

SUPPLY CHAIN MANAGEMENT (SCM)

SCM.250 Analytical Methods for Supply Chain Management

Prereq: None

G (Fall; partial term)

3-0-3 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.

B. Arntzen

SCM.251 Supply Chain Financial Analysis

Prereq: None. *Coreq: SCM.260[[J]]*; or permission of instructor

G (Fall; partial term)

4-0-2 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. SCM students are required to also register for SCM.253 when offered.

J. Goentzel, J. Rice

SCM.252 Supply Chain Software

Prereq: None

G (IAP)

Not offered regularly; consult department

2-0-1 units

Provides an overview of the main types of supply chain software including ERP, WMS, and TMS systems. Describes their main functionality, how they work, how they are used, their architecture, data flows, and how they are organized into modules. Also describes the software selection process and how software upgrade and implementation projects should be organized and managed. Restricted to SCM students.

B. Arntzen, J. Velazquez

SCM.253 Case Studies in Supply Chain Financial Analysis

Prereq: SCM.251

G (Fall, Spring; partial term)

2-0-1 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 Introduction to Programming and Data Analysis in Python (New)

Prereq: SCM.264, SCM.500, or permission of instructor

G (IAP)

2-0-1 units

Introduction to Python programming and data analysis for supply chain management. Students develop skills to program and analyze data to solve supply chain and logistics problems. Topics include data structures, Python structures and functions, Pandas, and other analysis tools. Restricted to SCM students.

S. Caballero

SCM.255 Machine Learning Applications for Supply Chain Management (New)

Prereq: SCM.254 or permission of instructor

G (Spring; second half of term)

2-0-4 units

Introduces principles, algorithms, and applications of machine learning to the field of supply chain management. Covers the use of machine learning techniques in modeling and prediction, formulation of learning problems, representation, over-fitting, generalization, classification, regression, neural networks, and methods such as linear classifiers, feed-forward, unsupervised learning, and recurrent networks. Applies teaching examples to logistics, transportation, and supply chain problems. Enrollment limited.

Staff

SCM.258 Written Communication Topics for Supply Chain Management (New)

Prereq: None

G (IAP)

1-0-0 units

Credit cannot also be received for SCM.259

Reviews the structure of and expectations for the master's capstone project and thesis. Discusses the concepts of genre and audience and their importance in writing the capstone/thesis. Explores techniques for developing and organizing ideas (such as freewriting, mapping, outlining) and for writing fluid, concise prose. Students also write a blog entry for the SCM student blog. Restricted to SCM students.

P. Siska

SCM.259 Business Writing for Supply Chain Management

Prereq: None

G (Fall)

1-0-2 units

Credit cannot also be received for SCM.258

Focuses on analyzing and tailoring content for specific audiences, developing argumentation and persuasion skills, and writing clear, concise and well-structured documents (business letters, memos, executive summaries, and briefings). Covers business writing techniques and strategies through lectures and exercises, individual writing assignments, and peer review workshops. Restricted to SCM students.

P. Siska

SCM.260[J] Logistics Systems

Same subject as 1.260[J], 15.770[J], IDS.730[J]

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.

Y. Sheffi, C. Caplice

SCM.261[J] Case Studies in Logistics and Supply Chain Management

Same subject as 1.261[J], 15.771[J]

Prereq: Permission of instructor

G (Spring)

3-0-6 units

A combination of lectures and cases covering the strategic, management, and operating issues in contemporary logistics and integrated supply chain management. Includes: logistics strategy; supply chain restructuring and change management; and distribution, customer service, and inventory policy.

J. Byrnes

SCM.262 Leading Global Teams

Prereq: SCM.260[J] or permission of instructor

G (IAP)

2-0-2 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.

B. Arntzen, J. Velazquez

SCM.263 Advanced Writing Workshop for SCM

Prereq: None

G (Spring)

1-0-2 units

Focuses on helping students write and present their ideas in cogent, persuasive arguments and other analytical frameworks. Designed to improve students' ability to communicate research information. Covers the basics of working with sources, including summarizing and paraphrasing, and synthesizing source materials. Workshops along with small team coaching sessions help students apply these lessons in the writing of their capstone project or thesis project. Restricted to SCM students.

P. Siska

SCM.264 Databases and Data Analysis for Supply Chain Management

Prereq: None

G (Fall)

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.

*C. Cassa***SCM.265[] Global Supply Chain Management**

Same subject as 1.265[], 2.965[], 15.765[]

Prereq: 15.761, 15.778, SCM.260[], SCM.261[], or permission of instructor

G (Spring)

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.

*B. Arntzen***SCM.266 Freight Transportation**

Prereq: SCM.260[]

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, Y. Sheffi***SCM.267 Global Supply Chain Management Topics**

Prereq: None. Coreq: SCM.265[]

G (Spring)

2-0-1 units

Discusses the basic theories of international trade, cultural differences in global supply chains, sustainability, risks, and security. Highly interactive format features student-led discussions, staged debates, and a mock trial. Assignments include case studies and student presentations. Meets with SCM.265[].

*B. Arntzen***SCM.268 Data Science for Supply Chain Management (New)**

Prereq: None

G (Spring; first half of term)

3-0-3 units

Introduces data science topics through programming, including connections to databases and data warehouses, data filtering and manipulation, and data structures. Software packages for data analysis, statistical and numerical calculations, and machine learning will be covered. Includes coverage of source control, system architecture, cloud computing frameworks and modules, security, emerging financial technologies, and software process.

*C. Cassa***SCM.270 Current Challenges in Supply Chain Management**

Prereq: None

G (Spring)

Not offered regularly; consult department

2-0-1 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. Restricted to SCM students.

*Y. Sheffi and CTL Staff***SCM.272 Supply Chain Specialty Workshop**

Prereq: None

G (IAP)

2-0-1 units

Introduces topics of maritime logistics, segmentation and revenue management, sourcing and purchasing fundamentals, service parts logistics, retailing operations, green supply chain management, and supply chain innovation in a series of hands-on workshops. Restricted to SCM students.

B. Arntzen, J. Velazquez

SCM.280 Supply Chain Communications Workshop (New)

Prereq: None

G (Fall, IAP; partial term)

1-0-0 units

Introduces topics of communication and methods to improve communication skills. Provides students with tools needed to become clear speakers and effective leaders. Includes assessment of communication styles, tactics for effective negotiation, interview strategies, and presenting one's self. Restricted to SCM students.

B. Arntzen, J. Velazquez

SCM.281 Supply Chain Public Speaking Workshop (New)

Prereq: None

G (Spring; partial term)

1-0-0 units

Further develop and refine public speaking skills through engaging interactive workshops. Techniques learned will help students become dynamic and authentic speakers. Includes impromptu speaking preparation, facilitating meetings, selling to the board room, and crafting presentations, always in relation to concepts and fundamentals of supply chain management. Restricted to SCM students.

B. Arntzen, J. Velazquez

SCM.282 Supply Chain Leadership Workshop (SCM.803)

Prereq: None

G (IAP)

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.

B. Arntzen, J. Velazquez

SCM.283 Humanitarian Logistics

Subject meets with SCM.284

Prereq: None

G (Spring; first half of term)

2-0-4 units

Explores how logistics management principles apply in dynamic, resource-constrained contexts, ranging from humanitarian crisis response to international development. Class sessions combine interactive presentations, practical exercises, case discussions, and guest speakers from humanitarian organizations. Provides an introduction to supply chain concepts and the humanitarian context to accommodate students from various backgrounds.

J. Goentzel

SCM.284 Humanitarian Logistics with Project

Subject meets with SCM.283

Prereq: None

G (Spring)

3-0-9 units

Explores how logistics management principles apply in dynamic, resource-constrained contexts, ranging from humanitarian crisis response to international development. Combines interactive presentations, practical exercises, case discussions, and guest speakers from humanitarian organizations. Provides an introduction to supply chain concepts and the humanitarian context to accommodate students from various backgrounds. Team projects utilize data and information from the UN, NGOs, government agencies, and the private sector. Meets with SCM.283 first half of term.

J. Goentzel

SCM.290 Sustainable Supply Chain Management

Prereq: None

G (Spring; first half of term)

2-0-4 units

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.

J. Velazquez

SCM.291 Procurement Fundamentals (New)

Prereq: None

G (Spring; first half of term)

2-0-4 units

Introduces strategic procurement fundamentals to enhance both competitive advantage and resilience to supply chains. Covers frameworks and tools that managers use to elevate purchasing from an operational function to a strategic one. Includes both classic resilience- and cost-based portfolios, as well as modern perspectives, which consider sustainability and power. Combines theoretical and applied perspectives and is designed for students with or without previous procurement experience. Assessment based on case analysis and a final project.

*D. Correll***SCM.293[] Urban Last-Mile Logistics (New)**

Same subject as 1.263[], 11.263[]

Prereq: None

G (Spring; second half of term)

2-0-4 units

Explores specific challenges of urban last-mile B2C and B2B distribution in both industrialized and emerging economies. Develops an in-depth understanding of the perspectives, roles, and decisions of all relevant stakeholder groups, from consumers, to private sector decision makers, to public policy makers. Discussion of the most relevant traditional and the most promising innovating operating models for urban last-mile distribution. Introduces application of the essential quantitative methods for the strategic design and tactical planning of urban last-mile distribution systems. Covers basic facility location problems, deterministic and stochastic network design problems, single- and multi-echelon vehicle routing problems, as well as associated approximation techniques.

*M. Winkenbach***SCM.295 Supply Chain Study Trek (New)**

Prereq: None

G (Spring; partial term)

3-0-0 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. Restricted to SCM students.

*B. Arntzen, J. Velazquez***SCM.301 Independent Study: Supply Chain Management**

Prereq: None

G (Fall, IAP, Spring)

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.

*B. Arntzen***SCM.302 Independent Study: Supply Chain Management**

Prereq: None

G (Fall, IAP, Spring)

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.

*B. Arntzen***SCM.500 Studies in Supply Chain Management (New)**

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)

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.

B. Arntzen, J. Velazquez

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.

Y. Sheffi, C. Caplice

SCM.S91 Special Subject: Supply Chain Management

Prereq: None

G (Fall)

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.

B. Arntzen

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.

Consult Y. Sheffi and CTL Staff

SCM.S94 Special Subject: Supply Chain Management (New)

Prereq: None

G (Fall; second half of term)

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.

C. Cassa, T. Hall

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 & Logistics (CTL) research staff.

B. Arntzen