

523. Large Animal Surgery and Medicine III
(VSM 523.) Fall, Spring. 7(7-0)
522.

Occurrence, diagnosis and treatment of surgical and reproductive diseases. Includes radiology and diseases of locomotion.

531. Meat Hygiene
(VSM 531.) Fall, Spring. 2(2-0)
Ninth-term Veterinary Medicine students.

Judging fitness of meat for human consumption based on a knowledge of bacteriology, parasitology and pathology. Organization and operation of meat inspection programs. Field trip required.

605. Large Animal Clinic II
(VSM 605.) Fall, Winter, Spring, Summer. 12(0-36) 505.

Advanced clinical instruction and experience in diagnosis, patient care, medication, surgery, disease prevention, and herd health. Includes handling of clinic patients under direct supervision of staff veterinarians and ambulatory clinic.

624. Large Animal Surgery and Medicine IV
(VSM 624.) Winter, Summer. 4(4-0)
523.

Etiology, pathogenesis, epidemiology, pathological changes, differential diagnosis, prevention, control and treatment of specific infectious diseases of large animals.

630. Jurisprudence, Ethics and Business Management
(VSM 630.) Fall, Spring. 5(5-0)
Eleventh-term Veterinary Medicine students.

Legal rights, responsibilities and liabilities of practicing veterinarians. Management and business principles of veterinary practice.

809. Problems in Large Animal Surgery
(VSM 809.) Fall, Winter, Spring, Summer. Variable credit.

811. Problems in Large Animal Medicine
(VSM 811.) Fall, Winter, Spring, Summer. Variable credit.

813. Seminar
(VSM 813.) Fall, Winter, Spring. 1 credit.

823. Special Surgery
(VSM 823.) Spring. 3(1-6) May re-enroll for a maximum of 6 credits. Approval of department.

Surgical techniques and tissue reactions following surgery in large animals.

899. Research
(VSM 899.) Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 18 credits. Approval of department.

Research on thesis problems.

LINGUISTICS AND ORIENTAL AND AFRICAN LANGUAGES

College of Arts and Letters

University credit is not given for waiving a prerequisite course on the basis of high school work.

To receive credit in first-year foreign language courses taken in class, all three terms must be completed satisfactorily.

Courses in CHINESE and JAPANESE on the 300 level or higher are normally conducted in the language.

Linguistics and Oriental and African Language Courses LOA

299. Special Projects
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 18 credits. Approval of department.
Work in areas outside regular course offerings.

499. Special Projects
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 18 credits. Approval of department.
Work in areas outside regular course offerings.

African Languages AFR

101. African Languages-Elementary
Fall. 4(3-2) May re-enroll for 101-102-103 sequence in more than one African language.

Comprehension and speaking taught by a linguist with native informants. Offerings include Bemba, Hausa, Ibo, Pidgin, Swahili, Yoruba. These and other African languages are taught upon sufficient demand and availability of instructors.

102. African Languages-Elementary
Winter. 4(3-2) May re-enroll for 101-102-103 sequence in more than one African language. 101.
Continuation of 101.

103. African Languages-Elementary
Spring. 4(3-2) May re-enroll for 101-102-103 sequence in more than one African language. 102.
Continuation of 102.

200H. Honors Work
Fall, Winter, Spring. 1 to 16 credits. Approval of department.

201. African Languages-Intermediate
Fall. 4(4-0) May re-enroll for 201-202-203 sequence in more than one African language. 103 in appropriate language or approval of department.

Continuation of African Languages-Elementary. Comprehension, speaking, reading and writing taught by a linguist with native informants. See AFR 101 for languages available.

202. African Languages-Intermediate
Winter. 4(4-0) May re-enroll for 201-202-203 sequence in more than one African language. 201.
Continuation of 201.

203. African Languages-Intermediate
Spring. 4(4-0) May re-enroll for 201-202-203 sequence in more than one African language. 202.
Continuation of 202.

400H. Honors Work
Fall, Winter, Spring. Variable credit. Approval of department.

420. African Contributions to Literary Tradition
(C L 420.) Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits. Juniors or approval of department.

Development and influence of the ideas, forms and motifs of African literatures in the literatures of the world.

450. African Languages-Advanced
Fall, Winter, Spring. Variable credit. May re-enroll for maximum of 18 credits. Approval of department.

Advanced training or specialized research in particular African languages.

Chinese CHS

101. Elementary Chinese
Fall. 4(3-5)
Introduction to Mandarin, the official spoken language of China, with emphasis on pronunciation drill and conversation practice.

102. Elementary Chinese
Winter. 4(3-5) 101.
Continued practice in conversation and aural comprehension; introduction to the reading and writing of Chinese characters.

103. Elementary Chinese
Spring. 4(3-5) 102.
Continuation of 102 and grammatical analysis of basic Chinese sentence structure.

200H. Honors Work
Fall, Winter, Spring. 1 to 16 credits. Approval of department.

201. Second-Year Chinese
Fall. 3(3-0) 103.
Conversation, reading, and writing at the intermediate level.

202. Second-Year Chinese
Winter. 3(3-0) 201.
Reading of advanced texts; introducing Chinese radicals and practice in the use of a Chinese dictionary.

203. Second-Year Chinese
Spring. 3(3-0) 202.
Continuation of 202; selected texts from Chinese newspapers, periodicals, and political journals.

221. Second-Year Conversation and Composition
Fall. 2(2-0) 103.
Conversation and composition at the intermediate level to supplement 201.

222. Second-Year Conversation and Composition
Winter. 2(2-0) 221.
Continuation of 221.

223. Second-Year Conversation and Composition
Spring. 2(2-0) 222.
Continuation of 222.

301. Readings in Modern Chinese Literature
Fall. 3(3-0) 203.
Selected short stories from authors of the twentieth century.

LATIN

See Romance Languages

302. Readings in Modern Chinese Literature
 Winter. 3(3-0) 301.
 Selected essays from authors of the twentieth century.

303. Readings in Classical Chinese Literature
 Spring. 3(3-0) 302.
 Selections from the writings of the important philosophers, historians, and poets.

321. Conversation and Composition
 Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits. 203.
 Directed topical conversation and practice in composition.

400H. Honors Work
 Fall, Winter, Spring. Variable credit.
 Approval of department.

401. Survey of Chinese Literature
 Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits. Oral command and reading knowledge of Chinese language.
 Survey of Chinese literature from earliest record to contemporary writings. Lectures and discussions conducted in Chinese. Most assigned readings in Chinese, some in English translation.

420. Far Eastern Contributions to Literary Tradition
 (C L 419.) Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits. Juniors or approval of department.
 Development and influence of the ideas, forms and motifs of Far Eastern literatures in the literatures of the world.

431. Chinese Poetry
 Fall. 3(3-0) Reading knowledge of Chinese.
 Rise and development of Chinese poetry with particular attention to poetry of the T'ang Dynasty.

432. Chinese Drama
 Winter. 3(3-0) Reading knowledge of Chinese.
 Special emphasis on drama of the Yuan Dynasty.

433. Chinese Novels
 Spring. 3(3-0) Reading knowledge of Chinese.
 The most important vernacular novels.

Japanese

JAP

101. Elementary Japanese
 Fall. 4(4-1)
 Spoken and written Japanese; emphasis on conversation and easy reading.

102. Elementary Japanese
 Winter. 4(4-1) 101.
 Continuation of 101.

103. Elementary Japanese
 Spring. 4(4-1) 102.
 Continuation of 102.

201. Second-Year Japanese
 Fall. 3(3-0) 103.
 A second-year course, stressing both oral and written Japanese.

202. Second-Year Japanese
 Winter. 3(3-0) 201.
 Continuation of 201.

203. Second-Year Japanese
 Spring. 3(3-0) 202.
 Continuation of 202.

221. Second-Year Composition
 Fall. 2(2-0) 103.
 Review grammar and composition to supplement 201.

222. Second-Year Composition
 Winter. 2(2-0) 221.
 Continuation of 221.

223. Second-Year Composition
 Spring. 2(2-0) 222.
 Continuation of 222.

400H. Honors Work
 Fall, Winter, Spring. Variable credit.
 Approval of department.

Linguistics

LIN

401. Introduction to Linguistics
 Fall, Winter, Spring. 3(3-0) Juniors or approval of department.
 Scientific study of language.

402. Phonetics and Phonemics
 Winter. 3(3-0) 401 or approval of department.
 Techniques for scientific description of languages. Problems of phonemic analysis.

403. Morphology
 Spring. 3(3-0) 402 or concurrently.
 Problems of morphemic analysis.

421. Articulatory Phonetics
 Fall, Winter, Spring. 3(2-2) Approval of department.
 Development of phonetic skills for the learning and teaching of languages.

431. Introduction to Transformational Grammar
 Spring. 3(3-0) 403 or approval of department.
 Transformational linguistics with emphasis on the theory of syntax. Writing phrase structure rules and transformations.

441. Introductory Readings in Linguistics
 Fall, Winter, Spring. 3(3-0) 401.
 Critical reading of basic texts of modern linguistics.

471. Principles and Methods of Historical Linguistics
 Winter. 3(3-0) 403 or concurrently.
 An elementary introduction to types of linguistic change and the methods used by the historical and comparative linguist. Exercises in comparative and internal reconstruction.

811. History of Linguistics
 Fall, Winter, Spring. 3(3-0) Approval of department.
 Selected topics in the historical development of linguistic theory.

815. Dialectology
 Winter. 3(3-0) Approval of department.
 Cultural and geographic factors in the social and spatial diffusion of linguistic traits.

821. Phonological Analysis
 Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits. 403 or approval of department.
 Problems of advanced phonological analysis.

831. Grammatical Analysis
 Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits. 403 or approval of department.
 Problems of advanced structural analysis.

835. Semantics of Natural Languages
 Spring. 3(3-0) Approval of department.
 Selected topics in the history, techniques and theories of the semantics of natural languages.

838. Interdisciplinary Seminar on Africa
 For course description, see Interdisciplinary Courses.

841. Field Methods
 Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits. 403 or approval of department.
 Working with informants, collecting and processing linguistic information.

851. African Linguistics
 (411.) Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits. 403 or approval of department.
 Phonologic, morphologic and semantic characteristics of one or a group of related African languages.

860. Special Projects
 Fall, Winter, Spring, Summer. Variable credit. Approval of department.
 Supervised study of specialized linguistic projects.

871. Comparative Indo-European Linguistics
 Spring. 3(3-0) 471.
 Comparative Indo-European linguistics.

880. Seminar in Linguistics
 Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits. Approval of department.
 Topics of current relevance in linguistics.

899. Research
 Fall, Winter, Spring, Summer. Variable credit. Approval of department.

970. Graduate Reading Course
 Fall, Winter, Spring. 3(3-0)
 Supervised readings in linguistics for Ph.D. candidates.

980. Seminar in Linguistics
 Fall, Winter, Spring. 3(3-0)
 Special topics in linguistics for Ph.D. candidates.

999. Research
 Fall, Winter, Spring. Variable credit. Approval of department.

South Asian Languages

SAL

**101. South Asian Languages—
Elementary**
Fall. 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.

**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 101.

**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 102.

**201. South Asian Languages—
Intermediate**
Fall. 4(3-2) May re-enroll for 201-202-203 sequence in more than one South Asian Language. 103.
Continued development of oral and aural skills. Study of grammar, readings in simple texts and exercises in composition.

**202. South Asian Languages—
Intermediate**
Winter. 4(3-2) May re-enroll for 201-202-203 sequence in more than one South Asian Language. 201.
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. 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 112 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. 3(3-0) MTH 109 or LBC 111 concurrently. Students may not receive credit in LBC 125 and CPS 110 or CPS 120.

FORTAN 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(3-0)

Instruction 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 evaluation as these pertain to the position the organism maintains in its environment.

141. Biology II
Fall, Winter, Spring. 3(2-3) 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 equilibria, 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(5-0) 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. 4(4-3) 153.

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(4-3) 251.

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

**253. Introduction to Chemistry and
Physics VI**
Spring. 4(4-3) 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, Summer. 1 or 2 credits. May re-enroll for a maximum of 6 credits. Approval of college.

295. Independent Study
Fall, Winter, Spring, Summer. 1 to 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. Student 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. Student 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 provocative nature. Student may submit original poetry in partial fulfillment of course requirements. Selected students may meet course requirements through independent study.