

460 Capstone for Management Majors (W)
 Fall, Spring. 3(2-2) P:M: (MGT 315 or concurrently) R: Open only to seniors in the Human Resource Management or General Management major.
 Topics in management and organizational behavior.

490 Independent Study
 Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to juniors or seniors. Approval of department.
 Supervised program of independent library research designed to supplement classroom study.

491 Special Topics in Human Resource Management
 Spring of even years. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. P:M: (MGT 315 or concurrently) R: Open only to juniors or seniors in The Eli Broad College of Business. Not open to students in The School of Hospitality Business.
 Topics in human resource management such as advanced organizational behavior, managing labor relations, organizational development, and organizational theory and design.

300 Managerial Marketing
 Fall, Spring, Summer. 3(3-0) R: Open only to juniors or seniors in the Eli Broad College of Business. Not open to students in The School of Hospitality Business. SA: ML 300, MTA 300 Not open to students with credit in MSC 327.

Analysis and strategic integration of buyer behavior, segmentation, positioning, demand analysis, information, pricing, promotion, channels, product policies, and ethics in consumer, reseller, industrial, and service markets.

302 Consumer and Organizational Buyer Behavior
 Fall, Spring, Summer. 3(3-0) P:M: (MSC 300) R: Open only to juniors or seniors in the Eli Broad College of Business or Food Industry Management major. SA: ML 302, MTA 302

Application of consumer behavior principles to customer satisfaction, market planning, and marketing mix decisions. Ethical, diversity, and international issues.

303 Introduction to Supply Chain Management
 Fall, Spring, Summer. 3(3-0) R: Open only to juniors or seniors in the Eli Broad College of Business and to students in programs for which MSC 303 is a catalog-listed requirement. Not open to students in The School of Hospitality Business. SA: MGT 303, ML 303, MTA 303

Objectives, processes, and functions of supply chain management activities including procurement, manufacturing, and logistics. The role of supply chain processes in creating competitive advantage with respect to quality, flexibility, lead-time, and cost.

305 Supply Chain Management
 Fall, Spring, Summer. 4(4-0) P:M: (MSC 303) R: Open only to juniors or seniors in The Eli Broad College of Business or the Business-Supply Chain Management cognate in the Engineering Arts major.

Supply chain operating practices and principles. Strategies for customer service, quality, procurement, manufacturing, logistics, and integrated supply chain management.

310 International and Comparative Dimensions of Business
 Fall, Spring, Summer. 3(3-0) R: Open only to juniors or seniors in The Eli Broad College of Business. Not open to students in The School of Hospitality Business. SA: ML 310, MTA 310

International and cross-cultural study of business decisions, enterprises, markets, and institutions. Globalization of industries and firm competitiveness. International business transactions and entry strategies.

313 Personal Selling and Buying Processes
 Fall, Spring. 3(3-0) SA: ML 313

The nature of channel relationships. Buying behavior and sales processes. Applications to differing industries and kinds of channel relationships.

317 Quantitative Business Research Methods
 Fall, Spring, Summer. 3(3-1) Interdepartmental with Statistics and Probability. P:M: (STT 315) R: Open only to juniors or seniors in The Eli Broad College of Business. Not open to students in The School of Hospitality Business. SA: ML 317, MTA 317

Application of statistical techniques, including forecasting, to business decision making. Includes applications of linear regression and correlation, analysis of variance, selected non-parametric tests, time series, and index numbers.

319 Marketing Research
 Fall, Spring. 3(3-0) P:M: (MSC 300 and MSC 317 or concurrently) R: Open only to juniors or seniors in The Eli Broad College of Business. SA: ML 319, MTA 319

Research methods designed to obtain information for marketing decisions. Research design, data collection, and interpretation of information to provide a customer orientation.

327 Introduction to Marketing
 Fall, Spring, Summer. 3(3-0) R: Open only to juniors or seniors in programs for which MSC 327 is a catalog-listed requirement. Not open to students with credit in MSC 300.

Survey of marketing topics - buyer behavior, segmentation, positioning, demand analysis, information, pricing, promotion, channels, product policies, and ethics in consumer, reseller, industrial, and service markets.

351 Retail Management
 Fall, Spring, Summer. 3(3-0) Interdepartmental with Food Industry Management. P:M: (MSC 300 or MSC 327) R: Open only to juniors or seniors in the Eli Broad College of Business or the Food Industry Management or Merchandising Management major. SA: ML 351, MTA 351

Domestic and international retailing structure, environment, and development. Managerial strategy. Locational, purchasing, organizational, personnel and promotional techniques. Retail budgeting and control. Social and ethical considerations.

401 Procurement and Supply Management
 Fall, Spring, Summer. 3(3-0) P:M: (MSC 305 and MSC 317) R: Open only to juniors or seniors in The Eli Broad College of Business. SA: MGT 401, ML 401, MTA 401

Strategic issues in procurement and supply management. Purchasing process, procurement cycle, purchasing research, relationships with suppliers, negotiation, and commodity planning. Cost, price, and value analysis.

402 Manufacturing Planning and Control
 Fall, Spring, Summer. 3(3-0) P:M: (MSC 305 and MSC 317) R: Open only to juniors or seniors in The Eli Broad College of Business. SA: MGT 402, ML 402, MTA 402

Production planning, demand management, master scheduling, materials requirements, and capacity planning. Shop floor control, computer-integrated manufacturing, and just-in-time systems.

410 Product Innovation and Management
 Fall. 3(3-0) P:M: (MSC 300 and MSC 317) R: Open only to juniors or seniors in The Eli Broad College of Business. SA: ML 410

Analytic, decision-making, and planning concepts and tools available to product managers. New product policy and development, organizational issues, and product modification and deletion.

MARKETING AND SUPPLY CHAIN MANAGEMENT MSC

Department of Marketing and Supply Chain Management The Eli Broad College of Business and The Eli Broad Graduate School of Management

101 Introduction to Business
 Fall, Spring. 3(3-0) R: Not open to juniors or seniors in the College of Business. SA: ML 101
 Role of business in society. Activities and functions of business organizations. Major issues and challenges facing business: globalization, social responsibility, diversity. Contemporary management practices.

293 Cooperative Education for Business Students
 Fall, Spring. 1(1-0) A student may earn a maximum of 3 credits in all enrollments for this course. Interdepartmental with Accounting; Economics; Finance; Management; Hospitality Business. R: Approval of department.

Integration of pre-professional educational employment experiences in industry and government with knowledge and processes taught in the student's academic program. Educational employment assignment approved by the Department of Marketing and Supply Chain Management.

Marketing and Supply Chain Management—MSC

412 Marketing Technology and E-Commerce
Fall, Spring. 3(3-0) Interdepartmental with Information Technology Management. P:M: (MSC 300 and MSC 317 and ITM 309) R: Open only to juniors or seniors in the Eli Broad College of Business, and to students in programs in which MSC 412 is a catalog-listed requirement.

Enabler technologies and their role in creating marketing opportunities, efficiencies, and innovations. Tools, applications, platforms, and infrastructures. Determination of business configurations that foster value creation from enabler technologies.

413 Sales Management
Fall, Spring. 3(3-0) P:M: (MSC 300 and MSC 317) R: Open only to juniors or seniors in The Eli Broad College of Business. SA: ML 413, MTA 413

Planning, implementing, and controlling the firm's personal selling function. Analysis of sales territories. Management of recruitment, selection, training, and motivation of sales personnel. Evaluation of sales performance. Discussion of diversity and ethical issues.

415 International Marketing Management
Fall, Spring. 3(3-0) P:M: (MSC 300) and (MSC 310 or EC 340) R: Open only to juniors or seniors in The Eli Broad College of Business. SA: ML 415, MTA 415

Marketing decisions, strategies, and operations of the firm involved in international business. Researching global market opportunities and formulating market entry strategies. Developing and implementing the international marketing program.

420 New Product Design and Development
Spring. 3(3-0) P:M: (MSC 300 and MSC 317) R: Open only to seniors in The Eli Broad College of Business.

Practical training and experiences in design and testing of new products.

439 Food Business Analysis and Strategic Planning(W)
Fall. 3(3-0) Interdepartmental with Food Industry Management. Administered by Department of Agricultural Economics. P:M: (FIM 220) R: Open only to juniors or seniors SA: ML 439, MTA 439, MSC 439

Principles and techniques of business analysis and strategic planning applied to food firms. Food trend forecasts, market potential, competition and cost analyses, business and strategic planning.

442 Logistics and Transportation Management
Fall, Spring, Summer. 3(3-0) P:M: (MSC 305 and MSC 317) R: Open only to juniors or seniors in The Eli Broad College of Business. SA: ML 442, MTA 442

Microanalysis of logistics and transportation services. Customer service, distribution operations, purchasing, order processing, facility design and operations, carrier selection, transportation costing and negotiation.

460 Marketing Strategy (W)
Fall, Spring, Summer. 3(3-0) P:M: (MSC 302 and MSC 317 and MSC 319) and completion of Tier I writing requirement. R: Open only to seniors in the Marketing major. SA: ML 460, MTA 460

Identification and analysis of managerial marketing issues. Integration of marketing concepts and theories through case analysis. Ethical and international applications.

470 Supply Chain Application and Policy (W)
Fall, Spring. 2(2-0) P:M: (MSC 401 or concurrently and MSC 402 or concurrently and MSC 442 or concurrently) and completion of Tier I writing requirement. R: Open only to seniors in the Supply Chain Management major. SA: ML 470, MTA 470

Analysis and problem solving of supply chain management cases. Purchasing, manufacturing, logistics, and transportation as an integrated supply chain.

472 Topics in Operations Management
Spring of odd years. 3(3-0) P:M: (MSC 402) R: Open only to juniors or seniors in the Supply Chain Management major. SA: ML 404, MSC 404, MTA 404, MGT 404

Managerial aspects of current issues such as total quality, computer integrated manufacturing and simultaneous engineering.

473 Topics in Logistics and Transportation Management
Spring. 3(3-0) P:M: (MSC 442) R: Open only to juniors or seniors in the Supply Chain Management major.

Current topics in logistics and transportation planning, information technology, response based strategies, third party logistics and relationship management.

490 Independent Study
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to juniors or seniors. Approval of department. SA: ML 490, MTA 490

Supervised program of independent library or field research designed to supplement classroom study.

490H Honors Independent Study
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Open only to juniors or seniors in the Honors College. Approval of department. SA: ML 490H, MTA 490H

Supervised program of independent library or field research designed to supplement classroom study.

491 Topics in Marketing and Supply Chain Management
Fall, Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. P:M: (MSC 300 or MSC 303) and (MSC 317) R: Open only to juniors or seniors in The Eli Broad College of Business. SA: ML 491, MTA 491

Current issues in specialized marketing, logistics knowledge of marketing, and environmental analysis. Strategy development for control.

MATERIALS SCIENCE AND ENGINEERING MSE

Department of Chemical Engineering and Materials Science College of Engineering

101 Materials and Society
Fall. 2(2-0) RB: High school physics, chemistry, mathematics.

Material capabilities, limitations, and their utilization in the service and advancement of society.

250 Materials Science and Engineering
Fall, Spring, Summer. 3(2-2) P:M: (CEM 141 or CEM 151 or LBS 171) SA: MSM 250
Structure of metals, ceramics and polymers. Phase diagrams, thermomechanical treatments, physical and mechanical properties, diffusion, microstructure studies, environmental effects.

310 Energy and Bonding within Solids
Fall. 3(3-0) P:M: (MSE 250 or concurrently) and (MTH 234 or MTH 254H or LBS 220) R: Open only to juniors or seniors in the College of Engineering. Not open to students with credit in MSE 351.

Enthalpy, entropy, free energy, phase changes in metal, ceramic and polymer materials systems. Application to alloying, phase diagram determination, electrochemistry.

320 Mechanical Properties of Materials
Fall. 3(3-0) P:M: (ME 222 or concurrently) and (MSE 250) R: Open only to juniors or seniors in the Materials Science and Engineering major. Not open to students with credit in MSE 355.

Mechanical behavior of metals, ceramics and polymers. Three-dimensional stress-states. Stress, strain and compliance tensors. Test methods. Elastic, viscoelastic, and plastic deformation. Fracture, fatigue and creep.

324 Biomaterials and Biocompatibility
Spring. 3(3-0) Interdepartmental with Biomedical Engineering. P:M: (PSL 250 or concurrently) and (MSE 250) R: Open only to students in the College of Engineering. SA: MSM 424

Materials science of human implants. Design requirements imposed by the human body. Need for bodily protection.

331 Materials Characterization Methods I
Fall. 1(0-2) P:M: (MSE 310 or concurrently and MSE 320 or concurrently) R: Open only to juniors or seniors in the Materials Science and Engineering major. Not open to students with credit in MSE 375.

Thermal analysis. Optical and Scanning Electron Microscopy Laboratory for characterizing microstructure-property relationships. Effects of processing on microstructures, properties, and fracture surfaces in metal, ceramic and polymer systems.