAP)
1-0-2 units
Credit cannot also be received for 15.431, 15.4311

Addresses key questions that are central to the funding and growth of high-tech start-up firms, such as how to value entrepreneurial firms using different valuation methods, and how to negotiate investor term sheets and convertible notes. Discusses the trade-off between different exit options for start-up firms. Aims to prepare students for these decisions from the perspective of entrepreneurs and venture capitalists. Restricted to MIT Executive MBA and Sloan Fellows students.

Consult J. Hising DiFabio

15.720 Financial Accounting
Prereq: Permission of instructor
G (Spring)
3-0-6 units
Credit cannot also be received for 15.511, 15.515

Examines the basic concepts of corporate financial accounting and reporting, and the role of accounting information in investment decisions, corporate and managerial performance assessment, and the valuation of firms. Develops skills for performing an economics-based analysis of accounting information from the viewpoint of the users of accounting information (especially senior managers), rather than the preparer (the accountant). Restricted to Executive MBA students.

Consult J. Hising DiFabio

15.721 Communication and Persuasion Through Data for Executives
Prereq: None
G (Fall, IAP; second half of term)
1-0-2 units
Credit cannot also be received for 15.286, 15.287

Explains how to better convey complex, quantitative information to non-experts inside and outside of one’s organization. Aims to improve skill set and teach tools that can be used to demonstrate to others how to be more effective. Specific skills covered include improving ability to create effective visuals for communicating quantitative information, maximizing audience comprehension when presenting data, and cultivating ability to communicate complex ideas in writing. Restricted to Executive MBA and Sloan Fellow MBA students.

M. Kazakoff

15.722 Applied Economics for Managers
Prereq: Permission of instructor
G (Fall)
3-0-6 units
Credit cannot also be received for 15.024

Develops facility with concepts, language, and analytical tools of economics. Primary focus is on microeconomics. Emphasizes integration of theory, data, and judgment in the analysis of corporate decisions and public policy, and in the assessment of changing US and international business environments. Restricted to Executive MBA students.

Consult J. Hising DiFabio

15.723 Advanced Applied Macroeconomics and International Institutions
Prereq: 15.702 or permission of instructor
G (Spring)
3-0-3 units

Topics draw on current macroeconomic issues and events, such as modern monetary and fiscal policy; financial crisis, contagion, and currency crisis; real exchange rates, purchasing power parity, and long run sustainability; sustainable development; targeting and the new monetary policy regime; and Europe and the Euro: optimal currency areas. Restricted to Executive MBA students.

Consult J. Hising DiFabio

15.724 Financial Management
Prereq: Permission of instructor
G (Fall)
3-0-6 units
Credit cannot also be received for 15.414

Provides a rigorous introduction to corporate finance and capital markets, with an emphasis on applications vital to corporate managers. Exposes students to the major financial decisions made by leaders within a firm and to the ways the firm interacts with investors, with a focus on valuation. Topics include project and company valuation, measuring risk and return, stock pricing, corporate financing policy, the cost of capital, and risk management. Presents a broad overview of both theory and practice. Restricted to Executive MBA students.

Consult J. Hising DiFabio
15.725 Marketing Strategy for General Managers
Prereq: None
G (IAP)
1-0-2 units

Helps students consider the entire marketing mix in light of the strategy of the firm. Reviews customer-based sources of competitive advantage and discusses how to identify, measure, and leverage them. Introduces a method for comparing alternative selling formats (e.g., brick and mortar vs. electronic), aiming to find the most efficient ways to sell different products to different customers. Discusses the myriad ways in which the firm can grow its sources of competitive advantage. Provides practical experience in using tools to identify, evaluate, and develop marketing strategies; design efficient products and selling formats; and plan the use and development of the firm's portfolio of resources. Restricted to Executive MBA and Sloan Fellows students. Consult J. Hising DiFabio

15.726 Pricing
Prereq: None
G (IAP)
1-0-2 units
Credit cannot also be received for 15.818

Focuses on practical pricing tactics. Presents a framework for the steps firms should take when thinking about pricing a new product or improving the pricing performance of an old product. Tools covered include monadic pricing surveys, empirical price elasticity calculations, and conjoint. Restricted to Executive MBA students. Consult J. Hising DiFabio

15.727 The Analytics Edge
Prereq: 15.730 or permission of instructor
G (Spring)
3-0-6 units

Introduces modern analytics methods (data mining and optimization), starting with real-world problems where analytics have made a material difference. Modern data mining methods include clustering, classification, logistic regression, CART, random forest methods, and association rules. Modern optimization methods include robust, adaptive and dynamic optimization. Applications include health care, hospital operations, finance, energy, security, internet, and demand modeling. Uses R programming language for data mining and ROME for robust optimization. Restricted to Executive MBA students. Consult J. Hising DiFabio

15.728 Deals, Finance, and the Law
Prereq: None
G (IAP)
1-0-2 units

Addresses the challenges managers face in connection with two overlapping responsibilities: negotiating and managing complex deals, and arranging financing. Examines mergers and acquisitions and early-stage investments in young companies; commercial finance, financial instruments, and structured products; and how these relationships and structures play out in the context of financial distress. Emphasizes the opportunities and risks the different parties involved confront. Focuses primarily on the US, but also considers how key legal issues are analyzed in a transnational context. Restricted to Executive MBA and Sloan Fellows students. Consult J. Hising DiFabio

15.730 Data, Models, and Decisions
Prereq: Permission of instructor
G (Spring)
3-0-6 units
Credit cannot also be received for 15.060

Introduces students to fundamental tools in using data to make informed management decisions. Emphasizes the executive perspective: how to leverage best-practice quantitative methods to manage and drive the business. Exercises and cases complemented by perspectives and applications in finance, operations management, healthcare, the Internet, and other functions and industries. Restricted to Executive MBA students. Consult J. Hising DiFabio

15.731 Risk Management
Prereq: (15.730 and 15.734) or permission of instructor
G (IAP)
1-0-2 units

Provides several core analytical and management concepts, helping students identify, model, think about, analyze, and manage risk. Topics vary; examples include risk measures, the drivers-event-outcomes framework, low-probability high-impact risk events, hedging risk with financial options, real options, risk management in the supply chain, project risk management, modern portfolio management, systemic risk. Restricted to Executive MBA and Sloan Fellows students. Consult J. Hising DiFabio
15.732 Marketing Management
Prereq: Permission of instructor
G (Fall, Spring)
3-0-6 units
Credit cannot also be received for 15.814, 15.8141
Studies the application of a reasoned framework to the selection of target markets and the optimization of marketing decisions. Subject is divided into two parts: a tactical portion that reviews how firms optimize profits in their chosen markets, and a strategic portion that focuses on identifying target markets. Tactical topics include pricing, promotion, channel and product issues. Restricted to Executive MBA students.
Consult J. Hising DiFabio

15.734 Introduction to Operations Management
Prereq: Permission of instructor
G (Spring, Summer)
3-0-6 units
Credit cannot also be received for 15.761, 15.7611
Provides concepts, techniques and tools to design, analyze and improve core strategic operational capabilities. Covers a broad range of application domains and industries, such as high-tech, financial services, insurance, automotive, health care, retail, fashion, and manufacturing. Emphasizes the effects of uncertainty in business decision making and the interplay between strategic and financial objectives and operational capabilities. Students play simulation games that demonstrate some of the central concepts. Restricted to Executive MBA students.
Consult J. Hising DiFabio

15.735 Product Design
Prereq: None
G (IAP)
1-0-2 units
Presents the modern methods of product development using a systematic innovation approach. Topics include opportunity identification, design thinking, product strategy, identifying customer needs, creativity, concept development, product architecture, industrial design, and green design practice. Restricted to Executive MBA and Sloan Fellows students.
Consult J. Hising DiFabio

15.736 Introduction to System Dynamics
Prereq: Permission of instructor
G (Spring, Summer)
3-0-6 units
Credit cannot also be received for 15.871, 15.873, 15.8731
Introduces system dynamics modeling for the analysis of business policy and strategy. Provides the skills to visualize an organization in terms of the structures and policies that create dynamics and regulate performance. Uses causal mapping, simulation models, case studies, and management flight simulators to help develop principles of policy design for successful management of complex strategies. Considers the use of systems thinking to promote effective organizational learning. Restricted to Executive MBA students.
Consult J. Hising DiFabio

15.737 Advanced System Dynamics
Prereq: 15.736 or permission of instructor
G (IAP)
3-0-0 units
Credit cannot also be received for 15.872
Workshops focus on two models: the dynamics of service quality within a firm; and industry dynamics (particularly investment cycles and bubbles), including the energy and housing markets. Emphasis on formulation, analysis, use, and decision-making. Develops modeling skills. Restricted to Executive MBA and Sloan Fellows students.
Consult J. Hising DiFabio

15.738 Topics in Corporate Finance
Prereq: 15.414 or 15.724
G (IAP)
1-0-2 units
Case studies and lectures introduce financial tools needed to make value-enhancing business decisions. Topics drawn from issues such as advanced valuation analysis, capital structure decisions, debt restructuring, bankruptcy, incentive problems, real options, and valuation of international projects. Restricted to Executive MBA and Sloan Fellows students.
Consult J. Hising DiFabio
15.739 Discovering Your Leadership Signature
Prereq: None
G (IAP)
1-0-2 units
Credit cannot also be received for 15.318
Helps students understand their unique way of leading, i.e., leadership signature. Provides tools for students to determine what kind of leader they are and how to tell their leadership story. Examines leadership identity, drawing on theory from leadership literature, family systems, developmental psychology, personality psychology, and organizational change. Also builds on the four capabilities (4-CAP) model. Includes case studies, reflection, video analysis, and storytelling. Restricted to Executive MBA and Sloan Fellows students.
Consult J. Hising DiFabio

15.740 Strategic Communication for Executives
Prereq: None
G (IAP)
1-0-2 units
Develops communication skills crucial to successful management. Focuses on identifying a range of communication styles, and recognizing how to use them; dealing successfully with challenging or hostile audiences; understanding cross-cultural and global communication issues and differences; and leading and communicating in a crisis situation. Restricted to Executive MBA and Sloan Fellows students.
Consult J. Hising DiFabio

Operations Management

15.761 Introduction to Operations Management
Prereq: 6.041B, 15.060, or permission of instructor
G (Fall, Spring, Summer)
4-0-5 units
Credit cannot also be received for 15.734, 15.7611
Imparts concepts, techniques, and tools to design, analyze, and improve core operational capabilities and apply them to a broad range of domains and industries. Emphasizes the effect of uncertainty in decision-making, as well as the interplay among high-level financial objectives, operational capabilities, and people and organizational issues. Covers topics in capacity analysis, process design, process and business innovation, inventory management, risk pooling, supply chain coordination, sustainable operations, quality management, operational risk management, pricing and revenue management. Underscores how these topics are integrated with different functions of the firm. Case studies and simulation games provide experience in applying central concepts and techniques to solve real-world business challenges. Meets with 15.7611 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details. Summer section is primarily for Leaders for Global Operations students.
R. Levi, T. Zaman, K. Zheng

15.7611 Introduction to Operations Management
Prereq: 6.041B, 15.0791, or permission of instructor
U (Spring)
4-0-5 units
Credit cannot also be received for 15.734, 15.761
Imparts concepts, techniques, and tools to design, analyze, and improve core operational capabilities and apply them to a broad range of domains and industries. Emphasizes the effect of uncertainty in decision-making, as well as the interplay among high-level financial objectives, operational capabilities, and people and organizational issues. Covers topics in capacity analysis, process design, process and business innovation, inventory management, risk pooling, supply chain coordination, sustainable operations, quality management, operational risk management, pricing and revenue management. Underscores how these topics are integrated with different functions of the firm. Case studies and simulation games provide experience in applying central concepts and techniques to solve real-world business challenges. Meets with 15.7611 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
T. Zaman, K. Zheng
15.762[J] Supply Chain Planning
Same subject as 1.273[J], IDS.735[J]
Prereq: 15.761 or SCM.260[J]
G (Spring; first half of term)
2-0-4 units
Focuses on effective supply chain strategies for companies that operate globally, with emphasis on how to plan and integrate supply chain components into a coordinated system. Students are exposed to concepts and models important in supply chain planning with emphasis on key tradeoffs and phenomena. Introduces and utilizes key tactics such as risk pooling and inventory placement, integrated planning and collaboration, and information sharing. Lectures, computer exercises, and case discussions introduce various models and methods for supply chain analysis and optimization. Recommended for Operations Management concentrators. First half-term subject.
D. Simchi-Levi

15.763[J] Manufacturing System and Supply Chain Design
Same subject as 1.274[J], IDS.736[J]
Prereq: 15.761, 15.778, or SCM.260[J]
G (Spring; second half of term)
2-0-4 units
Focuses on decision making for system design, as it arises in manufacturing systems and supply chains. Students exposed to frameworks and models for structuring the key issues and trade-offs. Presents and discusses new opportunities, issues and concepts introduced by the internet and e-commerce. Introduces various models, methods and software tools for logistics network design, capacity planning and flexibility, make-buy, and integration with product development. Industry applications and cases illustrate concepts and challenges. Recommended for Operations Management concentrators. Second half-term subject.
D. Simchi-Levi

Same subject as 1.271[J], IDS.250[J]
Prereq: (6.436[J] and (6.251[J] or 6.251[J])) or permission of instructor
G (Spring)
3-0-9 units
Can be repeated for credit.
Provides mathematical foundations underlying the theory of operations management. Covers both classic and state-of-the-art results in various application domains, including inventory management, supply chain management and logistics, behavioral operations, healthcare management, service industries, pricing and revenue management, and auctions. Studies a wide range of mathematical and analytical techniques, such as dynamic programming, stochastic orders, principal-agent models and contract design, behavioral and experimental economics, algorithms and approximations, data-driven and learning models, and mechanism design. Also provides practical experience in how to apply the theoretical models to solve OM problems in business settings. Specific topics vary from year to year.
D. Simchi-Levi, N. Trichakis, K. Zheng

15.765[J] Global Supply Chain Management
Same subject as 1.265[J], 2.965[J], SCM.265[J]
Prereq: 15.761, 15.778, SCM.260[J], SCM.261[J], or permission of instructor
G (Spring)
Not offered regularly; consult department
2-0-4 units
Focuses on the planning, processes, and activities of supply chain management for companies involved in international commerce. Students examine the end-to-end processes and operational challenges in managing global supply chains, such as the basics of global trade, international transportation, duty, taxes, trade finance and hedging, currency issues, outsourcing, cultural differences, risks and security, and green supply chains issues. Highly interactive format features student-led discussions, staged debates, and a mock trial. Includes assignments on case studies and sourcing analysis, as well as projects and a final exam.
Staff
15.767 Healthcare Lab: Introduction to Healthcare Delivery in the United States  
Prereq: (15.060 and 15.761) or permission of instructor  
G (Fall)  
Not offered regularly; consult department  
4-0-5 units  
Credit cannot also be received for 15.777  
Focuses on the business challenges and opportunities to deliver high-quality and reasonably-priced health services, mainly in the United States. Provides an opportunity to interact with guest speakers and senior executives from the health sector. Topics include aspects of healthcare delivery operations and how they are affected by healthcare reform policies, alternative payment models, population health perspectives, and social determinants of health. Discussions include examples from the ongoing healthcare-related work of Sloan faculty, as well as the potential for analytics and digitization to impact healthcare delivery. Provides a broad perspective on various career paths, such as consulting, entrepreneurship, delivery system management, and digital innovation development. Student teams work with a provider, supplier or healthcare-related startup organization on an applied project. Includes on-site work during fall and IAP.  
A. Quaadgras, J. Jonasson

15.768 Management of Services: Concepts, Design, and Delivery  
Prereq: 15.761, 15.778, or permission of instructor  
G (Fall)  
3-0-6 units  
Explores the use of operations tools and perspectives in the service sector, including both for-profit and not-for-profit organizations. Builds on conceptual frameworks and cases from a wide range of service operations, selected from healthcare, hospitality, internet services, supply chain, transportation, retailing, food service, entertainment, financial services, humanitarian services, government services, and others.  
C. Fine, Z. Ton

15.769 Operations Strategy  
Prereq: 15.761, 15.778, or permission of instructor  
G (Spring)  
3-0-6 units  
Provides a unifying framework for analyzing strategic decisions in manufacturing and service operations. Covers decisions in technology, facilities, vertical integration, human resources, sourcing, supply chain, and other strategic areas. Examines how decisions in these areas can be made to align with business strategy, and emphasizes the concept of operations as a source of competitive advantage. Discusses operations strategy within the firm, across the supply chain, and for growth and new business models. Qualifies as an elective for the Sloan Sustainability Certificate.  
T. Roemer, K. Zheng

15.770[J] Logistics Systems  
Same subject as 1.260[J], IDS.730[J], SCM.260[J]  
Subject meets with SCM.271  
Prereq: Permission of instructor  
G (Fall)  
3-0-9 units  
See description under subject SCM.260[J].  
Y. Sheffi, C. Caplice

15.771[J] Case Studies in Logistics and Supply Chain Management  
Same subject as 1.261[J], SCM.261[J]  
Prereq: Permission of instructor  
G (Spring)  
3-0-6 units  
See description under subject SCM.261[J].  
J. Byrnes
15.772[J] D-Lab: Supply Chains
Same subject as 2.771[J], EC.733[J]
Subject meets with 2.871
Prereq: None
U (Spring)
3-3-6 units
Introduces concepts of supply chain design and planning with a focus on supply chains for products destined to improve quality of life in developing countries. Topics include demand estimation, process analysis and improvement, facility location and capacity planning, inventory management, and supply chain coordination. Also covers issues specific to emerging markets, such as sustainable supply chains, choice of distribution channels, and how to account for the value-adding role of a supply chain. Students conduct D-Lab-based projects on supply chain design or improvement. Students taking graduate version complete additional assignments.
S. C. Graves

15.774 The Analytics of Operations Management
Prereq: None. Coreq: 15.060; or permission of instructor
G (Fall)
3-0-9 units
Introduces core concepts and methods in data-driven modeling that inform and optimize decisions under uncertainty. Teaches modeling and computational skills (R and Julia). Covers topics such as time series forecasting, choice modeling, queuing theory, network models, dynamic programming, mixed-integer programming, stochastic optimization, matching algorithms, multi-armed bandits. Draws on real-world applications from retail, healthcare, logistics, supply chain, social and online networks, sports analytics, social applications, and online learning.
G. Perakis, V. Farias, R. Levi

15.775 Analytics Proseminar
Prereq: None
G (Spring; first half of term)
2-0-1 units
Provides opportunities to meet senior executives serving in top analytics and data science functions within a variety of organizations across industries. Discusses key business analytics issues from the perspective of top management. Students prepare detailed briefings identifying and exploring important analytics issues facing these organizations.
C. Simon

15.777 Healthcare Lab: Introduction to Healthcare Delivery in the United States
Prereq: 15.060 and 15.761
G (Fall, IAP)
4-0-11 units
Credit cannot also be received for 15.767
Focuses on the business challenges and opportunities to deliver high-quality and reasonably-priced health services, mainly in the United States. Provides an opportunity to interact with guest speakers and senior executives from the health sector. Topics include aspects of healthcare delivery operations and how they are affected by healthcare reform policies, alternative payment models, population health perspectives, and social determinants of health. Discussions include examples from the ongoing healthcare-related work of Sloan faculty, as well as the potential for analytics and digitization to impact healthcare delivery. Provides a broad perspective on various career paths, such as consulting, entrepreneurship, delivery system management, and digital innovation development. Student teams work with a provider, supplier or healthcare-related startup organization on an applied project. Includes on-site work during fall and IAP.
A. Quaadgras, J. Jonasson

15.777 Introduction to Operations Management
Prereq: None
G (Summer)
3-0-6 units
Integrated approach to the analysis, design and management of supply networks for products and services. Provides a framework for analysis, design and operation of supply chains (SCs) that relies on fundamental concepts, such as the management of inventory, and operations and logistics planning. Discusses the value of (timely) information and of the need for collaboration and coordination between SC players. Also presents conceptual frameworks that focus on the emergence of a wide range of enabling services that are critical to the survival and growth of this class of system. Includes study and discussion of concepts, examples, and case studies from a wide range of industries. Guest speakers present personal experiences on various aspects of the service industry and supply chains. Restricted to Sloan Fellow MBAs.
V. Farias
15.779 Technology, Design and Entrepreneurship: Operating in Emerging Communities
Subject meets with 15.781
Prereq: Permission of instructor
G (Spring)
Not offered regularly; consult department
3-0-3 units

Designed for students working on solutions for resource-constrained communities. Examines downstream issues surrounding the adoption, distribution, and scaling (via business, non-profit, or public policy channels) of new solutions in an international development context. Focuses on implementing solutions as well as understanding the impact of interventions proposed.
C. Vaishnav, D. Rigos, R. Stoner, C. Fine

15.784 Operations Laboratory
Prereq: None. Coreq: 15.761
G (Spring)
2-3-4 units

Provides an interactive learning experience in implementing operations improvement and an opportunity to work on challenging operations problems across industries in the Boston-area, across the United States, and abroad. Teams of 3-5 students use their training and experience to help improve operations in organizations that range from small and medium businesses to multi-national corporations. Teams conduct term-long projects via remote interactions with companies, and travel to work on-site at the client company during the Sloan Innovation Period. Boston-area projects involve periodic visits throughout the term.
T. Kraft

15.785 Digital Product Management
Prereq: None
G (Spring; first half of term)
2-0-4 units

Introduction to product management with an emphasis on its role within technology-driven enterprises. Topics include opportunity discovery, product-technology roadmapping, product development processes, go-to-market strategies, product launch, lifecycle management, and the central role of the product manager in each activity. Exercises and assignments utilize common digital tools, such as storyboarding, wireframe mock-ups, and A/B testing. Intended for students seeking a role in a product management team or to contribute to product management in a new enterprise.
Staff

15.780 Stochastic Models in Business Analytics
Prereq: 6.041B, 15.0791, or permission of instructor
U (Fall)
3-0-9 units

Introduces core concepts in data-driven stochastic modeling that inform and optimize business decisions under uncertainty. Covers stochastic models and frameworks, such as queueing theory, time series forecasting, network models, dynamic programming, and stochastic optimization. Draws on real-world applications, with several examples from retail, healthcare, logistics, supply chain, social and online networks, and sports analytics.
R. Levi, K. Zheng

15.783[J] Product Design and Development
Same subject as 2.739[J]
Prereq: 2.009, 15.761, 15.778, 15.814, or permission of instructor
G (Spring)
3-3-6 units

Covers modern tools and methods for product design and development. Includes a cornerstone project in which teams conceive, design and prototype a physical product and/or service. Covers design thinking, agile development, product planning, identifying customer needs, concept generation, product architecture, industrial design, concept design, green design methods, and product management. Sloan students register via Sloan course bidding. In person not required. Engineering students accepted via lottery based on WebSIS pre-registration.
S. Eppinger, M. C. Yang

15.781 Technology, Design and Entrepreneurship: Operating in Emerging Communities
Subject meets with 15.779
Prereq: Permission of instructor
G (Spring)
Not offered regularly; consult department
2-0-1 units

Designed for students working on solutions for resource-constrained communities. Examines downstream issues surrounding the adoption, distribution, and scaling (via business, non-profit, or public policy channels) of new solutions in an international development context. Focuses on implementing solutions as well as understanding the impact of interventions proposed. Restricted to Tata Fellows.
C. Vaishnav, D. Rigos, R. Stoner, C. Fine
15.792[J] Global Operations Leadership Seminar
Same subject as 2.890[J], 10.792[J], 16.985[J]
Prereq: None
G (Fall, Spring)
2-0-0 units
Can be repeated for credit.
Integrative forum in which worldwide leaders in business, finance, government, sports, and education share their experiences and insights with students aspiring to run global operations. Students play a large role in managing the seminar. Preference to LGO students.
T. Roemer

15.794 Research Project in Operations
Prereq: Permission of instructor
G (Fall, IAP, Spring, Summer)
Units arranged
Can be repeated for credit.
Designed for Leaders for Global Operations (LGO) students in conjunction with on-site projects at LGO partner companies. Student teams work on faculty-supervised thesis research projects that deal with a specific aspect of operations. Students required to summarize their work in the context of understanding organization, leadership, teamwork, and task management in conjunction with 15.317.
T. Roemer

15.795 Behavioral Decision Theories and Applications
Prereq: Permission of instructor
G (Fall)
Not offered regularly; consult department
3-0-9 units
Introduces fundamental behavioral theories of human decision making and demonstrates how they impact the design of management strategies and policies. Topics include prospect theory, reference-dependence preferences, loss aversion, ambiguity aversion, regret, inter-temporal preferences, social preferences, cognitive hierarchy, bounded rationality, and adaptive learning. Studies these concepts in a wide range of applications, including pricing, supply chain management, social welfare, marketing, contract design, sustainability, and e-commerce. Discusses experimental methodologies to identify and measure various preferences and phenomena, as well as mathematical models to capture them in decision making. Content updated from year to year to include state-of-the-art research.
K. Zheng

15.799 Workshop in Operations Management
Prereq: None
G (Fall)
Units arranged
Can be repeated for credit.
Presentations by faculty, doctoral students, and guest speakers of ongoing research relating to current issues in operations management, including reports of research projects (proposed or in progress) and informal discussions of recent literature dealing with subjects of special interest to participants. Primarily for doctoral students.
Staff

Marketing

15.809 Introduction to Marketing and Strategy
Prereq: None
G (Summer)
3-0-6 units
Introduces the core strategic framework used to evaluate the attractiveness of different markets. Reviews the methods that firms can use to optimize their profits in the markets that they choose to target. Restricted to Sloan Fellow MBAs.
D. Simester

15.814 Marketing Innovation
Prereq: None
G (Fall, Spring)
4-0-5 units
Credit cannot also be received for 15.732, 15.8141
Develops the skills necessary to market innovations, including new products, services, concepts, and customer experiences. Covers how to select the right market, target that market effectively, position a product or service for maximum success, and combine analytics, frameworks, and research for maximum potential. Emphasizes both marketing theory and practice: proven solutions to marketing problems, case sessions to illustrate the application of these techniques in various industries, and practice sessions to apply these techniques to real problems.
Consult J. Hauser, J. Zhang
15.8141 Marketing Innovation
Prereq: None
U (Spring)
3-0-6 units
Credit cannot also be received for 15.732, 15.814
Develops the skills necessary to market innovations, including new products, services, concepts, and customer experiences. Covers how to select the right market, target that market effectively, position a product or service for maximum success, and combine analytics, frameworks, and research for maximum potential. Emphasizes both marketing theory and practice: proven solutions to marketing problems, case sessions to illustrate the application of these techniques in various industries, and practice sessions to apply these techniques to real problems.
J. Houser, J. Zhang

15.815 Applied Behavioral Economics
Prereq: None
G (Spring; second half of term)
3-0-3 units
Introduction to behavioral economics for future managers, analysts, consultants or advisors to private and public enterprises. Presents basic principles of behavioral economics, and selected applications to marketing, management, finance, and public policy. Focuses on hidden influences, habits, and irrationalities in our behavior. Treats departures from ‘rational behavior’ as opportunities - for individuals to improve themselves, for companies to solve consumers’ problems, for society to create new institutions and policies.
D. Prelec

15.818 Pricing
Prereq: 15.809, 15.814, or permission of instructor
G (Fall; first half of term)
3-0-3 units
Credit cannot also be received for 15.726
Framework for understanding pricing strategies and analytics, with emphasis on entrepreneurial pricing. Topics include economic value analysis, elasticities, customization, complementary products, pricing in platform markets, and anticipating competitive responses.
C. Tucker

15.819 Marketing Analytics
Prereq: 15.809, 15.814, or permission of instructor
G (Spring)
3-0-6 units
Hands-on course, using quantitative data to inform, make, and automate marketing decisions, including growth marketing, product design, pricing and promotions, advertising, and customer retention. Topics include creating metrics, randomized experiments, models for targeting, and analyzing launches. Features lectures, industry examples and guests, and data analysis assignments supported by in-class labs. Draws inspiration from the internet industry, but applications span many industries.
D. Eckles

15.821 Listening to the Customer
Prereq: 15.809, 15.814, or permission of instructor
G (Spring; first half of term)
3-0-3 units
Introduction to soft consumer research methods, useful for getting quick customer input into decisions on product design and development, strategic positioning, advertising, and branding. Covers interview techniques, observational methods, voice of the customer, focus groups, and analyses suitable for qualitative data. Introduces new information-gathering methods in development at MIT.
D. Prelec

15.822 Strategic Market Measurement
Prereq: None
G (Spring; second half of term)
Not offered regularly; consult department
3-0-3 units
Project subject teaches students how to create, carry out, interpret, and analyze a market research questionnaire. Emphasis on discovering market structure and segmentation, but students can pursue other project applications. Includes a user-oriented treatment of multivariate analysis (factor analysis, multidimensional scaling, conjoint and cluster analysis).
D. Prelec
15.828 Product Management
Prereq: 15.809, 15.814, or permission of instructor
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Fall)
3-0-6 units

Practical introduction to the process of product management. Provides opportunities for experiential learning through projects with companies and organizations. Exposes students to state-of-the-art frameworks and tools that bring to market elegant and efficient solutions to strong customer needs. Covers the major phases of product management: opportunity identification (customer insights, interviews and surveys, ideation and brainstorming), design (product strategy and conjoint analysis), testing (concept testing, prototyping and A/B testing), and launch (choice of media and channel).

T. Ke

15.830 Enterprise Management Lab
Prereq: None. Coreq: 15.761, 15.814, or 15.900
G (Fall, IAP)
3-0-6 units

Lays the foundation for the Enterprise Management (EM) Track by developing students’ ability to apply integrated management perspectives and practices through action-learning. Small teams of students deliver quality deliverables by working on projects for large organizations and emergent innovators that integrate marketing, operations, and/or strategy. Students engage with faculty mentors and guest faculty speakers from marketing, strategy, and operations. Promotes a holistic cross-functional approach to addressing business issues. Significant class time allocated to team collaboration on projects. Students must register for both the fall term and IAP. Restricted to MBA students in EM Track.

S. Chatterjee

15.833 Business-to-Business Marketing
Prereq: 15.809, 15.814, or permission of instructor
G (Fall; second half of term)
3-0-3 units

Applies marketing concepts, analyses and tools used in business-to-business (B2B) marketing. Develops an understanding of customer value management and value quantification as a strategy for delivering superior value to targeted business segments while maintaining equitable returns. Focuses on B2B pricing, brand building, web and technology facilitation of the supply chain, and customer relationship management. Underscores sales force management within the context of go-to-market strategy; however, does not address selling per se. Discusses ethical issues and various B2B contexts, such as products and services, for- and non-profits, and domestic and global markets. Emphasizes applications in technology and healthcare domains. Includes value-based pricing project, case studies, applied exercises, and readings.

S. Chatterjee

15.834 Marketing Strategy
Prereq: 15.809, 15.814, or permission of instructor
G (Spring; first half of term)
4-0-2 units

Prepares students to formulate the marketing component of overall corporate strategy. Students examine three types of situations: some in which firms leverage their existing competitive advantages; some in which they build new competitive advantages; and some in which a seemingly weaker competitor, such as a start-up, leapfrogs a larger incumbent. Presents material through a combination of cases, lectures, and a group project.

B. Wernerfelt

15.835 Entrepreneurial Marketing
Prereq: None
G (Spring; second half of term)
Not offered regularly; consult department
3-0-3 units

Explores a basic marketing framework in depth as it applies to start-ups. Students then apply this framework to a project.

B. Wernerfelt
15.838 Research Seminar in Marketing  
Prereq: None  
G (Fall, Spring)  
3-0-6 units  
Can be repeated for credit.  

Seminar on current marketing literature and current research interests of faculty and students. Topics such as marketing models, consumer behavior, competitive strategy, marketing experimentation, and game theory. Restricted to doctoral students.  
Consult B. Wernerfelt

15.839 Workshop in Marketing  
Prereq: Permission of instructor  
G (Fall, Spring)  
Units arranged [P/D/F]  
Can be repeated for credit.  

Presentations by faculty, doctoral students, and guest speakers of ongoing research relating to current issues in marketing. Topics: reports of research projects (proposed or in progress) and informal discussions of recent literature dealing with subjects of special interest to participants. Restricted to doctoral students.  
Staff

15.840-15.843 Seminar in Marketing  
Prereq: 15.810  
G (Fall)  
Not offered regularly; consult department  
Units arranged  
Can be repeated for credit.  

Group study of current topics related to marketing.  
Staff

15.846 Branding  
Prereq: 15.809, 15.814, or permission of instructor  
G (Spring; second half of term)  
3-0-3 units  

Provides a foundation for building, managing, and defending brands at various stages in the brand life cycle. Introduces the fundamentals of brand architecture and management relevant for B2C and B2B Marketing. Examples from a variety of industries cover topics that include brand co-creation, diffusion, imitation, and authenticity. Explores theory and practice using cases and academic research. Also looks at the development of leadership branding.  
R. Gosline

15.847[J] Consumer Behavior  
Same subject as 9.550[J]  
Prereq: 15.809, 15.814, or permission of instructor  
G (Spring)  
3-0-6 units  
Credit cannot also be received for 9.550[J], 15.8471[J]  

Examines the behavior of consumers through the lens of behavioral economics, cognitive science, and social psychology. Reviews theory and research and brings this knowledge to bear on a wide range of applications in business and public policy. Lectures are combined with brainstorming sessions where students work in teams to apply concepts to real-world problems. Meets with 15.8471[J] when offered concurrently. Expectations and evaluation criteria may differ for students taking the graduate version; consult syllabus or instructor for specific details.  
D. Rand

15.8471[J] Consumer Behavior (New)  
Same subject as 9.550[J]  
Prereq: None  
U (Spring)  
3-0-6 units  
Credit cannot also be received for 9.550[J], 15.847[J]  

Examines the behavior of consumers through the lens of behavioral economics, cognitive science, and social psychology. Reviews theory and research and brings this knowledge to bear on a wide range of applications in business and public policy. Lectures are combined with brainstorming sessions where students work in teams to apply concepts to real-world problems. Meets with 15.847[J] when offered concurrently. Expectations and evaluation criteria may differ for students taking the graduate version; consult syllabus or instructor for specific details.  
D. Rand
**System Dynamics**

**15.871 Introduction to System Dynamics**
Prereq: Permission of instructor
G (Fall, Spring; first half of term)
3-0-3 units
Credit cannot also be received for 15.736, 15.873, 15.8731

Introduction to systems thinking and system dynamics modeling applied to strategy, organizational change, and policy design. Students use simulation models, management flight simulators, and case studies to develop conceptual and modeling skills for the design and management of high-performance organizations in a dynamic world. Case studies of successful applications of system dynamics in growth strategy, management of technology, operations, public policy, product development, and others. Principles for effective use of modeling in the real world. Meets with 15.873 first half of term when offered concurrently. Students taking 15.871 complete additional assignments.

*D. Keith, H. Rahmandad, J. Sterman*

**15.872 System Dynamics II**
Prereq: 15.871
G (Spring; second half of term)
Not offered regularly; consult department
3-0-3 units
Credit cannot also be received for 15.737

Emphasizes tools and methods needed to apply systems thinking and simulation modeling successfully in diverse real-world settings, including supply chains, forecasting, project management, process improvement, service operations, and platform-based businesses, among others. Uses simulation models, management flight simulators, and case studies to deepen the conceptual and modeling skills introduced in 15.871. Through models and case studies of successful applications students develop proficiency in how to use qualitative and quantitative data to formulate and test models, and how to work effectively with senior executives to implement change successfully. Expectations and evaluation criteria differ for students taking half-term graduate version; consult syllabus or instructor for specific details.

*J. D. Sterman, H. Rahmandad, D. Keith*

**15.873 System Dynamics for Business and Policy**
Prereq: None
G (Fall, Spring)
3-0-6 units
Credit cannot also be received for 15.736, 15.871, 15.8731

Focuses on developing the skills and tools needed to successfully apply systems thinking and simulation modeling in diverse real-world settings, including growth strategy, management of technology, operations, public policy, product development, supply chains, forecasting, project management, process improvement, service operations, and platform-based businesses, among others. Uses simulation models, management flight simulators, and case studies to deepen conceptual and modeling skills beyond what is introduced in 15.871. Exploring case studies of successful applications, students develop proficiency in how to use qualitative and quantitative data to formulate and test models, and how to work effectively with senior executives to successfully implement change. Prepares students for further work in the field. Meets with 15.871 in first half of term when offered concurrently. Students taking 15.871 complete additional assignments.

*H. Rahmandad*

**15.8731 System Dynamics: Tools for Solving Complex Problems**
Prereq: None
U (Fall, Spring)
3-0-6 units
Credit cannot also be received for 15.736, 15.871, 15.873

Introduction to field of system dynamics. Builds on ideas of control theory to understand dynamics of social, technological and organizational systems. Focuses on developing skills and tools needed to successfully apply systems thinking and simulation modeling in diverse real-world settings, including sustainability, strategy, project management, product development, public policy, healthcare, forecasting, platform-based businesses, and others. Utilizes simulation models, management flight simulators, and case studies to deepen conceptual and modeling skills. Develops proficiency in using qualitative and quantitative data to formulate and test models and how to work effectively with policy makers and executives to successfully implement change. Meets with 15.873 when offered concurrently. Expectations and evaluation criteria may differ for students taking the graduate version; consult syllabus or instructor for specific details.

*H. Rahmandad, D. Keith, J. Sterman*
15.874[J] People and the Planet: Environmental Governance and Science
Same subject as 12.387[J], IDS.063[J]
Prereq: None
U (Fall)
3-0-6 units
See description under subject 12.387[J].
N. Selin, S. Solomon, J. Sterman

15.875 Applications of System Dynamics
Prereq: 15.872
G (Spring)
Not offered regularly; consult department
3-0-6 units
Can be repeated for credit.
Explores how system dynamics can help organizations achieve important goals. Student teams pair with clients to tackle a pressing issue framed by the client and its partners. In interactive classroom sessions, and via client engagement, students learn modeling and consulting skills they need to be effective. Focuses on gaining practical insight from system dynamics and its application across a wide range of organizations and challenges.
Consult J. D. Sterman

15.878 Capstone Seminar in Sustainability and Corporate Responsibility
Prereq: None. Coreq: 15.915
G (Spring; second half of term)
3-0-3 units
Integrative experience that explores the complex set of circumstances and choices leaders must face in light of uncertain environmental and social consequences. A shared deep dive into a systemic challenge provides a chance for students across programs to reflect and engage in dialogue about the ethical landscape of business. Through personal reflection and career visioning, students clarify their own personal commitments to leadership and change.
J. Jay

15.879 Research Seminar in System Dynamics
Prereq: 15.872 and permission of instructor
G (Fall, Spring)
3-0-9 units
Can be repeated for credit.
Doctoral level seminar in system dynamics modeling, with a focus on social, economic and technical systems. Covers classic works in dynamic modeling from various disciplines and current research problems and papers. Participants critique the theories and models, often including replication, testing, and improvement of various models, and lead class discussion. Topics vary from year to year.
Consult D. Keith, J. Sterman

Strategic Management

15.900 Competitive Strategy
Prereq: None
G (Fall, Spring)
3-0-6 units
Credit cannot also be received for 15.9001
Explores a wide range of strategic problems, focusing particularly on the sources of competitive advantage and the interaction between industry structure and organizational capabilities. Introduces a wide variety of modern strategy frameworks and methodologies. Builds upon and integrates material from core topics, such as economics and organizational processes. Meets with 15.900 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
D. Sull, N. Thompson, A. Kacperczyk

15.9001 Competitive Strategy
Prereq: None
U (Spring; first half of term)
3-0-6 units
Credit cannot also be received for 15.900
Explores a wide range of strategic problems, focusing particularly on the sources of competitive advantage and the interaction between industry structure and organizational capabilities. Introduces a wide variety of modern strategy frameworks and methodologies. Builds upon and integrates material from core topics, such as economics and organizational processes. Meets with 15.900 when offered concurrently. Expectations and evaluation criteria differ for students taking graduate version; consult syllabus or instructor for specific details.
D. Sull, N. Thompson, A. Kacperczyk
**15.902 Advanced Strategic Management**  
Prereq: Permission of instructor  
G (Spring; first half of term)  
Not offered regularly; consult department  
3-0-3 units  
Credit cannot also be received for 15.714  

Focuses on developing skills and applying frameworks for the conduct of competitive and corporate strategy. Develops tools from earlier core subjects, especially those from strategic marketing, organizational processes, innovation-driven advantage, and economics. Emphasis is placed on the role of strategic commitments, social networks, strategic coherence, and adapting to environmental and technological change. Restricted to MIT Sloan Fellows.  
*E. Zuckerman*

**15.903 Managing the Modern Organization: Organizational Economics and Corporate Strategy**  
Prereq: 15.010 and 15.311  
G (Fall; first half of term)  
3-0-3 units  

Focuses on how managers build and manage complex organizations to achieve strategic goals. Develops theoretical frameworks that build on 15.010 and 15.311. Applies these frameworks to corporate strategy (i.e., the design and management of the multi-business firm) and extended enterprises (i.e., the design and management of multi-firm structures such as supply chains, alliances, joint ventures, and networks).  
*R. Gibbons*

**15.904 Strategy and the CEO**  
Prereq: 15.900 or permission of instructor  
Acad Year 2020-2021: Not offered  
Acad Year 2021-2022: G (Spring; second half of term)  
3-0-3 units  

Builds on 15.900 and 15.902 to explore key concepts that have shaped the field of strategic management teaching and strategy consulting over the past several decades. Uses lectures, readings, case studies, and videos to review the evolution of strategy teaching, research, and practice; differences between analytical versus prescriptive tools for strategic thinking and planning; external versus internal influences on financial results; and sources of enduring competitive advantage. Key themes include the role of CEO leadership in strategy formulation and execution, how to view company performance in context, and the role of platform strategies as a tool for competition in the digital age.  
*M. Cusumano*

**15.905 Technology Strategy**  
Prereq: None  
G (Spring)  
Not offered regularly; consult department  
3-0-9 units  

Provides a series of strategic frameworks for managing high-technology businesses. Emphasis on the development and application of conceptual models which clarify the interactions between competition, patterns of technological and market change, and the structure and development of internal firm capabilities.  
*J. Utterback*

**15.910 Innovation Strategy**  
Prereq: None  
G (Spring; first half of term)  
3-0-3 units  

Establishes a solid foundation for students interested in formulating and executing a strategy for developing new-to-the-world products in a technology-intensive business. Clarifies the interactions among competition, patterns of technological and market change, and the development of internal firm capabilities. Topics include “crossing the chasm” with new technologies, appropriating the returns from innovation, platform strategy, and the role of intellectual property and government regulations. Key conceptual frameworks are linked to applications in a variety of industry and case settings.  
*B. Roin*

**15.911 Entrepreneurial Strategy**  
Prereq: None  
G (Spring)  
6-0-3 units  
Credit cannot also be received for 15.715  

Teaches an integrated strategy framework for start-ups. Provides a deep understanding of the core strategic choices facing innovation-based entrepreneurs, a synthetic framework for the process of choosing and the implementation of entrepreneurial strategy, and the core challenges and approaches for scaling ventures over time. Highlights the process of how to choose an entrepreneurial strategy, the specific choices that matter, how key choices fit together to form an overall entrepreneurial strategy, and the playbook for particular strategies for startups.  
*S. Stern*
15.912 Strategic Management of Innovation and Entrepreneurship
Prereq: 15.910, 15.911, or permission of instructor
G (Spring; second half of term)
Not offered regularly; consult department
3-0-3 units

Provides a series of strategic frameworks for managing high-technology businesses with a particular focus on innovation and entrepreneurship, especially as it builds upon patterns of technological and market change, prior research on product development and new ventures, and the structure and development of organizational capabilities. Includes case analyses and simulations, as well as independent readings drawn from research in technological innovation, entrepreneurial management, and organizational theory.

Staff

15.913 Strategies for Sustainable Business
Prereq: None
G (Spring; first half of term)
Not offered regularly; consult department
3-0-3 units

Develops a pragmatic, action-oriented approach to sustainability: the alignment between healthy businesses, healthy environments, healthy societies, and an economy that meets human needs. In-class simulations and role-playing provide a robust foundation for understanding sustainability challenges. Cases analyze innovative strategies for sustainable businesses and organizations. Class discussions explore how sustainability is changing existing business models and market structures, how to develop sustainable management practices, and how firms can implement those practices successfully. Students apply the concepts, theories, and tools of the course by working with a host organization on a real management project during the semester.
M. Amengual, J. Jay, J. Sterman

15.914 Competitive Dynamics and Strategy: Winning in Technology Markets
Prereq: 15.872 and (15.369, 15.567, 15.900, or 15.902)
G (Spring)
Not offered regularly; consult department
2-0-7 units

Focuses on competitive strategy in technology-driven markets. Students acquire a portfolio of models of the signature dynamics in these markets and use the models in projects with participating companies to analyze technology markets, formulate competitive strategies, and illuminate the challenges of execution. Addresses issues critical for both established incumbents and new market entrants. Restricted to graduate students.
H. B. Weil

15.915 Laboratory for Sustainable Business
Prereq: None
G (Spring)
3-0-9 units

Develops a pragmatic, action-oriented approach to sustainability: the alignment between healthy businesses, healthy environments, healthy societies, and an economy that meets human needs. In-class simulations and role-playing provide a robust foundation for understanding sustainability challenges. Cases analyze innovative strategies for sustainable businesses and organizations. Class discussions explore how sustainability is changing existing business models and market structures, how to develop sustainable management practices, and how firms can implement those practices successfully. Students apply the concepts, theories, and tools of the course by working with a host organization on a real management project during the semester.
M. Amengual, J. Jay

15.928 The Sociology of Strategy
Prereq: 15.342
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring)
3-0-9 units

Doctoral seminar in theory building for social scientists interested in economic sociology, organization theory, strategic management, and related fields. Builds skills for developing social scientific theory. Focuses on assessing and developing the relevance of sociological research for key questions in strategy research: what explains the relative performance of firms and the variety of their strategies for achieving performance. Students also develop skills in evaluating academic research in this area. Restricted to doctoral students.
E. Zuckerman

15.929 Identity and Action
Prereq: 15.342
Acad Year 2020-2021: G (Spring)
Acad Year 2021-2022: Not offered
3-0-9 units

Doctoral seminar in theory building for social scientists. Primary goal is to build skills for developing social scientific theory. Secondary goals are to review and integrate a broad array of ideas concerning the foundations of identity and its relation to action, and to suggest how such issues relate to a broader set of questions in the social sciences. Students learn that any account of action is based on ascribing desires, beliefs, and opportunities to specific actors, but such actors cannot be easily explained except as a result of action by prior actors. The focus of this course is around developing this paradox and providing a foundation for resolving it. Restricted to doctoral students.
E. Zuckerman
15.933 Strategic Opportunities in Energy
Prereq: 15.900 or permission of instructor
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Fall; first half of term)
4-0-2 units

Introduces the energy system in terms of sources and uses, market characteristics, and key metrics. Provides frameworks for understanding the structure and dynamics of the sector and the drivers of the energy future. Opportunities resulting from demand growth, supply challenges, environmental constraints, security of supply, technology breakthroughs, and regulation are analyzed from the perspectives of both established players and entrepreneurs. Student teams engage in projects that evaluate a segment of the energy landscape and develop a strategic prospectus for a new business opportunity.

H. B. Weil

15.941[J] Leadership in Real Estate
Same subject as 11.430[J]
Prereq: None
G (Fall; first half of term)
3-0-3 units

Designed to help students deepen their understanding of leadership and increase self-awareness. They reflect on their authentic leadership styles and create goals and a learning plan to develop their capabilities. They also participate in activities to strengthen their "leadership presence" - the ability to authentically connect with people's hearts and minds. Students converse with classmates and industry leaders to learn from their insights, experiences, and advice. Limited to 15.

G. Schuck

15.949 Seminar in Strategy
Prereq: None
G (Fall)
Not offered regularly; consult department
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to strategy.

Consult E. Zuckerman

Special Subjects

15.501 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, Summer)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Consult Sloan Educational Services

15.502 Special Seminar in Management
Prereq: Permission of instructor
G (IAP, Summer)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Staff

15.503 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, IAP, Spring, Summer)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Staff

15.504 Special Seminar in Management
Prereq: Permission of instructor
G (Summer; first half of term)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Staff

15.505 Special Seminar in Management
Prereq: Permission of instructor
G (Spring, Summer; second half of term)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Staff
15.S06 Special Seminar in Management
Prereq: Permission of instructor
G (IAP, Spring, Summer; first half of term)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Staff

15.S07 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, IAP, Summer)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Staff

15.S08 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, IAP, Summer)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Staff

15.S09 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, Spring)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Consult Department Headquarters

15.S10 Special Seminar in Management
Prereq: Permission of instructor
G (IAP, Spring, Summer)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Consult Sloan Educational Services

15.S11 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, Spring, Summer)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Consult Sloan Educational Services

15.S12 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, IAP, Summer)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Consult Department Headquarters

15.S13 Special Seminar in Management
Prereq: Permission of instructor
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: G (Spring)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Consult Sloan Education Services

15.S14 Special Seminar in Management
Prereq: Permission of instructor
G (Spring, Summer; second half of term)
Units arranged
Can be repeated for credit.

Opportunity for group study by graduate students on current topics related to management not otherwise included in curriculum.

Consult Department Headquarters

15.S15 Special Seminar in Management
Prereq: Permission of instructor
G (Spring, Summer)
Units arranged
Can be repeated for credit.

Group study of current topics related to management not otherwise included in curriculum. Consult Department headquarters.

Consult Sloan Educational Services

E. Zuckerman Sivan
15.S16 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, IAP, Spring)
Units arranged
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services

15.S17 Special Seminar in Management
Prereq: Permission of instructor
G (Spring, Summer; second half of term)
Units arranged
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services

15.S18 Special Seminar in Management
Prereq: Permission of instructor
G (Spring)
Units arranged
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services

15.S19 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, IAP, Spring, Summer)
Units arranged
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services

Prereq: Permission of instructor
G (IAP)
Units arranged
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum. Coursework may continue into the following term.
Consult Sloan Educational Services

15.S30 Special Distance Learning Seminar in Management
Prereq: None
G (Spring)
Not offered regularly; consult department
Units arranged
Can be repeated for credit.
Group study through distance learning on current topics related to management.
Consult Sloan Educational Services

15.S31 Special Distance Learning Seminar in Management
Prereq: None
G (Fall, IAP, Summer)
Units arranged
Can be repeated for credit.
Group study through distance learning on current topics related to management.
Consult Sloan Educational Services

15.S32 Special Distance Learning Seminar in Management
Prereq: None
G (Fall, IAP, Summer)
Units arranged
Can be repeated for credit.
Group study through distance learning on current topics related to management.
Consult Sloan Educational Services

15.S33 Special Distance Learning Seminar in Management
Prereq: None
G (Summer)
Units arranged
Can be repeated for credit.
Group study through distance learning on current topics related to management.
Consult Sloan Educational Services

15.S35-15.S38 Special Distance Learning Seminar in Management
Prereq: None
G (Fall, IAP, Summer)
Units arranged [P/D/F]
Can be repeated for credit.
Group study through distance learning on current topics related to management.
Consult Sloan Educational Services
15.S40 Special Seminar in Management
Prereq: None
U (Fall, IAP, Summer)
Units arranged [P/D/F]
Can be repeated for credit.

Group study of current topics related to management not otherwise included in curriculum.

Staff

15.S41 Special Seminar in Management
Prereq: None
Acad Year 2020-2021: Not offered
Acad Year 2021-2022: U (IAP)
Units arranged [P/D/F]
Can be repeated for credit.

Group study of current topics related to management not otherwise included in curriculum.

Staff

15.S42 Special Seminar in Management
Prereq: None
U (Fall)
Units arranged
Can be repeated for credit.

Group study of current topics related to management not otherwise included in curriculum.

Staff

15.S43 Special Seminar in Management
Prereq: None
U (Fall; first half of term)
Units arranged
Can be repeated for credit.

Group study of current topics related to management not otherwise included in curriculum.

Staff

15.S44 Special Seminar in Management
Prereq: None
U (Fall)
Units arranged
Can be repeated for credit.

Group study of current topics related to management not otherwise included in curriculum.

Staff

15.S45 Special Seminar in Management
Prereq: None
U (Fall)
Units arranged
Can be repeated for credit.

Group study of current topics related to management not otherwise included in curriculum.

Staff

15.S46 Special Seminar in Management
Prereq: None
U (Fall)
Units arranged
Can be repeated for credit.

Group study of current topics related to management not otherwise included in curriculum.

Staff

15.S47 Special Seminar in Management
Prereq: None
U (Fall, IAP)
Units arranged
Can be repeated for credit.

Group study of current topics related to management not otherwise included in curriculum.

Consult Undergraduate Program Headquarters

15.S50 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, IAP)
Units arranged [P/D/F]
Can be repeated for credit.

Group study of current topics related to management not otherwise included in curriculum.

Consult Sloan Educational Services

15.S51 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, IAP, Spring, Summer; second half of term)
Units arranged [P/D/F]
Can be repeated for credit.

Group study of current topics related to management not otherwise included in curriculum.

Consult Sloan Educational Services
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Prerequisites</th>
<th>Units</th>
<th>Repeatable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.S52</td>
<td>Special Seminar in Management</td>
<td>Permission of instructor, G (IAP, Spring)</td>
<td>P/D/F</td>
<td>Yes</td>
<td>Can be repeated for credit. Group study of current topics related to management not otherwise included in curriculum. Consult Sloan Educational Services</td>
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<tr>
<td>15.S53</td>
<td>Special Seminar in Management</td>
<td>Permission of instructor, G (IAP)</td>
<td>P/D/F</td>
<td>Yes</td>
<td>Can be repeated for credit. Group study of current topics related to management not otherwise included in curriculum. Consult Sloan Educational Services</td>
</tr>
<tr>
<td>15.S54</td>
<td>Special Seminar in Management</td>
<td>Permission of instructor, G (Fall, IAP, Spring)</td>
<td>P/D/F</td>
<td>Yes</td>
<td>Can be repeated for credit. Group study of current topics related to management not otherwise included in curriculum. Consult Sloan Educational Services</td>
</tr>
<tr>
<td>15.S55</td>
<td>Special Seminar in Management</td>
<td>Permission of instructor, G (Fall, Spring)</td>
<td>P/D/F</td>
<td>Yes</td>
<td>Can be repeated for credit. Group study of current topics related to management not otherwise included in curriculum. Consult Sloan Educational Services</td>
</tr>
<tr>
<td>15.S56</td>
<td>Special Seminar in Management</td>
<td>Permission of instructor, G (IAP)</td>
<td>P/D/F</td>
<td>Yes</td>
<td>Can be repeated for credit. Group study of current topics related to management not otherwise included in curriculum. Consult Sloan Educational Services</td>
</tr>
<tr>
<td>15.S57</td>
<td>Special Seminar in Management</td>
<td>Permission of instructor, G (Fall, Summer)</td>
<td>P/D/F</td>
<td>Yes</td>
<td>Can be repeated for credit. Group study of current topics related to management not otherwise included in curriculum. Consult Sloan Educational Services</td>
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<tr>
<td>15.S58</td>
<td>Special Seminar in Management</td>
<td>Permission of instructor, G (IAP, Summer)</td>
<td>P/D/F</td>
<td>Yes</td>
<td>Can be repeated for credit. Group study of current topics related to management not otherwise included in curriculum. Consult Sloan Educational Services</td>
</tr>
<tr>
<td>15.S59</td>
<td>Special Seminar in Management</td>
<td>Permission of instructor, G (IAP, Summer)</td>
<td>P/D/F</td>
<td>Yes</td>
<td>Can be repeated for credit. Group study of current topics related to management not otherwise included in curriculum. Consult Sloan Educational Services</td>
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<tr>
<td>15.S60</td>
<td>Special Seminar in Management</td>
<td>Permission of instructor, G (IAP, Summer)</td>
<td>P/D/F</td>
<td>Yes</td>
<td>Can be repeated for credit. Group study of current topics related to management not otherwise included in curriculum. Consult Sloan Educational Services</td>
</tr>
<tr>
<td>15.S61</td>
<td>Special Seminar in Management</td>
<td>Permission of instructor, G (Fall, IAP, Summer)</td>
<td>P/D/F</td>
<td>Yes</td>
<td>Can be repeated for credit. Group study of current topics related to management not otherwise included in curriculum. Consult Sloan Educational Services</td>
</tr>
</tbody>
</table>
15.S62 Special Seminar in Management
Prereq: Permission of instructor
G (IAP)
Units arranged [P/D/F]
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services

15.S63 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, Summer)
Units arranged [P/D/F]
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services

15.S64 Special Seminar in Management
Prereq: Permission of instructor
G (Fall; first half of term)
Units arranged [P/D/F]
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services

15.S65 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, IAP, Spring, Summer)
Units arranged [P/D/F]
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services

15.S66 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, Spring)
Units arranged
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services

15.S67 Special Seminar in Management
Prereq: Permission of instructor
G (Spring, Summer; second half of term)
Units arranged
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services

15.S68 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, Spring)
Units arranged
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services

15.S69 Special Seminar in Management
Prereq: Permission of instructor
G (Summer)
Units arranged
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services

15.S70-15.S75 Special Seminar in Management
Prereq: Permission of instructor
G (Fall, IAP)
Units arranged
Can be repeated for credit.
Group study of current topics related to management not otherwise included in curriculum.
Consult Sloan Educational Services
Thesis, Research, and Practice

15.UR Undergraduate Research in Management
Prereq: None
U (Fall, IAP, Spring, Summer)
Units arranged [P/D/F]
Can be repeated for credit.

Participation in the work of a research group which includes such activities as independent study of the literature, direct involvement in the group’s research (commensurate with the student’s skills and preparation), or project work under an individual faculty member possibly extending over more than one term. Admission by arrangement with individual faculty member. Requires written project report.

15.URG Undergraduate Studies in Management
Prereq: None
U (Fall, IAP, Spring, Summer)
Units arranged
Can be repeated for credit.

Participation in the work of a research group which includes such activities as independent study of the literature, direct involvement in the group’s research (commensurate with the student’s skills and preparation), or project work under an individual faculty member possibly extending over more than one term. Admission by arrangement with individual faculty member. Requires written project report.

J. S. Carroll

15.EPE UPOP Engineering Practice Experience
Engineering School-Wide Elective Subject.
Offered under: 1.EPE, 2.EPE, 3.EPE, 6.EPE, 8.EPE, 10.EPE, 15.EPE, 16.EPE, 20.EPE, 22.EPE
Prereq: 2.EPW or permission of instructor
U (Fall, Spring)
0-0-1 units

See description under subject 2.EPE.

Staff

15.950 Independent Study in Management
Prereq: None
U (Fall, IAP, Spring, Summer)
Units arranged [P/D/F]
Can be repeated for credit.

Advanced work, special investigation or application of a management topic, on an individual basis, under faculty supervision. May include readings, conferences, laboratory and fieldwork, and reports. Projects require prior approval, as well as a written proposal and a final report.

M. Hanlon

15.951 Independent Study in Management
Prereq: None
U (Fall, IAP, Spring, Summer)
Units arranged
Can be repeated for credit.

Advanced work, special investigation or application of a management topic, on an individual basis, under faculty supervision. May include readings, conferences, laboratory and fieldwork, and reports. Projects require prior approval, as well as a written proposal and a final report.

M. Hanlon

15.952 Curricular Practical Training
Prereq: None
U (Fall, IAP, Spring, Summer)
0-1-0 units
Can be repeated for credit.

For Course 15 undergraduate students participating in management curriculum-related off-campus internship experiences. Students must have an employment offer from a company or organization and must find a Sloan faculty supervisor before enrolling. Consult Sloan Undergraduate Education Office

M. Hanlon

15.960 Independent Study in Management
Prereq: Permission of instructor
G (Fall, IAP, Spring, Summer)
Units arranged [P/D/F]
Can be repeated for credit.

Advanced work, special investigation or application of a management topic, on an individual basis, under faculty supervision. May include readings, conferences, laboratory and fieldwork, and reports. Projects require prior approval, as well as a written proposal and a final report.

Consult Sloan Educational Services
**15.961 Independent Study in Management**  
Prereq: Permission of instructor  
G (Fall, IAP, Spring, Summer)  
Units arranged  
Can be repeated for credit.

Advanced work, special investigation or application of a management topic, on an individual basis, under faculty supervision. May include readings, conferences, laboratory and fieldwork, and reports. Projects require prior approval, as well as a written proposal and a final report.  
*Consult Sloan Educational Services*

**15.962 Pre-Thesis Research**  
Prereq: Permission of instructor  
G (Fall, IAP, Spring, Summer)  
Units arranged  
Can be repeated for credit.

Pre-thesis research conducted under faculty supervision; advance approval of project proposal required. Restricted to PhD students.  
*Consult H. Ross*

**15.998 Independent Group Study in Action Learning**  
Prereq: None  
G (Fall, IAP, Spring, Summer)  
Units arranged

Team-based opportunities for application management tools, under faculty supervision, on dynamic projects that provide a wide array of operational challenges facing organizations around the world. May include travel to on-site locales. Projects require prior approval, as well as a written proposal and a final report.  
*Consult T. Walor*

**15.999 Internship**  
Prereq: None  
G (Fall, IAP, Spring, Summer)  
Units arranged [P/D/F]  
Can be repeated for credit.

Students participate in an off-campus internship experience and apply topics of management and/or culture to their experience. Requirements include mandatory attendance at one workshop and a written deliverable. Students must have a formal offer letter from host employer/organization prior to enrolling. Restricted to MIT Sloan students who wish to intern in an area related to their field of study. Additional restrictions may apply.  
*Consult Sloan Educational Services*