

# Supply Chain Management and Engineering

## COLLEGE OF BUSINESS AND COLLEGE OF ENGINEERING

The graduate faculty members of the Supply Chain Management and Engineering program, consisting of members of the College of Business and the College of Engineering, offer joint graduate work leading to the Master of Science in Supply Chain Management and Engineering.

### College of Business Graduate Faculty Members:

**Burnett, Royce D.**, Associate Professor of Accounting, C.P.A., Ph.D., Oklahoma State University, 2003; 2009. Cost and Managerial Accounting.

**DeYong, Gregory D.**, Assistant Professor of Management, Ph.D., Indiana State University, 2010; 2013. Inventory Management, Production Scheduling, and Supply Chain Management.

**Goodale, John C.**, Associate Professor of Management. Ph.D., University of Utah, 1996; 2009. Workforce Scheduling and Service Supply Chains.

**Pearson, John M.**, Professor of Management, Ph.D., Mississippi State University, 1991; 2001. Management Information Systems and Internet Technology. .

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### College of Engineering Graduate Faculty Members:

**Chang, Feng-Chang (Roger)**, Associate Professor of Industrial Management and Applied Engineering, Ph.D., Ohio State University 1985; 1991. Manufacturing Systems, Quality Management, and Supply Chain Management.

**DeRuntz, Bruce D.**, Professor of Industrial Management and Applied Engineering, Ph.D., Southern Illinois University, 2005; 2005. Project Management and Quality Management.

**Dunston, Julie K.**, Associate Professor of Industrial Management and Applied Engineering, Ph.D., Florida State University, 1995; 1995. Manufacturing Processes Quality Management, and Control Systems.

**Velasco, Thomas**, Associate Professor of Industrial Management and Applied Engineering, Ph.D., University of Arkansas, 1991; 1993. Industrial Engineering, Quality Management and Supply Chain Management.

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## Master of Science in Supply Chain Management and Engineering

The Master of Science in Supply Chain Management and Engineering Program is an online program oriented toward developing the technical and managerial knowledge of current and future supply chain professionals. The program emphasizes a holistic approach to designing and managing supply chains.

The Program takes advantage of the resources and technology of the College of Business and the College of Engineering in a joint venture that produces graduates with technical skills that prepare them for supply chain leadership positions in industry and government.

### Program Description

Collaborative supply networks are critical for purchasing, transferring, and distributing material in an increasingly global economy where outsourcing is an important strategic practice in today's firm. In addition, supply chain and logistics costs are a significant portion of operating expenses for today's production and service organizations. Consequently, organizations can seize a large opportunity to impact supply chains that take advantage of leading-edge technical developments in supply chain design, analytics and quality. The Master of Science in Supply Chain Management and Engineering's technical focus will allow uniquely qualified graduates to have immediate value in analyst, purchasing, operations, and consulting positions.

The College of Business and the College of Engineering offer state-of-the-art online programming. The faculty and staff in both colleges are uniquely positioned to deliver this curriculum, which will help engineers and managers gain a competitive advantage in today's employment market for supply chain and logistics managers. This online program has a focus on Supply Chain Management (Management) and Quality (Engineering) that is consistent with challenges and opportunities that managers will experience in organizations today.

### Proposed Curriculum

The Master of Science in Supply Chain Management and Engineering Program requires 36 credit hours over four semesters, including a summer term. Semesters are divided into eight-week blocks. Students will take two three-credit courses the first eight-week block of each semester, and then take one three-credit course in the second eight-week block. The Program is delivered in an asynchronous online format.

### Course Requirements

36 Total semester hours (3 hours/course) after satisfying the MBA and Industrial Technology foundation requirements with prerequisites.

The twelve required courses are:

BA 512	Supply Chain Cost Accounting
BA 523	Innovation and Supply Chains
BA 541	Analytic Methods for Supply Chain Management
BA 544	Advanced Production Planning and Inventory Management
BA 553	Supply Markets and Negotiation
BA 565	Managing Supply Chain Information
QEM 546	Project Management for Supply Chain Engineering
QEM 560	Supply Chain Engineering
QEM 562	Transportation and Logistics Systems
QEM 564	Facilities and Location Planning
QEM 583	Analysis of Statistical Quality Data
QEM 585	Advanced Data Analysis & Design of Experiments

**Admission Requirements**

Prospective degree candidates are expected to demonstrate a readiness for graduate study and an aptitude for successful performance in graduate level work. Admission to the program is based on the applicant’s undergraduate record, a satisfactory score on the Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE), and other evidence pertaining to ability to perform well in graduate work. Special circumstances and work experience may be considered if presented. More specifically, the applicant must:

1. Meet all admission requirements set forth by the Graduate School. These requirements are outlined elsewhere in the catalog.
2. Complete the Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) and have the results of the test mailed directly to the Graduate Programs Office, College of Business. Information for the Graduate Management Admission Test (GMAT) can be found at: [www.mba.com](http://www.mba.com) Information for the Graduate Record Examination (GRE) can be found at: [www.ets.org/gre](http://www.ets.org/gre).

**Academic Retention**

In addition to the retention policies of the Graduate School, a student may earn no more than 5 hours of C or lower in graduate courses taken beyond the foundation requirements, or he/she will be suspended from the Master of Science in Supply Chain Management and Engineering program. A student who has 3 outstanding recorded grades of INC or DEF at the end of any semester or session, for any reason, will be deemed to be not making normal progress and will be placed on probationary status. If the student has 3 outstanding grades of INC or DEF remaining on record at the end of the next semester or session, the student will be suspended from the program. The definitions of INC and DEF may be found in the Graduate Catalog. A student who is to receive a grade of INC in a course is to meet with the instructor to work out a time and conditions for completion of the course within policy guidelines. Typically, a Notification of Incomplete Grade Agreement form is completed and the student is provided with a copy.

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**College of Business Courses (BA)**

*Students desiring to enroll in these courses must be admitted to the Master of Science in Supply Chain Management and Engineering degree program or have permission of the Associate Dean of Graduate Programs in the College of Business.*

**512-3 Supply Chain Cost Accounting.** Basic cost concepts, measures, methods, and systems of cost accounting useful for planning, implementation, control, and performance of supply chains. Includes cost analysis relevant for non-routine decision making. Restricted to enrollment in MS in Supply Chain Management and Engineering.

**523-3 Innovation and Supply Chains.** This course examines the challenges and the opportunities that technological innovation presents to supply chains, companies, and managers. What technology is to supply chains and businesses today, how science

and invention fuel technological innovation, and the organizational challenges that are presented by the evolution of new technology are addressed. Restricted to enrollment in MS in Supply Chain Management and Engineering.

**541-3 Analytic Methods for Supply Chain Management.** An introduction to mathematical model building in supply chains and the solution techniques commonly used to solve such models. In addition, this course includes statistical methods for decision making. Topical coverage includes decision theory, hypothesis testing, regression, spreadsheet modeling, mathematical programming, queuing models, and simulation. Restricted to enrollment in MS in Supply Chain Management and Engineering.

**544-3 Advanced Production Planning and Inventory Management.** An in-depth study of analytical models and techniques for production planning, scheduling, and inventory management. Restricted to enrollment in MS in Supply Chain Management and Engineering.

**553-3 Supply Markets and Negotiation.** This course is designed to address markets and negotiations for managing the purchasing function in supply chains. Restricted to enrollment in MS in Supply Chain Management and Engineering.

**565-3 Managing Supply Chain Information.** Information system design, analysis and operations. Topics include system concepts, systems analysis and design, database management, software and hardware concepts, decision support systems, expert systems, distributed processing, and telecommunications and information systems planning. SAP applications in supply chain management will be emphasized. Restricted to enrollment in MS in Supply Chain Management and Engineering.

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**College of Engineering Courses (QEM)**

*Students desiring to enroll in these courses must be admitted to the Master of Science in Supply Chain Management Engineering degree program or have permission of the Associate Dean of Engineering.*

**546-3 Project Management for Supply Chain Engineering.** The course is designed to provide students with an introduction to the project management process and an in-depth examination of the activities needed to successfully initiate, plan, schedule, and control the time and cost factors of the project as it relates to developing a supply chain system. Executing successful supply chain projects requires the management of technology, people, culture, stakeholders, and other diverse elements. This course takes an integrated approach to managing projects, merging both technical and managerial challenges. It emphasizes not only individual project execution, but also provides a strategic perspective, demonstrating supply chain projects at the program and portfolio levels.

**560-3 Supply Chain Engineering.** The objective of this course is to introduce the basic principles and techniques of the Lean methodologies and its application targeting specific needs of the Supply Chain professionals in executive sales and operations planning, forecasting, customer relationships, leveling production, dependent demand materials management, capacity management, shop floor control, inventory management, lot sizing, warehousing, logistics, quality control, and purchasing.

**562-3 Transportation and Logistics Systems** . The course covers different components of logistics and distribution; in particular, those dealing with material movement, associated moveable and immovable facilities/resources, procurement and material refurbishing, warehousing and distribution network systems, and transportation. The major thrust of the course is to explore the optimal planning, design and coordination of large scale warehousing operations and distribution logistics, supply transportation systems (shipping and materials tracking), multi-modal transportation systems and convoy movements.

**564-3 Facilities and Location Planning.** The course encompasses the planning, design, development, management and control of production and distribution systems to effectively distribute goods and services from the producer to end user, whether in manufacturing or service systems. Topics include analytical approaches in site location, facility layout, material handling, and storage systems. Aspects of facilities for manufacturing, material handling, packaging and distribution, concepts of group technology, and computer aided facility design are covered.

**580-3 Analysis of Statistical Quality Data.** Controlling and improving has become an important business strategy for many organizations: manufacturers, distributors, transportation companies, financial services organizations, health care providers, and government agencies. Maintaining a high level of product or service quality provides a competitive advantage. A business that can delight customers by improving and controlling quality can dominate its competitors. This course covers the technical methods for achieving success in quality control and improvement, and offers guidance on how to successfully implement these methods. .

**585-3 Advanced Data Analysis & Design of Experiments.** Experimentation plays an important role in product development and process realization and commercialization activities, which consist of new product design and formulation, manufacturing process development, and process improvement. The objective in many cases may be to develop a robust process, a process affected minimally by external sources of variability. The purpose of this course is to provide the student with a comprehensive coverage of the knowledge areas involved in these studies, focusing on Planning, Designing and Analyzing Experiments (DoE).