LYMAN BRIGGS COLLEGE

111. College Algebra
Fall, 3(3-0) Placement Test or approval of the college. Not open to students with credit in MTH 108, 109, or 111.
Topics covered include polynomial, trigonometric, exponential, and logarithmic functions, their inverses, their properties, and analytic geometry with an emphasis on conics.

112. Calculus I
Fall, Winter, Spring. 3(3-0) 111 or MTH 109; 125 concurrently. Not open to students with credit in MTH 113.
Topics covered include sequences and their limits, derivatives of rational functions, techniques of differentiation, applications, and approximating square roots.

113. Calculus II
Fall, Winter, Spring. 3(3-0) 112 and 125 concurrently. 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 evaluating polynomials and approximating square roots.

125. Elements of Computer Programming
Fall, Winter, Spring. 3(3-0) 125 concurrently. Students may not receive credit for 125 and CFS 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 computers.

131. Third Culture Rhetoric I
Fall, Winter. 3(3-0)
Instruction and practice in expository writing. Paper and report topics drawn from readings which relate science and human values.

132. Third Culture Rhetoric II
Winter, Spring. 3(3-0) 131 concurrently.
Continuation of 131 with emphasis upon investigative papers. Selected students may meet course requirements through independent study.

140. Biology I
Winter, Spring. 3(1-3) Not open to students with credit in BS 212.
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.

141. Biology II
Fall, Spring. 3(2-2) 140; Not open to students with credit in BS 211.
Maintenance and manipulation of materials, energy, space and information at the cellular and tissue level of organization.

150. Physics—Elementary Concepts
Fall. 1(2-0) MTH 108 or 109 or LBC 111 and LBC 131 concurrently.
Elementary concepts of mechanics, electricity, magnetism, and optics.

151. Introduction to Chemistry and Physics I
Fall, 4(4-3) MTH 108 or 109 or LBC 111 concurrently; high school physics or 150 concurrently.
Fundamental techniques of quantitative scientific investigation; gas laws, kinetic theory and thermodynamics.

152. Introduction to Chemistry and Physics II
Winter. 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.

153. Introduction to Chemistry and Physics III
Spring. 4(4-3) 152.
Topics in modern chemistry: atomic structure, chemical bonding, molecular orbitals, stoichiometry, chemical dynamics and equilibria, fundamentals of organic chemistry.

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.

242. Biology III
Fall, Winter. 4(3-3) 141.
Organismic growth and development from molecular genetics through life cycles of selected plant and animal species.

251. Introduction to Chemistry and Physics IV
Fall, Winter. 4(2-2) 153.
Classical physics; kinematics and dynamics of particles and rigid bodies; electricity; magnetism, electromagnetism, wave motion and wave optics.

252. Introduction to Chemistry and Physics V
Winter. 4(4-3) 251.
Chemistry of non-metals, transitional elements and coordination compounds, organic chemistry.

253. Introduction to Chemistry and Physics VI
Fall, Winter. 4(1-3) 252.
Relativity, atomic, molecular, and solid-state physics, quantum-mechanical effects and devices, nuclear models and nuclear energy levels.

290. Special Problems
Fall, Winter, Spring. 1 or 2 credits. May re-enroll for a maximum of 6 credits. Approval of college.

295. Independent Study
Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll for a maximum of 12 credits. Approval of college.
Independent study for qualified students under direction of a faculty member.

331. Modern Fiction
Fall, Winter. 3(3-0) 132.
The study of recent short stories and novels, particularly those which might have a special value for the student of science. Students may submit original work of a fictional nature in partial fulfillment of course requirements. Selected students may meet course requirements through independent study.

332. Modern Drama
Winter. 3(3-0) 132.
The study of recent plays which have social or literary significance. Students may submit original work of a dramatic nature in partial fulfillment of course requirements. Selected students may meet course requirements through independent study.

333. Modern Poetry
Spring. 3(3-0) 132.
The study of recent verse of a literary or pro­ vocative nature. Students may submit original poetry in partial fulfillment of course requirements. Selected students may meet course requirements through independent study.

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. Special topics may include axiomatics, meta-theory, modal logic, fallacies, paradoxes, inductive argument, the justification of logic.

373. Introduction to the Philosophy of Science
Winter, Spring. 4(4-0) 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) 374. 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) 375. 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
Spring. 4(4-0) 376. 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. 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
Winter, Spring. 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.

490. Special Problems
Fall, Winter, Spring, Summer. 1 to 6 credits. May re-enroll for a maximum of 6 credits. Approval of department.
492. Senior Seminar II
Fall, Winter, Spring. 3(3-0) 491.
The thesis planned in 491 is written and evaluated.

495. Independent Study
Fall, Winter, Spring. Summer. 1 to 12 credits. May re-enroll for a maximum of 12 credits. Juniors.

MANAGEMENT MGT
College of Business

101. Introduction to Business
Fall, Winter, Spring. 4(4-0) University Core students or approval of department.
Perceptions formed by business and the role of administration in our economy as a whole and in the operation of a specific business. Four major objectives: to aid students in choosing a vocation, to help Business majors select a field of concentration, to show the place of specialized techniques presented in more advanced business courses, and to give some familiarity with common business practices and terminology.

300. Production Management
Fall, Winter. 4(4-0) CPS 110, STT 121, AFA 202.

302. Organization and Administration
Fall, Winter, Spring, Summer. 4(4-0)
Junior Business majors; EC 201 and AFA 201.
Analysis of the internal organization structure and of executive roles and functions in the business. Comparison and contrast with other generalization of criteria situations. Examines administrative and managerial concepts in the context of behavioral research. Cases and outside research reports are used for specific analyses.

305. Materials and Purchasing Management
Fall, Winter. 4(4-0) 302 or MTA 300 or Juniors; non-majors.
Planning, organizing and controlling materials; acquisition in industrial enterprises, institutions, and government. Management of purchasing, materials movement, storage and control, value analysis, purchasing research, vendor relations and purchase forecasting.

306. Analysis of Processes and Systems
Fall, Winter. Spring. 4(4-0) CPS 110, STT 316.
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
Fall, Winter, Spring, Summer. 4(4-0) Juniors.
Organization, functioning, and policy administration of employee relations activities in the business enterprise; consideration of new techniques of employment, training, wage payment, morale-building, and employee security.

400H. Honors Work
Winter. 1 to 15 credits. Approval of department.
Investigates models, concepts and research findings of particular significance to effective decision-making and organization administration.

401. Planning and Control of Production
Fall, Winter. 4(4-0) 300, 302; Seniors.
Production planning; Inventory control, machine loading, scheduling, expediting and critical path scheduling.

402. Product Reliability and Quality Control
Spring. 4(4-0) MTA 316.
Methods of achieving satisfactory standards of product quality and reliability at minimum cost.

405. Manufacturing Policy
Spring. 4(4-0) 300, 302; Seniors.
Policy formulation in production management. Coordinating staff functions and integrating production with other activities in the firm.

409. Business Policy
Fall, Winter, Spring, Summer. 4(4-0)
Seniors in business administration and 302; 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.

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

413. Safety, Health and Employee Benefits
403. Fall, Winter. 4(4-0) Juniors: 302 for majors.
Manpower maintenance problems in business organizations—organization and operation of safety and health programs, practices and trends in employee benefits. Focus is on issues and relevant research and techniques.

414. Human Relations in Business
Fall, Winter. 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 size, motivation, authority, power, centralization, commitment, and stability.

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.

465. Field Studies
Fall, Winter, Spring. 3(3-0) Variable credits. May re-enroll for a maximum of 8 credits. Business administration majors and approval of department.
Financial 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. 4(4-0)
Advanced study of the policies, practices and problems relating to the procurement and control of materials in business organizations.

807. Administrative Policy
Fall, Winter, Spring, Summer. 4(4-0) 833; MTA 804; AFA 889; plus 30 credits in the MBA core program.
Application of administrative theory and techniques to business situations through case cutting across major functions within business organization. Cases viewed from standpoint of general management with consideration of social and physical environmental forces surrounding the firm.

7. Seminar in Management, Organization, and Administration
Fall, Winter, Spring. 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.