

# SUPPLY CHAIN MANAGEMENT (SCM)

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**Any experimental courses offered by SCM can be found at:**

registrar.iastate.edu/faculty-staff/courses/explistsings/ (<http://www.registrar.iastate.edu/faculty-staff/courses/explistsings/>)

**Courses primarily for undergraduates:**

## **SCM 301: Supply Chain Management**

(3-0) Cr. 3.

*Prereq: ECON 101 and STAT 226*

Various supply chain activities and integration of supply chain management with supply and demand, both within and between firms. Exposure to a wide range of supply chain management terminology, analytical tools, and theories related to four key elements of supply chain management: purchasing, operations, distribution, and integration. Specific topics include strategic sourcing, supply management, demand forecasting, resource planning, inventory management, process management, logistics, location analysis, process integration, and performance measurement.

## **SCM 340: Project Management**

(Cross-listed with MIS). (3-0) Cr. 3.

*Prereq: credit or enrollment in MIS 301*

Equips students to support team activities in the general project management environment and better manage their careers. Practical experience using project management techniques and tools. Course topics include project initiation and execution, risk assessment, estimating and contracts, planning, human factors, and standard methods.

## **SCM 424: Process Management, Analysis, and Improvement**

(3-0) Cr. 3.

*Prereq: SCM 301*

The design, analysis, and management of production processes to improve performance. Performance measures and their relationships; process design and evaluation; and managerial levers for improving and controlling process performance.

## **SCM 428: Special Topics in Operations Management**

(3-0) Cr. 3.

*Prereq: SCM 301*

In-depth analysis of current issues, problems, and systems in operations management with emphasis on new theoretical and methodological developments. Topics may include in different semesters, supply chain management, productivity and quality improvement, management of technology and innovation, information technology in operations management, quick response manufacturing, and service operations management.

## **SCM 440: Supply Chain Information Systems**

(Cross-listed with MIS). (3-0) Cr. 3.

*Prereq: MIS 301, SCM 301*

Internal and inter-organizational information systems necessary for a supply chain to achieve competitive advantage. Topics include: design, development, implementation, and maintenance of supply chain information systems; enterprise resource planning; advanced planning and scheduling, manufacturing execution systems; and the interface between manufacturing planning and control processes, logistics processes, and the information system.

## **SCM 450: Enterprise Resource Planning Systems in Supply Chain**

(Cross-listed with MIS). (3-0) Cr. 3.

*Prereq: SCM 301, MIS 301 or I E 148, I E 341*

Examination of the role of enterprise resource planning systems (ERP) in the supply chain. Hands-on experience with a major software application in use by many corporations to manage and improve the efficiency of their supply chains and operations. Students will develop a more process-centric perspective about how a supply chain operates and how ERP enables and supports such operations.

## **SCM 453: Supply Chain Planning and Control**

(3-0) Cr. 3. F.

*Prereq: SCM 301*

Supply chain planning and control is the process which synchronizes demand with manufacturing and distribution. This course will cover sales and operations planning with emphasis on forecasting, master scheduling, materials requirements planning, inventory management and demand planning. Linking business plans and information systems for integration and distribution channels are also covered.

**SCM 460: Decision Tools for Logistics and Operations Management**

(3-0) Cr. 3.

*Prereq: SCM 301*

Technical tools and skills required for problem solving and decision making in logistics and operations management. Transportation and network planning, inventory decision making, facility location planning, vehicle routing, scheduling, and production planning. Quantitative tools include linear and integer programming, non-linear programming, and simulation. Emphasis on the use of PC-based spreadsheet programs.

**SCM 461: Principles of Transportation**

(3-0) Cr. 3.

*Prereq: SCM 301*

Economic, operating, and service characteristics of the various modes of transportation, with a special emphasis on freight transportation. Factors that influence transport demand, costs, market structures, carrier pricing, and carrier operating and service characteristics and their influence on other supply chain costs and supply chain performance.

**SCM 462: Transportation Carrier Management**

(3-0) Cr. 3.

*Prereq: Credit or enrollment in SCM 461*

Analysis of transport users' requirements. Carrier management problems involving ownership and mergers, routes, competition, labor, and other decision areas.

**SCM 466: Global Trade Management**

(3-0) Cr. 3. F.S.

*Prereq: SCM 301*

Logistics systems and legal framework for the international movement of goods. Operational characteristics of providers of exporting and importing services. The effects of government trade policies on global logistics.

**SCM 471: Sustainable Supply Chain Management**

Cr. 3. Alt. F., offered irregularly. Alt. S., offered irregularly.

*Prereq: SCM 301*

The global nature of a supply chain causes many sustainability issues. This course will consider how supply chain design and execution affect sustainability. Some discussion of governmental policy will be included.

**SCM 486: Principles of Purchasing and Supply Management**

(3-0) Cr. 3.

*Prereq: SCM 301*

Sourcing strategies, concepts, tools and dynamics in the context of the integrated supply chain. Make or buy decision, supplier evaluation and selection, global sourcing, the total cost of ownership, contracts and legal terms, negotiation, purchasing ethics, and information systems requirements.

**SCM 490: Independent Study**

Cr. 1-3. Repeatable.

*Prereq: SCM 301, senior classification, permission of instructor*

**SCM 491: International Live Case and Study Tour**

Cr. 3. S.

*Prereq: SCM 301*

Students follow supply chain of major firm from overseas manufacturer to domestic point-of-sale. Students are expected to complete projects and present findings to senior leadership.

**SCM 495: Case Practicum**

(3-0) Cr. 3. Repeatable. F.S.

*Prereq: SCM 301*

Students explore different practical scenarios related supply chain projects and cases. Students acquire necessary skills and knowledge to solve practical issues associated with presented cases and problems. Students compete at different venues around the country.

**Courses primarily for graduate students, open to qualified undergraduates:**

**SCM 501: Supply Chain Management**

(3-0) Cr. 3.

*Prereq: Enrollment in MBA program or departmental permission*

Introduction to supply chain management including aspects of operations, logistics and global supply chain strategy development. Topic areas include lean manufacturing and value stream mapping; supplier development and measurement; sustainable supply chain operations; process measurement, management and improvement; supply chain risk and uncertainty; visibility and integration in the supply chain; and inventory control.

**SCM 513: Biorenewables Supply Chain Management**

(Cross-listed with BRT). Cr. 3. Repeatable, maximum of 1 times. S.

*Prereq: Graduate Standing or Qualified Undergraduate with Instructor Permission*

Evaluation of supply chain logistics related to the field of biorenewables. Unique challenges associated with the biorenewables supply chain are emphasized and examined: cost analysis, market demand & prices, life cycle analysis, environmental impacts, as well as the technological, social, and political factors related to society.

**SCM 520: Decision Models for Supply Chain Management**

(3-0) Cr. 3.

*Prereq: SCM 501 or permission of instructor*

The application of decision models for supply chain management. Topics include business applications of decision theory, inventory theory, business forecasting, optimization models, transportation and network models, routing problems, and project management.

**SCM 524: Strategic Process Analysis and Improvement**

(3-0) Cr. 3.

*Prereq: SCM 501 or permission of instructor*

Analysis, management, and improvement of the business processes used to produce and deliver products and services that satisfy customer needs. Process attributes that managers can control to influence the key operational performance measures of throughput time, inventory, cost, quality, and flexibility are discussed. Topics such as theory of constraints, lean production, and six sigma are included.

**SCM 553: Supply Chain Planning and Control**

Cr. 3. Alt. F., offered irregularly. Alt. S., offered irregularly.

*Prereq: SCM 501 or permission of instructor*

Supply chain planning and control is the process which synchronizes demand with manufacturing and distribution. Sales and operations planning with emphasis on forecasting, master scheduling, materials requirements planning, inventory management and demand planning. Linking business plans and information systems for integration and distribution channels are also covered. Emphasis on the strategic advantages of linking business plans and demand forecasts.

**SCM 560: Strategic Logistics Management**

(3-0) Cr. 3.

*Prereq: SCM 501 or permission of instructor*

Positions logistics vis-a-vis supply chain management (SCM). Presents different perspectives on SCM vs. logistics. Describes primary logistics functions: transportation, warehousing, facility location, customer service, order processing, inventory management and packaging. Benefits of and obstacles to the integration of these functions.

**SCM 561: Transportation Management and Policy**

(3-0) Cr. 3.

*Prereq: SCM 501 or permission of instructor*

Analysis of contemporary issues and strategies in transportation management and policy. Emphasis on evaluation of the impacts of transportation policies, new technologies, and strategic carrier and shipper management practices on the freight transportation industry and logistics systems.

**SCM 563: Purchasing and Supply Management**

(3-0) Cr. 3.

*Prereq: SCM 501 or permission of instructor*

Mechanics, procedures and tools used in purchasing. Recruiting, selecting, developing and managing supply chain partners in order to achieve competitive advantage via superior supply chain management. Factors and information needs for making supply management decisions.

**SCM 590: Special Topics**

Cr. 1-3. Repeatable.

*Prereq: Graduate classification and permission of instructor*

For students who wish to do individual research in a particular area of supply chain management.

**Courses for graduate students:****SCM 601: Theoretical Foundations of Supply Chain Management**

(3-0) Cr. 3.

*Prereq: MGMT 601 or permission of instructor*

An overview of the development of supply chain management (SCM) theory, including review of seminal articles in logistics, operations, and purchasing management and theories from allied disciplines (e.g., economics, marketing, sociology, strategic management). Analysis of trends in SCM research topics and methodologies. Identification of emerging and future areas for research and theory development.

**SCM 602: Seminar in Supply Chain Strategy**

(3-0) Cr. 3.

*Prereq: SCM 601 or concurrent enrollment*

Review of research literature on supply chain strategy, including the impact of technology, global economic and social factors, and intra- and inter-organizational integration on supply chain strategy formation. The role of SCM in overall corporate strategy and the impact of SCM on firm performance will also be addressed.

**SCM 603: Seminar in Purchasing**

(3-0) Cr. 3.

*Prereq: SCM 601 or concurrent enrollment*

Review of classic purchasing theories. Discussion of contemporary supply management strategy; the role of supply management and its relationship with other functional areas; its impact on logistics and transportation issues; management of supply uncertainties.

**SCM 604: Seminar in Logistics Management**

(3-0) Cr. 3.

*Prereq: SCM 601 or concurrent enrollment*

Integration of network, economic, and systems theory in the design, management, and control of logistics systems in the context of integrated supply chain management. Functional areas addressed include transportation, inventory order fulfillment, distribution, and warehousing. Facility location analysis will also be covered.

**SCM 605: Seminar in Operations Management**

(3-0) Cr. 3.

*Prereq: SCM 601 or concurrent enrollment*

Review of the research literature on methods of organizing, planning, controlling, and improving manufacturing systems to achieve the desired performance objectives related to cost, quality, speed, and flexibility. The relationship between the performance of the manufacturing system and the performance of the supply chain system will also be discussed.

**SCM 609: Special Topics in SCM**

Cr. 3. Repeatable. Alt. F., offered irregularly. Alt. S., offered irregularly.

*Prereq: SCM 601 or permission of instructor.*

Review of current issues in SCM. Provides opportunities to read and discuss research articles that made important contributions in SCM literature.

**SCM 650: Research Practicum I**

(1-0) Cr. 1.

*Prereq: enrollment in the PhD program*

Preparation of a research manuscript to be submitted to a peer-reviewed academic journal. Students will work with a faculty mentor on a research project.

**SCM 651: Research Practicum II**

(1-0) Cr. 1.

*Prereq: enrollment in the PhD program*

Preparation of a second research manuscript to be submitted to a peer-reviewed academic journal. Although students work under the supervision of a faculty mentor, the students will take independent responsibility for the research project.

**SCM 699: Dissertation**

Cr. 12.

*Prereq: Graduate classification, permission of dissertation supervisor*

Research.