

818. Supervisory and Executive Development
Fall, Spring, Summer. 4(4-0) 806 or

808.
Theory and research of developmental stages of executive careers. Special emphasis on: impact of organization on executive potentiality; forces influencing development of executive skills and abilities; studies of antecedents of executive role performance; role of training programs.

821. Production Control
Winter. 4(4-0) 801.

Planning and control of production operations. Inventory management, production and work force smoothing, job shop scheduling and project scheduling.

830. Fundamentals of Management
Fall, Winter. 4(4-0) Open only to selected MBA candidates.

The managerial process: planning, organization, measurement, and control of work and work flow; recruitment, placement, motivation, development, and assessment of organizational manpower. Management theory and practice illuminated by managerial and behavioral science research.

831. Computers and Systems Analysis for Business

Fall, Spring. 4(4-0) 832 or concurrently; MTH 111 and STT 121 or concurrently or 12 credits of college mathematics. Open only to selected MBA candidates.

Computer programming and systems analysis in business administration. of tangible and intangible values and in the control of elements of business enterprise.

832. Statistical Methods for Business
Fall, Spring. 4(4-0) 831 or concurrently; MTH 111 and STT 121 or concurrently or 12 credits of college mathematics. Open only to selected MBA candidates.

Statistics for analysis and research in business.

833. Decision Making Models
Fall, Winter, Spring, Summer. 4(4-0) 831, 832; AFA 840 or concurrently.

Normative decision analysis in business under different assumptions of information availability.

834. Linear Optimization Models
Fall, Spring, Summer. 4(4-0) 833, MTH 228, STT 423.

Formulation and solution of linear optimization models in business administration under conditions of certainty.

835. Nonlinear Optimization Models
Winter, Summer. 4(4-0) 834.

Continuation of 834.

836. Stochastic Programming Models
Spring. 4(4-0) 835.

Formulation and optimization of stochastic programming models in business administration.

860. Corporation Management and Society
Spring. 4(4-0) 806.

Analysis of the emerging character of administrative structure of the large corporation. Administrative autocracy, corporate government, stockholder and director relationships. Examination of ethics of decision-making, strategic values and priorities basic to resource allocation decisions.

880. Organization and Control in the Political Economy: Institutions and Theory

Winter. 4(4-0) Interdepartmental with and administered by the Economics Department. Organization and technique in choice and implementation of economic, especially planning and programming, functions of political authority.

881. Organization and Control in the Political Economy: Selected Problems

Spring. 4(4-0) Approval of instructor. Interdepartmental with the Department of Economics.

Analysis of role and tasks, appropriate techniques and organizational structures of political agencies in planning and management of complex programs.

890. Special Problems
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

906. Behavioral Research: Organization

Winter. 3 credits. MTA 905.

Concepts and methods of behavioral science research that are applicable to the study of organization as a strategic device in the development

907. Behavioral Research: Business Executive

Spring. 3 credits. 906.

Concepts and methods of behavioral science research in the study of the agents of enterprise decision-making and action. Attention is focused on the way in which decisions are made in business organizations and the multiple influences operating on the executive. Modes of adjustment to the decision environment are examined.

908. Seminar in Organization Theory
Winter. 4(4-0) 806; doctoral candidates; master's candidates with approval of department.

Directed reading and research on issues in contemporary organization theory.

911. Seminar in Personnel Research
Spring. 4(4-0) 810; doctoral candidates; master's candidates with approval of department.

Directed reading and research on issues in contemporary personnel administration theory and practice.

937. Systems Simulation
Fall, Summer. 4(4-0) 836, STT 423, MTH 228.

Formulation and application of advanced simulation models to study the behavior and design of complex business and industrial systems.

938. History of Management Science
Winter. 4(4-0) 836, MTH 334, 426, STT 863.

History of important theoretical developments and applications in the field of management science.

939. Contemporary Issues in Management Science

(910.) Spring. 4(4-0) 937, 938.

Detailed treatment of selected recent research applications, and developments in the field of management science.

999. Research

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

MARKETING AND TRANSPORTATION ADMINISTRATION MTA

College of Business

300. Consumption and Marketing Organization
Fall, Winter, Spring, Summer. 4(2-2) EC 200.

Adjustment of the firm to its market environment with emphasis on competitive strategy. Assessment of market forces and opportunities with reference to social, political, economic and technological forces affecting distribution methods and institutions. Structural organization of marketing system-functions involved in effective market performance. Small group problems involving analysis of costs and efficiency.

301. Management of Marketing Effort
Fall, Winter, Spring. 4(2-2) 300.

Market management in relation to total enterprise. Problems, analytical tools and approaches to decisions concerning allocation of funds to various means of market cultivation. Development of promotional strategy, price policy and management of field selling effort. Particular attention to role of marketing research, forecasting, budgets, organization arrangements and control techniques. Use of cases in small groups.

311. Principles of Selling
Fall, Winter, Spring, Summer. 3(2-1)

Nature of personal selling and its requirements. Functional relationships of selling in marketing mix. Buyer motivations and selling theories, with application to various buyer-seller situations.

313. Sales Management
Fall, Winter, Spring, Summer. 4(4-0) 300.

Techniques and policies in the administration of the personal sales organization with respect to the marketing strategies involved. Emphasis on the sales management problems of manufacturers.

316. Fundamentals of Statistical Inference

Fall, Winter, Spring, Summer. 4(5-0) STT 121. Primarily for students in the College of Business. Interdepartmental with and administered by the Statistics and Probability Department.

Description of sample data, applications of probability theory, sampling, estimation, tests of hypotheses.

317. Quantitative Business Research Methods

Fall, Winter, Spring, Summer. 4(3-2) STT 316. Interdepartmental with the Statistics and Probability Department.

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.

335. Food Processing and Distribution Management

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

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

341. Transport Requirements and Programming

Fall, Spring, Summer. 4(4-0) EC 200.

Transportation and distribution systems are presented as functional entities capable of introducing change into the economic system and capable of reacting to change in other segments of the economy. Subject matter includes regional economic growth, inter-regional trade, macro-location theory, transportation and distribution system alternatives, regional transportation policy.

351. Retail Administration

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

Survey of retailing and its role in distribution. Management policy areas studied include administrative organization, locational decisions, buying, pricing, merchandising, sales promotion, personnel and over-all planning and coordination in retailing firms. Analysis of illustrative cases.

400H. Honors Work

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.

409. Field Studies in Business

Fall, Winter, Spring, Summer. Variable credit. May re-enroll 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) 300, 316.

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) Juniors.

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. 4(4-0) 301, 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.

437. Food Marketing Administration

Spring. 4(4-0) 335 or approval of department.

Policy, organization and personnel structures for food firms, including objectives for corporate structures suitable for large and small firms, merger policies, product line policies, union-management issues, executive development, community and public relations.

439. Advanced Food Processing and Distribution Management

Fall. 3(3-0) 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 Analysis

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

Analysis of the logistics of distribution systems for firms engaged in marketing and manufacturing. Component parts of each system are studied and analytical tools are presented for selecting those alternatives which will attain the distribution goals of the firm.

448. Passenger Transportation Systems

(447.) Spring. 4(4-0) Interdepartmental with the School of Hotel, Restaurant and Institutional Management.

Composition and objectives of principal passenger travel markets. Analysis of carrier service, pricing and promotional practices and problems, competitive and cooperative relations. Review of major proposals for change and expansion of service systems.

452. Retail Policies and Problems

Fall, Spring. 4(4-0) 351.

Analysis of retail problems with intensive examination of selected current major problem areas. Critical review of controls and techniques used to achieve management objectives. Cases, readings and field work.

476. Canadian-American Studies

For course description, see Interdisciplinary Courses.

802. Administrative Research Methods

Fall, Spring. 4(4-0)

Research process, methods and techniques as a basis for business planning and problem solving. Covered are scientific methodology and problem solving, selected models and model building, selected statistical decision techniques and computer applications.

804. Marketing Concepts and Processes

Fall, Winter. 4(4-0) AFA 839; EC 860; concurrently.

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) 804; AFA 840; MGT 833.

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.

807. Foundations of Industry

Fall, Summer. 3(3-0)

Functional appraisal of materials foundation of business enterprise, emphasizing allocation, support capacity and essential characteristics of present and future industrial resources as they affect business decisions, opportunities and responsibilities.

808. Emerging Issues in the Business Environment

Winter, Summer. 4(4-0) Thirty credits of MBA core program, or approval of department.

Selected significant current organizational, 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.

810. Macro Distribution Systems

Fall, Winter. 4(4-0)

Provides a functional knowledge of transportation and distribution systems. Areas covered include: the geography of marketing, the comparative basis for trade, transportation costs and trade restrictions, functional analysis of carriers, sources of flow data, introduction to distribution systems, and the emerging programs of national policy.

811. Seminar in Marketing

Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 15 credits.

812. Analysis of Logistical and Distribution Systems

Winter. 4(4-0)

Specific tools are developed for the individual firm in analyzing spatial arrangements of markets, plant and warehouse location, inventory systems, selection of carrier alternatives and selection of physical movement channels.

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.

831. Advanced Food Processing and Distribution Management

Fall, Spring. 4(4-0) May re-enroll for a maximum of 8 credits. Approval of Director of Food Marketing Management Program. Primarily for Food Marketing Management majors.

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. Management of Transportation and Distribution Systems

Spring. 4(4-0)

Integrative course drawing heavily on the content of 810 and 812, bringing them to a decisive focus on the logistics of macrodistribution and microdistribution systems. Cases are used to illustrate the principles and develop a relevant context.

851. Market Behavior and Competitive Strategy

Fall, Winter, Summer. 5(5-0) 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) 802 or concurrently, 805; AFA 840.

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) 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 Accounting and Financial Administration Department.

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

Winter, Summer. 4(4-0) 804 and EC 860.

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

(859.) Spring. 4(4-0) 805, 860 or approval of department.

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

(861.) Fall. 4(4-0) 860 or approval of department.

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. Variable credit. Approval of department.

905. Analysis of Business Enterprise Systems

Fall. 3 credits. 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

(910.) 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

(910.) Spring. 5(5-0) 910A.

Continuation of MTA 910A.

911A. History of Marketing Thought

(911.) Fall. 4(4-0) May re-enroll for a maximum of 15 credits. 851.

Traces the evolution of marketing institutions, techniques, theories and criticisms. The influ-

ence 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

(911.) Winter. 4(4-0) May re-enroll for a maximum of 15 credits. 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) 812, 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.

921. Advanced Sampling and Estimation Techniques in Business Administration

Spring. 5(5-0)

Research design, estimation and decision criteria including Bayesian estimators, small sampling, stratified sampling, random and non-random sampling, information theory, powers of tests.

941. Transportation-Distribution Development Policy

Spring. 4(4-0) 910, 912.

Applications in theory, principles, and processes developed in MTA 910 and MTA 912 to the design of research processes and reports in significant transport and distribution problems.

957. Seminar in Micro Marketing

Spring. 4(4-0) 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. 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 Mathematics Department which carry credit.

081. Elements of Algebra

Fall, Winter, Spring. 0(3-0) [3(3-0)]† Current enrollment in 103.

Fractions, decimals, real number properties, algorithms of arithmetic, simple factoring, parentheses, reciprocals, linear equations, integer exponents, applied problems, coordinate systems, graphing, solving equations by graphing.

082. Intermediate Algebra

Fall, Winter, Spring. 0(2-0) [2(2-0)]† Current enrollment in 104, one year of high school algebra.

Properties of real numbers, polynomials, factoring, rational functions, exponents, roots and †See page A-2 item 3.

radicals, first and second degree equations, linear inequalities, complex numbers, word problems.

102. Trigonometry

Fall, Winter, Spring. 3(3-0) 1½ high school units in algebra and satisfactory score on placement test, or 082; 1 high school unit in geometry. Not open to students who have had trigonometry in high school or credit in 109.

Trigonometric functions, identities, related angles, radian measure, graphs, sum and difference formulas, simple trigonometric equations, logarithms, solution of plane triangles, inverse functions.

103. Elements of Algebra

Fall, Winter, Spring. 2(2-0) Current enrollment in 081.

Fractions, decimals, real number properties, algorithms of arithmetic, simple factoring, parentheses, reciprocals, linear equations, integer exponents, applied problems, coordinate systems, graphing, solving equations by graphing.

104. Intermediate Algebra

Fall, Winter, Spring. 3(3-0) Current enrollment in 082, one year of high school algebra.

Properties of real numbers, polynomials, factoring, rational functions, exponents, roots and radicals, first and second degree equations, linear inequalities, complex numbers, word problems.

108. College Algebra and Trigonometry I

Fall, Winter, Spring. 5(5-0) 1½ high school units in algebra and satisfactory score on placement test, or 082; 1 high school unit in geometry. Not open to students with credit in 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. 5(5-0) 1½ high school units in algebra and superior score on placement test, or 108; 1 high school unit in geometry. Not open to students with credit in 102 or 111.

Continuation of 108 plus trigonometry including definition of circular functions, angular measure, fundamental identities.

111. College Algebra

Fall, Winter, Spring, Summer. 5(5-0) 1½ years of high school algebra, 1 year of high school geometry, satisfactory score in algebra placement examination, trigonometry or 102 or concurrently. Not open to students with credit in 108 or 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 I with Analytic Geometry

Fall, Winter, Spring, Summer. 5(5-0) 109 or 111.

The sequence 112, 113, 214, 215 is an integrated course in calculus, analytic geometry and differential equations covering derivatives, curve sketching, definite and indefinite integrals, area, volume, transcendental functions, vector analysis, solid geometry, partial differentiation, multiple integrals, infinite series, power series, differential equations.