

- 652. Equine Clerkship II**
(LSM 652.) Fall, Winter, Spring, Summer. 4 credits. Completion of 9 terms of professional program, LCS 650, approval of department.
Advanced, supervised equine medicine and surgery.
- 654. Equine Clerkship III**
(LSM 654.) Fall, Winter, Spring, Summer. 4 credits. Completion of 9 terms of professional program, LCS 652, approval of department.
In-depth, supervised equine medicine and surgery.
- 656. Large Animal Anesthesiology Clerkship**
(LSM 656.) Fall, Winter, Spring, Summer. 4 credits. Completion of 9 terms of professional program, approval of department.
Concepts and supervised practice in large animal anesthesiology.
- 660. Ambulatory Clerkship**
(LSM 660.) Fall, Winter, Spring, Summer. 4 credits. Completion of 9 terms of professional program, approval of department.
General medicine and surgery in large animals in field setting. Basic skills, diagnostic techniques and differential diagnosis. Clinical manipulative skills in theriogenology and minor surgery.
- 662. Introduction to Herd Health Clerkship**
(LSM 662.) Fall, Winter, Spring, Summer. 4 credits. Completion of 9 terms of professional program, LCS 660, approval of department.
Concepts and supervised practice in herd health programs. Emphasis on developing programs for food animal species and equine species.
- 664. Dairy Herd Health Clerkship**
(LSM 664.) Fall, Winter, Spring, Summer. 4 credits. Completion of 9 terms of professional program, approval of department.
Dairy farm and herd health management. Record keeping, general management, housing, nutrition, and mastitis control will be emphasized.
- 666. Equine Herd Health Clerkship**
(LSM 666.) Winter, Spring, Summer. 4 credits. Completion of 9 terms of professional program, LCS 660, approval of department.
Establishing and maintaining herd health programs for equine operations. Reproduction, parasite control, immunization, and diagnostic medicine and surgery in the field.
- 670. Food Animal Clerkship I**
(LSM 670.) Fall, Winter, Spring, Summer. 4 credits. Completion of 9 terms of professional program, approval of department.
Concepts and supervised practice in food animal medicine. Emphasis on diagnosis, prognosis, treatment and disease prevention.
- 672. Food Animal Clerkship II**
(LSM 672.) Fall, Winter, Spring, Summer. 4 credits. Completion of 9 terms of professional program, LCS 670, approval of department.
Advanced, supervised food animal surgery and medicine.

- 674. Preceptorial Clerkship**
(LSM 674.) Fall, Winter, Spring, Summer. 8(0-24) to 16(0-48) May reenroll for a maximum of 16 credits. Completion of 9 terms of professional program, approval of department. Students may not receive credit in both VM 610 and LCS 674.
Applied large animal clinical science. Students participate in all activities in assigned private practices tutored by practitioners with adjunct faculty appointments.
- 809. Problems in Large Animal Surgery**
(LSM 809.) Fall, Winter, Spring, Summer. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
Elective work in selected surgical research problems compatible with student's interest and ability.
- 811. Problems in Large Animal Medicine**
(LSM 811.) Fall, Winter, Spring, Summer. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
Elective work in selected medicine-related research problems compatible with student's interest and ability.
- 813. Seminar**
(LSM 813.) Fall, Winter, Spring. 1 credit.
- 825. Fundamental Biomedical Experimental Techniques**
(LSM 825.) Fall. 3(2-3) Students enrolled in a graduate degree program, approval of department.
Fundamentals of humane treatment of animals, anesthesia, aseptic techniques, instrumentation, suture materials and patterns, tissue handling and woundhealing for experimental animal research.
- 899. Master's Thesis Research**
(LSM 899.) Fall, Winter, Spring, Summer. Variable credit. May reenroll for a maximum of 18 credits. Students enrolled in a graduate degree program, approval of department.
Research on thesis problems.
- 921. Pathology of Nutritional and Metabolic Diseases**
(HNF 921., LSM 921.) Spring of odd-numbered years. 4(3-2) Approval of department; PTH 404 or ANT 420. ANS 525, BCH 452, HNF 462 recommended. Interdepartmental with Human Nutrition and Foods.
Development, physiopathology and morphologic pathology of nutritional and metabolic diseases including carbohydrate, protein, fatty acid, vitamin and mineral deficiencies, their experimental induction and their medical or economic significance.
- LATIN**
See Romance and Classical Languages.

LINGUISTICS AND GERMANIC, SLAVIC, ASIAN AND AFRICAN LANGUAGES

(Name changed September 1, 1981. Formerly the Department of Linguistics and Oriental and African Languages and the Department of German and Russian.)

College of Arts and Letters

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. 1 to 6 credits. May reenroll for a maximum of 12 credits. Approval of department.
Work in areas outside regular course offerings.
- 360. World Literature in English**
(315.) Fall. 3(3-0) Interdepartmental with and administered by the Department of English.
Representative works, not from England or the United States, which were written originally in English, especially the English literature of present or former British Commonwealth nations, and nations from the Middle East and Africa.
- 361. World Literature in English Translation**
(316.) Winter. 3(3-0) Interdepartmental with the Department of English.
Significant and characteristic works of the Orient, the Middle East, and Africa in English translation.
- 362. Genres and Themes in World Literature**
(317.) Spring. 3(3-0) Interdepartmental with and administered by the Department of English.
Work will center each term around a single literary genre, type or theme. Typical examples: The Quest, Literature of Revolt, Satire. Literary examples will be selected from several national literatures.

- 499. Special Projects**
Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 16 credits. Approval of department.
Work in areas outside regular course offerings.

African Languages AFR

- 101. African Languages-Elementary**
Fall. 4(4-1) May reenroll for AFR 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(4-1) May reenroll for AFR 101-102-103 sequence in more than one African language. AFR 101.
Continuation of AFR 101.

of
Courses

103. African Languages–Elementary
Spring, 4(4-1) May reenroll for AFR 101-102-103 sequence in more than one African Language. AFR 102.
Continuation of AFR 102.

200H. Honors Work
Fall, Winter, Spring, 1 to 6 credits. May reenroll for a maximum of 16 credits. Approval of department.

201. African Languages–Intermediate
Fall, 4(5-0) May reenroll for AFR 201-202-203 sequence in more than one African language. AFR 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(5-0) May reenroll for AFR 201-202-203 sequence in more than one African Language. AFR 201.
Continuation of AFR 201.

203. African Languages–Intermediate
Spring, 4(5-0) May reenroll for AFR 201-202-203 sequence in more than one African language. AFR 202.
Continuation of AFR 202.

400H. Honors Work
Fall, Winter, Spring, 1 to 6 credits. May reenroll for a maximum of 18 credits. Approval of department.

418. Critical Issues in Contemporary Africa
Fall, Spring, 3(3-0) May reenroll for a maximum of 9 credits if different topics are taken. One course on African subject and approval of instructor. Interdepartmental with the departments of Anthropology, Geography, History, Political Science, and Sociology. Administered by the Department of History.
Four separate multidisciplinary topics will be offered at different times: The Horn of Africa, Southern Africa, Africa and the Americas, Social Impact Studies.

420. African Literature in Translation
Fall, Winter, Spring, 3(3-0) May reenroll 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, 1 to 10 credits. May reenroll for a maximum of 18 credits. Approval of department.
Advanced training or specialized research in particular African languages.

839. African Research
(IDC 838.) Fall, Winter, Spring, 2 to 4 credits. May reenroll for a maximum of 8 credits. Graduate standing or approval of instructor. Interdepartmental with the departments of Administration and Curriculum, Anthropology, Geography, History, Political Science, and Sociology. Administered by the Department of Anthropology.
African-related archival and field research topics and methodologies viewed from perspective of relevant social science and humanistic disciplines associated with the African Studies Center.

Arabic **ARB**

101. Elementary Arabic
Fall, 4(4-1)
Introduction to Modern Standard Arabic, with pronunciation and conversation practice, reading and writing, and basic grammatical analysis.

102. Elementary Arabic
Winter, 4(4-1) ARB 101.
Continuation of ARB 101.

103. Elementary Arabic
Spring, 4(4-1) ARB 102.
Continuation of ARB 102.

201. Intermediate Arabic
Fall, 4(4-1) ARB 103.
Reading and discussion of a broad range of cultural materials including expository and literary texts from the Arabic-speaking world. Further development of language skills.

202. Intermediate Arabic
Winter, 4(4-1) ARB 201.
Reading and discussion of a broad range of cultural materials including expository and literary texts from the Arabic-speaking world. Further development of language skills.

203. Intermediate Arabic
Spring, 4(4-1) ARB 202.
Reading and discussion of a broad range of cultural materials including expository and literary texts from the Arabic-speaking world. Further development of language skills.

Chinese **CHS**

101. Elementary Chinese
Fall, 4(4-1)
Introduction to Mandarin, the official spoken language of China, with emphasis on pronunciation drill and conversation practice.

102. Elementary Chinese
Winter, 4(4-1) CHS 101.
Continued practice in conversation and aural comprehension; introduction to the reading and writing of Chinese characters.

103. Elementary Chinese
Spring, 4(4-1) CHS 102.
Continuation of CHS 102 and grammatical analysis of basic Chinese sentence structure.

200H. Honors Work
Fall, Winter, Spring, 1 to 6 credits. May reenroll for a maximum of 16 credits. Approval of department.

201. Second-Year Chinese
Fall, 3(3-0) CHS 103.
Reading and discussion of a broad range of cultural materials including expository and literary texts from the Chinese-speaking world. Further development of language skills.

202. Second-Year Chinese
Winter, 3(3-0) CHS 201.
Reading and discussion of a broad range of cultural materials including expository and literary texts from the Chinese-speaking world. Further development of language skills.

203. Second-Year Chinese
Spring, 3(3-0) CHS 202.
Reading and discussion of a broad range of cultural materials including expository and literary texts from the Chinese-speaking world. Further development of language skills.

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

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

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

250. Chinese Calligraphy
Spring, 2(2-0) One year in Chinese language or approval of department.
The essential characteristics of and fundamental skills involved in writing Chinese characters, from the point of view of practical use.

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

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

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

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

400H. Honors Work
Fall, Winter, Spring, 1 to 10 credits. May reenroll for a maximum of 18 credits. Approval of department.

401. Survey of Chinese Literature
Fall, Winter, Spring, 3(3-0) May reenroll 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. Oriental Literature in Translation
Fall, Winter, Spring, 3(3-0) May reenroll 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 Tang Dynasty.

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

German and Russian Courses GR

Students who have had high school work in the foreign language in which they wish to continue their studies must take a placement examination in that language. Placement in the appropriate course is determined by the results of this examination. University credit is not given for courses waived by performance on the placement examination.

418. Scandinavian Contributions to Literary Tradition
Winter. 3(3-0) Approval of department. Interdepartmental with Romance Languages and the Department of English.
Development and influence of the ideas, forms and motifs of the Scandinavian literatures in the literatures of the world.

498. Topics in Comparative Literature
Fall, Winter, Spring. 3(3-0) or 4(4-0)
May reenroll for a maximum of 12 credits if different topics are offered. Interdepartmental with Romance Languages and the Department of English. Administered by Romance Languages.
Varying topics on relationships among writers, themes, genres, movements and periods in different national literatures, and between literature and other arts.

878. Comparative Literature: Methods in the Study of Comparative Literature
Fall. 3(3-0) Interdepartmental with Romance Languages and the Department of English. Administered by the Department of English.
Rationale and techniques of study in comparative literature.

German GRM

Students who have had high school work in the foreign language in which they wish to continue their studies must take a placement examination in that language. Placement in the appropriate course is determined by the results of this examination. University credit is not given for courses waived by performance on the placement examination.

101. Elementary German
Fall, Winter, Spring, Summer. 4(4-1)
German language, civilization, and culture. Development of language skills in contemporary German. Independent practice in the language laboratory.

102. Elementary German
Fall, Winter, Spring, Summer. 4(4-1)
GRM 101.
Continuation of GRM 101.

103. Elementary German
Fall, Winter, Spring, Summer. 4(4-1)
GRM 102.
Continuation of GRM 102.

105. Intensive Elementary German
Winter, Spring. 8(8-2) GRM 101 with 3.0 or better or approval of department. May not receive credit for both GRM 105 and GRM 102, GRM 103.
Combination of GRM 102, GRM 103 in one term.

111. German for Travelers
Spring. 2(3-0) Not applicable to major or minor requirements.
Essential German for travelers: basic grammar, vocabulary and useful phrases. Introduction to German culture and life through lectures, audio-visual aids and reading.

201. Intermediate German
Fall, Winter, Spring, Summer. 4(4-0)
GRM 103.
Reading and discussion of a broad range of cultural materials including expository and literary texts from the German-speaking world. Further development of language skills.

202. Intermediate German
Fall, Winter, Spring, Summer. 4(4-0)
GRM 201.
Reading and discussion of a broad range of cultural materials including expository and literary texts from the German-speaking world. Further development of language skills.

203. Intermediate German
Fall, Winter, Spring, Summer. 4(4-0)
GRM 202.
Reading and discussion of a broad range of cultural materials including expository and literary texts from the German-speaking world. Further development of language skills.

204. Intensive Second Year German
Spring. 10(10-0) GRM 103
Intensive second year, combining in one term the work of GRM 201, GRM 202, GRM 203.

241. German Literature in English Translation (A)
Fall. 3(3-0) Knowledge of German not required. Not applicable to major requirements.
Selections from narrative prose, drama, and lyric poetry chosen to encourage and develop an appreciation of German literature.

242. German Literature in English Translation (A)
Winter. 3(3-0) Knowledge of German not required. Not applicable to major requirements.
Continuation of GRM 241.

243. German Literature in English Translation (A)
Spring. 3(3-0) Knowledge of German not required. Not applicable to major requirements.
Continuation of GRM 242.

299. Special Projects
Fall, Winter, Spring, Summer. 1 to 12 credits. May reenroll for a maximum of 12 credits. Approval of department.
Work in areas outside regular course offerings.

321. German Composition and Conversation
Fall. 3(3-0) GRM 203.
Essential and difficult points of grammar reviewed. Written and oral reports; active participation in class discussion. Designed especially for students who plan to teach German.

322. German Composition and Conversation
Winter. 3(3-0) GRM 321.
Continuation of GRM 321.

323. German Composition and Conversation
Spring. 3(3-0) GRM 322
Continuation of GRM 322.

331. German in International Business Communication I
Fall. 3(3-0) GRM 203.
Thorough grammar review based upon business vocabulary. German business communication formats and procedures: letter, memoranda, minutes, telephone, telex, resume, job description and application.

332. German in International Business Communication II
Winter. 3(3-0) GRM 331 or approval of department.
Continuation of German 331 - the world of German economics and business. Lecture and discussion in German covering business types, unions, import-export, banking system, foreign workers, multinational organizations, etc.

333. German in International Business Communication III
Spring. 3(3-0) GRM 332 or approval of department.
Continuation of German 332 - the world of German economics and business. Lecture and discussion in German, covering German international policy, German/American corporate investment, corporations, communication problems, German business press.

336. Introduction to German Civilization and Culture
Winter. 3(3-0) GRM 203 or approval of department.
The cultural heritage of the German peoples. Readings and discussions in German based on selected nonliterary texts from 1750 to the present.

337. Contemporary German Civilization and Culture
(327) Spring. 3(3-0) GRM 203 or approval of department.
The cultural heritage of the German peoples. Readings and discussions in German based upon selected nonliterary texts since World War II.

351. Introduction to German Literature
Fall. 3(3-0) GRM 203 or approval of department.
Major and representative dramas, novellas, lyric poems and ballads of German literature selected from the works of great authors. Methods of literary analysis, terminology, periodization.

352. Introduction to German Literature
Winter. 3(3-0) GRM 203 or approval of department. Not open to students with credit in GRM 301, GRM 302.
Reading and interpretation of representative works of eighteenth and nineteenth century authors. Methods and language of literary criticism. Study of form and expression in major literary works.

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- 353. Introduction to German Literature**
(303.) Spring. 3(3-0) GRM 203 or approval of department.
Reading and interpretation of representative works of twentieth century authors. Methods and language of literary criticism. Study of form and expression in major literary works.
- 410. German Reading Skills**
Fall, Winter, Spring, Summer. 5(5-0) GRM 101 or graduate students or approval of department.
Designed for those in scientific or other fields who wish to be able to read scholarly material. An intensive presentation of German grammar with emphasis on those features and techniques necessary for reading and translation.
- 411. German Reading Skills**
Fall, Winter, Spring, Summer. 5(5-0) GRM 103 or GRM 410 and approval of department.
Reading and translation of works in the student's field of interest. Completion of GRM 410 and GRM 411 with 3.0 or better will satisfy the Ph.D. reading requirement in most departments.
- 421. Advanced Composition and Conversation**
Fall. 3(3-0) GRM 323 or GRM 333.
Thorough grammar review. Oral reports and discussion of cultural topics. Written papers with critiques.
- 425. German in International Business Communication IV**
Winter. 3(3-0) GRM 333.
Continuation of GRM 333. The world of German economics and business. Lecture and discussion in German covering specific problems of German/American business communication arising from linguistic and cultural differences.
- 429. German Style**
Spring. 3(3-0) GRM 421 or approval of department.
Principles of German style, based on representative selections from modern German cultural history. Conducted in German.
- 434. Contrastive Structures of English and German**
Fall. 3(3-0)
Linguistic analysis of the structures of English and German. Recommended for those intending to teach German.
- 435. History of the German Language**
Winter. 3(3-0) GRM 434 or LIN 401.
Survey of the development of Modern Standard German and its relationship to other Indo-European and Germanic languages.
- 437. The Contemporary German Scene**
(427.) Spring. 3(3-0) GRM 337 or GRM 353 or approval of department.
The literary, artistic, intellectual, social, religious, economic, and political scene in present-day Germany with a study of its development from the recent past.
- 450. Special Topics in German Literature**
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 9 credits if different topics are taken. GRM 337 or GRM 353 or approval of department.
Genre, theme, problem, or critical topic.
- 451. Studies in German Literature Before 1700**
(441.) Fall of odd-numbered years. 3(3-0) GRM 337 or GRM 353 or approval of department.
Early periods of German literature including Old High German, Middle High German (minnesang, the courtly epic, mysticism), the Reformation, and the baroque.
- 452. The Age of Goethe**
Winter of even-numbered years. 3(3-0) GRM 337 or GRM 353 and approval of department.
Development of eighteenth century literature; major works of Goethe and Schiller.
- 453. Romanticism and Realism**
Fall of even-numbered years. 3(3-0) GRM 337 or GRM 353 and approval of department.
Representative writers and texts of the two periods, Romanticism and Realism, 1795-1880. The study of literary structures, their interaction with changing society, and their impact on our time.
- 454. Naturalism and Early 20th Century Literature**
Winter of odd-numbered years. 3(3-0) GRM 337 or GRM 353 or approval of department.
Reading and interpretation of representative works of nineteenth and twentieth century authors, naturalism and expressionism. Methods and language of literary criticism.
- 455. Contemporary German Literature**
Spring of even-numbered years. 3(3-0) GRM 337 or GRM 353 or approval of department.
Representative German novels, dramas and poetry from 1945 to the present with emphasis on such authors as Durrenmatt, Frisch, Handke, Boll, Grass, Lenz, Muller, Hacks, Bobrowski and Wolf.
- 456. Major Authors in German Literature**
Spring of odd-numbered years. 3(3-0) May reenroll for a maximum of 9 credits if different topics are taken. GRM 337 or GRM 353 and approval of department.
The life and literary contributions of a selected German author such as Goethe, Schiller, Mann, Kafka, Frisch, Wolff.
- 499. Special Projects**
Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 18 credits. Approval of department.
Work in areas outside regular course offerings.
- 801. Introduction to Graduate Study**
Fall of odd-numbered years. 3(3-0)
A proseminar on the terminology and methods of literary criticism, and the bibliographical aids for literary and pedagogical research.
- 806. Teaching of the German Language**
Fall, Winter, Spring. 1(1-0) May reenroll for a maximum of 3 credits. Graduate teaching assistants.
Problems of teaching German languages at the elementary and intermediate levels including such matters as textbook selection, teaching techniques and the preparation of examinations.
- 815. Middle High German Language**
Fall of even-numbered years. 3(3-0)
Readings from the German language between 1050 and 1350, with emphasis upon the epic and lyric of the Classical period.
- 816. Old High German Language and Literature**
Spring of even-numbered years. 3(3-0) GRM 815 or approval of department.
German language from the beginnings to about 1050; reading and analysis of sections from Tatian, Isidor, Notker, Otfrid, Hildebrandslied, and other documents.
- 818. Middle High German Literature**
Winter of odd-numbered years. 3(3-0)
Readings in Middle High German from the Court poets to Wernher der Gartner.
- 824. Eighteenth Century Literature**
Fall of even-numbered years. 3(3-0)
Development of German literature from 1700 to 1770 with special emphasis on Lessing and Wieland.
- 826. German Classicism**
Winter of odd-numbered years. 3(3-0)
Major works of Schiller and Goethe.
- 827. Goethe's Intellectual Development**
Spring of even-numbered years. 3(3-0)
An examination of Goethe's thought in relation to his major works.
- 834. Nineteenth Century Literature**
Fall of odd-numbered years. 3(3-0)
Representative literary masterpieces from Romanticism to Naturalism.
- 836. Twentieth Century Literature**
Winter of even-numbered years. 3(3-0)
Representative works of drama, prose and lyric poetry from Naturalism to World War II.
- 837. Contemporary Literature**
Spring of even-numbered years. 3(3-0)
Selections from German literature since 1945.
- 841. Old Norse**
Spring or odd-numbered years. 3(3-0) Approval of department.
Readings from Old Norse poetry and prose.
- 860. Graduate Reading Course**
Fall, Winter, Spring, Summer. 1 to 5 credits. May reenroll for a maximum of 15 credits. Approval of department.
Supervised reading course for investigation of special fields.
- 899. Master's Thesis Research**
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
- 981. Seminar**
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 18 credits.
A particular writer, a major work, or a limited theme is chosen for intensive analysis.
- 999. Doctoral Dissertation Research**
Fall, Winter, Spring, Summer. Variable credit. May reenroll for a maximum of 36 credits.

Hebrew **HEB**

101. Elementary Hebrew
Fall. 4(4-1) *Interdepartmental with the Department of Religious Studies.*

Introduction to the Hebrew language, with pronunciation and conversation practice, reading and writing, and basic grammatical analysis of biblical and modern Hebrew.

102. Elementary Hebrew
Winter. 4(4-1) *HEB 101. Interdepartmental with the Department of Religious Studies.*

Continuation of HEB 101.

103. Elementary Hebrew
Spring. 4(4-1) *HEB 102. Interdepartmental with the Department of Religious Studies.*

Continuation of HEB 102.

201. Intermediate Hebrew
Fall. 4(4-1) *HEB 103. Interdepartmental with the Department of Religious Studies.*

Systematic review of grammar, oral practice and reading of modern pointed and unpointed texts. Root-finding skills and dictionary exercises.

202. Intermediate Hebrew
Winter. 4(4-1) *HEB 201. Interdepartmental with the Department of Religious Studies.*

Continuation of HEB 201.

203. Intermediate Hebrew
Spring. 4(4-1) *HEB 202. Interdepartmental with the Department of Religious Studies.*

Continuation of HEB 202. Primarily unpointed Hebrew texts and newspapers.

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) *JAP 101.*

Continuation of JAP 101.

103. Elementary Japanese
Spring. 4(4-1) *JAP 102.*

Continuation of JAP 102.

201. Second-Year Japanese
Fall. 3(3-0) *JAP 103.*

Reading and discussion of a broad range of cultural materials including expository and literary texts from the Japanese-speaking world. Further development of language skills.

202. Second-Year Japanese
Winter. 3(3-0) *JAP 201.*

Reading and discussion of a broad range of cultural materials including expository and literary texts from the Japanese-speaking world. Further development of language skills.

203. Second-Year Japanese
Spring. 3(3-0) *JAP 202.*

Reading and discussion of a broad range of cultural materials including expository and literary texts from the Japanese-speaking world. Further development of language skills.

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. 1 to 6 credits.
May reenroll for a maximum of 18 credits. 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.

250. Animal Communication and Language
Fall. 3(3-0)

Comparison of animal systems of communication in relation to the structural design of human language; types of signals and their content compared; development of human language compared with development of communication in animals.

280. Introduction to Sociolinguistics
(320.) Winter. 4(4-0) *Not open to students with credit in LIN 415.*

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
Winter. 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.

415. Sociolinguistics Topics
Winter. 4(4-0) *Juniors or approval of department. Not open to students with credit in LIN 280.*

Linguistic choices among different styles, dialects, and languages as socio-psychological symbols. Communicative competence, subjective speech evaluations, social dialects, socially motivated language change.

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
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. 4(4-0) *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
Fall, Winter, Spring. 3(3-0)

Individual projects demonstrating ability to do independent research.

808. Foundations of Modern Linguistics
Fall of even-numbered years. 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.

Descriptions – Linguistics and Germanic, Slavic, Asian and African Languages

of

Courses

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.

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. 1 to 6 credits. May reenroll for a maximum of 16 credits. Approval of instructor.

Supervised study, reading, and research in specialized areas of linguistics.

861. Second Language Acquisition

Spring. 3(3-0) LIN 401.

Research and general theories; universals; personal, social, neurolinguistic, and other factors influencing second and foreign language acquisition/learning; comparisons with first language acquisition; methods of research.

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

Fall 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. Master's Thesis Research

Fall, Winter, Spring, Summer. Variable credit. Approval of instructor.

999. Doctoral Dissertation Research

Fall, Winter, Spring. Variable credit. Approval of instructor.

Russian

RUS

Students who have had high school work in the foreign language in which they wish to continue their studies must take a placement examination in that language. Placement in the appropriate course is determined by the results of this examination. University credit is not given for courses waived by performance on the placement examination.

101. Elementary Russian

Fall, Winter, Spring, Summer. 4(4-1) May not receive credit for both RUS 101 and RUS 111, RUS 112.

Fundamentals of grammar, syntax, and pronunciation with graded readings. RUS 111 plus RUS 112 are the equivalent of RUS 101.

102. Elementary Russian

Fall, Winter, Spring, Summer. 4(4-1) RUS 101. May not receive credit for both RUS 102 and RUS 113, RUS 114.

Continuation of RUS 101. RUS 113 plus RUS 114 are the equivalent of RUS 102.

103. Elementary Russian

Fall, Winter, Spring, Summer. 4(4-1) RUS 102. May not receive credit for both RUS 103 and RUS 115, RUS 116.

Continuation of RUS 102. RUS 115 plus RUS 116 are the equivalent of RUS 103.

111. Elementary Russian

Fall. 2(2-1) May not receive credit for RUS 111 and RUS 101.

Fundamentals of grammar, syntax and pronunciation with graded readings. RUS 111 plus RUS 112 are the equivalent of RUS 101.

112. Elementary Russian

Winter. 2(2-1) RUS 111. May not receive credit for RUS 112 and RUS 101.

Continuation of RUS 111. RUS 111 plus RUS 112 are the equivalent of RUS 101.

113. Elementary Russian

Spring. 2(2-1) RUS 112 or RUS 101. May not receive credit for RUS 113 and RUS 102.

Continuation of RUS 112. RUS 113 plus RUS 114 are the equivalent of RUS 102.

114. Elementary Russian

Fall. 2(2-1) RUS 113. May not receive credit for RUS 114 and RUS 102.

Continuation of RUS 113. RUS 113 plus RUS 114 are the equivalent of RUS 102.

115. Elementary Russian

Winter. 2(2-1) RUS 114 or RUS 102. May not receive credit for RUS 115 and RUS 103.

Continuation of RUS 114. RUS 115 plus RUS 116 are the equivalent of RUS 103.

116. Elementary Russian

Spring. 2(2-1) RUS 115. May not receive credit for RUS 116 and RUS 103.

Continuation of RUS 115. RUS 115 plus RUS 116 are the equivalent of RUS 103.

201. Intermediate Russian

Fall, Winter, Spring. 4(4-0) RUS 103.

Reading and discussion of a broad range of cultural materials including expository and literary texts from the Russian-speaking world. Further development of language skills.

202. Intermediate Russian

Fall, Winter, Spring. 4(4-0) RUS 201.

Reading and discussion of a broad range of cultural materials including expository and literary texts from the Russian-speaking world. Further development of language skills.

203. Intermediate Russian

Fall, Winter, Spring. 4(4-0) RUS 202.

Reading and discussion of a broad range of cultural materials including expository and literary texts from the Russian-speaking world. Further development of language skills.

241. Masterpieces of Russian Literature in English Translation

Fall. 3(3-0) Knowledge of Russian not required.

Issues confronting the individual within a society. Selections are from the finest prose masterpieces of mid-nineteenth century, including Pushkin, Gogol, Turgenyev, early Dostoevsky.

242. Masterpieces of Russian Literature in English Translation

Winter. 3(3-0) Knowledge of Russian not required.

Issues confronting people and their perception of God. Selections are from the finest prose masterpieces of late nineteenth century, including Dostoevsky, Tolstoy, Chekhov.

243. Masterpieces of Russian Literature in English Translation

Spring. 3(3-0) Knowledge of Russian not required.

Issues of conscience and courage in the twentieth century. Selections are from the finest prose masterpieces of post-revolutionary twentieth century, including Sholokhov, Bulgakov, Solzhenitsyn.

299. Special Projects

Fall, Winter, Spring, Summer. 1 to 12 credits. May reenroll for a maximum of 12 credits. Approval of department.

Work in areas outside regular course offerings.

301. Introduction to Russian Literature

Fall. 3(3-0) RUS 203 or approval of department.

Selections from representative works of major Russian authors, with concentration on the nineteenth century. Familiarization with essential Russian literary terminology.

302. Introduction to Russian Literature

Winter. 3(3-0) RUS 301.

Continuation of RUS 301.

303. Introduction to Russian Literature

Spring. 3(3-0) RUS 302.

Continuation of RUS 302.

321. Advanced Composition and Conversation

Fall. 3(3-0) RUS 203.

Review of finer points of grammar. Oral reports, tape recordings, intensive class discussion. Written exercises, translations into Russian, compositions.

322. Advanced Composition and Conversation

Winter. 3(3-0) RUS 321.

Continuation of RUS 321.

323. Advanced Composition and Conversation

Spring. 3(3-0) RUS 322.

Continuation of RUS 322.

325. Russian Civilization and Culture

Fall. 3(3-0) RUS 203

Cultural heritage of the Russian people. Readings on history, geography, the arts, religion, ideologies.

- 326. Russian Civilization and Culture**
Winter. 3(3-0) RUS 203.
Continuation of RUS 325.
- 327. Russian Civilization and Culture**
Spring. 3(3-0) RUS 203.
Continuation of RUS 326.
- 341. Alexander Solzhenitsyn and the Russian Literary Tradition in English Translation**
Fall. 3(3-0) Knowledge of Russian is not required.
Reading of the principal works of Alexander Solzhenitsyn with inquiry into their literary and philosophical antecedents, especially Dostoevsky and Tolstoy.
- 401. Russian Literature Before 1917**
Fall of odd-numbered years. 3(3-0)
RUS 303 or RUS 327.
Major literary movements, authors, and works from the Kievan time to 1917.
- 402. Russian Literature Before 1917**
Winter of even-numbered years. 3(3-0)
RUS 401.
Continuation of RUS 401.
- 403. Russian Literature Before 1917**
Spring of even-numbered years. 3(3-0)
RUS 402.
Continuation of RUS 402.
- 410. Russian Reading Skills**
Fall, Winter, Spring, Summer. 5(5-0)
RUS 101 or graduate students or approval of department.
Designed for those in scientific or other fields who wish to be able to read scholarly material. An intensive presentation of Russian grammar with emphasis on those features and techniques necessary for reading and translation.
- 411. Russian Reading Skills**
Fall, Winter, Spring, Summer. 5(5-0)
RUS 103 or RUS 410 and approval of department.
Reading and translation of works in the student's field of interest. Completion of RUS 410 and RUS 411 with a 3.0 or better will satisfy the Ph.D. reading requirement in most departments.
- 425. Contemporary Russian Literary Language**
Fall. 3(3-0) RUS 323.
Description and analysis of contemporary Russian literary language, its phonology, morphology and syntax. Designed especially for future teachers of Russian.
- 426. Contemporary Russian Literary Language**
Winter. 3(3-0) RUS 425 or approval of department.
Continuation of RUS 425.
- 427. Contemporary Russian Literary Language**
Spring. 3(3-0) RUS 426 or approval of department.
Continuation of RUS 426.
- 431. Russian Literature Since 1917**
Fall of even-numbered years. 3(3-0)
RUS 303 or RUS 326.
Literary schools and authors in Russia after 1917. Readings in the works of Gorky, Mayakovsky, Alexei Tolstoy, Sholokhov, Pasternak and others.
- 432. Russian Literature Since 1917**
Winter of odd-numbered years. 3(3-0)
RUS 303 or RUS 326.
Continuation of RUS 431.
- 433. Russian Literature Since 1917**
Spring. 3(3-0) RUS 303 or RUS 326.
Continuation of RUS 432.
- 499. Special Projects**
Fall, Winter, Spring, Summer. 1 to 8 credits. May reenroll for a maximum of 18 credits. Approval of department.
Work in areas outside regular course offerings.
- 800. Teaching Methods of Russian in College**
Fall, Winter, Spring. 0 to 3 credits.
Graduate teaching assistant.
Supervised teaching of college classes in Russian.
- 801. Slavic Bibliography and Research Methods**
Fall of odd-numbered years. 3(3-0)
Bibliographies of Slavic literature and languages. The library and the utilization of its resources. Principles of bibliographic compilation and research techniques in Russian Literature and linguistics.
- 815. Russian Literature Before 1800**
Fall of even-numbered years. 3(3-0)
Origin and development of Russian literature up to 1800. Emphasis on major works and authors of the period.
- 817. Nineteenth Century Russian Prose I**
Fall of odd-numbered years. 3(3-0)
Pushkin and Chekhov's search for a modern literary expression.
- 818. Nineteenth Century Russian Prose II**
Winter of even-numbered years. 3(3-0)
Gogol and Turgenev: a study of contrasting techniques and temperments.
- 828. Introduction to Old Church Slavic**
Fall of even-numbered years. 3(3-0)
Basic knowledge of Russian or another Slavic language.
Grammatical structure of the first written Slavic language accompanied by readings from the canonical Old Church Slavic texts.
- 829. Development of Old Church Slavic and Russian**
Winter of odd-numbered years. 3(3-0)
RUS 828.
Historical phonology and morphology of Old Church Slavic compared to that of Russian. The relation of both languages to Proto-Slavic and Proto-Indo-European. Readings of selected Old Church Slavic and Old Russian texts.
- 830. Development of Modern Slavic Languages**
Spring of odd-numbered years. 3(3-0)
RUS 829.
A survey of the principal modern Slavic languages in historical perspective. The development of their phonological and grammatical features from Proto-Slavic and in relation to Old Church Slavic.
- 832. Russian Drama Before 1859**
Winter of odd-numbered years. 3(3-0)
Origin and development of Russian drama. Analysis of major plays by Fonvizin, Griboyedov, Pushkin, Lermontov and Gogol.
- 835. Russian Poetics**
Fall of odd-numbered years. 3(3-0)
The development of literary genres, prosody, and versification.
- 836. Nineteenth Century Russian Poetry**
Winter of even-numbered years. 3(3-0)
RUS 835 or approval of department.
Trends and styles in 19th century Russian poetry up to 1890. Emphasis on major poetry by Zhukovsky, Batyushkov, Pushkin, Baratynsky, Yazykov, Tyutchev, Lermontov, Tolstoy, Fet, Nekrasov, and Solovyev.
- 837. Twentieth Century Russian Poetry**
Spring of even-numbered years. 3(3-0)
RUS 836 or approval of department.
Theory and practice of the Symbolists, Acmeists, Futurists and the Social Realists.
- 851. Russian Literary Criticism, 20th Century**
Winter of odd-numbered years. 3(3-0)
Aestheticism, Transcendentalism and Socialist Realism.
- 854. Russian Phonology and Morphology**
Winter of even-numbered years. 3(3-0)
LIN 401.
Linguistic description of the phonological and morphological structure of Modern Russian: phonemes and their allophones; morphological classes; morphophonemics.
- 855. Russian Syntax**
Spring of even-numbered years. 3(3-0)
RUS 854.
Survey of syntactic phenomena in modern Russian. Basic clause, phrase, and sentence structures and their interrelations. Syntactic classes and their membership. The functions of Russian cases.
- 856. Twentieth Century Russian Prose I**
Winter of even-numbered years. 3(3-0)
Modernistic trends in Russian prose before 1917.
- 857. Twentieth Century Russian Prose II**
Spring of even-numbered years. 3(3-0)
Selected works by Bunin, Pasternak and Sholokhov.
- 859. Twentieth Century Russian Prose IV**
Spring of odd-numbered year 3(3-0)
'Samizdat' works of Russian dissident writers.
- 860. Graduate Reading Course**
Fall, Winter, Spring. 1 to 5 credits. May reenroll for a maximum of 15 credits. Approval of department.
Supervised reading course for investigation of special fields in Russian literature.
- 899. Master's Thesis Research**
Fall, Winter, Spring. Variable credit.
Approval of department.

of
Courses

981. Seminar in Slavic Studies
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 18 credits.
A particular writer, a major work, or a limited theme is chosen for intensive analysis.

999. Doctoral Dissertation Research
Fall, Winter, Spring, Summer. Variable credits. May reenroll for a maximum of 36 credits.

LYMAN BRIGGS SCHOOL

LBS

College of Natural Science

Lyman Briggs School has a six term sequence in Chemistry and Physics that may be completed to fulfill the School's requirements in Chemistry and Physics. This sequence involves Lyman Briggs School 161 through 163L and Lyman Briggs School 261 through 263L. It is a coordinated sequence that is comparable to certain courses in the Department of Chemistry and the Department of Physics. Any student who plans to complete only part of the sequence must contact the faculty coordinator of either the Chemistry or the Physics portion.

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

Rational and real numbers, functions, inverse functions, polynomials, rational functions, exponential and logarithmic functions, trigonometric functions and their inverses.

112. Calculus I
Fall, Winter, Spring. 5(5-0) LBS 111 or MTH 109; LBS 124 concurrently. Not open to students with credit in MTH 112.

Theory and applications of derivatives to polynomials, rational functions, trigonometric functions and their inverses, logarithmic and exponential functions. Definition and properties of the definite integral. Numerical approximations of definite integrals.

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

Further applications of the derivative to related rates, approximations including Newton's method and graphing. The mean value theorem. Integration techniques, applications, and improper integrals. The conics and polar coordinates.

124. APL-Computer Programming for Scientists
Fall, Winter, Spring. 3(3-0) LBS 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 operation of time-shared computers.

131. Science and Technology Studies: Writing I
Fall, Winter, Spring. 4(4-0)

Instruction and practice in expository writing. Paper and report topics on science, technology and human values in Western civilization.

For prerequisite purposes the introductory biology sequence LBS 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) LBS 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. LBS 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.

160. Physics-Elementary Concepts
Winter. 1(2-0) LBS 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 LBS 111 concurrently; LBS 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) LBS 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) LBS 161; LBS 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) LBS 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) LBS 162; LBS 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) LBS 163 or concurrently or approval of instructor.
Continuation of LBS 161.

216. Calculus III
Fall, Winter, Spring. 5(5-0) LBS 113.

Series, sequences, power series including Taylor series, and indeterminate forms. Graphing and vector geometry in 3-spaces. Differential calculus of functions of several variables through Taylor series and extreme points.

217. Calculus IV
Fall, Winter, Spring. 5(5-0) LBS 216. Credit may not be earned in both LBS 217 and MTH 310.

Double and triple integrals and their applications. Line integrals. Ordinary differential equations of first order and linear second order equations, including series solutions. Numerical methods for single and Simultaneous equations.

232. Science and Technology Studies: Writing II
Fall, Winter, Spring. 4(4-0) LBS 131; sophomores.

A writing course emphasizing investigative expository papers. Paper and report topics drawn from readings in the history and philosophy of science and technology, and other areas of science technology studies.

233. Special Topics in Third Culture Rhetoric
Fall, Winter, Spring. 1 to 2 credits. May reenroll for a maximum of 6 credits. LBS 132.

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

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

242. Biology III
Fall, Winter. 4(3-3) LBS 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.

256. Energy Consumption and Environmental Quality (N)
Spring. 3(3-0) Interdepartmental with and administered by Physics.

The role of energy as a fundamental pollutant will be discussed along with the availability of fossil energy sources. Limitations on the safe utilization of both fossil and nuclear energy will also be considered.