

Descriptions — Electrical Engineering and Systems Science

of Courses

829. **Linear Multivariable Control Systems**
Winter. 4(4-0) SYS 826, STT 441, SYS 413.

Linear continuous time and discrete time multivariable control systems; state and output feedback; observers; eigenstructure placement; asymptotic tracking; optimal linear control; stochastic processes; Kalman filter; LQG optimal control.

835. **Static Optimization Methods**
Summer. 4(4-0) MTH 424.

Linear and nonlinear optimization examples and applications; Kuhn-Tucker theory; saddle point optimality conditions; algorithms for problems with constraints; unconstrained optimization; introduction to search methods.

841. **Optimization of Urban Traffic Flow**

Fall of even-numbered years. 3(3-0) C E 346, STT 351 or approval of department. Interdepartmental with and administered by Civil Engineering.

Traffic flow models used in design of computerized traffic control systems. Optimal freeway ramp metering algorithms. Offline and online optimization of traffic signal timing.

843. **Ecosystem Analysis, Design and Management**

Spring. 3(3-0) SYS 442 or ZOL 404. Interdepartmental with the Department of Zoology.

Groups of students from various biological and nonbiological disciplines will synthesize and analyze models of selected biological systems. Project should yield information relevant to solution of contemporary ecological problems.

847. **Communication Engineering**

Fall. 4(4-0) E E 457. Interdepartmental with and administered by Electrical Engineering.

Communications in probabilistic channels. Measures in system performance. Channel models. Optimal reception of analog and digital signals. Coding for various channel models. Detection of targets. Signal solution.

848. **Communication Theory**

Spring. 3(3-0) SYS 863. Interdepartmental with and administered by Electrical Engineering.

Hypothesis testing, decision theory and parameter estimation in communications and signal processing. Optimal filtering techniques. Communication in non-white noise. Communication in non-Gaussian noise. Quantum detection theory.

851. **Modeling of Engineering Systems I**
Fall. 3(3-0) M E 458 or E E 415. Interdepartmental with and administered by the Department of Mechanical Engineering.

Modeling of engineering components and dynamic systems; mechanical, electrical, fluid, thermal, and transducer effects. Linear state-space responses, impedance methods. Simulation of linear models. Design project.

852. **Modeling of Engineering Systems II**

Winter. 3(3-0) M E 851. Interdepartmental with and administered by the Department of Mechanical Engineering.

Continuation of M E 851. Modeling of nonlinear dynamic systems. Applications of phase-plane and linearization methods. Simulation of nonlinear systems. Design project.

863. **Analysis of Stochastic Systems**

Winter. 3(3-0) SYS 826, STT 441, MTH 424. Interdepartmental with Electrical Engineering.

Analysis and modeling of stochastic signals and systems. Topics include stochastic models, description of processes, stationarity, ergodicity, correlation and power spectrum, linear stochastic systems, harmonic analysis, Markov processes, Poisson processes.

880. **Digital Signal Processing**

Winter. 3(3-0) E E 456 or STT 441. Interdepartmental with and administered by Electrical Engineering.

Discrete time signals and systems, random discrete time signals. Basic principles of estimation theory, spectral estimation. Digital filter design techniques.

899. **Master's Thesis Research**

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

960. **Nonlinear Control**

Fall of even-numbered years. 3(3-0) SYS 827, M E 458 or E E 413. Interdepartmental with and administered by the Department of Mechanical Engineering.

Input-output stability of feedback systems; describing function methods; relay control; stabilizing controllers; design techniques selected from variable structure, high-gain, geometric, Lyapunov-based, vibration, feedback linearization and tracking controls.

961. **Optimal Control Theory**

Fall of odd-numbered years. 3(3-0) SYS 829, MTH 424.

Optimal control, performance measures, principle of optimality, dynamic programming, Hamilton-Jacobi-Bellman equation, variational approach, constrained extrema, Pontryagin principle, necessary conditions, solution techniques, singular cases.

963. **Dynamic System Identification**

Winter of odd-numbered years. 3(3-0) SYS 863.

Review of stochastic system modeling; identifiability; canonical forms; spectral factorization; least squares and maximum likelihood identification methods and their properties, consistent estimators; closed-loop system identification, recursive algorithms; experiment design.

964. **Large Scale Dynamic Systems**

Spring of even-numbered years. 3(3-0) SYS 827, SYS 829.

Topics will be drawn from: model reduction and aggregation; stability of interconnected systems; multiple time scale decomposition; decentralized control; hierarchical control.

965. **Adaptive Control**

Spring of odd-numbered years. 3(3-0) SYS 827, SYS 829, SYS 963.

Model reference adaptive control in continuous time and discrete time; Lyapunov and hyperstability approaches; adaptive observers; self tuning regulators; design using pole-zero assignments, minimum variance control and LQG control.

999. **Doctoral Dissertation Research**

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

ENGINEERING

EGR

College of Engineering

150. **Engineers and the Engineering Profession**

Spring. 3(3-0)

Overview of the engineering profession. Historical background. Engineering specialties. Engineers at work. Professionalism and ethics. Communication skills. Future trends.

200. **Technology, Society and Public Policy**

Winter. 3(3-0) Twelve credits from natural science or engineering. Interdepartmental with the Department of Natural Science.

Description and analysis of certain current technologies and their consequences; exploration of avenues for assessing such consequences as an aid to formulation of public policy.

290. **Selected Topics**

Fall, Winter, Spring, Summer. 1 to 3 credits May reenroll for a maximum of 6 credits if different topics are taken.

Experimental course developments or special topics appropriate for freshmen and sophomores.

344. **Engineering Cooperative Education**

Fall, Winter, Spring, Summer. Zero credits. [3 credits-See page A-1, item 3.] May reenroll for a maximum of ten terms. Employment assignment approved by College of Engineering.

Pre-professional employment in industry and government related to student's major.

390. **Value Engineering**

Fall. 4(4-0) Engineering Arts juniors, approval of department.

The basis of value engineering is function, value, and a group of special techniques developed to aid in isolating and identifying problems created by our complex society and technology.

401. **Engineering and Public Policy**

Spring. 3(3-0) Seniors or approval of department. Interdepartmental with the Department of Natural Science.

Sociotechnical assessment of impact of technology on society, with analysis of the role of engineering and natural science in contributing to public policy formulation.

ENGLISH

ENG

College of Arts and Letters

091. **English for Foreign Students—Structures**

Fall, Winter, Spring, Summer. Zero credits. [3(5-0) See page A-1 item 3.] English language proficiency examination.

Explanation and intensive practice of basic grammatical structures of English. Students are tested and then placed in small groups, from beginning to advanced, depending on their need.

- 092. English for Foreign Students—Speaking and Listening**
Fall, Winter, Spring, Summer. Zero credits. [3(5-0) See page A-1 item 3.] English language proficiency examination.
Intensive speaking and listening practice of spoken English in small groups (determined by proficiency). For beginners, practice is largely drill. Advanced groups use drill, films, discussion, and practical conversations.
- 093. English for Foreign Students—Language Laboratory**
Fall, Winter, Spring, Summer. Zero credits. [3(5-0) See page A-1 item 3.] English language proficiency examination.
Language laboratory practice in small groups (determined by proficiency). Beginnings review and supplement ENG 091, ENG 092. Advanced groups use carefully prepared lectures, speeches, and presentations to practice structures and vocabulary.
- 094. English for Foreign Students—Reading**
Fall, Winter, Spring, Summer. Zero credits. [3(5-0) See page A-1 item 3.] English language proficiency examination.
Intensive and extensive reading in small groups (determined by proficiency). Beginners emphasize vocabulary development and practice in basic structures. Advanced classes include reading skills, wider reading, and specialized vocabulary.
- 095. English for Foreign Students—Writing**
Fall, Winter, Spring, Summer. Zero credits. [3(5-0) See page A-1 item 3.] English language proficiency examination.
Frequent controlled and free writing in small groups to reduce errors and practice using structures and vocabulary to express ideas. Advanced classes include writing styles used in academic course work.
- 101. Responses Through Writing**
Fall, 4(4-0) Arts and Letters Freshmen only. Students must enroll in and complete ENG 102 satisfactorily to make a substitution for the American Thought and Language requirement.
A writing workshop that concentrates on the students' personal writing voice and on their responses to the things, people, and institutions central to their experience.
- 102. Writing and Composing**
Winter, 5(5-0) ENG 101; Arts and Letters Freshmen only.
A continuation of ENG 101 that develops the emphases of ENG 101 and encourages students to write in more public and objective forms—narrative, critical analysis, and issue-oriented essays.
- 104. Writing for Science Majors**
Fall, 3(3-0) Satisfactory grade in English proficiency exam; College of Natural Science majors. Interdepartmental with the Department of American Thought and Language.
Writing workshop for science students that develops and refines composition ability.
- 105. The Scientist as Writer**
Winter, 3(3-0) ENG 104. Interdepartmental with the Department of American Thought and Language.
Study of various types of writing by scientists—fiction, poetry, and autobiography as well as professional papers and books. Students will write frequently about the readings.
- 106. Introductory Scientific Writing**
Spring, 3(3-0) ENG 105. Interdepartmental with the Department of American Thought and Language.
Writing of popular essays, scientific papers and reports, and other papers related to science.
- 200H. Honors Work**
Fall, Winter, Spring, 1 to 16 credits. Approval of department.
- 201. Nature of Language**
Fall, Winter, Spring, Summer, 3(3-0)
Various aspects of language—phonology and orthography; morphology, semantics and the lexicon; syntax; and dialects—with special reference to American English.
- 205. Introduction to Shakespeare**
Fall, Winter, Spring, 3(3-0) Not applicable to major or minor requirements.
A study of selected plays illustrating the powers of England's greatest writer.
- 206. Forms of Literature: Fiction**
Fall, Winter, Spring, Summer, 3(3-0) Open to Freshmen.
Major forms of prose fiction, designed to reveal artistic problems met and solved by these forms. Prepares students for advanced literary study by acquainting them with the conventions of various literary forms, by providing a critical vocabulary and by furnishing experience in reading and writing critical evaluations of outstanding literary works from all historical periods.
- 207. Forms of Literature: Drama**
Fall, Winter, Spring, Summer, 3(3-0) Open to Freshmen.
Major forms of drama, designed to reveal artistic problems met and solved by these forms.
- 208. Forms of Literature: Poetry**
Fall, Winter, Spring, Summer, 3(3-0) Open to Freshmen.
Major forms of poetry, designed to reveal artistic problems met and solved by these forms.
- 210. Introduction to the Study of Literature I**
Fall, Winter, 4(4-0) English majors or prospective English majors.
Exploration of the major forms of literature, the aims and process of literary study, the cultural and personal functions of literature, and the role of literary study in the University.
- 211. Introduction to the Study of Literature II**
Winter, Spring, 4(4-0) ENG 210.
A continuation of ENG 210.
- 213. Writing Workshop**
Fall, Winter, Spring, Summer, 4(4-0) Completion of the American Thought and Language General Education requirement.
A writing workshop designed to help students improve their writing abilities. The course provides opportunities for students to write with different purposes in a variety of modes.
- 220. English from Greek and Latin Roots**
Fall, 3(3-0) Interdepartmental with and administered by Classical Languages.
Prefixes, roots, suffixes derived from Greek and Latin word elements used in formation of English words. Useful for improving vocabulary and spelling.
- 226. Introduction to Creative Writing**
Fall, Winter, Spring, 4(4-0) Completion of American Thought and Language General Education requirement.
Writing of fiction, drama, creative nonfiction, and poetry, with ample practice in several. Some reading of professional contemporary writing. Course organized as workshop, designed for beginning writers.
- 228A. Fiction Writing**
Fall, Winter, 4(4-0) Written approval of instructor based on manuscripts submitted.
The writing of short fiction. Classes and individual conferences.
- 228B. Fiction Writing**
Winter, Spring, 4(4-0) Written approval of instructor based on manuscripts submitted.
The writing of fiction. Classes and individual conferences.
- 229. Poetry Writing**
Fall, Winter, Spring, 4(4-0) Written approval of instructor based on manuscripts submitted.
The writing of poetry. Classes and individual conferences.
- 230. Non-fictional Imaginative Prose Writing**
Fall, Winter, Spring, 4(4-0) Written approval of instructor.
The writing of biography, autobiography, and personal essays. Classes and individual conferences.
- 241. Introduction to Popular Culture (A)**
Fall, Winter, 3(3-0) Freshmen or Sophomores.
Generic and thematic study of the arts and artifacts of popular culture with particular emphasis on writing about the popular culture of contemporary American society.
- 242. Popular Literary Forms**
Fall, Winter, Spring, 3(3-0) May reenroll for a maximum of 6 credits. Freshmen or Sophomores.
Study of a particular genre of popular literature (e.g., science fiction, western, gothic) through reading, discussion, and writing, and with attention to the genre's development in media other than print.
- 250. Major Themes in English and American Literature**
Fall, Winter, Spring, Summer, 3(3-0) May reenroll for a maximum of 6 credits.
A particular theme of significant works of English and American writers in a relevant social or cultural context. Reading, discussion and writing are essential activities.
- 302. Introduction to English Language Studies**
Fall, Winter, Spring, Summer, 4(4-0)
The English language, including such topics as social and regional dialects, sounds, grammar, usage, psycholinguistics and semantics. Attention is given to practical applications.
- 303. Grammar and Usage**
Winter, Spring, 4(4-0) Completion of the ATL requirement or approval of department.
Survey of the history and philosophy behind standards of correctness. Review of traditional grammatical terms. Intensive study and practice of usage rules.

**Descriptions — English
of
Courses**

- 310. Writing for Prelaw Students**
(J M 310.) Fall, Winter. 4(4-0) ENG 213 or approval of department.
Provides a step-by-step process for organizing and writing a legal argument. Emphasizes a logical, clear, and persuasive style.
- 312. Advanced Workshop in Expository Writing**
Winter, Spring. 4(4-0) ENG 213 or approval of department.
Directed practice in the writing of clear, concise, and forceful expository prose, with special emphasis on practical writing tasks like the composing of summaries, reports, and position papers.
- 313. Scientific Writing**
Winter, Spring. 4(4-0) Science students or students with considerable background in the natural sciences.
Writing of papers, reports and essays.
- 327. Playwriting**
Winter, Spring. 4(4-0) May reenroll for a maximum of 8 credits. Written approval of instructor.
Basic elements of playwriting: dramatic action, exposition, plotting, characterization, dialogue, mood, and visual effects. Class work will also include discussion of plays.
- 328. Advanced Fiction Writing**
Fall, Spring. 4(4-0) May reenroll in ENG 328 and/or ENG 329 for a maximum of 12 credits. ENG 228B and written approval of instructor based on manuscripts submitted.
Advanced work in the writing of fiction. Classes and individual conferences.
- 329. Advanced Poetry Writing**
Winter, Spring. 4(4-0) May reenroll in ENG 328 and/or ENG 329 for a maximum of 12 credits. ENG 229 and written approval of instructor based on manuscripts submitted.
Advanced work in the writing of poetry. Classes and individual conferences.
- 330. Composition for Secondary English Teachers**
Fall, Winter. Summer of odd-numbered years. 4(3-4) Sophomore English Education majors or minors or written approval of department.
Writing practice in various modes such as personal narrative and description, the familiar essay, drama, poetry, and fiction. Exercises in creative dramatics. Discussion of the process of composing and the teaching of oral and written composition in junior and senior high schools. Will participate in field experience.
- 331. Literature and the Adolescent**
Winter, Spring. Summer of even-numbered years. 4(3-4) Sophomore English Education majors or minors and 8 credits of literature or written approval of department.
Extensive reading of literature appropriate for secondary school students. Discussion of formal literature programs in relation to student's reading needs. Methods of analyzing literature and establishing common and individualized reading programs. Will participate in field experience.
- 332. English Field Experience Internship**
Fall, Winter, Spring, Summer. 1 to 5 credits. May reenroll for a maximum of 10 credits. Juniors, approval of instructor.
Supervised field experience in English.
- 340. Studies in Popular Culture**
Spring. 3(3-0) May reenroll for a maximum of 9 credits. Sophomores.
Popular Cultures of the United States and England from the 19th Century to the present.
- 342. Women and Literature**
Fall, Winter, Spring. 3(3-0) Sophomores.
The feminine sensibility as revealed in literary themes and characterizations, through a study of poetry and fiction written by women authors.
- 343. Regional American Literature**
Fall. 3(3-0) May reenroll for a maximum of 9 credits if different topics are taken. Sophomores.
Representative works of a particular geographical region as expressions of its distinctive cultural, historical, and literary characteristics, e.g., in a given term, the Middle West, South, New England, or Far West.
- 344. Jewish-American Literature (A)**
Spring. 4(4-2) Sophomores.
The Jewish-American experience as reflected in fiction, drama, poetry, essay, autobiography, film.
- 347. Literature and Film**
Fall, Winter, Spring. 4(2-4) Sophomores.
Introduction to the relationship between film and literature through study of theme, style, and structure in selected film masterpieces from different periods and cultures.
- 349. Afro-American Literature I**
Fall. 4(4-0) Sophomores.
Chronological survey of the literature and historical experience of Black America from the African oral tradition to Reconstruction. Literary texts complemented by readings in history and politics. Several film screenings.
- 350. Afro-American Literature II**
Winter. 4(4-0) Sophomores.
Chronological survey of the literature and historical experience of Black America from Reconstruction to the present. Literary texts complemented by readings in history, politics, autobiography. Several film screenings.
- 351. English Literature I**
Fall. 4(4-0) Sophomore English majors or approval of department.
Survey of English literature to Milton. Major representative writers and literary forms of the specified period.
- 352. English Literature II**
Winter. 4(4-0) Sophomore English majors or approval of department.
Survey of English literature, Milton to Blake. Major representative writers and literary forms of the specified period.
- 353. English Literature III**
Spring. 4(4-0) Sophomore English majors or approval of department.
Survey of English literature, Blake to Hardy. Major representative writers and literary forms of the specified period.
- 360. World Literature in English**
Fall. 3(3-0) Interdepartmental with Linguistics and Oriental and African Languages.
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**
Winter. 3(3-0) Interdepartmental with and administered by Linguistics and Oriental and African Languages.
Significant and characteristic works of the Orient, the Middle East, and Africa in English translation.
- 362. Genres and Themes in World Literature**
Spring. 3(3-0) Interdepartmental with Linguistics and Oriental and African Languages.
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.
- 363. African Literature in English**
Spring of odd-numbered years. 3(3-0) Sophomores.
African literature from the oral tradition to the contemporary novel. Focus on breadth of African literary forms and preoccupations in works by Achebe, Head, Soyinka and others.
- 364. Canadian Literature and Culture**
Spring. 4(4-0) May reenroll for a maximum of 8 credits. Sophomores.
Canadian literature and culture in bicultural, historical and contemporary contexts.
- 365. Classic Myths and Literature**
Fall, Winter, Spring. Summer of even-numbered years. 3(3-0) Sophomores.
Greek myths that have been wrought into later poetry, fiction, drama, painting, sculpture, and music.
- 366. Literary Interpretation of the Bible**
Fall, Winter. 3(3-0) Sophomores.
Literary study of the Old and New Testaments, with emphases upon the ideas and events which figure prominently in English and American literature.
- 380. Masterpieces of American Literature**
Fall, Winter, Spring, Summer. 3(3-0) Sophomores. Not applicable to major or minor requirements.
Selected masterpieces of American literature.
- 381. Masterpieces of English Literature**
Fall, Winter, Spring, Summer. 3 credits. Sophomores. Not applicable to major or minor requirements.
Selected masterpieces of English literature.
- 382. Masterpieces of Contemporary Literature**
Fall, Winter, Spring, Summer. 3(3-0) Sophomores. Not applicable to major or minor requirements.
Selected masterpieces of contemporary literature.
- 399. Perspectives on Literature and English Language**
Fall, Winter, Spring, Summer. 4(4-0) May reenroll for a maximum of 12 credits if different topics are taken. Sophomores.
A rich variety of perspectives on literature and English language for majors and non-majors. Approach and content differs with each section.

- 400. Tutorial**
Fall, Winter, Spring, Summer. 1 to 5 credits. May reenroll for a maximum of 10 credits. Approval of department.
Reading, discussion, and writing under the guidance of a faculty member.
- 400H. Honors Work**
Fall, Winter, Spring. 1 to 5 credits. May reenroll for a maximum of 10 credits. Approval of departmental Honors College adviser.
Open to particularly able students. Consists of individually supervised study of a phase of literary history.
- 403. The Development of Modern English**
Winter. 4(4-0) Sophomores.
Historical development of the language; native and foreign elements; changes in inflections, pronunciation, vocabulary, meaning.
- 404. American English**
Fall. 4(4-0) Sophomores.
Characteristic American dialects, standard and non-standard, with analysis of usage and explanations of origins and differences.
- 407. Methods of Teaching English as a Second Language**
Fall. 4(4-0) ENG 201 or ENG 302 or approval of department.
Survey and demonstration of theories, methods and techniques for teaching English, both here and abroad, to school age children and adults who are not native speakers of English.
- 408A. Problems in the Teaching of Reading**
Fall, Winter, Spring. 5(3-5) ENG 330 or ENG 331, ENG 302.
Instruction and field experience in the teaching of reading for prospective English teachers.
- 410. Chaucer**
Fall, Winter. 4(4-0) Juniors, 8 credits of literature.
Chaucer's poetry, especially "The Canterbury Tales". Read in Middle English.
- 411. Spenser**
Spring of even-numbered years. 4(4-0) Juniors, 8 credits of literature.
A representative selection of Spenser's poetry with special emphasis on "The Faerie Queene".
- 412. Milton**
Winter, Spring. 4(4-0) Juniors, 8 credits of literature.
Milton's prose and poetry, especially "Paradise Lost".
- 421. Shakespeare: Representative Plays**
Fall, Winter, Spring, Summer. 4(4-0) Juniors, 8 credits of literature.
Plays chosen to represent the different periods of Shakespeare's career and the genres in which he wrote.
- 422. Shakespeare: Advanced Study**
Spring. 4(4-0) ENG 421 or ENG 426B or approval of instructor.
Intensive study of particular plays, poems, genres, or issues.
- 423. Writing: Style and Technique**
(JM 410.) Winter, Spring. 4(4-0) ENG 213 or approval of department.
Intensive individual and seminar instruction in advanced composition.
- 424. Conference Course in Advanced Writing**
Fall, Winter, Spring, Summer. 1 to 5 credits. May reenroll for a maximum of 10 credits. Written approval of instructor based on manuscripts submitted.
Intended for the student ready to pursue an advanced project in writing. Individual conferences.
- 425. Writing as a Profession**
Spring. 4(4-0) At least one creative writing course or approval of department.
Discussion of many questions and problems experienced by students interested in professional writing. A variety of panels and lectures by people who know the field.
- 426A. Comparative Drama**
Fall. 3(3-0) Juniors, 8 credits of literature.
Studies in the development of drama: classical and medieval.
- 426B. Comparative Drama**
Winter. 3(3-0) Juniors, 8 credits of literature.
Studies in the development of drama: Renaissance and seventeenth century.
- 426C. Comparative Drama**
Spring. 3(3-0) Juniors, 8 credits of literature.
Studies in the development of drama: neoclassical and romantic.
- 426D. Comparative Drama**
Winter. 3(3-0) Juniors, 8 credits of literature.
The development of drama: Ibsen to World War II.
- 426E. Comparative Drama**
Spring. 3(3-0) Juniors, 8 credits of literature.
The development of drama: World War II to the present.
- 431. Writing the Research Report**
Spring. 4(4-0) ENG 213 or approval of department.
Advanced methods and organization of written research reports will be taught by providing examples, exercises, and writing practice based on research submitted by the students.
- 434. Aesthetic Theory and Modernism**
Fall. 4(4-0) Juniors. Interdepartmental with History of Art, Linguistics and Oriental and African Languages, Romance Languages, and the School of Music, and the Department of Philosophy. Administered by the Department of Philosophy.
Problems, assumptions, and arguments of modern aesthetic theory examined in the context of debates over modernity and modernist artistic practice.
- 436. Comparative Fiction**
Fall. 3(3-0) May reenroll for a maximum of 9 credits. Juniors, 8 credits of literature.
Types of narrative and fiction in various literatures and periods. Specific course content varies each term.
- 439. Twentieth Century British Poetry**
Winter. 4(4-0) Juniors, 8 credits of literature.
Special emphasis on Hopkins, Hardy, Yeats, Auden and Thomas.
- 441. American Literature: Colonial and Revolutionary Period**
Fall of even-numbered years. 4(4-0) Juniors, 8 credits of literature.
Works of such writers as Bradstreet, Equiano, Franklin, Freneau, Taylor, Wheatley, and others.
- 442. American Literature: Early Romanticism**
Winter. 4(4-0) Juniors, 8 credits of literature.
Works of such writers as Cooper, Emerson, Fuller, Irving, Poe, Thoreau, and others.
- 443. American Literature: Later Romanticism**
Spring. 4(4-0) Juniors, 8 credits of literature.
Works of such writers as Dickinson, Douglass, Hawthorne, Melville, Stowe, Whitman, and others.
- 446. American Literature: Realism and Naturalism**
Fall, Winter, Spring. 4(4-0) Juniors, 8 credits of literature.
Rise and development of realism and naturalism as exemplified in the works of such writers as Chesnut, Chopin, Dreiser, James, Robinson, Twain, Wharton, and others.
- 447. Twentieth Century American Fiction**
Fall, Winter, Spring, Summer. 4(4-0) Juniors, 8 credits of literature.
Works of such writers as Cather, Faulkner, Fitzgerald, Hemingway, Wright, and others.
- 448. Twentieth Century American Poetry**
Fall. 4(4-0) Juniors, 8 credits of literature.
Works of such writers as Eliot, Frost, H.D., Hughes, Pound, Stevens, and others.
- 452. Contemporary British Literature**
Fall. 4(4-0) Juniors, 8 credits of literature.
Contemporary British fiction, drama, poetry; such writers as Sillitoe, Powell, Murdoch, Osborne, Fowles, Larkin, and others.
- 453. Contemporary American Poetry**
Spring. 4(4-0) Juniors, 8 credits of literature.
American poetry from WW II to present: such writers as Roethke, Lowell, Plath and others.
- 454. Contemporary American Fiction**
Winter. 4(4-0) Juniors, 8 credits of literature.
American fiction from WW II to present: such writers as Mailer, Ellison, Barth, Updike, O'Connor, Pynchon, and others.
- 455. Literature of the Early Renaissance**
Winter of odd-numbered years. 4(4-0) Juniors, 8 credits of literature.
Poetry, prose and non-Shakespearean drama of the sixteenth century.
- 456. Literature of the Later Renaissance**
Spring of even-numbered years. 4(4-0) Juniors, 8 credits of literature.
Some of the major literary works of 1600-1660.

**Descriptions — English
of
Courses**

460. The Age of Dryden and Pope
Fall. 4(4-0) Juniors, 8 credits of literature.

Literature of the Restoration and early eighteenth century, 1660-1744; Dryden, Pope, Swift, and others.

462. The Later Eighteenth Century
Spring. 4(4-0) Juniors, 8 credits of literature.

Fiction, other prose, and poetry from the mid-century to the early romantics.

465. The English Romantic Period
Fall. 4(4-0) Juniors, 8 credits of literature.

The beginnings of romanticism; Blake, Wordsworth and Coleridge.

466. The English Romantic Period
Winter. 4(4-0) Juniors, 8 credits of literature.

Continuation of ENG 465; Keats, Shelley, Byron.

467. Language and Culture
Fall, Spring. 4(4-0) Approval of department. Interdepartmental with and administered by the Department of Anthropology.

A survey exploring the interconnectedness of language and culture. Special areas to be emphasized include: Child Language Learning; Linguistic and Cultural Contact Phenomena; "Specialized" Languages, such as Cant, Argot, Trade Jargon, Lingua Franca; "Hybridization" and "Substratum"; Language and Cultural Change; a brief examination of Theories of Origins and of the Sapir-Whorf Hypothesis.

468. Nature of Myth
Winter. 3(3-0) Juniors, 8 credits of literature.

Myth in some of its theoretical aspects, with special reference to the mythical character of literature.

471. Victorian Studies
Spring. 4(4-0) Juniors, 8 credits of literature.

Selected readings from poets and essayists of the Victorian period.

477A. Comparative Epic
Fall. 3(3-0) Juniors, 8 credits of literature.

Two epics will be considered: "Odyssey" and the "Book of Job".

477B. Comparative Epic
Winter. 3(3-0) Juniors, 8 credits of literature.

Two epics will be considered: Dante's "Inferno" and Milton's "Paradise Lost".

477C. Comparative Epic
Spring. 3(3-0) Juniors, 8 credits of literature.

Two epics will be considered: "Beowulf" and the "Song of Roland".

479. Classical Christian Contributions to Literary Tradition
Spring of odd-numbered years. 3(3-0) Juniors, 8 credits of literature.

Development and influence of the ideas, forms, and motifs of the ancient world and Christianity in literature of the world.

480. Literary Criticism: Theory and Practice
Fall. 4(4-0) Juniors, 8 credits of literature.

A survey of literary theory; critical and historical approaches to literature.

481. Modern Critical Theory
Winter. 4(4-0) Juniors, 8 credits of literature.

An examination of the principal modern theories of literary criticism.

484. Literature and Psychology
Spring. 4(4-0) Juniors or approval of department. Interdepartmental with the Department of Psychology.

An application of psychological theory to the study of literature and an exploration of the ways in which literature enriches the theory which helps to illuminate it.

485. The English Novel Through the Eighteenth Century
Fall. 4(4-0) Juniors, 8 credits of literature.

Study of such writers as Richardson, Fielding, Smollett, Sterne, Austen, and others.

486. The English Novel in the Nineteenth Century
Winter, Spring. 4(4-0) Juniors, 8 credits of literature.

Study of such writers as Scott, Dickens, Thackeray, Eliot, Hardy and others.

487. The Modern English Novel
Fall, Winter, Spring. 4(4-0) Juniors, 8 credits of literature.

Study of such writers as Conrad, Ford, Joyce, Woolf, and others.

491H. Studies in Period
Winter of odd-numbered years. 4(4-0) May reenroll for a maximum of 8 credits. To receive credit, both ENG 491H and ENG 492H must be completed satisfactorily. Juniors, 8 credits of literature, approval of departmental Honors College adviser.

A two-term study of specific writers in relation to their age is provided by ENG 491H and ENG 492H.

492H. Studies in Period
Spring of odd-numbered years. 4(4-0) May reenroll for a maximum of 8 credits. To receive credit, both ENG 491H and ENG 492H must be completed satisfactorily. ENG 491H. Continuation of ENG 491H.

493H. Studies in Genre
Winter of even-numbered years. 4(4-0) May reenroll for a maximum of 8 credits. To receive credit, both ENG 493H and ENG 494H must be completed satisfactorily. Juniors, 8 credits of literature, approval of departmental Honors College adviser.

A two-term study of the conventions and techniques of a specific literary genre.

494H. Studies in Genre
Spring of even-numbered years. 4(4-0) May reenroll for a maximum of 8 credits. To receive credit both ENG 493H and ENG 494H must be completed satisfactorily. ENG 493H. Continuation of ENG 493H.

496H. Special Topics
Fall. 4(4-0) May reenroll for a maximum of 12 credits. Juniors, 8 credits of literature, approval of departmental Honors College adviser.

Intensive study of some particular author, theme, problem or other critical topic.

497H. Senior Honors Essay
Fall, Winter, Spring. 4 to 10 credits. May reenroll for a maximum of 10 credits. Seniors and approval of departmental honors adviser.

A substantial piece of writing under the direction of selected faculty.

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 German and Russian, and Romance Languages. 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.

499. Senior Proseminar
Spring. 4(4-0) Seniors, 8 credits of literature.

Intensive work in an area, problem or author. Students will work closely with the instructor in the preparation and evaluation of substantial research or critical papers.

The content of certain courses on both the 800-level and the 900-level may change from term to term, making possible a wide variety of course offerings. Students may enroll in such courses with authorized reenrollment provisions for more than one term or in more than one section during the same term, provided that duplication of content does not result. Brochures giving detailed information concerning all graduate courses to be offered during a given year are available in the English office throughout that academic year.

Courses numbered 900 or above (with the exception of 970 and 999) are doctoral seminars. Students desiring to enroll in these courses must obtain departmental approval at least before registration, but if possible before the pre-enrollment period.

800. History of the English Language
Fall of odd-numbered years. 3 credits. May reenroll for a maximum of 12 credits.

801. Old English
Fall of even-numbered years. 3 credits. May reenroll for a maximum of 12 credits. Phonology and morphology of English before 1100.

802. Beowulf
Winter of odd-numbered years. 3 credits. May reenroll for a maximum of 12 credits.

805. Studies in Comparative Theatre and Drama
Fall, Winter, Spring, Summer. 3(3-0) May reenroll for a maximum of 12 credits. Approval of department. Interdepartmental with and administered by the Department of Theatre. Comparative study of selected playwrights, movements, trends and developments in world drama from the beginnings to the present day.

- 807. Advanced Methods of Teaching English as a Second Language**
Spring. 3(3-0) May reenroll for a maximum of 12 credits. ENG 407.
Advanced study of linguistic theory and applications to classroom practice of methods of teaching English as a second language, specifically with regard to oral drill, reading, writing, testing, language and cultural heritage.
- 808. Testing of English as a Second Language**
Winter. 3(3-0) May reenroll for a maximum of 12 credits. ENG 407.
Techniques of testing English as a second language; intensive practice in writing test items; survey of current testing practices and test/item analysis procedures. Individual test project required.
- 810. Medieval Literature**
Spring. 3(3-0) May reenroll for a maximum of 12 credits.
Chaucer and the literature of the fourteenth century.
- 811. Renaissance Literature**
Fall of odd-numbered years. 3(3-0) May reenroll for a maximum of 12 credits.
English nondramatic literature, 1500-1600.
- 812. Early English Drama**
Spring of even-numbered years. 3(3-0) May reenroll for a maximum of 12 credits.
Non-Shakespearean English drama from its liturgical beginnings to 1642.
- 815. Restoration and Eighteenth Century Literature**
Winter of even-numbered years. 3(3-0) May reenroll for a maximum of 12 credits.
English literature, 1660-1798.
- 816. Nineteenth Century Literature**
Spring. 3(3-0) May reenroll for a maximum of 12 credits.
English literature, 1798-1900.
- 821. Nineteenth Century American Literature**
Winter. Spring of even-numbered years. 3(3-0) May reenroll for a maximum of 12 credits.
American literature, 1820-1900.
- 824. Seventeenth Century Literature**
Fall of even-numbered years. 3(3-0) May reenroll for a maximum of 12 credits.
English nondramatic literature, 1600-1660, including Milton.
- 828. Colonial and Revolutionary American Literature**
Fall of even-numbered years. 3(3-0) May reenroll for a maximum of 12 credits.
American literature, from the beginnings to 1820.
- 829. Twentieth Century Literature**
Fall of odd-numbered years. Spring. 3(3-0) May reenroll for a maximum of 12 credits.
English and American literature, 1900 to the present, with attention to foreign backgrounds.
- 833. Writing Workshop: Poetry**
Winter, Spring. 3(3-0) May reenroll for a maximum of 6 credits. Approval of instructor.
Concentration on individual student's writing, through workshop discussion and conferences with instructor. Some attention to professional contemporary poetry.
- 835. Writing Workshop: Fiction**
Fall, Winter. 3(3-0) May reenroll for a maximum of 6 credits. Approval of instructor.
Concentration on individual student's writing, through workshop discussion and conferences with instructor. Some attention to professional contemporary fiction.
- 837. Writing Workshop: Drama**
Fall of odd-numbered years. 3(3-0) May reenroll for a maximum of 6 credits. Approval of instructor.
Concentration on individual student's writing, through workshop discussion and conferences with instructor. Some attention to professional contemporary drama.
- 840. Writing Workshop for Teachers**
Winter, Summer of odd-numbered years. 3(3-0) or 5(5-0) May reenroll for a maximum of 12 credits. Major in English—Secondary School Teaching or approval of department.
Exploration of the writing process through composition activities and examination of techniques for teaching writing.
- 841. Topics in the Teaching of English**
Fall. 3 to 5 credits. May reenroll for a maximum of 12 credits.
Selected topics and issues in the teaching of English and the language arts. Investigation of problems of special concern to the students, especially those directly related to teaching.
- 845. Approaches to Language**
Fall. 3(3-0) May reenroll for a maximum of 12 credits.
Modern linguistic approaches to language and their application to writing.
- 846. Approaches to Language**
Winter. 3(3-0) May reenroll for a maximum of 12 credits.
Continuation of ENG 845.
- 847. Reading and the English Teacher**
Spring of odd-numbered years, Summer of odd-numbered years. 3(3-0) or 5(5-0) May reenroll for a maximum of 12 credits.
Investigation of applied linguistics and psycholinguistics and their application to the reading process with particular emphasis on application to problems in the teaching of reading and literature.
- 849. English Teaching Workshop**
Winter of odd-numbered years. 2 to 5 credits. May reenroll for a maximum of 12 credits.
Workshop in the development of teaching materials and resources in English. Investigation of sources and bibliographies. Emphasis on seeking practical solutions to particular problems in the teaching of English.
- 855. Shakespeare**
Winter. 3(3-0) May reenroll for a maximum of 12 credits.
Intensive study of selected plays.
- 862. Approaches to Literature**
Spring, Summer. 3(3-0) May reenroll for a maximum of 12 credits. Major in English—Secondary School Teaching or approval of instructor.
Literary and reading resources; discussion of critical approaches to and techniques for teaching literature.
- 871. Methods of Literary Research**
Fall. 3(3-0) May reenroll for a maximum of 12 credits.
Bibliography and use of library; preparation of reports, reviews, and scholarly papers.
- 872. Methods of Research into Literacy**
Spring of even-numbered years. 3(3-0) May reenroll for a maximum of 12 credits. Graduate students.
Concepts and procedures of research for investigating the teaching and learning of English language and literature. Examination of representative studies and techniques for evaluating, designing, and conducting applied research.
- 877. Myth, Ritual and Folklore in Literature**
Fall of odd-numbered years. 3(3-0) May reenroll for a maximum of 12 credits. Interdepartmental with Romance Languages.
The concepts, scholarship, and methods of study and research in mythology, ritual, and folklore, with special attention to their use in literature and drama.
- 880. Proseminar for Master's Degree Candidates**
Fall of even-numbered years. 3(3-0) May reenroll for a maximum of 12 credits.
Individual scholarly work under guidance.
- 885. Studies in the History of Literary Criticism**
Winter of even-numbered years. 3(3-0) May reenroll for a maximum of 12 credits.
The history of literary criticism.
- 886. Studies in Modern Criticism**
Spring of odd-numbered years. 3(3-0) May reenroll for a maximum of 12 credits. ENG 885.
Continuation of ENG 885.
- 895A. College Teaching of English Language and Literature: History and Issues**
Fall of even-numbered years. 3(3-0) May reenroll for a maximum of 12 credits. Approval of instructor.
Literature, literary criticism, writing, and reading in the English language as academic subjects.
- 895B. College Teaching of English Language and Literature: Reading**
Winter of odd-numbered years. 3(3-0) May reenroll for a maximum of 12 credits. Approval of instructor.
Integration of the teaching of writing and reading in English with stress on relevant research in reading in such areas as: linguistics, applied linguistics, psycholinguistics, language acquisition.
- 895C. College Teaching of English Language and Literature: Writing**
Spring. 3(3-0) May reenroll for a maximum of 12 credits. Approval of instructor.
Integration of the teaching of writing and reading in English with stress on relevant research in writing and composition such as linguistics, applied linguistics, psycholinguistics, and language acquisition.
- 896. Practicum in English Language and Literature**
Fall, Winter, Spring, Summer. 2 to 6 credits. May reenroll for a maximum of 12 credits. Approval of department.
Supervised graduate practicums, observations, internships in the teaching of English language and literature.

Descriptions — English

of Courses

899. **Master's Thesis Research**
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
901. **Studies in Comparative Literature**
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 12 credits. Interdepartmental with Romance Languages.
Critical approaches to genre, periodization, and influence.
955. **Studies in Shakespeare**
Winter of odd-numbered years. 3(3-0) May reenroll for a maximum of 12 credits.
Special problems in Shakespeare.
970. **Graduate Reading Course**
Fall, Winter, Spring, Summer. 1 to 5 credits. May reenroll for a maximum of 12 credits. Approval of department.
Supervised reading course in English and American literature for Ph.D. candidates.
973. **Seminar in English Education**
Fall, Winter, Spring. 3 to 5 credits. May reenroll for a maximum of 10 credits if different topics are taken. Approval of instructor.
Seminar in the teaching of English literature, language, and composition.
975. **The Reading Process and the Concept of Literacy**
Spring. 3(3-0) May reenroll for a maximum of 12 credits. Approval of department.
The contributions of language and literary studies to our understanding of the reading process and our definitions of literacy.
980. **Studies in English Language**
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 12 credits.
The English language from the viewpoint of historical problems, literary analysis and pedagogical implications.
981. **Seminar: Earlier English Literature**
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 12 credits.
Special problems in English literature, beginnings to 1660.
982. **Seminar: Later English Literature**
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 12 credits.
Special problems in English literature, 1660-1900.
983. **Seminar: American Literature**
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 12 credits.
Special problems in American literature, beginnings to 1900.
984. **Seminar: Twentieth Century Literature**
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 12 credits.
Special problems in English and American literature, 1900 to the present.
985. **Seminar: Special Studies in Literary Form and Theory**
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 12 credits.
Forms, genres, and movements.

986. **Seminar: American Literature and Culture**
Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 12 credits.
American literature in a cultural context, drawing upon popular and fine arts, the history of ideas, the history of social movements.
998. **Advanced Writing for Doctoral Candidates**
Fall. 3(3-0) May reenroll for a maximum of 12 credits. Admission to a doctoral program or approval of instructor.
Training for writing dissertations and publishing in the sciences, humanities, and other fields. Includes a detailed analysis of each student's style, methods of organizing, practice in editing, and individual conferences.
999. **Doctoral Dissertation Research**
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

ENTOMOLOGY ENT

College of Agriculture and Natural Resources College of Natural Science

201. **Insects and Society (N)**
Fall. 4(4-0)
Influence of insects on the human race from a global and historical perspective. Environmental and cultural factors and how they influence and interrelate with the insects.
250. **Pests, Environmental Quality and Ecosystem Management (N)**
Winter. 3(4-0)
Impact of pests and pesticides in ecosystems and society, with emphasis on integrated pest management and environmental quality.
301. **General Entomology**
Fall, Spring. Summer of even-numbered years. Given at W. K. Kellogg Biological Station Summer of even-numbered years. Fall, Spring: 3(3-0) Summer of even-numbered years: 3 credits. B S 212 recommended.
Biological relationships of insects. Insect behavior, ecology, and classification. Metamorphosis and development of insects.
302. **General Entomology Laboratory**
Fall, Spring. Summer of even-numbered years. Given at W. K. Kellogg Biological Station Summer of even-numbered years. Fall, Spring: 2(0-6) Summer of even-numbered years: 2 credits. B S 212 recommended.
Insect diversity with emphasis on morphology, development, classification, identification, bionomics, and evolution. Stresses reproductive strategies and general adaptability as relates to the overall ecological success of insects.
330. **Forest Protection**
Fall. 4(4-0) FOR 304, FOR 305, FOR 320. Interdepartmental with the departments of Botany and Plant Pathology and Forestry. Administered by the Department of Forestry.
Procedures used to detect and respond to pest, fire and environmental problems in a variety of forest types.
337. **Forest and Shade Tree Entomology**
Fall. 4(3-2) Three terms of natural science.
Ecological relationships of insect/tree interactions. Taxonomy of insects and recognition of insect injury. Biological, chemical, silvicultural and integrated control methods. Insect collection required (see instructor during prior spring term).
401. **Problems**
Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 12 credits. Approval of department.
Advanced individual work on a field or laboratory research problem or a study of published literature on a selected topic.
410. **Apiculture and Pollination**
Spring. 3(2-2)
Biology of the honey bee and some of the wild bees. Relationships between bees and flowering plants. Value of bees in crop pollination. Introduction to management with visits to the University apiary.
415. **Insect Behavior**
Winter of even-numbered years. 3(3-0) ENT 301, ENT 302; ZOL 313 recommended.
Mechanisms and adaptive significance of communication, orientation, food and habitat selection and behavioral rhythmicity in insects.
418. **Systematic Entomology**
Winter. 4(1-9) ENT 301, ENT 302.
General taxonomic course to acquaint the student with the various groups of insects.
420. **Aquatic Insects**
Spring. 4(3-3) ENT 301, ENT 302.
Biology, ecology and systematics of aquatic insects. Insect collection required.
425. **Agricultural Entomology**
Winter. 4(3-2) One year of biological or agricultural sciences.
Natural processes of insect populations and associated techniques that are important to agriculture.
438. **Taxonomy of Immature Insects**
Spring of even-numbered years. 4(1-9) ENT 418.
Identification of immature insects with particular emphasis on the Holometabola.
440. **External Morphology of Insects**
Fall. 4(2-6) ENT 301, ENT 302, or approval of department.
Morphological concepts of external skeletal parts of insects. Emphasis on evolutionary development of structures from the Apterygota through the Pterygota.
444. **Insect Ecology**
Fall of odd-numbered years. 3(3-0) One course in introductory entomology.
Unique characteristics and principles of insect ecology. Trophic relationships, populations, climate, co-existence, competition, behavior, communities and distributions.
450. **Insect Physiology**
Fall of even-numbered years. 5(3-4) ENT 301, ENT 302; 1 biochemistry or physiology course; 1 year of chemistry including 1 term of organic.
General and comparative physiology of insects, treating molecular, tissue and organ function. Laboratory exercises emphasizing mastery of sound experimental procedures.