

IDM Engineering **Foundation** and Elective Course List

Effective: 11/2/18

Civil and Environmental Engineering

- 1.001 Engineering Computation and Data Science
- 1.124[J] Software and Computation for Simulation
- 1.125[J] Architecting and Engineering Software Systems
- 1.126[J] Pattern Recognition and Analysis
- 1.128[J] Computational Geometry
- [1.146 Engineering Systems Analysis for Design](#)
- 1.151 Probability and Statistics in Engineering
- 1.152 Random Processes in Engineering
- 1.200[J] Transportation Systems Analysis: Performance and Optimization
- 1.201[J] Transportation Systems Analysis: Demand and Economics
- 1.202[J] Demand Modeling
- 1.207 Computer Algorithms in Systems Engineering
- 1.208 Resilient Infrastructure Networks
- 1.231[J] Planning and Design of Airport Systems
- 1.252 Urban Transportation Planning
- 1.261[J] Case Studies in Logistics and Supply Chain Management
- 1.275[J] Business and Operations Analytics
- 1.286[J] Energy and Infrastructure Technologies
- 1.463[J] Globalization and the Built Environment
- 1.472 Innovative Project Delivery in the Public and Private Sectors
- 1.541 Mechanics and Design of Concrete Structures
- 1.57 Mechanics of Materials: An Energy Approach
- 1.573[J] Structural Mechanics
- 1.582 Design of Steel Structures
- 1.818[J] Sustainable Energy
- 1.819[J] Design for Sustainability

Mechanical Engineering

- 2.091[J] Software and Computation for Simulation
- 2.096[J] Introduction to Numerical Simulation
- 2.120 Introduction to Robotics
- [2.131 Advanced Instrumentation and Measurement](#)
- [2.140 Analysis and Design of Feedback Control Systems](#)
- 2.141 Modeling and Simulation of Dynamic Systems
- 2.151 Advanced System Dynamics and Control
- 2.154 Maneuvering and Control of Surface and Underwater Vehicles
- [2.160 Identification, Estimation, and Learning](#)
- 2.165[J] Robotics
- 2.171 Analysis and Design of Digital Control Systems

2.183[J] Biomechanics and Neural Control of Movement
2.22 Design Principles for Ocean Vehicles
2.372[J] Design and Fabrication of Microelectromechanical Systems
2.391[J] Nanostructure Fabrication
[2.42 General Thermodynamics](#)
2.52 Modeling and Approximation of Thermal Processes
[2.55 Advanced Heat and Mass Transfer](#)
[2.62\[J\] Fundamentals of Advanced Energy Conversion](#)
2.625[J] Electrochemical Energy Conversion and Storage: Fundamentals, Materials and Applications
2.626 Fundamentals of Photovoltaics
2.65[J] Sustainable Energy
2.680 Unmanned Marine Vehicle Autonomy, Sensing, and Communication
2.702 Systems Engineering & Naval Ship Design
[2.720 Elements of Mechanical Design](#)
[2.733 Engineering Systems Design](#)
2.737 Mechatronics
2.740 Bio-inspired Robotics
2.744[J] Product Design
[2.75\[J\] Medical Device Design](#)
2.753 Development of Mechanical Products
2.76 Global Engineering
[2.77 FUNdaMENTALS of Precision Product Design](#)
2.778 Large and Complex Systems Design and Concept Development
2.782[J] Design of Medical Devices and Implants
2.79 Biomaterials: Tissue Interactions
[2.810 Manufacturing Processes and Systems](#)
2.821[J] Selection and processing of Structural Materials
[2.83 Energy, Materials and Manufacturing](#)
2.830[J] Control of Manufacturing Processes
2.852 Manufacturing Systems Analysis
2.854 Introduction to Manufacturing Systems
2.888 Professional Seminar in Global Manufacturing Innovation and Entrepreneurship
2.S990 Designing the First Year at MIT (Spring 2018 only)
[2.S998 Additive Manufacturing \(Spring 2018 only\)](#)
2.S999 Solving for Carbon Neutrality at MIT (Spring 2018 only)

Materials Science and Engineering

3.207 Innovation and Commercialization
3.22 Mechanical Behavior of Materials
3.36 Cellular Solids: Structure, Properties, Applications
3.371 Selection and Processing of Structural Materials
[3.560 Industrial Ecology of Materials](#)
[3.57\[J\] Materials Selection, Design, and Economics](#)

Electrical Engineering and Computer Science

- 6.231 Dynamic Programming and Stochastic Control
- 6.241[J] Dynamic Systems and Control
- 6.254 Game Theory with Engineering Applications
- [6.267 Heterogeneous Networks: Architecture, Transport, Protocols, and Management](#)
- [6.268 Network Science and Models](#)
- [6.320 Feedback System Design](#)
- 6.335[J] Fast Methods for Partial Differential and Integral Equations
- [6.336\[J\] Introduction to Numerical Simulation](#)
- 6.338[J] Parallel Computing
- 6.341 Discrete-Time Signal Processing
- 6.345 Automatic Speech Recognition
- 6.374 Analysis and Design of Digital Integrated Circuits
- 6.431A Introduction to Probability I
- 6.431B Introduction to Probability II
- 6.434[J] Statistics for Engineers and Scientists
- 6.438 Algorithms for Inference
- 6.441 Information Theory
- 6.450 Principles of Digital Communication
- 6.453 Quantum Optical Communication
- 6.521[J] Cellular Biophysics
- 6.522 Quantitative Physiology: Organ Transport Systems
- [6.525\[J\] Medical Device Design](#)
- 6.541[J] Speech Communication
- 6.555[J] Biomedical Signal and Image Processing
- 6.561[J] Fields, Forces, and Flows in Biological Systems
- 6.621 Fundamentals of Photonics
- 6.630 Electromagnetics
- 6.631 Optics and Photonics
- 6.637 Optical Signals, Devices, and Systems
- 6.685 Electric Machines
- 6.690 Introduction to Electric Power Systems
- 6.720[J] Integrated Microelectronic Devices
- 6.728 Applied Quantum and Statistical Physics
- 6.777[J] Design and Fabrication of Microelectromechanical Systems
- 6.781[J] Nanostructure Fabrication
- 6.820 Foundations of Program Analysis
- 6.823 Computer System Architecture
- [6.824 Distributed Computer System Engineering](#)
- 6.829 Computer Networks
- 6.830 Database Systems
- [6.831 User Interface Design and Implementation](#)
- 6.832 Underactuated Robotics
- 6.833 The Human Intelligence Enterprise
- 6.834[J] Cognitive Robotics
- 6.835 Intelligent Multimodal User Interfaces

[6.836 Multicore Programming](#)
6.839 Advanced Computer Graphics
6.840[J] Theory of Computation
6.846 Parallel Computing
6.849 Geometric Folding Algorithms: Linkages, Origami, Polyhedra
6.852[J] Distributed Algorithms
6.857 Network & Computer Security
6.858 Computer Systems Security
6.861 Aspects of a Computational Theory of Intelligence
[6.862 Applied Machine Learning](#)
6.864 Advanced Natural Language Processing
6.865 Advanced Computational Photography
6.866 Machine Vision
6.867 Machine Learning
6.869 Advances in Computer Vision
6.871 Performance Engineering of Software Systems
6.872[J] Biomedical Computing
6.929[J] Energy Technology and Policy: From Principles to Practice
6.946 Classical Mechanics: A Computational Approach

Chemical Engineering

10.392[J] Fundamentals of Advanced Energy Conversion
10.551 Systems Engineering
10.585 Engineering Nanotechnology

Aeronautics and Astronautics

[16.31 Feedback Control Systems](#)
[16.343 Spacecraft and Aircraft Sensors and Instrumentation](#)
16.355[J] Concepts in the Engineering of Software
16.422[J] Human Supervisory Control of Automated Systems
16.423[J] Aerospace Biomedical and Life Support Engineering
16.453[J] Human Systems Engineering
16.470[J] Statistical Methods in Experimental Design
16.475[J] Human-Computer Interface Design Colloquium
16.511 Aircraft Engines and Gas Turbines
16.512 Rocket Propulsion
16.522 Space Propulsion
16.842 Fundamentals of Systems Engineering
16.851 Satellite Engineering
16.852[J] Integrating The Lean Enterprise
[16.855 Systems Architecting Applied to Enterprises](#)
[16.863\[J\] System Safety Concepts](#)
[16.888\[J\] Multidisciplinary System Design Optimization](#)
16.895[J] Engineering Apollo: The Moon Project as a Complex System

Biological Engineering

[20.201 Fundamentals of Drug Development](#)
20.203[J] Neurotechnology in Action
20.207 Biotechnologies in Infectious Disease
[20.405\[J\] Principles of Synthetic Biology](#)
20.410[J] Molecular, Cellular, and Tissue Biomechanics
20.420[J] Biomolecular Kinetics and Cellular Dynamics
20.445 Methods & Problems in Microbiology
[20.452 Principles of Neuroengineering](#)
[20.463\[J\] Biomaterials Science and Engineering](#)
20.490 Foundations of Computational and Systems Biology
[20.554 Frontiers in Chemical Biology](#)

Nuclear Engineering

22.13 Nuclear Energy Systems
22.38 Probability and Its Applications To Reliability, Quality Control, and Risk Assessment
22.611[J] Introduction to Plasma Physics 1
22.811[J] Sustainable Energy

IDSS

[IDS.131 Statistics, Computation and Applications](#)
[IDS.330 Real Options for Product and Systems Design](#)
[IDS.333 Risk and Decision Analysis](#)
IDS.410[J] Modeling and Assessment for Policy
IDS.521 Energy Systems and Climate Change Mitigation
IDS.526[J] Sustainability Science and Engineering

SCM

SCM.266 Freight Transportation
SCM.269 Supply Chain Risk Management

Classes listed jointly in the SoE and Sloan

The following are a set of classes that are currently J-listed across the SoE and the Sloan School and that qualify for credit toward an IDM degree. Each of these courses includes substantial content in both engineering and management. Students taking these courses should count half of the units toward engineering requirements and half toward management requirements. For example, a student completing Course 16.71[J]/15.054[J], The Airline Industry, will receive 6 units of engineering elective credit and 6 units of management elective credit. A student completing Course 15.762[J]/1.273[J], Supply Chain Planning, will receive 3 units of management foundation credit and 3 units of engineering foundation credit.

**Unless otherwise noted with ** all course units split evenly. Exceptions include 15.480, 15.565, and 6.928- see below.

The following 3 courses have been approved for split **Foundation** credit (half Engineering Foundation, half Management Foundation):

15.093[J] Optimization Methods

Same subject as 6.255[J], IDS.200[J] Prereq: 18.06 G 4-0-8 units

Introduces the principal algorithms for linear, network, discrete, robust, nonlinear, dynamic optimization and optimal control. 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.

15.762[J] Supply Chain Planning

Same subject as 1.273[J], IDS.150[J] Prereq: 1.260[J] or 15.761 G 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.

15.763[J] Manufacturing System and Supply Chain Design

Same subject as 1.274[J], IDS.151[J] Prereq: 1.260[J], 15.761, or 15.778 G (Spring) 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.

The following courses on this and subsequent pages have been approved for split **Elective** credit:

15.017[J] Engineering, Economics and Regulation for Energy Access in Developing Countries

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.

Same subject as [6.934\[J\]](#); Prereq: None, Units: 3-0-9

15.054 [J] The Airline Industry

Prereq: None 12 Units

Overview of the global airline industry, focusing on recent industry performance, current issues and challenges for the future. Fundamentals of airline industry structure, airline economics, operations planning, safety, labor relations, airports and air traffic control, marketing, and competitive strategies, with an emphasis on the interrelationships among major industry stakeholders. Recent research findings of the MIT Global Airline Industry Program are showcased, including the impacts of congestion and delays, evolution of information technologies, changing human resource management practices, and competitive effects of new entrant airlines. Taught by faculty participants of the Global Airline Industry Program.

Same subject as 1.232[J], 16.71[J], G

15.062[J] Data Mining: Finding the Data and Models that Create Value

Same subject as IDS.145

Subject meets with 15.0621 Prereq: 15.060 or 15.075[J] G (second half of term) 2-0-4 units

Provides an introduction to data mining and machine learning, a class of methods that assist in recognizing patterns 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, search engines, and social networks. Includes topics in logistic regression, association rules, tree-structured classification and regression, cluster analysis, discriminant analysis, and neural network methods. Presents examples of successful applications in areas such as credit ratings, fraud detection, marketing, customer relationship management, and investments. Introduces data-mining software. Term project required. Meets with 15.0621 when offered concurrently. Students taking graduate version complete additional assignments.

15.066[J] System Optimization and Analysis for Operations

Same subject as 2.851[J], Prereq: Calculus II (GIR) G 4-0-8 units

Introduction to mathematical modeling, optimization, and simulation, as applied to manufacturing. Specific methods include linear programming, network flow problems, integer and nonlinear programming, discrete-event simulation, heuristics and computer applications for manufacturing processes and systems. Restricted to Leaders for Global Operations students.

15.070[J] Advanced Stochastic Processes

Same subject as 6.265[J] Prereq: 6.431, 15.085[J], 18.100A, 18.100B, or 18.100C G 3-0-9 units

Analysis and modeling of stochastic processes. Topics include measure theoretic probability, martingales, filtration, and stopping theorems; elements of large deviations theory; Brownian motion and reflected Brownian motion; stochastic integration and Ito calculus; functional limit theorems. Applications to finance theory, insurance, queueing and inventory models.

15.073[J] Logistical and Transportation Planning Methods

Prereq: 6.041 12 Units

Quantitative techniques of operations research with emphasis on applications in transportation systems analysis (urban, air, ocean, highway, and pickup and delivery systems) and in the planning and design of logistically oriented urban service systems (e.g., fire and police departments, emergency medical services, and emergency repair services). Unified study of functions of random variables, geometrical probability, multi-server queuing theory, spatial location theory, network analysis and graph theory, and relevant methods of simulation. Computer exercises and discussions of implementation difficulties.
Same subject as 1.203[J], 16.76[J], G

15.077[J] Statistical Learning and Data Mining

Same subject as IDS.211 Prereq: 6.431, 15.085[J], or 18.600; 18.06 or 18.700 G (Spring) 4-0-8 units

Advanced introduction to the theory and application of statistics, data-mining, and machine learning, concentrating on techniques used in management science, marketing, finance, consulting, engineering systems, and bioinformatics. First half builds the statistical foundation for the second half, with topics selected from sampling, including the bootstrap, theory of estimation, testing, nonparametric statistics, analysis of variance, categorical data analysis, regression analysis, MCMC, EM, Gibbs sampling, and Bayesian methods. Second half focuses on data mining, supervised learning, and multivariate analysis. Topics selected from logistic regression; principal components and dimension reduction; discrimination and classification analysis, including 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 packages, such as R and MATLAB for data analysis and data mining. Includes a term project.

15.081[J] Introduction to Mathematical Programming

Prereq: 18.06 12 Units

Introduction to linear optimization and its extensions emphasizing both methodology and the underlying mathematical structures and geometrical ideas. Covers classical theory of linear programming as well as some recent advances in the field. Topics: simplex method; duality theory; sensitivity analysis; network flow problems; decomposition; integer programming; interior point algorithms for linear programming; and introduction to combinatorial optimization and NP-completeness.

Same subject as 6.251[J] G

15.083[J] Integer Programming and Combinatorial Optimization

Same subject as 6.859[J] Prereq: 15.081[J] or permission of instructor Acad Year 2016-2017: Not offered

Acad Year 2017-2018: G 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.

15.084[J] Nonlinear Optimization

Prereq: 18.06; 18.100A, 18.100B, or 18.100C 12 Units

Unified analytical and computational approach to nonlinear optimization problems.

Unconstrained optimization methods include gradient, conjugate direction, Newton, sub-gradient and first-order methods. Constrained optimization methods include feasible directions, projection, interior point methods, and Lagrange multiplier methods. Convex analysis, Lagrangian relaxation, nondifferentiable optimization, and applications in integer programming. Comprehensive treatment of optimality conditions and Lagrange multipliers. Geometric approach to duality theory. Applications drawn from control, communications, power systems, and resource allocation problems.

Same subject as 6.252[J] G

15.085[J] Fundamentals of Probability

Prereq: Calculus II (GIR) 12 Units

Introduction to probability theory. Probability spaces and measures. Discrete and continuous random variables. Conditioning and independence. Multivariate normal distribution. Abstract integration, expectation, and related convergence results. Moment generating and characteristic functions. Bernoulli and Poisson process. Finite-state Markov chains. Convergence notions and their relations. Limit theorems. Familiarity with elementary notions in probability and real analysis is desirable.

Same subject as 6.436[J] G

15.094[J] Robust Modeling, Optimization, and Computation

Same subject as 1.142[J] Prereq: 18.06 or permission of instructor G 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.

15.371[J] Innovation Teams

Same subject as 10.807[J] Prereq: 15.911 or permission of instructor G 4-4-4 units

Students work in teams to develop commercialization strategies for innovative research projects generated in MIT laboratories. Projects cover critical aspects of commercialization, from selecting the target application and market for the technology to developing an intellectual property strategy and performing a competitive analysis. Instruction provided in communication and teamwork skills, as well as analysis of the challenges and benefits of technology transfer. Includes lectures, guest speakers, and extensive team coaching. Designed primarily for students in engineering, science, and management. Applications, resumes, and a brief statement of interest are required prior to registration.

15.377[J] Linked Data Ventures

Prereq: 6.005, 6.033, or permission of instructor 12 Units; Same subject as 6.932[J] G

Provides practical experience in the use and development of semantic web technologies. Focuses on gaining practical insight from executives and practitioners who use these technologies in their companies. Working in multidisciplinary teams, students complete a term project to develop a sustainable prototype. Concludes with a professional presentation, judged by a panel of experts, and a technical presentation to faculty.

15.428[J] Tools for Analysis: Design for Real Estate and Infrastructure Development

Prereq: None 6 Units

Introduction to analytical tools to support design and decision-making in real estate, infrastructure development, and investment. Particular focus on identifying and valuing sources of flexibility using "real options," Monte-Carlo simulation, and other techniques from the field of engineering systems. Integrates economic and engineering perspectives, and is suitable for students with various backgrounds. Provides useful preparation for thesis work in the area. Same subject as 11.434[J], IDS.671 G

**15.480[J] Science and Business of Biotechnology

(Same subject as 7.546[J], 20.586[J])

Prereq: Permission of instructor; Coreq: 15.401

Units: 3-0-6 (Units will be split 6 as management elective, 3 as engineering elective (not vice versa))

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.

**15.565[J] Digital Evolution: Managing Web 3.0

(Same subject as IDS.345[J])

Prereq: Permission of instructor

Units: 3-0-6 (Student may choose to apply 6 units to management elective and 3 units to engineering elective, or vice versa (student's choice)).

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.

15.657[J] Technology, Globalization, and Sustainable Development

Prereq: Permission of instructor 12 Units

Investigates sustainable development, taking a broad view to include not only a healthy economic base, but also a sound environment, stable employment, adequate purchasing power, distributional equity, national self-reliance, and maintenance of cultural integrity. Explores

national, multinational, and international political and legal mechanisms to further sustainable development through transformation of the industrial state. Addresses the importance of technological innovation and the financial crisis of 2008.
Same subject as 1.813[J], 11.466[J], IDS.437[J] G

15.765[J] Global Supply Chain Management

Prereq: 1.260[J], 1.261[J], 15.761, 15.778, or permission of instructor 6 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.

Same subject as 1.265[J], 2.965[J], SCM.265[J] G

15.770[J] Logistics Systems

Same subject as 1.260[J], IDS.730, SCM.260 Prereq: Permission of instructor G 3-0-9 units

Provides an introduction to supply chain management from both analytical and practical perspectives. Taking a unified approach, students develop a framework for making intelligent decisions within the supply chain. Covers key logistics functions, such as demand planning, procurement, inventory theory and control, transportation planning and execution, reverse logistics, and flexible contracting. Explores concepts such as postponement, portfolio management, and dual sourcing. Emphasizes skills necessary to recognize and manage risk, analyze various tradeoffs, and model logistics systems.

**6.928[J] Leading Creative Teams

(Same subject as 16.990[J]/15.S67 (spring 2018))

Prereq: None

Units: 3-0-6 (Units will be split 6 as management elective, 3 as engineering elective (not vice versa))

Prepares students to lead teams charged with developing creative solutions in engineering and technical environments. Grounded in research but practical in focus, equips students with leadership competencies such as building self-awareness, motivating and developing others, creative problem solving, influencing without authority, managing conflict, and communicating effectively. Teamwork skills include how to convene, launch, and develop various types of teams, including project teams. Learning methods emphasize personalized and professional skill development.

SCM.290 Sustainable Supply Chain Management

first half of term

Prereq: None

Units: 3-0-3

Introduces operational aspects of sustainable supply chains. Focuses on analyzing the implications of environmental considerations in logistics decisions. Topics include carbon footprint, sustainable logistics, closed-loop supply chains, reverse logistics, and sustainable

supply chain strategy. Includes a team project that evaluates the sustainable supply chain strategy of an industry or a publicly-traded company.