

LYMAN BRIGGS
COLLEGE

LBC

111. **College Algebra**

Fall, 5(5-0) 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 and their properties; and analytic geometry with an emphasis on conics.

112. **Calculus I**

Fall, Winter, Spring, 5(5-0) 111 or MTH 109; LBC 124 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, 5(5-0) 112 and 124. 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.

124. **APL-Computer Programming for Scientists**

Fall, Winter, Spring, 3(3-0) 112 or concurrently. Interdepartmental with the Department of Computer Science.

APL programming; interactive programming techniques; arithmetic, logical, and extended APL operators; functions; applications to concurrent topics in mathematics; principles of operations of time-shared computers.

131. **Third Culture Rhetoric I**

Fall, Winter, 4(4-0)

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, 4(4-0) 131.

Continuation of 131 with emphasis upon investigative papers. Selected students may meet course requirements through independent study.

*140. **Biology I**

Winter, Spring, 4(3-3) Not open to students with credit in BS 212.

The organisms and their environment. Organismal level of organization. Evolution and adaptation as forces for biological variance.

*141. **Biology II**

Fall, Spring, 4(3-3) 140; not open to students with credit in BS 210.

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

142. **Biology IA**

Winter, Spring, 1 to 2 credits. May re-enroll for a maximum of 4 credits. 140 or concurrently.

Selected problems such as analysis of biological data, interspecific and intraspecific competition, microarthropods inhabiting leaf litter, spring flora, diversity, stability and evolution of natural communities.

*For prerequisite purposes this introductory biology sequence may be used in place of Biological Science 210, 211, 212.

143. **Biology IIA**

Fall, Spring, 2 credits. May re-enroll for a maximum of 4 credits if different topic is taken. 141 or concurrently.

Selected biology problems considering such topics as genetics, bacterial culturing and staining techniques, photosynthesis and histological techniques.

160. **Physics—Elementary Concepts**

(150.) Winter, 1(2-0) 162 or concurrently.

Elementary concepts of mechanics, electricity, magnetism and optics.

161. **Introduction to Chemistry and Physics I**

Fall, 3(4-0) MTH 108 or 109 or 111 or LBC 111 concurrently; LBC 161L or concurrently or approval of instructor.

Gases and gas laws, kinetic theory, heat and thermodynamics. Equilibria, solutions, acids and bases, ionization and electrolysis.

161L. **Introductory Chemistry Laboratory**

Fall, 1(0-3) 161 or concurrently or approval of instructor.

Techniques and instruments in the chemistry laboratory. Includes qualitative, quantitative and synthetic work.

162. **Introduction to Chemistry and Physics II**

Winter, 3(4-0) 161; 162L or concurrently or approval of instructor.

Basic concepts of atomic and nuclear structure, wave particle duality, the quantum theory and the special theory of relativity. Radioactivity, nuclear reactions and elementary particle physics.

162L. **Introductory Physics Laboratory**

Winter, 1(0-3) 162 or concurrently or approval of instructor.

Introduction to techniques and instruments in the physics laboratory. Selected experiments in classical and modern physics.

163. **Introduction to Chemistry and Physics III**

Spring, 3(4-0) 162; 163L or concurrently or approval of instructor.

Periodic properties and chemical families, stoichiometry, modern theory of chemical bonding, molecular orbitals. Chemical dynamics and equilibria, some organic chemistry nomenclature and reaction kinetics.

163L. **Introductory Chemistry Laboratory**

Spring, 1(0-3) 163 or concurrently or approval of instructor.

Continuation of 161.

216. **Calculus III**

(215.) Fall, Winter, Spring, 5(5-0)

113. Introduction to the calculus of several variables.

217. **Calculus IV**

(214.) Fall, Winter, Spring, 5(5-0)

216. 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.

233. **Special Topics in Third Culture Rhetoric**

Fall, Winter, Spring, 1 to 2 credits. May re-enroll for a maximum of 6 credits. 132 Guided study of relations between the humanities and sciences. Students submit written work.

*242. **Biology III**

Fall, Winter, 4(3-3) 141. Not open to students with credit in BS 211.

Organismal growth and development from molecular genetics through life cycles of selected plant and animal species.

1DC. **Energy Consumption and Environmental Quality**

For course description, see Interdisciplinary Courses.

261. **Introduction to Chemistry and Physics IV**

Fall, 3(4-0) 163; 261L or concurrently or approval of instructor; LBC 112 or MTH 112 recommended.

Kinematics and dynamics of classical particle and rigid body motion. Fundamentals of atomic, molecular vibration-rotation and nuclear magnetic resonance spectroscopy.

261L. **Introductory Physics Laboratory**

Fall, 1(0-3) 261 or concurrently or approval of instructor.

Continuation of 162L.

262. **Introduction to Chemistry and Physics V**

Winter, 3(4-0) 261; 262L or concurrently or approval of instructor.

Chemistry of non-metals, transitional elements and coordination compounds, some organic chemistry. The major emphasis is on descriptive chemistry using principles developed in 161, 162, and 163.

262L. **Introductory Chemistry Laboratory**

Winter, 1(0-3) 262 or concurrently or approval of instructor.

Continuation of 163L.

263. **Introduction to Chemistry and Physics VI**

Spring, 3(4-0) 261; 263L or concurrently or approval of instructor.

Classical theory of electricity and magnetism. Electromagnetic wave motion and wave optics. Selected topics in solid state physics, and the special and general theories of relativity.

263L. **Introductory Physics Laboratory**

Spring, 1(0-3) 263 or concurrently or approval of instructor.

Continuation of 261L.

290. **Directed Study**

Fall, Winter, Spring, 2 to 6 credits. May re-enroll for a maximum of 6 credits. Approval of college.

Faculty directed studies in curricular areas which are normally related to regular course offerings.

A. Directed Study—General
1 or 2 credits.

B. Directed Study—Biology
1 or 2 credits.

C. Directed Study—Chemistry/Physics
1 or 2 credits.

F. Directed Study—Computer Science
1 to 3 credits.

- 295. Independent Study**
Fall, Winter, Spring. 2 to 4 credits.
May re-enroll for a maximum of 12 credits.
Approval of college.
Student conceived individual courses of study in curricular areas. Preliminary faculty approval and continuing guidance.
A. Independent Study—General
B. Independent Study—Biology
C. Independent Study—Chemistry/Physics
D. Independent Study—Mathematics
E. Independent Study—Science Studies

- 331. Modern Fiction**
Fall. 4(4-0) 132 or 131 with a 3.0 or better.
Recent fiction and its cultural backgrounds, particularly those of special value to students of science. Students may submit original fiction in partial fulfillment of course writing requirements.

- 332. Modern Drama**
Winter. 4(4-0) 132 or 131 with 3.0 or better.
Recent plays which have social and literary significance. Students may submit original dramatic writings as partial fulfillment of course writing requirements.

- 333. Modern Poetry**
Spring. 4(4-0) 132 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. 1(0-3) ZOL 303 concurrently.
Interdepartmental with the Department of Zoology.
Laboratory examination of form and function of representative vertebrate and invertebrate animals.

- 361. Philosophy of Technology**
Fall, Winter. 4(4-0) Sophomores or approval of college. Interdepartmental with the Department of Philosophy.
Is our technology desirable? Are its social forms desirable? What alternatives are there? Students will develop and defend their own appraisals of technology.

- 372. Introduction to Symbolic Logic**
Fall, Winter. 4(4-0) Sophomores or approval of college.
Concepts, notation and application of truth-functional and quantificational 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) 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.

- 377. The Natural Environment: Perceptions and Practices**
Spring. 4(4-0) Sophomores.
Factors which have influenced U.S. environmental attitudes as reflected in art and literature. Ways in which changing attitudes have led to changes in legislation and practice.

- 378. Popular Culture and Technical Change**
Winter. 4(4-0) Juniors or approval of college.
How mass culture and technology affect each other. The course demonstrates several approaches to this question and introduces students to research in this area.

- 483. Philosophy of Physical Science**
Fall. 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. Directed Study**
Fall, Winter, Spring. 2 to 6 credits.
May re-enroll for a maximum of 6 credits.
Juniors and approval of college.
Faculty directed studies in curricular areas which are normally related to regular course offerings.

- A. Directed Study—General
- B. Directed Study—Biology
- C. Directed Study—Chemistry/Physics
- D. Directed Study—Mathematics
- E. Directed Study—Science Studies

- 491. Senior Seminar I**
Fall, Winter, Spring. 3(3-0) Seniors or approval of college.
Selected interdisciplinary problems concerned with the interface between science and society or science and man are identified and formulated. A bibliography is generated and an outline for a thesis prepared.

- 492. Senior Seminar II**
Fall, Winter, Spring. 3(3-0) 491.
The thesis planned in 491 is written and evaluated.

- 493. Field Experience**
Fall, Winter, Spring. 4 to 15 credits.
May re-enroll for a maximum of 16 credits.
Approval of college.
Experiential learning related to the public or private practice of science and technology.

- 495. Independent Study**
Fall, Winter, Spring. 2 to 12 credits.
May re-enroll for a maximum of 12 credits.
Juniors and approval of college.
Student conceived individual courses of study in curricular areas. Preliminary faculty approval and continuing guidance.
A. Independent Study—General
B. Independent Study—Biology
C. Independent Study—Chemistry/Physics
D. Independent Study—Mathematics
E. Independent Study—Science Studies

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. Operations Planning**
Fall, Spring. 4(4-0) CPS 110, STT 315, AFA 202.
Operations Management—functions and technologies. Planning and acquiring physical facilities, work design and work measurement, acquisition and management of materials.

- 301. Operations Control**
Winter. 4(4-0) 300.
Analysis and control of operations. Production control, product reliability, maintenance, cost control and management information systems.

- 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 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.