Chapter 1: Descriptions

507. Administrative Policy
Fall, Winter, Spring, Summer. 4(4-0)
906; EC 860; AFA 840; MTA 802.
Application of administrative theory and observational and analytic techniques to actual business situations through use of cases. Analysis, decisions, formulation of plans for action. Cases viewed from standpoint of general management.

508. Seminar in Management, Organization, and Administration
Fall, Winter, Spring, Summer. 4(4-0)
May re-enroll for a maximum of 12 credits.
Philosophy, practice, research, and current problems in management, organization, and administration. Historical and current literature, lectures, discussion, individual research, cases and plant visits are methods of study used in various terms.

510. Personnel Management
Fall, Winter, Summer. 4(4-0) 806.
Principles and methods of recruiting, selecting, training, evaluating, motivating, and rewarding personnel. Fringe benefits, retirement, absenteeism, and other employee benefit problems.

511. Advanced Problems in Personnel Management
Spring, Summer. 4(4-0) May re-enroll for a maximum of 8 credits. 810.
Advanced studies in selected administrative and technical policies and practices in employee relations, with individual and group project work and research.

512. Manpower Measurement and Management (804.) Spring of even-numbered years. 4(4-0) 801 or approval of department.
Emphasis on utilization of manpower as a factor of production. Manpower is viewed as a productive resource to be measured, programmed and controlled in routine and non-routine work.

515. Linear Programming in Management
Fall, Spring. 4(4-0) MTA 802.
Theory, formulation and application of the general linear, transportation and integer programming models.

516. Simulation of Production Systems
Winter, Summer. 4(4-0) MTA 802.
Use of digital computer for management decisions. Development of skills in computer programming and in the application of analytic models to study behavior and design of systems.

Chapter 2: Course Descriptions

817. Supervisory and Executive Development
Fall, Spring, Summer. 4(4-0) 806 or 808.

818. Quality and Reliability
Fall of odd-numbered years. 4(4-0) MTA 806.
Specification of reliability and quality criteria: methods of evaluation and control; particular emphasis on cost minimization models.

821. Production Control
Winter. 4(4-0) 801.
Planning and control of production operations. Inventory management, production and work force scheduling, job shop scheduling and project scheduling.

822. Manufacturing Strategy and Policy
Spring. 4(4-0) Approval of department.
Major production operations and policy decisions in the total business strategy of the firm. Viewpoint of top administrator responsible for production.

830. Corporation Management and Society
Spring. 4(4-0) 806.
Analysis of the emergent 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.

906. Behavioral Research: Organization
Winter. 3 credits. MTA 905.
Concepts and methods of behavioral science research that are applicable to the study of organizing as a strategic device in the development of tangible and intangible values and in the control of elements of business enterprise.

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 organization 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.

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

Chapter 3: Marketing and Transportation Administration

College of Business

300. Consumption and Marketing Organization
Fall, Winter, Spring, Summer. 4(2-2) EC 260.
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 systems designed to effective market performance. Small group problems involving analysis of costs and efficiency.

301. Management of Marketing Effort
Fall, Winter, Spring, Summer. 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(3-2) STT 131. 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.
341. Transport Requirements and Programming  
Fall, Spring, Summer. 4(4-0) EC 290.  
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-policy, micro-policy, and overall planning and coordination in retailing firms. A discussion of retailing and its role in distribution systems. Management policy areas studied include administrative organization, location decisions, buying, pricing, merchandising, sales promotion, personnel and over-all planning and coordination in retailing firms. Analysis of illustrative cases.  

351. Retail Administration  
Fall, Winter, Spring, Summer. 4(4-0)  
Survey of retailing and its role in distribution. Management policy areas studied include administrative organization, location 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. Planned Elective  
Fall, Winter, Spring, Summer. Approval of department.  
May re-enroll for a maximum of 9 credits. May re-enroll for a maximum of 9 credits. Further study and investigation of current problems within the food industry.  

414. Marketing Research  
Fall, Winter, Spring, Summer. 5(5-0)  
Research process as an aid to decision-making in marketing management. 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 studies.  

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.  

431. Food Marketing Administration  
Spring. 4(4-0). 435 or approval of department.  
Policy, organization and personnel structures for food firms, including objectives for corporate structures suitable for large and small firms, resource planning, product line policies, union-management issues, executive development, community and public relations.  

437. Special Problems in Food Distribution  
Fall, Winter, Spring. 3 credits. May re-enroll for a maximum of 9 credits. Further study and investigation of current problems within the food industry.  

445. Passenger Transportation Systems  
Spring. 4(4-0).  
Composition and objectives of principal passenger travel markets, analysis of carrier service, pricing, and promotion strategies and practices, problems, competitive and cooperative relations. Review of major proposals for change and expansion of transportation 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.  

461. Canadian-American Studies  
For course description, see Interdisciplinary Courses.  

502. Administrative Research Methods  
Fall, Spring. Summer. 5(5-0)  
Research process, methods and techniques used in management. Emphasis on the significance of management research.  

505. Administration: Theory and Action I  
Fall, Winter, Spring, Summer. 4(4-0).  
Administrative action is considered from the viewpoint of the interaction of the enterprise with its external environment, especially in the market place. Corporate objectives and policies are analyzed in terms of their impact on the adjustment of the business to competitive and regulatory pressures.  

507. Foundations of Industry  
Fall, Summer. 3(3-0)  
Functional appraisal of the foundation of business enterprises emphasizing allocation, support capacity and essential characteristics of present and potential decision processes as they affect business decisions, opportunities and responsibilities.  

508. Frontier of Business  
Winter, Summer. 3(3-0)  
Knowledge of administration and research skills will be focused on current and projected developments of importance to business management. Emphasis on the ways such developments revereberate through a firm or enterprise system.  

810. Transport and 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 analysis of 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 is devoted to concepts of retail competition and cost efficiency. Emphasis on research in improving retail efficiency.  

831. Seminar in Food Distribution  

832. Special Problems in Food Marketing Administration  
Winter. 4(4-0).  
Problems and policies related to food marketing management; further study and investigation of current major problem areas. Critical review of controls and techniques used to achieve management objectives. Cases, readings and field work.  

841. Management of Transportation and Distribution Systems  
Spring. 4(4-0).  
Integrative course drawing heavily on the context of 810 and 812, bringing them to a decision 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, 895; APA 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 were developed for use by executives in planning and controlling marketing activities. Emphasis is on the determination of cost factors affecting marketing cost differences and the assignment of costs to those factors. Application of the tools is utilized by the determination of expenditure revenue patterns.
859. **International Marketing**  
**Fall, 4(4-0)**  
Presents an analytic framework for studying the development of marketing systems in the context of overall economic growth. Emphasis given to comparative marketing systems and the structure and operation of regional Common Market arrangements.

860. **International Business**  
**Winter, Summer, 4(4-0)**  
Case examination of United States business overseas organization and operations including administration in foreign settings, overseas personnel, marketing, financial and legal problems in conducting international business.

861. **Seminar in International Business**  
**Spring, 3(3-0)**  
Individual papers concerning international business problems with emphasis on administrative problems under conditions of cross-cultural operations.

862. **Beginning Algebra II**  
**Fall, Winter, Spring, 6(4-0) [4(4-0)]**  
One year of high school algebra.

102. **Trigonometry**  
**Fall, Winter, Spring, 3(3-0) 1¼ high school units in algebra and satisfactory score on placement test, or 092; 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.

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 092; 1 high school unit in geometry. Not open to students with credit in 101 or 120.**  
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 for high school unit in geometry. Not open to students with credit in 102 or 111.**  
Continuation of 108 plus trigonometry including definitions 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 or 120.**  
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, conic sections, 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.

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

190. **Freshman Mathematics Seminar**  
**Winter, Spring, 3(3-0) Freshman; prior or concurrent calculus enrollment.**  
Intended to introduce mathematics majors to the type of mathematical reasoning and subject matter they can expect to encounter in advanced mathematics courses. Specific content will vary.

201. **Foundations of Arithmetic**  
**Fall, Winter, Spring, 4(4-0)**  
Open only to elementary education majors.

202. **Foundations of Algebra**  
**Fall, Winter, Spring, 4(4-0) 201; elementary education majors.**  
Fundamental concepts of algebra for elementary school teachers including properties of real numbers, equations, and inequalities, modular arithmetic, complex numbers, polynomials, algebraic structures, functions.

203. **Foundations of Geometry**  
**Spring, 4(4-0) 201; elementary education majors.**  
Fundamental concepts of geometry for prospective elementary school teachers.

214. **Calculus III with Vectors**  
**Fall, Winter, Spring, Summer, 5(5-0) 113.**  
Continuation of 114.

215. **Calculus IV with Differential Equations**  
**Fall, Winter, Spring, Summer, 5(5-0) 214.**  
Continuation of 214.

216. **Mathematics of Finance**  
**Winter, 3(3-0) 108 or 111.**  
Mathematical theory of interest with application to such topics as ordinary annuities, and deferred annuities, amortization of debt; depreciation; capitalized cost; purchase price of bonds.

227. **Calculus for Social Scientists**  
**Fall, 4(4-0) Graduate standing; 1½ years of high school algebra or high placement score; 1 year of high school geometry. Not open to students who have credit for calculus.**  
The sequence 227, 228 intended for social science graduate students is mainly calculus. Course 227 includes pre-calculus, differentiation and integration of elementary functions, applications.

228. **Calculus for Social Scientists**  
**Winter, 4(4-0) 227.**  
Mean value theorems, approximate integration, infinite series, Taylor series, partial derivatives, double and triple integration, and applications.

301. **Foundations of Mathematics**  
**Fall, Winter, Spring, 3(3-0) Approval of department.**  
Fundamental ideas underlying elementary mathematics. Basic set theory, relations, functions, mathematical induction, meaning of mathematical proof and the axiomatic method illustrated by examples from algebra, geometry and analysis.

309. **Theory of Equations**  
**Fall, Winter, Spring, Summer, 4(4-0) 113 or approval of department.**  

315. **Concepts of Geometry I**  
**Fall, Winter, Spring, 3(3-0) 315 or 301 or approval of department.**  
Axiomatic structure of geometries including Euclidean, the classical non-Euclidean and projective geometries. Coordinate systems and geometric transformations.

316. **Concepts of Geometry II**  
**Winter, Spring, 3(3-0) 315.**  
Continuation of 315.

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**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.

A-B2