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.

*J. Velazquez Martinez*

**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)  
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 Applied Programming and Data Analysis in Python**
Prereq: SCM.264, SCM.500, or permission of Instructor  
G (IAP)  
2-0-1 units

Introduces Python programming and data analysis applications 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.256 Data Science and Machine Learning for Supply Chain Management**
Prereq: SCM.254 or permission of instructor  
G (Spring)  
3-0-9 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.

*C. Cassa, T. Hall*

**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*
SUPPLY CHAIN MANAGEMENT (SCM)

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 and thesis. Discusses the concepts of genre and audience and their importance in writing the capstone/thesis. Explores techniques for developing and organizing ideas and for writing concise, fluid prose. Covers how to find and work with source materials. Touches upon conventions of business email and principles of good slide design. Restricted to SCM students.

P. Siska

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 requires fewer assignments and lectures.

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)
2-0-4 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)
2-0-1 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.

J. Velazquez Martinez

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

SCM.264 Databases and Data Analysis for Supply Chain Management
Subject meets with SCM.274
Prereq: None
G (Fall; second 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
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, Y. Sheffi

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 requires fewer assignments and
lectures.
Y. Sheffi, C. Caplice

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.
J. Velazquez Martinez

SCM.274 Databases and Data Analysis Topics for Supply Chain
Management
Subject meets with SCM.264
Prereq: Permission of instructor
G (Fall; second 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.280 Supply Chain Communications Workshop
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.
J. Velazquez Martinez, M. Jesus Saenz

SCM.281 Supply Chain Public Speaking Workshop
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.
J. Velazquez Martinez
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.
J. Velazquez Martinez

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 Global Aging & the Built Environment (New)
Same subject as 11.547
Prereq: None
G (Spring)
3-0-9 units

See description under subject 11.547.
J. F. Coughlin

SCM.289 E-Commerce and Omnichannel Fulfillment Strategies (New)
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; second half of term)
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 CO2 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; 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[J] Urban Last-Mile Logistics  
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 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 and public policy makers. Discusses the most relevant traditional and the most promising innovating operating models for urban last-mile distribution. Introduces applications of the essential quantitative methods for the strategic design and tactical planning of urban last-mile distribution systems, including optimization and simulation. Covers basic facility location problems, network design problems, single- and multi-echelon vehicle routing problems, as well as associated approximation techniques. Requires intermediate coding skills in Python and independent quantitative analyses Python.  
M. Winkenbach

SCM.294 Digital Supply Chain Transformation  
Prereq: None  
G (Spring; second half of term)  
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. Restricted to SCM students.  
J. Velazquez, 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
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.
J. Velazquez, M. Jesus Saenz

SCM.C51 Machine Learning Applications for Supply Chain Management (SCM.257)
Prereq: SCM.254 or permission of instructor; Coreq: 6.C51
G (Spring)
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 simultaneous completion of the core subject 6.C51.
N. Summerville

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 (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.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 (New)
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.S94 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.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.

J. Velazquez, 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