922. Production Planning and Scheduling

Fall. 4(4-0) MGT 921 or approval of department.

The hierarchy of strategic and operational production planning and scheduling.

923. Topics in Operations Management

Spring. 4(4-0) MGT 922 or approval of department.

Current research in Operations Management. Research methods and strategies. Preparation and presentation of student papers.

999. Doctoral Dissertation Research

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

MARKETING AND TRANSPORTATION ADMINISTRATION MTA

College of Business and Graduate School of Business Administration

292. Selected Topics

Fall, Winter, Spring. 3(3-0) or 4(4-0) May reenroll for a maximum of 8 credits when a different topic is taken.

Selected subject matter of current interest in marketing: social, institutional, and managerial, etc., topics. Subject varies by terms.

300. Marketing Management in Business and Society I

Fall, Winter, Spring, Summer. 4(4-0) EC 202, ACC 201 or ACC 230.

Firm and consumer roles in the exchange system for goods and services. Competitive analysis of market structures and marketing management. Fitting product-service offerings to various customer group needs.

301. Marketing Management in Business and Society II

Fall, Winter, Spring, Summer. 4(4-0) Juniors, MTA 300.

Market planning and control within the context of international and domestic environments with an emphasis on industrial applications. Includes market selection, competitive analysis, distribution strategy and market information systems.

303. Materials and Logistics Management

(MGT 300.) Fall, Winter, Spring, Summer. 4(4-0) Juniors in the College of Business or approval of department. Interdepartmental with and administered by the Department of Management.

Management concepts and techniques for purchasing, operations and distribution processes. Productivity and profit contributions. Planning, analysis and control of purchasing, production and transportation-distribution.

304. Operations Planning and Control

(MGT 301.) Winter, Spring. 4(4-0) MGT 303 or approval of department. Interdepartmental with and administered by the Department of Management.

Managing the production system. Product development, process selection, facilities location and layout; staffing; materials, cost and quality control.

305. Purchasing Management

Fall, Winter, Spring. 4(4-0) MGT 303 or approval of department. Interdepartmental with and administered by the Department of Management.

Planning, organizing and controlling the purchasing function within organizations. Purchasing responsibilities, objectives and policies. Source selection and evaluation. Price, cost and value analysis. Negotiation. Managing purchase inventories.

311. Personal Selling

Fall, Winter, Spring, Summer. 3(3-0) MTA 300.

Theories, principles, methods and techniques of personal selling with application to different buyer-seller situations. Development of interpersonal communication skill. Career opportunities in selling.

313. Sales Management

Fall, Winter, Spring, Summer. 4(4-0) MTA 300.

Organization and administration of the firm's personal selling. Topics include: recruitment, selection, training, compensation, evaluation, development, and motivation of the sales force; market assessment, territory alignment, and quotas; segmental analysis and budgeting.

317. Quantitative Business Research Methods

Fall, Winter, Spring, Summer. 4(5-0) STT 315. Interdepartmental with the Department of Statistics and Probability.

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

320. Consumer and Buyer Behavior

Fall, Spring, Summer. 4(4-0) MTA 300.

Consumer buyer behavior characteristics, theories and research methods for marketing and strategies and problem solving. Emphasis on predicting and understanding purchase behavior for best firm/buyer needs match.

335. Food Processing and Distribution Management

Winter. 3(3-0) MTA 300 or FSM 200. Interdepartmental with Food Systems Economics and Management.

Anlysis of problems faced in the food processing and distribution system. Includes functional interrelationships, consumer orientation and future development.

341. Transportation Distribution Systems

Fall, Winter, Summer. 4(4-0) MGT 303 or approval of department. Interdepartmental with the Department of Management.

Application of economic and business principles to transportation and distribution systems. Functional analysis of all major transport modes. Identification of major issues, analysis of alternatives and discussion of probable future outcomes.

342. Traffic Management

Winter, Spring, Summer. 4(4-0) MGT 303 or approval of department. Interdepartmental with the Department of Management.

Basic practices related to purchasing and operating transportation services for private and public enterprises.

351. Retail Management

Fall, Winter, Spring, Summer. 4(4-0) MTA 300, ACC 201 or concurrently.

Management methods, locational analysis, store organization, personnel planning, merchandising, buying and pricing techniques and customer service policies for retail firms. Survey of retailing and its role in distribution.

400H. Honors Work

Fall, Winter, Spring. 1 to 15 credits. Approval of department.

Investigates models, concepts and research findings of particular significance to effective decision making in administration of marketing and transportation systems.

403. Research and Negotiation for Purchasing Materials and Management

Fall, Winter, Spring. 4(4-0) MGT 305 or approval of department. Interdepartmental with and administered by the Department of Management.

Applied research and planning focusing on the purchasing and materials management functions in organizations. Preparation for and conducting purchase negotiations. Field research studies. Administration of the research and planning effort.

405. Operations Management Topics

Fall, Winter, Spring. 4(4-0) MGT 304 or approval of department. Interdepartmental with and administered by the Department of Management.

Consideration of current and controversial questions in operations management. Field experience to study operations and policies in business. Industry studies; impact of new technology and government regulations.

407. Materials and Logistics Policy

Winter, Spring. 4(4-0) MGT 303 plus 12 credits in MLM Program. Interdepartmental with the Department of Management.

Analysis of comprehensive cases incorporating topical coverage of the entire materials and logistics management program.

409. Field Studies in Business

Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 8 credits. Majors and approval of department.

Planned program of independent research or observation, study, and work in selected business firms. Designed to supplement classroom study in such a way as to make maximum contribution to student's total educational experience.

414. Marketing Research

Fall, Winter, Spring, Summer. 5(5-0) MTA 301, MTA 317.

Research process as an aid to decision making in marketing managements. Specific attention to the planning of research and gathering analysis and interpretation of data.

415. International Market Systems

Fall, Winter. 4(4-0) MTA 300.

Development of criteria for evaluating foreign markets. Design of international organization and marketing systems. Study of major methods, modes, and strategies of international trade and operations. Applications through reports and case decisions.

418. ***Marketing Development and Policies***
Fall, Winter, Spring, Summer. 4(4-0) MTA 301, MTA 414 and at least 3 additional credits of MTA electives.
Study and integration of major tasks and decisions involved in developing and marketing products. Comprehensive discussion of cases involving different decisions for a variety of products.

439. ***Advanced Food Processing and Distribution Management***
Fall. 3(3-0) MTA 335. Interdepartmental with Food Systems Economics and Management.
Managerial principles and techniques applied to food processing and distribution. Emphasizes adjustment to changing social, economic and internal company environment. Student interaction with industry, labor and government representatives. Field trips, special projects.

445. ***Physical Distribution Management***
Fall, Winter, Spring. 4(4-0) MGT 303 or approval of department. Interdepartmental with the Department of Management.
Micro analysis of private and public physical distribution systems. Emphasis on component parts of the movement system; analytical tools used in planning, implementing and controlling the system.

452. ***Retail Policies and Problems***
Spring. 4(4-0) MTA 351.
Analysis of retail problems with examination of selected current major problem areas. Critical review of budgetary and other controls, standards and techniques used to achieve management objectives.

800. ***Materials and Logistics Management***
Fall, Winter, Spring, Summer. 4(4-0) Graduate students. Interdepartmental with and administered by the Department of Management.
Management concepts of and frameworks for acquisition, conversion and distribution processes. Impact on business and social systems, productivity and profits. Emphasis on planning, analysis and control of purchasing, production and physical distribution.

801. ***Operations Management***
Winter. 4(4-0) MGT 800 or approval of department. Interdepartmental with and administered by the Department of Management.
Managing the production system. Strategies of product and process selection. Design of production facilities: location, layout and capacity. Organizing and staffing operations and work measurement. Controlling quality and costs.

802. ***Research Analysis for Marketing Decisions***
Fall, Spring. 4(4-0)
Use of research techniques as an aid in marketing decision making. Research process involving research problem definition, hypothesis formulation, data collection, interpretation and presentation. Class projects may be used.

803. ***Purchasing Administration***
Winter, Spring. 4(4-0) MGT 800. Interdepartmental with and administered by the Department of Management.
Purchasing objectives, responsibilities, policies and organization. Source selection, evaluation and development. Negotiations. Purchase planning and evaluation.

804. ***Marketing Concepts and Processes***
Fall, Winter. 4(4-0)
The business is considered relative to its external environment. Institutions comprising the marketing system, the principal environmental opportunities and constraints facing the marketing manager, and the major marketing informational, control and coordination devices available to the firm will be studied.

805. ***Marketing: Models, Theories and Strategies***
Fall, Winter, Spring, Summer. 4(4-0) MTA 804.
Analysis of marketing functions, programming marketing effort, and control and coordination are considered within the context of industrial and consumer demand. Strategic and decision-making aspects of marketing are stressed.

808. ***Emerging Issues in the Business Environment***
Winter, Spring. 4(4-0) May reenroll for a maximum of 12 credits if course content changes. Thirty credits of MBA core program, or approval of department.
Selected significant current organization, social, political, economic and cultural issues are examined in relation to business policy and decision making. Discussions, readings and research reports. Topics selected may vary from term to term.

809. ***Transportation Distribution Strategies***
Fall, Winter. 4(4-0) MGT 800. Interdepartmental with the Department of Management.
Planning and control of the enterprise's transportation and physical distribution system. Emphasis on detailed examination of component parts of the movement storage system.

811. ***Seminar in Marketing***
Fall, Winter, Spring, Summer. 1 to 5 credits. May reenroll for a maximum of 15 credits.

812. ***Systems Design Modeling***
Spring. 4(4-0) MGT 800. Interdepartmental with the Department of Management.
Research procedure and planning models for design of the firm's logistical system. Emphasis on situational analysis, research methodology, data analysis, analytical techniques and implementation.

815. ***Business and Material Forecasting***
(MGT 802.) Fall. 4(4-0) MGT 800 or approval of department. Interdepartmental with and administered by the Department of Management.
Causes and consequences of supply dynamics. Analyses and forecasts of national and international materials and purchasing business trends. Influences of material resource problems on policies, strategies and behaviors.

816. ***Transportation Policy and Plans***
Fall, Winter. 4(4-0) MGT 800. Interdepartmental with the Department of Management.
An operational model and theoretical perspective on national policies that are apt to shape the future of the transportation system. Interaction of government, carrier, and user logistics and distribution strategies.

821. ***Production and Inventory Planning and Control***
Winter, Spring. 4(4-0) MGT 800 or approval of department. Interdepartmental with and administered by the Department of Management.
Theory and practice of production and inventory planning and control. Focus on computer based planning systems for material requirements including aggregate planning, master scheduling, capacity planning, shop floor control and inventory planning.

823. ***Seminar in Retailing***
Winter. 4(4-0)
Critical analysis of available generalizations concerning the economic, social, and commercial role of retailing. Special attention to concepts of retail competition and productivity. Emphasis on research in improving retail efficiency.

824. ***Marketing Channel Management***
Spring. 4(4-0) MTA 805.
Seminar in selected organizational, social, political, economic and cultural issues related to management in marketing channels.

831. ***Food Marketing Management***
Fall, Spring. 4(4-0) May reenroll for a maximum of 8 credits. Interdepartmental with the Department of Agricultural Economics.
Food industry adjustment to changing social, economic and internal company environment. Managerial principles and techniques applied to food processing and distribution. Student interaction with industry, labor and government representatives.

841. ***Materials and Logistics Management Policy***
Spring, Summer. 4(4-0) MGT 800 plus 30 credits in the MBA Program. Interdepartmental with the Department of Management.
Case course that integrates the materials and logistics management program. Emphasis on problem recognition, applying course materials and preparation of plans that improve total systems performance.

851. ***Market Behavior and Competitive Strategy***
Fall, Winter, Summer. 4(4-0) MTA 805.
Industrial and consumer market structure and behavior and their impact upon the firm's competitive operations and actions.

853. ***Market Programming***
Winter, Spring, Summer. 4(4-0) MTA 805.
Planning processes leading to programming the various elements of market cultivation. Major emphasis is given to the development of a total marketing strategy for the firm. Case analysis.

854. ***Problem-Solving Processes in Marketing***
Fall, Spring. 4(4-0) MTA 853.
The problem-solving process is approached through the investigation and solution of current marketing problems by research teams.

855. ***Market Cost-Revenue Analysis***
Winter. 4(4-0) One course in accounting and one in marketing. Interdepartmental with the Department of Finance and Insurance.
Analytical tools for use in planning and controlling marketing activities. Emphasis on the determination of factors causing marketing cost differences and the assignment of costs to those factors. Application of tools to determination of expenditure-revenue patterns and market potentials.

860. ***International Business***
Fall, Summer. 4(4-0) MTA 805.
The economic environment within which the international firm operates is presented. Special emphasis on relating trade and payments theory, regional analysis, and economic development to strategy formulation of the firm. Marketing, financial, and organizational factors are considered.

862. ***International Marketing***
Winter. 4(4-0) MTA 860.
Models for headquarters planning and control of international marketing operations are developed. Social, cultural, institutional, and economic variables are considered in studying marketing operations in foreign environments.

863. ***Problems in International Business***
Spring. 4(4-0) MTA 862.
Examination of strategies and organization for international business. In-depth consideration of headquarters and overseas personnel, marketing, financial, and legal issues.

890. ***Special Problems***
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 8 credits. Approval of department.

905. ***Analysis of Business Enterprise Systems***
Fall. 3 credits. MTA 805; MGT 806.
Research concepts and scientific methods for the study of business enterprise systems. The design of research, formulation of hypotheses, concepts of measurements and use of quantitative methods in the study of business systems.

909. ***Theory of Transportation-Distribution Systems***
Fall. 4(4-0)
Examines the functions of transportation-distribution systems. Develops the relevant elements of networks, systems, and economic theory with empirical design. Applications to the design evaluation, and control of representative macro and micro systems.

910A. ***Advanced Research in Marketing I***
Winter. 4(4-0) Second-year doctoral students in marketing.
Advanced concepts and quantitative methods in the scientific investigation of market phenomena and the tools of market cultivation.

910B. ***Advanced Research in Marketing II***
Spring. 5(5-0) MTA 910A.
Continuation of MTA 910A.

911A. ***History of Market Thought***
Fall. 4(4-0) May reenroll for a maximum of 15 credits. MTA 851.
Traces the evolution of marketing institutions, techniques, theories and criticisms. The influence of changing environmental and technological factors on marketing practice and thought. Readings in retrospective and original materials, discussion and research paper.

911B. ***Seminar in Macro Marketing***
Winter. 4(4-0) May reenroll for a maximum of 15 credits. MTA 911A.
Examines the relationships between competition, marketing and corporate and economic growth. Emphasis is given to a functional examination of competition and the central role of innovation in the process.

912. ***Research Methodology in Transportation-Distribution Systems***
Winter. 4(4-0) MTA 812, MTA 909.
Research methodology in the design and administration of transportation-distribution systems. Emphasis on technique and methodology for conducting system design studies and evaluation of common implementational problems.

941. ***Transportation-Distribution Development Policy***
Spring. 4(4-0) MTA 909, MTA 912.
Applications in theory, principles, and proceses developed in MTA 909 and MTA 912 to the design of research processes and reports in signficant transport and distribution problems.

957. ***Seminar in Micro Marketing***
Spring. 4(4-0) MTA 911A.
Examines the current state of theory concerning the planning and implementation of marketing strategies and programs, and tries to identify where future research is needed and/or will be most useful to marketing and business managers.

999. ***Doctoral Dissertation Research***
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

MATHEMATICS MTH

College of Natural Science

One and one-half years of high school algebra and one year of geometry and a satisfactory score on the placement test are prerequisites for all courses in the Department of Mathematics which carry credit.

0813. ***Elements of Algebra***
Fall, Winter, Spring, Summer. 0(3-0) [3(3-0) See page A-1 item 3.] Current enrollment in MTH 1033.
Fractions, decimals, real number properties, algorithms of arithmetic, simple factoring, simplifying algebraic expressions, parentheses, reciprocals, linear equations, integer exponents, applied problems, coordinate systems, graphing, solving equations by graphing.
Approved through Fall 1988.

0823. ***Intermediate Algebra***
Fall, Winter, Spring, Summer. 0(2-0) [2(2-0) See page A-1 item 3.] Current enrollment in MTH 1043, one year of high school algebra, satisfactory score on placement exam.
Properties of real numbers, polynomials, factoring, exponents, roots and radicals, first and second degree equations, linear inequalities, complex numbers, word problems, system of equations, operating on algebraic expressions, simplifying algebraic expressions.
Approved through Fall 1988.

1033. ***Elements of Algebra***
Fall, Winter, Spring, Summer. 2(2-0) Current enrollment in MTH 0813.
Fractions, decimals, real number properties, algorithms of arithmetic, simple factoring, simplifying algebraic expressions, parentheses, reciprocals, linear equations, integer exponents, applied problems, coordinate systems, graphing, solving equations by graphing.
Approved through Fall 1988.

1043. ***Intermediate Algebra***
Fall, Winter, Spring, Summer. 3(3-0) Current enrollment in MTH 0823, one year of high school algebra, satisfactory score on placement exam.
Properties of real numbers, polynomials, factoring, exponents, roots and radicals, first and second degree equations, linear inequalities, complex numbers, word problems, system of equations, operations on algebraic expressions, simplifying algebraic expressions.
Approved through Fall 1988.

108. ***College Algebra and Trigonometry I***
Fall, Winter, Spring, Summer. 5(5-0) 1-1/2 high school units in algebra and satisfactory score on placement test, or MTH 0823; 1 high school unit in geometry. Not open to students with credit in MTH 111.
Number systems; variables; functions and relations; mathematical induction; exponents and radicals; elementary theory of equations; binomial theorem; determinants, matrices and systems of equations.

109. ***College Algebra and Trigonometry II***
Fall, Winter, Spring, Summer. 5(5-0) MTH 108; not open to students with credit in MTH 111.
Continuation of MTH 108 plus trigonometry including definition of circular functions, angular measure, fundamental identities.

110. ***Finite Mathematics with Applications***
Fall, Winter, Spring, Summer. 5(5-0) MTH 108 or MTH 111.
Elementary combinatorial analysis, binomial theorem, vectors and matrices, convex sets and linear programming, graph theory, applications to theory of games.

111. ***College Algebra with Trigonometry***
Fall, Winter, Spring, Summer. 5(5-0) 1-1/2 years of high school algebra, 1 year of high school geometry, knowledge of trigonometry, satisfactory score in algebra placement test. Not open to students with credit in MTH 108 or MTH 109.
Sets and equations, simultaneous equations and matrices, vectors, inequalities, functions and relations, inverse functions, elementary theory of equations, trigonometric equations and identities, polar coordinates, parametric equations, straight line analytic geometry.

112. ***Calculus and Analytic Geometry I***
Fall, Winter, Spring, Summer. 5(5-0) MTH 109 or MTH 111.
The sequence MTH 112, MTH 113, MTH 214, MTH 215, is an integrated course in calculus and analytic geometry, covering derivatives, curve sketching, definite and indefinite integrals, area volume, transcendential functions, vector analysis, solid geometry, partial differentiation, multiple integrals, infinite series, power series.

113. ***Calculus and Analytic Geometry II***
Fall, Winter, Spring, Summer. 5(5-0) MTH 112.
A continuation of MTH 112.

122. ***Calculus I***
Fall, Winter, Spring. 5(5-0) MTH 109 or MTH 111; not open to engineers, physical science or mathematics majors or to students with credit in MTH 112.
The first of a two-term course in primarily single variable calculus with and introduction to several variables for students who want only one or two terms of calculus.