

- 203. Second-Year Japanese**
Spring. 3(3-0) JAP 202.
Continuation of JAP 202.
- 221. Second-Year Composition**
Fall. 2(2-0) JAP 103.
Review grammar and composition to supplement JAP 201.
- 222. Second-Year Composition**
Winter. 2(2-0) JAP 221.
Continuation of JAP 221.
- 223. Second-Year Composition**
Spring. 2(2-0) JAP 222.
Continuation of JAP 222.
- 400H. Honors Work**
Fall, Winter, Spring. Variable credit.
Approval of department.
- Linguistics** **LIN**
- 200. Language and Linguistics**
Fall, Winter, Spring. 3(3-0)
Especially for students in areas other than linguistics, this course consists of an introduction to language and linguistics, emphasizing the application of linguistics to various other disciplines.
- 320. Introduction to Sociolinguistics**
Winter. 3(3-0)
The association of linguistic features and choice among linguistic varieties with socio-cultural variables. Topics: small group interactions, styles and dialects, multilingualism, code-switching, language maintenance and shift, language policy.
- 401. Introduction to Linguistics**
Fall, Winter, Spring, Summer. 4(4-0)
Juniors or approval of department. Not open to students with credit in LIN 200.
The scientific study of human languages. Basic goals, assumptions, terminology, and research results of modern theoretical and applied linguistics, with examples from a variety of languages.
- 402. Phonology**
Fall, Winter. 3(3-0) LIN 200, LIN 401 or approval of department.
Sounds and sound systems, emphasizing the four basic areas of articulatory phonetics, phonetic features and components, classical phonemics, and phonology in contemporary linguistic theories.
- 403. Morphology**
Winter, Spring. 3(3-0) LIN 402 the previous term or approval of department.
Structure of words, covering the identification and classification of morphemes, morphophonemics alternation, and morphology in contemporary linguistic theories.
- 404. Syntactic Phenomena**
Spring. 3(3-0) LIN 200 or LIN 401.
Essential syntactic phenomena in the languages of the world. Syntactic description of phrases, clauses, and sentences, and its relation to morphological structures and meaning structures.
- 408. History of Linguistics**
(811.) Fall. 3(3-0) LIN 200 or LIN 401.
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.
- 410. Child Language Acquisition**
Fall. 3(3-0) LIN 200 or LIN 401 or approval of instructor.
Linguistic issues, perspectives, and research on the acquisition of language, in spoken and written form, by children; phonology, morphology, syntax, semantics, and linguistic universals; implications for related disciplines.
- 421. Articulatory Phonetics**
Fall, Spring. 3(2-2) Approval of department.
Development of phonetic skills for the learning and teaching of languages.
- 425. Field Methods**
(841.) Fall. 3(3-0) May reenroll for a maximum of 9 credits. LIN 403 or approval of department.
Methods of working with informants in order to gather linguistic information, processing and analyzing data, writing linguistic descriptions.
- 431. Introduction to Transformational Grammar**
Winter, Spring. 3(3-0) LIN 200, LIN 401 or approval of department.
Investigation of the origin and development of transformational theory of syntax; properties of deep structure, surface structure, and transformations; application of transformational concepts to native and foreign language learning.
- 471. Principles and Methods of Historical Linguistics**
Winter. 3(3-0) LIN 403 or concurrently.
Types of linguistic change and the methods used by linguists to study the historical development of languages and language families.
- 490. Senior Research**
Spring. 3(3-0)
Individual projects demonstrating ability to do independent research.
- 808. Foundations of Modern Linguistics**
Fall. 3(3-0) LIN 403.
Critical reading of basic texts of modern linguistics from 1900 to the 1950's with primary emphasis on American writers.
- 821. Phonological Analysis**
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 9 credits. Approval of department.
Advanced study of phonology, generally utilizing one of the following theories: stratificational, tagmemic, transformational.
- 831. Grammatical Analysis**
Fall, Winter, Spring. 3(3-0) May reenroll 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.
- 835. Semantics of Natural Languages**
Spring. 3(3-0) LIN 431 or approval of department.
Selected topics on the study of meaning in human languages. History, issues, and theories of semantics.
- IDC. Interdisciplinary Seminar on Africa**
For course description, see *Interdisciplinary Courses*.
- 851. African Linguistics**
Winter. 3(3-0) May reenroll for a maximum of 9 credits. LIN 401; LIN 402 or concurrently.
Investigation of linguistic issues and phenomena in one or a group of African languages.
- 860. Special Projects**
Fall, Winter, Spring, Summer. Variable credit. Approval of instructor.
Supervised study, reading, and research in specialized areas of linguistics.
- 865. Contrastive Analysis**
Spring. 3(3-0) LIN 403.
The essentials of contrastive analysis, with emphasis on methods of making such analysis. The usefulness of and controversies concerning contrastive analysis will also be discussed.
- 871. Comparative Indo-European Linguistics**
Spring of odd-numbered years. 3(3-0) LIN 471.
Comparative linguistics as applied to the investigation of the development and historical relationships of the languages of the Indo-European family.
- 880. Seminar in Linguistics**
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 18 credits in different topics. Approval of department.
Advanced critical study of current topics in linguistics such as applications to other disciplines, aspects of linguistic theory, child language acquisition, contrastive analysis, structure of particular languages.
- 899. Research**
Fall, Winter, Spring, Summer. Variable credit. Approval of instructor.
- 999. Research**
Fall, Winter, Spring. Variable credit. Approval of instructor.

**LYMAN BRIGGS
COLLEGE**

LBC

- 111. College Algebra**
Fall. 5(5-0) Placement Test or approval of college. Not open to students with credit in MTH 108, MTH 109, or MTH 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) LBC 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.

**Descriptions – Lyman Briggs College
of
Courses**

113. Calculus II

Fall, Winter, Spring. 5(5-0) LBC 112 and LBC 124. Not open to students with credit in MTH 113.

Continuation of LBC 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) LBC 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) LBC 131.

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

For prerequisite purposes the introductory biology sequence LBC 140, 141, 242 may be used in place of Biological Science 210, 211, 212.

140. Biology I

Winter, Spring. 4(3-3) Not open to students with credit in B S 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) LBC 140; not open to students with credit in B S 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 reenroll for a maximum of 4 credits. LBC 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.

143. Biology IIA

Fall, Spring. 2 credits. May reenroll for a maximum of 4 credits if different topic is taken. LBC 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) LBC 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 MTH 109 or MTH 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) LBC 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) LBC 161; LBC 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) LBC 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) LBC 162; LBC 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) LBC 163 or concurrently or approval of instructor.

Continuation of LBC 161.

216. Calculus III

Fall, Winter, Spring. 5(5-0) LBC 113.

Introduction to the calculus of several variables.

217. Calculus IV

(214.) Fall, Winter, Spring. 5(5-0) LBC 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 reenroll for a maximum of 6 credits. LBC 132.

Guided study of relations between the humanities and sciences. Students submit written work.

For prerequisite purposes the introductory biology sequence LBC 140, 142, 242 may be used in place of Biological Science 210, 211, 212.

242. Biology III

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

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

IDC. Energy Consumption and Environmental Quality

For course description, see Interdisciplinary Courses.

261. Introduction to Chemistry and Physics IV

Fall. 3(4-0) LBC 163; LBC 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) LBC 261 or concurrently or approval of instructor.

Continuation of LBC 162L.

262. Introduction to Chemistry and Physics V

Winter. 3(4-0) LBC 261; LBC 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 LBC 161, LBC 162, and LBC 163.

262L. Introductory Chemistry Laboratory

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

Continuation of LBC 163L.

263. Introduction to Chemistry and Physics VI

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

Continuation of LBC 261L.

290. Directed Study

Fall, Winter, Spring. 2 to 6 credits. May reenroll 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 reenroll for a maximum of 12 credits. Approval of college.

Student conceived individual courses of study in curricula 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) LBC 132 or LBC 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) LBC 132 or LBC 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) LBC 132 or LBC 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 animal.

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) 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 reenroll 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) LBC 491.
The thesis planned in LBC 491 is written and evaluated.

493. Field Experience
Fall, Winter, Spring. 4 to 15 credits. May reenroll 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 reenroll 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) MGT 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.