The spoken language. Emphasis on intensive pronunciation, comprehension drills, and developing South Asian Languages SAL 101-102-103 sequence in more than one South Asian Language. Continued development of oral and aural skills. Study of grammar, readings in simple texts and exercises in composition.

202. South Asian Languages—Intermediate Winter, 5(3-2) May re-enroll for 201-202-203 sequence in more than one South Asian Language. 103. Continuation of 201.

203. South Asian Languages—Intermediate Spring, 4(3-2) May re-enroll for 201-202-203 sequence in more than one South Asian Language. 102. Continuation of 202.

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 109, 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) or MTH 109, 111, or 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) or MTH 112. 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(2-0) or concurrently. Interdepartmental with the Computer Science Department. 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) Continuation of 131 with emphasis upon investigative paper. Selected students may meet course requirements through independent study.
233. Special Topics in Third Culture Rhetoric
Fall, Winter, Spring. 1 to 2 credits. May re-enroll for a maximum of 6 credits. 128
Guided study of relations between the humanities and sciences. Students submit written work.

242. Biology III
Fall, Winter, 4(3-2) 141. Not open to students with credit in B 3 211.
Organizational growth and development from molecular genetics through life cycles of selected plant and animal species.

251. Introduction to Chemistry and Physics IV
Fall. 4(4-3) 153.
Classical physics; kinematics and dynamics of particles; conservation of energy; electricity; magnetism, electromagnetism, wave motion and wave optics.

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

253. Introduction to Chemistry and Physics VI
Spring. 4(4-3) 222.
Relativity, atomic, molecular, and solid-state physics, quantum-mechanical effects and devices, nuclear models and nuclear energy levels.

IDC. Energy Consumption and Environmental Quality
For course description, see Interdisciplinary Courses.

290. Directed Study
Fall, Winter, Spring, Summer. Variable credit. 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.
D. Directed Study-Computer Science
1 to 3 credits.

295. Independent Study
Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll for a maximum of 19 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 393 concurrently.
Interdepartmental with the Zoology Department. 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? Is its social form 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 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) 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 environmental attitudes in the 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, emergence, vitalism, value neutrality.

490. Directed Study
Fall, Winter, Spring, Summer. 1 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.

495. Independent Study
Fall, Winter, Spring, Summer. 1 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