South Asian Languages

101. South Asian Languages—Elementary
Fall, Winter, Spring. 4(3-2) May re-enroll for 101-102-103 sequence in more than one South Asian Language. The spoken language. Emphasis on intensive pronunciation, comprehension drills, and developing sentence structure. Orthography introduced.

Continuation of

102. South Asian Languages—Elementary
Winter. 4(3-2) May re-enroll for 101-102-103 sequence in more than one South Asian Language. 101.

Continuation of

103. South Asian Languages—Elementary
Spring. 4(3-2) May re-enroll for 101-102-103 sequence in more than one South Asian Language. 102.

Continuation of

201. South Asian Languages—Intermediate
Fall. 4(3-2) May re-enroll for 201-202-203 sequence in more than one South Asian Language. 201.

Continuation of 202.

203. South Asian Languages—Intermediate
Spring. 4(3-2) May re-enroll for 201-202-203 sequence in more than one South Asian Language. 202.

Continuation of 202.

LYMAN BRIGGS COLLEGE

LBC

111. College Algebra
Fall. 5(5-0). Placement test. Students may not receive credit in both LBC 111 and MTH 111.

The topics studied will include polynomials, simultaneous linear equations, matrices, sets, functions, inequalities, and straight line analytic geometry, with computing techniques and problems included in the first three topics.

112. Calculus I with Analytic Geometry
Fall, Winter, Spring. 5(5-0) 111 or MTH 109, 125. Students may not receive credit in both LBC 118 and MTH 112.

The topics studied will include limits, derivatives, continuous functions, differentiable functions, plane analytic geometry, and anti-derivatives; with computing techniques and problems used to clarify and extend the material.

113. Analytical Geometry, Calculus and Numerical Analysis
Fall, Winter, Spring. 5(4-1) 112. Students may not receive credit for both LBC 113 and MTH 113.

Initial value problems and their applications, definite and indefinite integrals, exponential functions, infinite series, natural logarithms; trigonometric functions; higher derivatives, inverse functions, and linear 2nd order differential equations. Numerical methods will be used extensively.

125. Elements of Computer Programming
Fall, Winter, Spring. 3(3-0) MTH 109 or MTH 111 concurrently. Students may not receive credit in LBC 125 and MTH 120.

FORTRAN programming; arithmetic and logical operations; functions and subroutines; matrix and vector operations; computer solution of simultaneous equations.

131. Third Culture Rhetoric I
Fall, Winter. 3(0-0) Introduction and practice in expository writing and oral communication, with paper and report topics drawn from readings and college lectures which relate science to society. Emphasis is given to the development of the capacity to communicate scientific concepts to non-scientists.

132. Third Culture Rhetoric II
Winter, Spring. 3(3-0) 131.

A continuation of 131, with investigative papers and more formal oral presentations. Some emphasis on independent study.

140. Biology I
Fall, Winter. Spring. 3(1-3) Plant and animal diversity. Morphology, adaptation and evolution as these pertain to the position the organism maintains in its environment.

141. Biology II
Fall, Winter. Spring. 3(3-0) 140.

Maintenance and manipulation of materials, energy, space and information at the cellular and tissue level of organization.

150. Physics—Elementary Concepts
Fall. 1(1-0) MTH 108 or 109 or LBC 111 and LBC 151 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 equilibrium, fundamentals of organic chemistry.

214. Calculus, Vectors, and Numerical Analysis
Fall, Winter, Spring. 5(3-2) 113.

Students may not receive credit in both LBC 214 and MTH 214.

Linear 2nd order differential equations with constant coefficients, linear spaces, linear operators, matrices, inner product length, determinants, 1st order systems of linear differential equations. Numerical methods will be used extensively.

215. Calculus, Differential Equations and Numerical Analysis
Fall, Winter, Spring. 5(3-2) 214.

Continuation of 214. Topics will include systems of differential equations and calculus of functions of several variables.

251. Introduction to Chemistry and Physics IV
Fall, Winter, Spring. 5(3-2) 214.

Classical physics, kinematics and dynamics of particles and rigid bodies, mechanical waves and fluid mechanics, electricity, magnetism, electromagnetism, wave optics.

252. Introduction to Chemistry and Physics V
Winter. 4(3-0) 251.

Chemistry of non-metals, organic chemistry and coordination chemistry.

253. Introduction to Chemistry and Physics VI
Spring. 4(3-2) 252.

Quantum mechanics and the structure of matter; atomic molecular and solid-state physics, quantum-mechanical devices and effects, nuclear models and nuclear energy levels.

290. Special Problems
Fall, Winter, Spring. 3(3-0) 1 or 2 credits. May re-enroll for a maximum of 6 credits. Approval of college.

295. Independent Study
Fall, Winter, Spring. 3(3-0) 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. 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.
371. Introduction to the History of Science  
Fall, Winter, Spring. 4(4-0) Juniors or approval of college.  
Historical study of the origins, growth and influence of scientific ideas, techniques and knowledge in relation to the main currents of culture.

372. Introduction to Symbolic Logic  
Fall, Winter. 4(4-0) Juniors or approval of college.  
Rigorous introduction to the concepts, laws and metalogic of sentential and quantificational logic. Some attention shall be paid to philosophical implications and to practical applications of the systems treated.

373. Introduction to the Philosophy of Science  
Winter, Spring. 4(4-0) 372.  
Philosophical analysis of scientific knowledge. Topics treated shall include concept formation and theory construction, methods of discovery and justification, logic of testing and confirmation, logic of explanation.

MANAGEMENT MGT  
College of Business

101. Introduction to Business  
Fall, Winter, Spring. 4(4-0) University College students or approval of department.  
Functions performed 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. 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 enterprise and other goal-directed institutions. Examines administrative and managerial concepts in the context of behavioral research in business. 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 218.  
Analysis of some fundamental systems and process concepts which are basic to industrial management. Techniques are 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. 4(4-0) Juniors.  
Organization, functions, 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 in administration, organization and management.

401. Planning and Control of Production  
Winter. 4(4-0) 300, 306; 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.

404. 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 381; 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 case 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  
(302.) Fall, Winter. 4(4-0) Juniors; 302 for majors.  
Manpower maintenance problems in business organizations—organization and operation of safety and health programs, and trends in employee benefit plans. Focus is on issues and relevant research and techniques.

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

415. Managerial Approaches to Collective Bargaining  
(307.) Winter, Spring. 4(4-0) 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.

468. Field Studies  
Fall, Winter, Spring. 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.

501. 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. Administration: Theory and Action II  
Fall, Winter, Spring, Summer. 4(4-0) MTA 805.  
Organization structure and executive behavior and their interrelationships are examined. Focus is on internal structure and managerial processes through the examination of research literature on organization theory, and executive behavior. Organization systems and subsystems, groups and individual interaction, administrative models and executive values.