471. Principles and Methods of Historical Linguistics
Fall, Winter, Spring. 3(3-0) 405 or concurrently.
Types of linguistic change and the methods used by linguists to study the historical development of languages and language families.

472. African Linguistics
Fall. 3(3-0) Approval of department.
The origin and development of linguistic studies from ancient India and Greece to the present. Provides a foundation for the understanding of contemporary issues in linguistics.

473. Grammatical Analysis
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits. Approval of department.
Advanced study of syntax and related topics, generally utilizing one of the following theories: stratificational, tagmemic, transformational.

474. Special Projects
Fall, Winter, Spring. 3(3-0) Approval of department.
Supervised study, reading, and research in specialized areas of linguistics.

911. College Algebra
Fall. 5(5-0) Placement Test or approval of the college. Not open to students with credit in MTH 106, 109, or 111.
Topics covered include polynomial, trigonometric, exponential, and logarithmic functions, their inverses and their properties, and analytic geometry with an emphasis on conics.

912. Calculus I
Fall, Winter, Spring. 5(5-0) 111 or MTH 101; LBC 115 concurrently. Not open to students with credit in MTH 112.
Topics covered include sequences and their limits, derivatives of rational power functions,
techniques of differentiation, applications, numerical methods for evaluating polynomials and approximating square roots.

113. Calculus II
Fall, Winter, Spring. 3(3-0) 112 and 152. Not open to students with credit in MTH 113. Continuation of 112. Topics covered are applications of the derivative integration, exponential, logarithmic, and trigonometric functions, power series, and numerical methods for integrating, root finding, and series evaluating.

125. Elements of Computer Programming
Fall, Winter, Spring. 3(3-0) 112 concurrently. Students may not receive credit for 125 and CPS 110 or CPS 120.

FORTAN programming, arithmetic and logical operations, functions and subroutines, applications to concurrent topics in mathematics; principles of operation and programming of batch processing and time-shared computer.

131. Third Culture Rhetoric I
Fall, Winter, Spring. 4(4-0) 131 concurrently. Students may not receive credit for 131 and 125. Not open to students with credit in MTH 113. Introduction and practice in expository writing.

FORTRAN programming; arithmetic and logical operations; functions and subroutines; applications to concurrent topics in mathematics; principles of operation and programming of batch processing and time-shared computers.

141. Biology
Winter, Spring. 3(2-3) Not open to students with credit in B S 211. Maintenance and manipulation of materials, energy, space and information at the cellular and tissue level of organization.

142. Third Culture Rhetoric II
Winter, Spring. 4(4-0) 131. Continuation of 131 with emphasis upon investigative papers. Selected students may meet course requirements through independent study.

140. Physics—Elementary Concepts
Fall, Winter, Spring. 112 is concurrently. Development of the concept of terrestrial and aquatic ecosystems and the maintenance and manipulation of energy, materials, and space at the organismal level of organization.

150. Physics—Elementary Concepts
Fall, Winter, Spring. 112 is concurrently. Development of the concept of terrestrial and aquatic ecosystems and the maintenance and manipulation of energy, materials, and space at the organismal level of organization.

151. Introduction to Chemistry and Physics II
Fall, Winter, Spring. 4(4-3) 151. Topics in modern physics: photons, electrons, atoms and nuclei; radioactivity; nuclear reactions; Bohr theory of the hydrogen atom; special theory of relativity.

214. Calculus III
Fall, Winter, Spring. 5(5-0) 113. Not open to students with credit in MTH 215. Topics covered include infinite series, power series, and introduction to differential equations; first order, second order linear with constant coefficients, first order systems, numerical methods, power series solutions, and applications.

215. Calculus IV
Fall, Winter, Spring. 5(5-0) 214. Not open to students with credit in MTH 214. Introduction to the calculus of several variables.

322. Modern Drama
Fall, Winter. 4(4-0) 131 or 131 with 3.0 or better. Recent plays which have social and literary significance. Students may submit original dramatic writings as part of full course of writing requirements.

333. Modern Poetry
Spring. 4(4-0) 133 or 131 with 3.0 or better. Recent poetry of literary and social nature. Students may submit original poetry in partial fulfillment of course writing requirements.

344. Introductory Animal Systematics Laboratory
Fall. 10(5-0) ZOL 153 concurrently. Interdepartmental with the Zoology Department. Laboratory examination of form and function of representative vertebrate and invertebrate animals.

372. Introduction to Symbolic Logic
Fall, Winter. 4(4-0) Sophomores or approval of college. Concepts, notation and application of truth-functional and quantification logic. Topics may include axiomatics, meta-theory, modal logic, fallacies, paradox, inductive argument, the justification of logic.

373. Introduction to the Philosophy of Science
Winter, Spring. 4(4-3) 372. Juniors or approval of college. Philosophical problems about the character and justification of scientific knowledge. Possible topics: concept formation, theory construction, scientific explanation, confirmation theory, "logic" of discovery, philosophical implications of physical theories.

374. Historical Problems in the Biological Sciences
Fall, Winter. 4(4-0) Juniors or approval of college. Various themes or periods in the biological sciences. The course may emphasize the pattern of theoretical development, changes in explanatory ideals, the interaction of external factors and scientific ideas, etc.

375. Historical Problems in the Physical Sciences
Spring. 4(4-0) Juniors or approval of college. Various themes or periods in the physical sciences. The course may emphasize the pattern of theoretical development, changes in explanatory ideals, the interaction of external factors and scientific ideas, etc.

376. Historical Problems in Technical Change
Fall, Spring. 4(4-0) Juniors or approval of college. Factors which influence technical change. Exploration of both historical and contemporary problems of technology and technical change.

483. Philosophy of Physical Science
Fall, Spring. 4(4-0) Nine credits in physical science or approval of department in interdepartmental with the Department of Philosophy.

Philosophical problems of the physical sciences. The topics will be taken from such areas as quantum mechanics, space-time, classical mechanics, relativity.

484. Philosophy of Biological Sciences
Fall, Winter. 4(4-0) Nine credits in science or approval of department. Interdepartmental with the Department of Philosophy. Methodological notions and problems of the biological sciences such as observation and measurement, classification, teleological and functional explanation, teleological systems, emergentism, vitalism, value neutrality.
306. Analysis of Processes and Systems
Fall, Winter, Spring. 4(4-0) CPS 110, STT 216
Analysis of some fundamental systems and process concepts which are basic to industrial management. The course is oriented toward computer model building, acquainting the student with the use of the computer as an instrument for analysis of complex problems in industry. Course includes consideration of criteria for efficiency and optimization, and program planning.

310. Fundamentals of Personnel Administration
(303.) Fall, Winter, Spring, Summer. 4(4-0) Juniors.
Organization, functions, and policy administration of employee relations activities in the business enterprise; consideration of new techniques of engagement, training, wage payment, morale-building, and employee security.

405. Operations Management: Current Topics
Spring. 4(4-0) 301, 302.
Consideration of current and controversial questions in the operations area. Field experience to study operations and policies in industrial, institutional, and service organizations.

406. Introduction to Management Science
Winter. 4(4-0) 306.
Quantitative models and techniques applied to various business problems integrating the computer into the problem solving process. Topics include linear programming, integer programming, dynamic programming, queuing problems, Bayesian Decision Theory, theory of games.

409. Business Policy
Fall, Winter, Spring, Summer. 4(4-0) Seniors in business administration and 303; AFA 391; MTA 300.
Problems, methods, and analytical frameworks for building and maintaining consistent and effective policy frameworks in the business enterprise. Written and oral analyses are made of comprehensive cases cutting across the major functions within business organizations. Team and individual reports are required.

411. Personnel Selection and Development
Winter. 4(4-0) 310; MTA 317.
Manpower input problems of business organizations—manpower planning, recruitment, selection, placement, training and development at all levels. Focus is on policy issues, research findings, and advanced techniques.

419. Compensation and Motivation
Spring. 4(4-0) 310.
Manpower motivation and compensation problems in business organizations—compensation structures, management, control, performance appraisal, job evaluation, wage and salary administration, non-financial incentives and the impact of job content and job context factors on performance.

413. Occupational Safety and Health Administration
(402.) Fall, Winter. 4(4-0) Juniors; 302 for majors.
Programs and procedures for control of work accidents and maintenance of health in business and other organizations. Analysis of costs related to employee and product safety. Administration of a safety program in compliance with new Federal law.

414. Human Relations in Business
(404.) Fall, Winter, Summer. 4(4-0) 302; approval of department.
Human problems in business administration: examination of the empirical research dealing with organizational and administrative problems in business, including morale, motivation, authoritarism, power, centralization, commitment, and mobility.

415. Managerial Approaches to Collective Bargaining
Winter, Spring. 4(4-0) 302 or Junior non-business majors.
Union-management problems and managerial strategy and tactics in collective bargaining—the union challenge, legal constraints, negotiations and operating under the contract, dimensions of cooperation and conflict.

420. Problems of Small Business Enterprise
Fall. 4(4-0) Approval of department.
For College of Business Seniors, or non-business majors enrolled in AFA 315 concurrently. For students participating in Lansing Entrepreneurial Assistance Service (LEASE).
Analysis of problems of establishing, financing, and managing a small business enterprise. Emphasis on minority entrepreneurship. Students will prepare a proposal for establishing a small business enterprise.

421. Small Business Counseling
Winter, Spring, 1 to 3 credits. May re-enroll for a maximum of 8 credits. Business administration majors and approval of department.
Planned program of business counseling with small businesses in the Lansing area in need of management assistance. Students will meet bi-weekly to share experiences and discuss problems.

468. Field Studies
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 8 credits. Business administration majors and approval of department.
Planned program of observation, study, and work in selected business firms. Designed to supplement classroom study in such a way as to make maximum contribution to students’ total educational experience. Field work may be arranged in finance, insurance, marketing, personnel management, production management, purchasing, real estate, retailing, transportation and banking.

499. Senior Seminar
Spring. 4(4-0) Senior majors; approval of department.
Directed reading and student research in contemporary management problems.

801. Work Design and Administration
Fall. 4(4-0)
Design, improvement, and problems in the administration of work systems with emphasis on repetitive operations. Criteria for evaluating systems. Tools for developing, analyzing, and improving procedures. Cases and projects.

802. Materials Management
Spring. 4(4-0)
Advanced study of the policies, practices and problems relating to the procurement and control of materials in business organizations.

803. Seminar in Industrial Relations
For course description, see Interdisciplinary Courses.

806. Organization and Administration
Fall, Winter, Spring, Summer. 4(4-0)
Dynamics of organization: the organization seen as an open system interacting with a rapidly changing environment, as a structure of organized human behavior, as an instrument of managerial strategy, current theory and research applied to organizational process and design.