

the dean of the school or college in which the thesis is prepared; approval of the dean of the Honors College. May be substituted for HNRS 4000.

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## Management Science

see *Graduate Catalog*

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## Manufacturing Engineering Technology

see Engineering Technology

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## Marketing and Logistics

### *Aviation Logistics, LGAV*

**LGAV 2100. Introduction to Aviation Industry.** 3 hours. Introduction to the aviation discipline including an investigation of the key role the aviation industry plays in the global transportation network. Emphasis on how aviation management impacts current business practices in a globalizing economy. The importance of aviation transportation networks on business practice is examined.

**LGAV 3110. Aviation Maintenance Programs.** 3 hours. Basics of aviation maintenance management. Familiarization with functions and responsibilities of aviation maintenance managers. Topics include managing maintenance; complying with regulatory, legal and technical requirements of aviation maintenance; and defining safety concepts of the aviation maintenance industry. Emphasis on the identification of optimum applications used in aviation maintenance. Prerequisite(s): LGAV 2100.

**LGAV 3120. Aviation Safety.** 3 hours. Principles of the development and management of an effective safety program. Inquiry into how education, training and morale influence aviation safety. Topics include basic concepts of risk management in aviation safety, the effective management of improvements of aviation safety, and identification of factors influencing risk-taking behavior. Special attention is given to the analysis of hazards and risks and to the development of programs to control them, including how customer and contractor relations can affect the programs. Prerequisite(s): LGAV 2100.

**LGAV 3130. Air Cargo Planning and Control.** 3 hours. Examination of the basics of air cargo operations and the economic principles facing air transportation after deregulation. Topics include how scheduled and unscheduled airlines handle air cargo services including containerization, deregulation, hazardous material handling, and marketing. Special emphasis on the economics of air transportation and the analysis of distribution costs. Prerequisite(s): LGAV 2100.

**LGAV 3140. Air Passenger Planning and Control.** 3 hours. Management of air passenger operations in the aviation industry including fleet operations and passenger and crew scheduling. Topics include optimizing flight routing, flight networks and fleet diversity; scheduling air/ground crew assignments and gate assignments; and understanding the impact of hub and spoke systems and maintenance locations on air passenger operations. Emphasis on developing analytical tools to effectively manage air passenger operations. Prerequisite(s): LGAV 2100.

**LGAV 3150. Aviation Law, Public Policy and Regulatory Environment.** 3 hours. The legal structure of air transportation. Addresses federal, local and state statutes as well as regulatory statutes and case law necessary for the conduct of commercial flight operations in globalizing economy. Topics include contracts, insurance and liability, regulatory statutes and case law. Participation in a moot court simulating litigation involving the Federal Aviation Administration and an international American flag carrier. Prerequisite(s): LGAV 2100.

**LGAV 3510. Private Pilot and General Aviation Concepts.** 3 hours. Mastery of baseline knowledge required of holders of the Private Pilot certificate. Focus is to learn and master the requirements specified in 14 CFR Part 141, appendix B, paragraph 3 necessary to pass the written examination portion of the Private Pilot certificate knowledge test. Prerequisite(s): LGAV 2100.

**LGAV 3520. Instrument Flying Concepts.** 3 hours. Mastery of the baseline knowledge required of the holders of the Instrument Rating certificate. Focus is to learn and master the requirements specified in 14 CFR part 141, appendix B, paragraph 3 to pass the written examination portion of the Instrument Rating knowledge test. Prerequisite(s): LGAV 2100, LGAV 3510.

**LGAV 3530. Commercial Pilot Concepts.** 3 hours. Mastery of the baseline knowledge required of the holders of the Commercial Certificate. Focus is to learn and master the requirements in 14 CFR part 141, appendix D, paragraph 3 to pass the written examination portion of the Commercial Certificate knowledge test. Prerequisite(s): LGAV 2100, LGAV 3510.

**LGAV 4100. Airport and Infrastructure Planning and Control.** 3 hours. Comprehensive inquiry into the management of airport operations. Topics include the history of airports, the roles of government agencies, and the impact of deregulation and wide-bodied aircraft on airports. Special attention is given to the management of the airport planning process including the general Federal Aviation Regulations pertaining to airport management and the role of government airport planning and development. Capstone course to be taken during the last term/semester of course work. Prerequisite(s): LGAV 2100, LGAV 3130, LGAV 3140.

**LGAV 4500. Human Factors and Cockpit Resource Leadership.** 3 hours. Comprehensive inquiry into the Advanced Qualification Programs (AQP) used by air carriers to develop programs for the training of flight crews. Focus on Crew Resource Management (CRM) and Line of Flight Training (LOFT) with specific emphasis on avoiding errors, trapping errors before they are committed, and mitigating the consequences of errors. Capstone course to be taken during the last term/semester of course work. Prerequisite(s): LGAV 2100, LGAV 3510, LGAV 3530.

**LGAV 4951. Honors College Capstone Thesis.** 3 hours. Major research project prepared by the student under the supervision of a faculty member and presented in standard thesis format. An oral defense is required of each student for successful completion of the thesis. Prerequisite(s): completion of at least 6 hours in honors courses; completion of at least 12 hours in the major department in which the thesis is prepared; approval of the department chair and the dean of the school or college in which the thesis is prepared; approval of the dean of the Honors College. May be substituted for HNRS 4000.

**Logistics and Supply Chain Management, LSCM**

**LSCM 2960. Global Logistics and Supply Chain Management.** 3 hours. Introduction to the multicultural and multiracial world from a logistics and supply chain management perspective. Provides useful tools for assessing and addressing diversity in the business and global supply chain management environment. Topics include customer service, transportation, warehousing, inventory control, materials handling and packaging, information systems within and between firms throughout the global supply chain to help improve performance. Emphasis on concepts and practices that provide firms with global competitive advantage. Cannot be used to meet business foundation, business professional field, or business supporting field requirements.

**LSCM 3960. Logistics and Supply Chain Management.** 3 hours. Analysis and design of domestic and international logistics systems. Topics include transportation, warehousing, inventory control, materials handling and packaging, and plant and warehouse locations within and between firms. Emphasis on concepts and practices that provide firms with a competitive advantage. Prerequisite(s): junior standing.

**LSCM 4360. Global Alliances and International Supply Chain Management.** 3 hours. Supply chain and alliance strategy in the multi-national firms. Materials management, international sourcing and distribution, and importing/exporting procedures. International carrier management and operations are examined. Prerequisite(s): LSCM 3960.

**LSCM 4530. E-Logistics in Supply Chain Management.** 3 hours. Comprehensive inquiry into the role of e-commerce in collaborative distribution and logistics relationships. Special attention is afforded to resource and technology interdependencies, exchange governance mechanisms and relationship management bench-marking. Emphasis is given to the tools for creating value in the supply chain.

**LSCM 4540. Logistics Application of Enterprise Resource Planning Systems.** 3 hours. (2;2) Students gain first-hand experience in Enterprise Resource Planning (ERP) systems through a combination of lectures and lab exercises. Special attention is paid to interdependencies between logistical (SCM) and back office software functions such as finance (FI), controlling (CO) and human resources (HR). Students learn how to navigate, analyze data, and develop solutions for supply chain management problems using a modern, commercially available ERP system. Students learn how to work through key tasks in all major modules and develop greater understanding of the underlying supply chain business processes.

**LSCM 4560. Business Transportation Management.** 3 hours. Principles of transportation covering the role of transportation systems; environmental and economic impacts; modal components; managerial and economic aspects of the various modes, with applications to both domestic and international operations.

**LSCM 4800. Logistics Internship.** 3 hours. Supervised work in a job related to the student's career objectives. Prerequisite(s): LSCM 3960 and LSCM 4560. Must be within two long terms/semesters of graduation at the time of the internship and have consent of department chair or internship director. Pass/no pass.

**LSCM 4830. Industry Practicum.** 3 hours. Students work in small groups to identify and resolve hands-on industry problems under the guidance of a faculty member, work

closely with industry representatives and develop solutions for a final paper/presentation to industry executives. Prerequisite(s): LSCM 3960 and at least one other LSCM course.

**LSCM 4860. Advanced Logistics Management.** 3 hours. Application of logistics decision-making tools and skills as they apply to inventory, transportation, and warehouse management. Course stresses hands-on application of analytical tools useful in logistics; analysis of the characteristics of logistics system elements and their interrelationships within a company; developing skills to analyze technical logistics problems; and developing executive-level communications skills leading to the concise statement of problems and proposed solutions. Capstone course to be taken during the last term/semester of course work. Prerequisite(s): LSCM 3960.

**LSCM 4951. Honors College Capstone Thesis.** 3 hours. Major research project prepared by the student under the supervision of a faculty member and presented in standard thesis format. An oral defense is required of each student for successful completion of the thesis. Prerequisite(s): completion of at least 6 hours in honors courses; completion of at least 12 hours in the major department in which the thesis is prepared; approval of the department chair and the dean of the school or college in which the thesis is prepared; approval of the dean of the Honors College. May be substituted for HNRS 4000.

**Marketing, MKTG**

**MKTG 2650. International Cultures and Consumption.** 3 hours. Students critically examine consumer role sets in culturally diverse settings, brand preference formation in different cultures, and cultural imperatives in the marketing of products and services. Emphasis is placed on issues and challenges in "doing business" in other cultures/countries. Students acquire skills in creative and critical thinking, working in groups, appreciating other cultures and harnessing their own values within the university community and the larger society. Class exercises, examination, and written and verbal presentations enhance students' self-awareness and openness to different perspectives. *Satisfies a portion of the Understanding the Human Community requirement of the University Core Curriculum.*

**MKTG 3010. Professional Selling.** 3 hours. Professional selling principles and practices for business applications. Principles of communication, listening, selling yourself and a business sales model. Students develop and present two sales presentations. Satisfies the CoB business foundation communication requirement. Open to all majors. *Satisfies a portion of the Understanding the Human Community requirement of the University Core Curriculum.*

**MKTG 3650. Foundations of Marketing Practice.** 3 hours. Survey of marketing concepts and practices and overview of the range of activities performed by marketing managers. Topics include the identification of market opportunities, strategic marketing planning, product/service development and management, price setting and management, establishing and managing distribution channels, and structuring promotional programs. Prerequisite(s): junior standing.

**MKTG 3660. Advertising Management.** 3 hours. Advertising for business executives; creation of primary demand, stimuli, promotional programs, media selection, appropriation and evaluation. Prerequisite(s): MKTG 3650.

**MKTG 3700. Marketing and Money.** 3 hours. Students are taught to understand and appreciate the money implications and impact of marketing decisions. The teaching method is “intensively hands-on” and makes use of mini-cases, problems and exercises in the context of market opportunity analysis, market segmentation, and planning and implementing a marketing mix. Prerequisite(s): MKTG 3650 (may be taken concurrently, but completion is recommended).

**MKTG 3710. Marketing Research and Information Technology.** 3 hours. Examination of marketing information technologies and marketing research. Students learn why and when to do marketing research, the types and sources of primary and secondary data available, methods for collecting data, the construction of data gathering instruments (e.g. questionnaires), the use of measurement scales, basic sampling, and data analysis techniques. Class emphasizes the use of secondary data sources, especially online, electronic sources of marketing information. Prerequisite(s): DSCI 2710 and MKTG 3700 (may be taken concurrently).

**MKTG 3720. Internet Marketing Concepts and Strategy.** 3 hours. Students are expected to garner an appreciation for the role of e-commerce for creating competitive advantage in the global marketplace. Course reviews models and strategies pertinent to Internet marketing, including market segmentation, marketing mix strategies and customer relationship management. Prerequisite(s): MKTG 3650.

**MKTG 3881. Personal Professional Development.** 1 hour. Emphasis is on career development including preparation of professional resumes, developing interviewing skills and utilizing UNT placement office facilities and services. Guest speakers from various industrial settings familiarize students with professional opportunities in marketing.

**MKTG 4120. Buyer Behavior.** 3 hours. A survey of individual and organizational decision making in the acquisition, consumption and disposition of goods and services, with selected applications in market segmentation, marketing communications and marketing management. Topics include consumer and organizational behavior models and decision processes; internal influencing forces of motivation, perception, learning, personality, lifestyle and attitudes; external influencing forces of culture, subculture, demographic, social class, reference group and household. Prerequisite(s): MKTG 3650.

**MKTG 4280. Global Marketing Issues and Practice.** 3 hours. Students examine marketing decision making in an international context. Course emphasizes issues and concepts relevant to firms competing in the global marketplace, including problems and opportunities arising from the economic, legal/political, sociocultural, geographic and technological environments. Specific topics include multinational distribution, international product adaptation and cross-cultural consumer behavior. Requires a project emphasizing using and refining secondary data collection skills. Students may be required to work in a group context. Prerequisite(s): MKTG 3650.

**MKTG 4320. New Product Development.** 3 hours. Understanding customer needs and translating them into new products and services whose design and presentation address those needs. Applying a disciplined approach to the new product development process from idea generation to product launch. Prerequisite(s): MKTG 3700 and MKTG 3710.

**MKTG 4330. Strategic Brand Management.** 3 hours. Course concentrates on strategic and operational issues related to brand management—an important aspect of marketing function—its integration in the organization, management of portfolio of brands, environmental scanning, identification and creation of value to offer to consumers, budgeting, planning, and control issues. Specific areas include research, data management, analyses for planning and decision making, decisions in the areas of product/service offering, pricing, communication (advertising, sales promotion, sponsorship and publicity), channels, ethics and global implications, among others. Prerequisite(s): MKTG 3650 and MKTG 3700 (may be taken concurrently).

**MKTG 4520. Marketing Channels and Strategic Partnerships.** 3 hours. An examination of strategic issues involved in managing marketing channels. Topics include channel design, supply chain management and the external channels environment. Marketing channel strategy is extended to the use of strategic alliances and other collaborative distribution relationships for global competitive advantage. Special attention is directed to resource and technology interdependencies, exchange governance and relationship bench-marking. Prerequisite(s): MKTG 3650.

**MKTG 4600. Retailing.** 3 hours. Principles and methods; store location and layout; sales promotion; buying and pricing; personnel management; credit; stock control. Prerequisite(s): MKTG 3650.

**MKTG 4620. E-Commerce Marketing Tools and Applications.** 3 hours. Explores the evolution of the Internet and the Internet’s ensuing role in marketing. Introduction to web design, web authoring and web-based marketing applications. Prerequisite(s): MKTG 3650.

**MKTG 4630. Electronic Retailing and Promotion Strategies.** 3 hours. Addresses advanced aspects of retailing concepts in an electronic, online setting. Topics include promotional issues, privacy and security concerns, target market assessment, building a customer base, site design, order tracking and shipping. Prerequisite(s): MKTG 3650.

**MKTG 4640. Database Marketing Fundamentals.** 3 hours. Examines theories, issues, processes and applications involved in the strategic use of marketing databases in corporate and non-corporate settings. Emphasizes the importance of acquiring, maintaining and processing market-related information. Introduces the extension of database marketing to the concept of one-to-one marketing. Discusses uses of computer hardware and software, the Internet and telecom technology in database marketing. Examines issues involved in the creation and maintenance of marketing databases as well as their varied uses. Students complete a project, learning and using many skills related to applied database marketing. Prerequisite(s): MKTG 3650 and MKTG 4620.

**MKTG 4750. Services Marketing.** 3 hours. Places emphasis on examination of the basic “building blocks,” characteristics and nature of the service product and importance in the economy. Focuses on the “service-dominant logic (SDL) model” and competitive marketing strategies. Students acquire creative and critical thinking skills in case study and real industry analysis culminating in writing a report and making verbal presentations. . Prerequisite(s): MKTG 3650.

**MKTG 4800. Internship in Marketing or Logistics.** 3 hours. Supervised work in a job related to student’s career objective or equivalent.

**MKTG 4810. Special Topics in Marketing or Logistics.** 3 hours. Investigation, analysis and discussion of a variety of topics that are important in marketing and logistics. Topics may include supply chain management, transportation, logistics, distribution and channel management, product development and management, sales management, consultative and team selling, promotion, market segmentation and opportunity analysis, and strategic pricing. Prerequisite(s): completion of 9 hours of upper-division marketing courses. May be repeated for credit as topics vary.

**MKTG 4880. Advanced Marketing Management.** 3 hours. Application of concepts, tools and procedures employed by practicing marketing managers. Specific attention is given to product development and management, promotion development and management, channel selection and management, physical distribution management and price setting and management. Students acquire skills in the essentials of case analysis and written as well as oral presentation of their analysis. Oral presentations may be made using electronic media. Groups may be required for case work. Prerequisite(s): MKTG 3700 and MKTG 3710.

**MKTG 4890. Applied Marketing Problems.** 3 hours. Capstone marketing course. Students work in team settings to develop a comprehensive marketing plan. The marketing plan requires students to integrate a wide range of marketing principles and practices. The integrated marketing plan requires students to identify market opportunities and challenges, formulate actionable plans to address organizational strengths and weaknesses, and execute a marketing mix strategy. Requires both oral and written presentation of the marketing plan. Prerequisite(s): MKTG 3650, MKTG 3700, MKTG 3710 and graduating senior status.

**MKTG 4900. Special Problems.** 1–3 hours each.

**MKTG 4951. Honors College Capstone Thesis.** 3 hours. Major research project prepared by the student under the supervision of a faculty member and presented in standard thesis format. An oral defense is required of each student for successful completion of the thesis. Prerequisite(s): completion of at least 6 hours in honors courses; completion of at least 12 hours in the major department in which the thesis is prepared; approval of the department chair and the dean of the school or college in which the thesis is prepared; approval of the dean of the Honors College. May be substituted for HNRS 4000.

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## Master's Engineering Systems

see *Graduate Catalog*

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## Materials Science and Engineering

### **Materials Science and Engineering, MTSE**

**MTSE 2900-MTSE 2910. Introduction to Materials Science Research.** 1–3 hours. Individualized laboratory instruction. Students may begin training on laboratory research techniques.

**MTSE 3010. Bonding and Structure.** 3 hours. Amorphous and crystalline structures in metals, ceramics and polymers, point defects in crystals, structure determination by X-ray diffraction. Prerequisite(s): ENGR 3450.

**MTSE 3020. Microstructure and Characterization of Materials.** 3 hours. Introduction to dislocations, grain boundaries, surfaces and multiphase microstructures. Optical and electron microscopic characterization of microstructures. Prerequisite(s): ENGR 3450.

**MTSE 3030. Thermodynamics and Phase Diagrams.** 3 hours. First three laws of thermodynamics; phase equilibria, reaction equilibria and solution theory. Principles and applications of phase diagrams. Prerequisite(s): ENGR 3450.

**MTSE 3040. Transport Phenomena in Materials.** 3 hours. Principles of transport phenomena (momentum, heat and mass transport) in materials processes including heat, mass and momentum transport. Emphasis on applications of appropriate differential equations and boundary conditions to solve real materials processing problems. Prerequisite(s): MATH 3310 and ENGR 3450.

**MTSE 3050. Mechanical Properties of Materials.** 3 hours. Macroscopic mechanical response of ceramics, metals, polymers and composite materials, with an introduction to the underlying microstructural processes during deformation and fracture. Prerequisite(s): ENGR 3450.

**MTSE 3060. Phase Transformations in Materials.** 3 hours. Principles of structural transformations in materials. Thermodynamics and kinetics of nucleation, growth, precipitation and martensitic reactions. Prerequisite(s): MTSE 3030 and MTSE 3040.

**MTSE 3070. Electrical, Optical and Magnetic Properties of Materials.** 3 hours. Bonding and the electronic structure and properties of metallic, ceramic, semiconducting and polymeric materials. Prerequisite(s): ENGR 3450.

**MTSE 3080. Materials Processing.** 3 hours. Basic principles and strategies for processing metals, ceramics, polymers, composites and electronic materials. Prerequisite(s): MTSE 3040.

**MTSE 3090. Materials Science and Engineering Laboratory I.** 1 hour. (0;1) Laboratory designed to introduce students to some of the most common materials testing and characterization methods. Topics include optical metallography, tensile testing, hardness testing, impact testing, heat treating, melting and casting. Prerequisite(s): ENGR 3450.

**MTSE 3100. Materials Science and Engineering Laboratory II.** 1 hour. (0;1) Sequel laboratory designed to continue to introduce students to some of the most common materials testing and characterization methods. Topics include differential scanning calorimetry, rheology, powder processing and sintering, density, scanning electron microscopy, and x-ray diffraction. Prerequisite(s): MTSE 3090.

**MTSE 4010. Physical Metallurgy Principles.** 3 hours. Physical metallurgy principles with a focus on understanding structure-property relationships in metals and alloys. Topics include structure, dislocations, mechanical behavior, grain boundaries, annealing, recrystallization, grain growth, diffusion, phase diagrams, transformations, strengthening mechanisms, fatigue, creep and fracture. Emphasis on the basic structure-property-processing relationships in metals and how they differ from other material classes. Prerequisite(s): MTSE 3010, MTSE 3030 and MTSE 3040.