SUPPLY CHAIN MANAGEMENT (SCM)

SCM.250 Analytical Methods for Supply Chain Management I
Prereq: None
G (Fall; partial term)
2-0-1 units

Covers the primary methods of analysis required for supply chain management planning. The class solves various practical problems using simulation, linear programming, integer programming, regression, and other techniques. The work is primarily team based with a final exam. Restricted to SCM students.
E. Dugundji

SCM.251 Supply Chain Financial Analysis
Prereq: None. *Coreq: SCM.260[J]*; or permission of instructor
G (Fall; partial term)
3-0-6 units

Explores the linkages between supply chain management and corporate finance. Emphasizes how the supply chain creates value for both the shareholders of the company and for the stakeholders affected by the company's operations. Sessions combine lectures and data-rich cases from the manufacturer, distributor, and retailer perspective. Topics include accounting fundamentals, financial analysis, activity-based costing, working capital management, cash flow projections, capital budgeting, and sustainability.
J. Goentzel, J. Rice

SCM.253 Case Studies in Supply Chain Financial Analysis
Prereq: Permission of instructor
G (Spring; first half of term)
Not offered regularly; consult department
2-0-4 units

Students explore and discuss case studies that focus on financial analysis in real supply chains. Cases provide the opportunity for students to apply the theory and quantitative methods that they have studied in addressing actual supply chain challenges. These include decision making around sourcing, capital investments, inventory strategy, and new product introduction. Students present and defend their solutions to their peers.
J. Goentzel, J. Rice

SCM.254 Analytical Methods for Supply Chain Management II
Prereq: SCM.250, SCM.500, or permission of instructor
G (IAP)
2-0-1 units

Introduces tools needed to analyze data to solve supply chain and logistics problems. Topics include principal component analysis and clustering, regression and prediction for continuous and discrete variables, experimental design and causal inference, and geospatial visualization and analysis. Instruction provided in Python programming in the context of data analysis applications for supply chain management. Restricted to SCM students.
Staff

SCM.256 Data Science and Machine Learning for Supply Chain Management
Prereq: SCM.254 or permission of instructor
G (Spring)
5-0-7 units

Introduces data science and machine learning topics in both theory and application. Data science topics include database and API connections, data preparation and manipulation, and data structures. Machine learning topics include model fitting, tuning and prediction, end-to-end problem solving, feature engineering and feature selection, overfitting, generalization, classification, regression, neural networks, dimensionality reduction and clustering. Covers software packages for statistical analysis, data visualization and machine learning. Introduces best practices related to source control, system architecture, cloud computing frameworks and modules, security, emerging financial technologies and software process. Applies teaching examples to logistics, transportation, and supply chain problems. Enrollment limited.
E. Dugundji

SCM.258 Written Communication Topics for Supply Chain Management
Prereq: None
G (Fall, IAP)
1-0-0 units
Credit cannot also be received for SCM.259

Provides an overview of the expectations for the capstone project and thesis. Explores techniques for developing and organizing ideas and for writing concise, fluid prose. Covers how to find and work with source materials. Restricted to SCM students.
P. Siska

SCM.259 Written Communication for Supply Chain Management
Prereq: None
G (Fall)
1-0-2 units
Credit cannot also be received for SCM.258

Provides an overview of the expectations for the capstone project/thesis. Explores techniques for developing and organizing ideas and for writing concise, fluid prose. Covers how to find and use source materials. Also touches upon principles of good poster design. Restricted to SCM students.
P. Siska, T. Gooley

SCM.260[J] Logistics Systems
Same subject as 1.260[J], 15.770[J], IDS.730[J]
Subject meets with SCM.271
Prereq: Permission of instructor
G (Fall)
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. SCM.271 meets with SCM.260[J], but has fewer assignments.
A. Acocella, C. Caplice

SCM.261[J] Supply Chain Transformation: Case Studies
Same subject as 1.261[J], 15.771[J]
Prereq: None
G (Spring; first half of term)
2-0-4 units

A combination of case studies and industry speakers covering the strategic and operating issues in supply chain transformation. Focuses on the pragmatic creation of supply chain capabilities, including resilience, omnichannel, E2E visibility, entrepreneurship, servitization, E2E automation, and AI.
M. J. Saenz

SCM.262 Leading Global Teams
Prereq: SCM.260[J] or permission of instructor
G (IAP)
2-0-1 units

Reinforces supply chain concepts and develops management and teamwork skills. Focuses on practical, rather than theoretical tools, methodologies, and approaches that students will use throughout their supply chain career. Includes guest lectures, a case competition, and several large-scale, team-based simulation learning games. Restricted to SCM students.
C. Mejia

SCM.263 Advanced Writing Workshop for SCM
Prereq: None
G (Spring)
1-0-2 units

Designed to help students write an excellent capstone/thesis. Lectures cover conventions of academic writing and the expectations for each chapter of the capstone/thesis. Small team coaching sessions provide in-depth feedback on each project, helping students present their ideas in cogent, concise prose. Restricted to SCM students.
P. Siska, T. Gooley

SCM.264 Databases and Data Analysis for Supply Chain Management
Subject meets with SCM.274
Prereq: None
G (Fall; first half of term)
3-0-3 units

Introduces databases, data analysis, and machine learning topics. Covers data modeling, relational databases, SQL queries, data mining, non-relational databases, and data warehouses. Introduces data analysis tools for visualization, regression, supervised and unsupervised techniques including principal component analysis and clustering. Term project includes implementation of data model, database, visualization and data analysis. SCM.274 meets with SCM.264 but requires fewer assignments and lectures. Restricted to SCM students.
C. Cassa, T. Hall

SCM.265[J] Global Supply Chain Management
Same subject as 1.265[J], 2.965[J], 15.765[J]
Prereq: 15.761, 15.778, SCM.260[J], SCM.261[J], or permission of instructor
G (Spring; first half of term)
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

SCM.266 Freight Transportation
Prereq: SCM.260[J]
G (Spring; second half of term)
2-0-4 units

Provides an in-depth introduction to the fundamental concepts and techniques related to the design, procurement, and management of freight transportation. Examines freight transportation as a bridging function for a firm, considering the physical flow of raw materials and finished goods as well as connections to suppliers and customers. Also covers how freight transportation insulates a firm's core operations from external disruptions and variability of supply and demand.
C. Caplice, A. Acocella

SCM.270 Current Challenges in Supply Chain Management
Prereq: None
G (Spring)
2-0-0 units

Each week students study and then discuss a case and/or article(s) related to a current challenge in supply chain management. Led by faculty and researchers in the MIT Center for Transportation and Logistics (CTL) along with invited guest speakers from industry. Topics highlight the current areas of research at CTL as well as other challenging issues from industry. Includes several required case write-ups or research papers.
C. Caplice

SCM.271 Logistics Systems Topics
Subject meets with 1.260[J], 15.770[J], IDS.730[J], SCM.260[J]
Prereq: Permission of instructor
G (Fall)
1-0-2 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. SCM.271 meets with SCM.260[J], but has fewer assignments. Restricted to students who previously completed the edX course SC1x Supply Chain Fundamentals.
A. Acocella, C. Caplice

SCM.274 Databases and Data Analysis Topics for Supply Chain Management
Subject meets with SCM.264
Prereq: Permission of instructor
G (Fall; first half of term)
1-0-2 units

Introduces databases, data analysis, and machine learning topics. Covers data modeling, relational databases, SQL queries, data mining, non-relational databases, and data warehouses. Introduces data analysis tools for visualization, regression, supervised and unsupervised techniques including principal component analysis and clustering. Term project includes implementation of data model, database, visualization and data analysis. SCM.274 meets with SCM.264 but requires fewer assignments and lectures. Restricted to SCM students.
C. Cassa, T. Hall

SCM.275 Advanced Supply Chain Systems Planning and Network Design
Prereq: None
G (Fall; second half of term)
2-0-4 units

Explores the challenges of supply chain design in the dynamic and uncertain context of the contemporary supply chains. Introduces students to the most common decisions in supply chain design, the main trade-offs associated with those decisions, and the fundamental quantitative methods for used in supply chain design. Helps students translate a real-life business decision-making problem into a formal supply chain network design mathematical model.
M. Winkenbach, M. Janjevic

SCM.281 Supply Chain Public Speaking Workshop
Prereq: None
G (Spring)
1-0-0 units

Further develops and refines public speaking skills through engaging interactive workshops. Techniques learned will help students become dynamic and authentic speakers. Includes speaking preparation, practice sessions, tactics related to content and delivery, storytelling, and crafting presentations, always in relation to concepts and fundamentals of supply chain management. Restricted to SCM students.
P. Cheek

SCM.282 Supply Chain Leadership Workshop
Prereq: None
G (IAP)
Not offered regularly; consult department
2-0-1 units

Designed to enhance your ability to manage and lead in challenging times through a series of self assessment instruments, case studies, and workshops. The objectives are to increase awareness of your strengths and weaknesses as a leader, provide a battery of instruments and surveys to help one understand the way one operates in an organizational setting, and offer strategies and tips on how to leverage one's strengths and work on areas in need of development. Restricted to SCM students.
M. Jesus Saenz

SCM.283 Humanitarian Logistics
Prereq: None
G (Spring; first half of term)
2-0-4 units

Explores how logistics management improves response to humanitarian crises stemming from natural disasters, armed conflicts, epidemics, and famine. Class sessions combine online and class lectures, practical exercises, case discussions, and guest speakers. Provides students from various backgrounds with knowledge of the humanitarian context and fundamental supply chain concepts, as well as practice applying new knowledge in developing and communicating plans and policies to address realistic problems.
J. Goentzel

SCM.284 Humanitarian Logistics Project
Prereq: SCM.283
G (Spring; second half of term)
1-0-5 units

Students completing SCM.283 may enroll for an independent study project, to be completed individually or in a small group, during the second half of the semester. Projects aim to drive innovation and improvement in humanitarian action, utilizing data and information directly from sources such as the UN, Red Cross, national government agencies, NGOs, and/or the private sector. Most projects include direct engagement with leaders from the humanitarian organizations.
J. Goentzel

SCM.287[J] Global Aging & the Built Environment
Same subject as 11.547[J]
Prereq: None
G (Spring)
3-0-9 units

See description under subject 11.547[J].
J. F. Coughlin

SCM.289 E-Commerce and Omnichannel Fulfillment Strategies
Prereq: None
G (Spring; first half of term)
2-0-4 units

Explores supply chain challenges when implementing omnichannel strategies. Develops an in-depth understanding of how customers' expectations and e-commerce is transforming warehouses operations. Discusses the most relevant traditional warehouses operations and the most innovating fulfillment models in e-commerce and omnichannel. Includes presentations, guest speakers, team projects, and case discussions.
E. Ponce

SCM.290 Sustainable Supply Chain Management
Prereq: None
G (Spring; first half of term)
Not offered regularly; consult department
2-0-4 units

Focuses on analyzing the environmental implications of logistics decisions in the supply chain, with special focus on the effect of green transportation, and the new trends in logistics sustainability within the context of growing urbanization and e-commerce. Studies practical alternatives on how to optimize CO_2 emissions during last-mile operations by using geo-spatial analysis, and data analytics. Examines the delivery of "fast" and "green" in the new digital era, consumer relationship to sustainable products and services, and environmental costs of fast-shipping e-commerce. Covers supply chain carbon footprint, sustainable transportation, green vehicle routing, fleet assignment, truck consolidation, closed-loop supply chains, reverse logistics, green inventory management, and green consumer behavior.
J. Velazquez

SCM.291 Procurement Fundamentals
Prereq: None
G (Spring; second half of term)
2-0-4 units

Introduces key strategies that elevate procurement from a transactional function to a strategic role, enabling participants to make informed decisions that drive supply chain continuity, resilience, and competitiveness. Subject focuses on innovation, particularly the application of artificial intelligence in procurement. Participants explore various use cases of AI in procurement, aiming to improve decision-making and optimize procurement strategies. Balances theoretical foundations, case-based discussions, and real-world applications; designed for individuals with limited or no procurement experience. Equips learners with the skills to manage supplier relationships effectively, adopt collaborative strategies, and leverage cutting-edge technologies to build resilient, sustainable supply chains.
J. Rice, S. Rajagopalan

SCM.292 Logistics Automation & Technology (New)
Prereq: None
G (Spring; second half of term)
2-0-4 units

Explores how technological developments are transforming logistics, with physical robots powered by AI increasingly taking over tasks once performed by humans. Uses a multidisciplinary approach to teach students to evaluate and develop new logistics technologies, focusing on aspects such as technology scalability and flexibility, long-term strategy, financial implications, risk management, human factors, and relationships with technology vendors. Through this approach, students identify the key drivers behind the success or failure of modern logistics technologies. Non-technical course that aims to inspire critical thinking and strategic decision-making through case studies, industry insights, peer-to-peer discussions, and hands-on projects. Students also engage in debates, Socratic method discussions, and real-world applications with guest speakers.
Dr. Miguel Rodriguez

SCM.293[J] Last-Mile Logistics Systems
Same subject as 1.263[J], 11.263[J]
Prereq: SCM.254 or permission of instructor
G (Spring; second half of term)
2-0-4 units

Explores the quantitative foundations of last-mile logistics and fulfillment systems across diverse operational contexts and delivery models. Develops deep understanding of mathematical modeling and optimization techniques for strategic network design, tactical planning, and operational execution. Covers facility location and multi-echelon network design, inventory positioning and fulfillment strategies, vehicle routing problems, crowdsourced delivery and matching problems, warehouse operations optimization, alternative delivery methods, reverse logistics, and stochastic optimization under uncertainty. Integrates contemporary challenges including sustainability, data-driven decision-making, and real-time optimization. Emphasizes rigorous quantitative methods including mixed-integer programming, approximation algorithms, heuristic approaches, machine learning applications, stochastic and robust optimization.
M. Winkenbach

SCM.294 Digital Supply Chain Transformation
Prereq: None
G (Spring; first half of term)
Not offered regularly; consult department
2-0-4 units

Analyzes the factors involved in the digital transformation of supply chain relationships. Develops an in-depth understanding of the perspectives, roles, and decisions of relevant stakeholders in transforming supply chains in the digital era. Covers digital supply chain capabilities, the role of technology, processes and organizations, as well as digital platforms and performance. Discusses relevant case studies of digitally transformed supply chains, covering topics of long-term competitive advantage through operations and digital enhanced value generation. Includes presentations, guest speakers, team projects and case discussions, under experiential learning complementary approaches.
M. Jesus Saenz

SCM.295 Supply Chain Study Trek
Prereq: None
G (Spring; partial term)
1-0-0 units

Focuses on real world application of logistics and supply chain. Includes travel to on-site locations, company visits, facility operation tours, and partner presentations. Requires prior approval, detailed proposal, and final report.
M. Jesus Saenz

SCM.301 Independent Study: Supply Chain Management
Prereq: None
G (Fall, IAP, Spring, Summer)
Not offered regularly; consult department
Units arranged
Can be repeated for credit.

Opportunity for research in Supply Chain Management and Logistics on an individual or group basis. Registration subject to prior arrangement and supervision by staff.
Staff

SCM.302 Independent Study: Supply Chain Management
Prereq: None
G (Fall, IAP, Spring, Summer)
Not offered regularly; consult department
Units arranged [P/D/F]
Can be repeated for credit.

Opportunity for research in Supply Chain Management and Logistics on an individual or group basis. Registration subject to prior arrangement and supervision by staff.
Staff

SCM.500 Studies in Supply Chain Management
Prereq: Permission of department
G (IAP)
0-0-42 units

Introduction to supply chain management in a series of online subjects followed by a comprehensive examination. Analytics: analysis and modeling, statistics, regression, optimization and probability. Fundamentals: concepts for logistics, demand forecasting, inventory planning, control, transportation planning, and execution. Design: network design, finance, supplier management, demand planning, and organization design. Dynamics: global supply chain management, system dynamics, risk management, case studies and simulations. Technology and systems: IT concepts, core systems, and data analysis. Restricted to students who successfully receive the MicroMasters Credential in Supply Chain Management and enroll in the SCM blended master's program.
Y. Sheffi, CTL Staff

SCM.800 Capstone Project in Supply Chain Management
Prereq: None
G (Fall, IAP, Spring, Summer)
Units arranged
Can be repeated for credit.

Provides an opportunity for students to synthesize their coursework and professional experience in supply chain management. Students conduct research on a real-world problem of interest to supply chain practitioners. Projects may include site visits, in-person interviews and quantitative analysis of data provided by a sponsoring company, agency, or NGO. Students present their research results in both a report and to an audience of sponsors and supply chain executives. Restricted to SCM students.
M. Jesus Saenz

SCM.C51 Machine Learning Applications for Supply Chain Management
Prereq: 6.C51 and (SCM.254 or permission of instructor)
G (Spring; second half of term)
2-0-4 units

Building on core material in 6.C51, applies selected machine learning models to build practical, data-driven implementations addressing key business problems in supply chain management. Discusses challenges that typically arise in these practical implementations. Addresses relevant elements for large scale productionalization and monitoring of machine learning models in practice. Students cannot receive credit without completion of the core subject 6.C51.
I. Jackson

SCM.S90 Special Subject: Supply Chain Management
Prereq: None
G (Fall, Spring)
Not offered regularly; consult department
Units arranged
Can be repeated for credit.

Opportunity for study of topics in Supply Chain Management not otherwise included in the curriculum.
Staff

SCM.S91 Special Subject: Supply Chain Management
Prereq: None
G (Spring)
Units arranged [P/D/F]
Can be repeated for credit.

Opportunity for study of topics in Supply Chain Management not otherwise included in the curriculum.
Staff

SCM.S92 Special Subject: Supply Chain Management
Prereq: None
G (Fall, Spring)
Not offered regularly; consult department
Units arranged [P/D/F]
Can be repeated for credit.

Opportunity for study of topics in Supply Chain Management not otherwise included in the curriculum.
Staff

SCM.S93 Special Subject: Supply Chain Management
Prereq: None
G (Fall, Spring)
Not offered regularly; consult department
Units arranged
Can be repeated for credit.

Opportunity for study of topics in Supply Chain Management not otherwise included in the curriculum.
Staff

SCM.S94 Special Subject: Supply Chain Management
Prereq: None
G (Fall, Spring)
Units arranged [P/D/F]
Can be repeated for credit.

Opportunity for study of topics in Supply Chain Management not otherwise included in the curriculum.
Staff

SCM.S95 Special Subject: Supply Chain Management
Prereq: None
G (Fall, Spring)
Not offered regularly; consult department
Units arranged [P/D/F]
Can be repeated for credit.

Opportunity for study of topics in Supply Chain Management not otherwise included in the curriculum.
Staff

SCM.THG Graduate Thesis
Prereq: None
G (Fall, IAP, Spring, Summer)
Units arranged
Can be repeated for credit.

Program of research leading to the writing of a master's thesis on a relevant supply chain management topic. Arranged by the student with a member of the Center for Transportation and Logistics (CTL) research staff.
M. Jesus Saenz

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

Undergraduate research opportunities in Supply Chain Management.
Staff

SCM.URG Undergraduate Research
Prereq: None
U (Fall, IAP, Spring, Summer)
Units arranged
Can be repeated for credit.

Undergraduate research opportunities in Supply Chain Management.
Staff