Linguistics and Languages—LL

152 Beginning Individualized Less Commonly Taught Languages II Spring, 4(4-1) Further individualized work on speaking, reading and writing a less commonly taught language, with continued emphasis on developing oral proficiency skills.

251 Intermediate Individualized Less Commonly Taught Language I Fall, 4(4-1) Intermediate-level individualized work on speaking, reading and writing a less commonly taught language, with emphasis on developing oral proficiency skills.

252 Intermediate Individualized Less Commonly Taught Languages II Spring, 4(4-1) Further intermediate-level individualized work on speaking, reading and writing a less commonly taught language, with continued emphasis on developing oral proficiency skills.

290 Independent Study Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 9 credits in all enrollments for this course. R: Approval of department. Special projects in Linguistics and Languages arranged by an individual student and a faculty member in areas supplementing regular course offerings.

352 Asian American Writing Spring. 3(3-0) Interdepartmental with English. Administered by Department of English. P:M: Completion of Tier I writing requirement. RB: 3 credits of literature. Writing by Americans of Asian descent. Attention to artistic, historical, and cultural contexts.

361 Asian Literature in English or in English Translation Spring. 3(3-0) Interdepartmental with English. Administered by Department of English. P:M: Completion of Tier I writing requirement. RB: 3 credits of literature. Literary traditions of a major Asian civilization--Chinese, Indian or Japanese. Historical, cultural, and international contexts of Asian literature.

380 Methods of Teaching Foreign Languages Spring of odd years. 3(3-0) P:M: (GRM 202 or RUS 202 or CHS 202 or JPN 202) R: Open only to undergraduate students in the East Asian Languages and Cultures or German or Russian or Chinese or Japanese major with a teacher certification option or in the German or Japanese or Russian minor available for teacher certification. Methods of teaching Germanic, Slavic, Asian, and African languages for teacher education candidates. Theories of second language acquisition and practical application of teaching strategies.

413 Slavic Language I (MTC) Fall. 4(4-1) A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department. SA: RUS 413 Development of skills in speaking, reading, listening comprehension, and writing in a Slavic language other than Russian, such as Serbo-Croatian, Polish, Czech, or Ukrainian.

414 Slavic Language II (MTC) Spring. 4(4-1) A student may earn a maximum of 8 credits in all enrollments for this course. P:M: (LL 413) R: Approval of department. SA: RUS 414 Further development of skills in speaking, reading, listening comprehension, and writing in a Slavic language other than Russian, such as Serbo-Croatian, Polish, Czech, or Ukrainian.

474 Aesthetic Theory and Modernism Fall. 4(4-0) Interdepartmental with Philosophy; English; History of Art; Music; Romance Languages. Administered by Department of Philosophy. R: Not open to freshmen or sophomores. Problems, assumptions, and arguments of modern aesthetic theory examined in the context of debates over modernity and modernist artistic practice.

490 Independent Study Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 9 credits in all enrollments for this course. R: Approval of department. Special projects in linguistics and languages arranged by an individual student and a faculty member in areas supplementing regular course offerings.

821 Proseminar in Comparative Literature Fall. 3(3-0) Interdepartmental with Arts and Letters; English; Romance Languages. Administered by Arts and Letters. R: Open only to graduate students in the College of Arts and Letters. History and practice of comparative literature including foundational concepts and current directions.

822 Methods of Comparative Literature Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Arts and Letters; English; Romance Languages. Administered by Arts and Letters. R: Open only to graduate students in the College of Arts and Letters. Case studies in international literary tradition, reception, and transmission. Approaches to genre and period. History and aesthetics of reception.

823 Seminar in Comparative Literary Criticism Fall. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Arts and Letters; English; Romance Languages. Administered by Arts and Letters. R: Open only to graduate students in the College of Arts and Letters. Theory and practice of comparative literary criticism, with attention to the development of critical approaches and to current topics in the critical literature.

825 Comparative Critical Theory Spring, 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Arts and Letters; English; Romance Languages. Administered by Arts and Letters. R: Open only to graduate students in the College of Arts and Letters. Critical theory of comparative literature, including comparative studies in rhetorical theory and discourse analysis.

863 The Literatures of Africa and the Diaspora Spring. 3(3-0) Interdepartmental with English; Romance Languages. Administered by Department of English. R: Open only to graduate students in College of Arts and Letters. Literatures of Africa and the Diaspora with emphasis on Third World critical approaches, non-canonical perspectives, and problems.

991B Topics in Comparative Literature Fall. 3(3-0) A student may earn a maximum of 12 credits in all enrollments for this course. Interdepartmental with English; Romance Languages. Administered by Department of English. R: Open only to Ph.D. students. Approval of department. Critical approaches to genre, periodization, and influence in English and other literatures.

991D Topics in the Literature of Africa and the African Diaspora Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with English; Romance Languages. Administered by Department of English. Authors, movements, and cultures of the literature of Africa and the African diaspora.

LYMAN BRIGGS SCHOOL

Lyman Briggs School
College of Natural Science

117 College Algebra and Trigonometry Fall. 3(3-0) P:M: Designated score on Mathematics placement test. R: Open only to students in Lyman Briggs School. Not open to students with credit in MTH 103 or MTH 116. Rational and real numbers. Functions and inverses. Equations, simultaneous equations. Inequalities. Graphing. Trigonometry.

118 Calculus I Fall, Spring. 5(5-0) P:M: (LBS 117 or MTH 116 or MTH 114) or designated score on Mathematics placement test. R: Open only to students in Lyman Briggs School. Not open to students with credit in MTH 132 or MTH 133 or MTH 152H. Limits, continuity, differentiation, integration, and elementary applications.

119 Calculus II Fall, Spring. 4(4-0) P:M: (LBS 118) R: Open only to students in Lyman Briggs School. Not open to students with credit in MTH 133 or MTH 153H or MTH 235. Continuation of LBS 118. Further applications of one variable calculus. Infinite series. Ordinary differential equations.

126 Personal Computers and Networks Fall, Spring. 3(3-0) R: Open only to students in Lyman Briggs School. Not open to students with credit in CSE 101. Selecting, installing and using personal computer software and hardware. Computer networks.
### Introduction to Science and Technology Studies
Fall, Spring. 4(4-0) P:M: Designated score on English placement test. R: Open only to students in Lyman Briggs School. Not open to students with credit in AL 192 or AL 192H or ATL 115 or ATL 120 or ATL 125 or ATL 130 or ATL 135 or ATL 140 or ATL 145 or ATL 150 or ATL 195H or MC 111 or MC 112 or ATL 115.

Instruction and practice in expository writing. Paper technology.

### Biology I: Organismal Biology
Fall. Spring. 4(3-3) R: Open only to students in Lyman Briggs School. Not open to students with credit in BS 110.

Modern biology at the organismal level of integration. Principles of genetics, evolution, ecology, and organismal diversity as interactive units.

### Biology II: Cellular and Molecular Biology
Fall. Spring. 5(3-4) P:M: (LBS 144 or BS 110 or LBS 148H) and (CEM 141 or CEM 151 or concurrently or CEM 181H or concurrently or LBS 171 or concurrently) R: Open only to students in Lyman Briggs School. Not open to students with credit in BS 111.

Modern biology mainly at the cellular level of integration. Principles of cell structure and function are used to explain processes of bioenergetics, protein synthesis, and development.

### Honors Organismal Biology
Fall. 3(3-0) Interdepartmental with Biological Science. R: Honors College student or approval of school. Not open to students with credit in BS 111.

Diversity and basic properties of organisms, with emphasis on genetic principles, ecological interactions, and the evolutionary process. Historical approach to knowledge discovery.

### Honors Cell and Molecular Biology
Spring. 3(3-0) Interdepartmental with Biological Science. P:M: (CEM 141 or concurrently or CEM 151 or concurrently or CEM 181H or concurrently or LBS 171 or concurrently) R: Honors College student or approval of school. Not open to students with credit in BS 111 or LBS 145.

Exploration of the physicochemical and molecular organization of cells as the unifying framework for genetics, evolution, and the social relevance of biology.

### Honors Organismal Biology Laboratory
Fall. 2(1-3) Interdepartmental with Biological Science. Not open to students with credit in BS 110 or LBS 144. C: LBS 148H concurrently.

Basic procedures used by organismal biologists, including experimental design and statistical methods. Development and implementation of research projects to test hypotheses in genetics, ecology, and evolution.

### Honors Cell and Molecular Biology Laboratory
Spring. 2(1-3) Interdepartmental with Biological Science. Not open to students with credit in BS 111L or LBS 145. C: LBS 149H concurrently.

Basic techniques of cellular and molecular biology including experimental design and hypothesis formulation. Student-initiated projects to test hypothesis-driven projects in biochemistry, molecular biology or genetics.

### Principles of Chemistry I - Structure
Fall. 4(4-0) P:M: (LBS 117 or concurrently or MTH 116 or concurrently or MTH 132 or concurrently or MTH 133 or concurrently or MTH 152H or concurrently or LBS 116 or concurrently or LBS 119 or concurrently) R: Open only to students in Lyman Briggs School. SA: LBS 165 Not open to students with credit in CEM 141 or CEM 152 or CEM 182H. C: CEM 171L concurrently.

Chemical principles: structure and bonding, periodic properties. Stoichiometry, states of matter. Solutions, acids and bases, equilibria, thermodynamics, and kinetics.

### Introductory Chemistry Laboratory I
Fall. 1(0-3) R: Open only to students in Lyman Briggs School. SA: LBS 165L Not open to students with credit in CEM 161 or CEM 186H. C: LBS 171 concurrently.


### Principles of Chemistry II - Reactivity
Spring. 3(4-0) P:M: (LBS 171 or CEM 141 or CEM 152 or CEM 182H) and (LBS 171L or CEM 161 or CEM 186H) R: Open only to students in Lyman Briggs School. SA: LBS 265L Not open to students with credit in CEM 142 or CEM 151 or CEM 181H.

Spectroscopy, coordination chemistry, solubility and stability constants. Electrochemistry, main group chemistry, atmospheric chemistry, and organometallic chemistry. Polymers and biochemistry.

### Principles of Chemistry II - Reactivity Laboratory
Spring. 1(0-3) P:M: (LBS 171 or CEM 141 or CEM 152 or CEM 182H) and (LBS 171L or CEM 161 or CEM 186H) and (LBS 172 or concurrently) R: Open only to students in Lyman Briggs School. SA: LBS 266L Not open to students with credit in CEM 162 or CEM 186H.

Synthesis and characterization of chemical systems.

### Calculus III
Fall, Spring. 5(5-0) P:M: (LBS 119 or MTH 133) R: Open only to students in Lyman Briggs School. Not open to students with credit in MTH 234 or MTH 235 or MTH 254H or MTH 255H.

Continuation of LBS 119. Three-dimensional vector geometry, differential calculus of functions of two or three variables. Double and triple integrals, line integrals.

### Experimental Projects in Biology
Spring. 1 to 3 credits. A student may earn a maximum of 5 credits in all enrollments for this course. P:M: (LBS 145) or (BS 111 and BS 111L) or (LBS 149H and LBS 159H) and completion of Tier I writing requirement. R: Open only to students in Lyman Briggs School.

Experiments, field studies. Selected problems in biology such as cell structure and metabolism, diversity, stability, evolution of natural communities, and reproductive biology.

### Physics I
Fall. 3(4-0) P:M: (MTH 132 and LBS 118 and MTH 152H) R: Open only to students in Lyman Briggs School. SA: LBS 164 Not open to students with credit in PHY 181B or PHY 183 or PHY 183B or PHY 193H or PHY 231 or PHY 231B or PHY 231C. Basic physics principles, problem solving techniques. Mechanical systems, elementary thermodynamics, vibrations and waves. Atoms and nuclei.

### Physics Laboratory I
Fall. 1(0-3) P:M: (LBS 271 or concurrently) R: Open only to students in Lyman Briggs School. SA: LBS 164L Not open to students with credit in PHY 191 or PHY 251. Techniques and instruments in the physics laboratory. Selected experiments in classical and modern physics.

### Physics II
Spring. 3(4-0) P:M: (LBS 118 or MTH 133 or MTH 153H) and (LBS 271) R: Open only to students in Lyman Briggs School. SA: LBS 267L Not open to students with credit in PHY 182B or PHY 184 or PHY 184B or PHY 232 or PHY 232B or PHY 294H or PHY 294L. Principles of electromagnetic theory, special relativity, quantum physics, optics, atomic and subatomic physics.

### Physics Laboratory II
Spring. 1(0-3) P:M: (LBS 271L and LBS 272 or concurrently) R: Open only to students in Lyman Briggs School. SA: LBS 267L Not open to students with credit in PHY 192 or PHY 252.

Selected experiments in classical and modern physics.

### Directed Study-Multidisciplinary
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to Lyman Briggs School majors. Directed studies involving at least two Lyman Briggs School curricular areas: biology, chemistry, physics, mathematics, science and technology, computer science.

### Directed Study-Biology
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to students in Lyman Briggs School.

Directed studies in biology.

### Directed Study--Chemistry/Physics
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to students in Lyman Briggs School. Not open to students with credit in PHY 191 or PHY 251. Techniques and instruments in the physics laboratory. Selected experiments in classical and modern physics.

### Directed Study--Chemistry
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to students in Lyman Briggs School. Not open to students with credit in PHY 191 or PHY 251. Techniques and instruments in the physics laboratory. Selected experiments in classical and modern physics.

### Directed Study--Physics
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to students in Lyman Briggs School.
Directed Study--Mathematics
290D
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to students in Lyman Briggs School.

Directed study in mathematics.

Directed Study--Science and Technology Studies
290E
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to students in Lyman Briggs School.

Directed study in science and technology studies.

Directed Study--Computing
290F
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to students in Lyman Briggs School.

Directed studies in computing.

Topics in Science and Technology Studies
330
Fall, Spring. 4(4-0) P:M: (LBS 133) and completion of Tier I writing requirement. R: Open only to students in Lyman Briggs School majors. SA: LBS 239

Topics in history, sociology, and philosophy of science and technology. Science policy.

Literature and Science
331
Spring. 4(4-0) P:M: Completion of Tier I writing requirement. R: Open only to sophomores or juniors or seniors in Lyman Briggs School.

Representations of science and technology in texts drawn from science fiction, Gothic, and utopian literature or mainstream writings.

Technology and Culture
332
Fall. 4(4-0) Interdepartmental with American Studies. P:M: Completion of Tier I writing requirement. R: Open only to juniors or seniors in the American Studies major in Lyman Briggs School.

History of technology with special emphasis on the interaction of technical innovation and other elements of culture.

Topics in History of Science
333
Fall, Spring. 4(4-0) A student may earn a maximum of 8 credits in all enrollments for this course. P:M: Completion of Tier I writing requirement. R: Open only to juniors or seniors in Lyman Briggs School.

Various themes or periods in physical/biological science. May emphasize patterns of theory development, changes in explanatory aims and standards or interaction of social and cultural factors with scientific ideas, practices, instrumentation or experimentalism.

Science, Technology and Public Policy
334
Spring. 4(4-0) P:M: Completion of Tier I writing requirement. R: Open only to sophomores or juniors or seniors in Lyman Briggs School.

Science and technology in public policy formation considered from the perspectives of the history, philosophy, and sociology of science and technology.

The Natural Environment: Perceptions and Practices
335
Spring. 4(4-0) Interdepartmental with American Studies. P:M: Completion of Tier I writing requirement. R: Open only to sophomores or juniors or seniors in the American Studies major or in Lyman Briggs School.

American attitudes toward the natural environment and related public and private institutions.

Gender, Science, Technology (W)
336
Fall. 4(4-0) P:M: Completion of Tier I writing requirement. RB: (LBS 144 and LBS 145) R: Open only to juniors or seniors in Lyman Briggs majors.

Impacts of gender on the development of sciences and technologies; feminist critiques of science and technology; barriers to women's participation in science and technology; scientific constructions of sex, gender, and sexuality.

Advances in Applied Biology
347
Fall. 3(2-3) P:M: (LBS 145) or (BS 111 or concurrently and BS 111L) or (LBS 149H or concurrently and LBS 159H) and completion of Tier I writing requirement. R: Open only to juniors or seniors in Lyman Briggs School.

Advances in cell and molecular biology and application: plant and animal breeding, environment, and therapeutics.

Philosophy of Technology
355
Spring. 4(4-0) Interdepartmental with Philosophy. P:M: Completion of Tier I writing requirement. R: Open only to sophomores or juniors or seniors in Lyman Briggs School or the Department of Philosophy.

Examination of the desirability of technology, its social forms, and its alternatives. Conventional productivist, ecological progressive, and radical humanist outlooks.

Science, Technology and Society
368
Fall. 3(3-0) Interdepartmental with Sociology. Administered by Department of Sociology. RB: (LBS 133) or some familiarity with basic concepts and methods in sociology. R: Not open to freshmen or sophomores.

Role of science and technology in social change. Values and ethics in contemporary perspectives, controversies, and cases. Science and technology as forms of knowledge.

American and European Health Care since 1800
425

Literature and Medicine
483
Spring. 3(3-0) Interdepartmental with English. Administered by Department of English. P:M: Completion of Tier I writing requirement. R: Not open to freshmen or sophomores.


Advanced Directed Study--Multidisciplinary
490A
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to juniors or seniors in Lyman Briggs School.

Directed advanced studies involving at least two LBS curricular areas: biology, chemistry, physics, mathematics, science and technology studies, computing.

Advanced Directed Study--Biology
490B
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to juniors or seniors in Lyman Briggs School.

Directed advanced studies in biology.

Advanced Directed Study--Chemistry or Physics
490C
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Not open to freshmen or sophomores. Open only to Lyman Briggs School majors.

Directed advanced studies in chemistry or physics.

Advanced Directed Study--Mathematics
490D
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to juniors or seniors in Lyman Briggs School.

Directed advanced studies in mathematics.

Advanced Directed Study--Science and Technology Studies
490E
Fall. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to sophomores or juniors or seniors in Lyman Briggs School.

Directed advanced studies in science and technology studies.

Senior Seminar
492
Fall, Spring. 4(4-0) RB: (LBS 239 or LBS 330 or LBS 331 or LBS 332 or LBS 333 or LBS 334 or LBS 335 or LBS 355 or LBS 490E or HST 425 or ENG 483) and completion of Tier I writing requirement. R: Open only to juniors or seniors in Lyman Briggs School.

Directed advanced studies in science and technology studies.

Field Experience
493
Fall, Spring. 1 to 10 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to juniors or seniors in Lyman Briggs School.

Experiential learning related to the public or private practice of science and technology.