

E E 458. Analog and Pulse Communication Systems (3)

Prerequisite: Electrical Engineering 410.

Analog and digital communication systems. Amplitude and frequency modulation, pulse modulation, and PCM. Introduction to information theory.

E E 483. Power Distribution Systems (3)

Prerequisite: Electrical Engineering 380.

Design and operation of electric power distribution systems. Design of primary and secondary systems, application of one phase and three phase transformer banks, and metering principles and practices.

E E 484. Power Electronics (3)

Prerequisites: Electrical Engineering 380 and concurrent registration in Electrical Engineering 430.

Design and analysis of power electronic devices. Power semiconductor switches, switch-mode power supplies, dc-to-ac inverters, PM and PWM ac-to-ac converters. Power electronics applications. (Formerly numbered Electrical Engineering 583.)

E E 490. Senior Design Project (4) I, II

Two lectures and six hours of laboratory.

Prerequisites: Electrical Engineering 330L, 410, 430, 434.

Supervised capstone design projects to provide integrative design experience for seniors to include ethics, professionalism, cost-effectiveness, and project management.

E E 496. Advanced Electrical Engineering Topics (1-3)

Prerequisite: Consent of instructor.

Modern developments in electrical engineering. See Class Schedule for specific content. Maximum credit nine units for any combination of Electrical Engineering 496 and 596 applicable to a bachelor's degree.

E E 499. Special Study (1-3) I, II

Prerequisite: Approval of project adviser and department chair.

Individual study. Maximum credit six units.

**UPPER DIVISION COURSES
(Also Acceptable for Advanced Degrees)**

E E 502. Electronic Devices for Rehabilitation (3)

Two lectures and three hours of laboratory.

Prerequisite: Electrical Engineering 303 or 330.

Recent developments in electronic assistive devices and micro-computers for persons with various disabilities; assessment of disabled persons for suitable technological assistive devices.

E E 503. Biomedical Instrumentation (3)

Prerequisites: Engineering 280; Electrical Engineering 410 and 430 (or for Mechanical Engineering majors, Electrical Engineering 303 and Mechanical Engineering 312).

Instrumentation systems to monitor, image, control, and record physiological functions.

E E 530. Analog Integrated Circuit Design (3)

Prerequisite: Electrical Engineering 430 with minimum grade of C-.

Advanced treatment of transistor pairs, device mismatches, differential amplifiers, current mirrors, active loads, level shifting, and output stages. Parasitic and distributed device parameters. Economics of IC fabrication and impact on design.

E E 534. Solid-State Devices (3)

Prerequisite: Electrical Engineering 434.

Conduction theory of solids. Characteristics of tunnel, backward, breakdown, multilayer and varactor diodes; silicon controlled rectifiers and switches, unijunction transistors, hot electron devices. Lasers and laser applications.

E E 539. Instrumentation Circuits I (3)

Prerequisite: Electrical Engineering 430.

Design and analysis of hybrid analog/digital electronic sub-systems incorporated into modern instrument design. Emphasis on operational amplifier based circuit design and analog-to-digital and digital-to-analog conversion processes.

E E 540. Microwave Devices and Systems (3)

Prerequisite: Electrical Engineering 450. Recommended: Engineering 510.

Applications of Maxwell's equations to wave propagation. Microwave network parameters; guided wave transmission and reflection. Design of filters, couplers, power dividers and amplifiers. Applications in radar and telecommunications systems.

E E 540L. Microwave Design and Measurements Laboratory (1)

Three hours of laboratory.

Prerequisites: Credit or concurrent registration in Electrical Engineering 430L and 540.

Designs, computer simulations, fabrications, and testings of microwave matching networks, couplers, filters, and amplifiers.

E E 541. Electro-Optics (3)

Prerequisite: Electrical Engineering 434.

Optical/electronic devices and systems; wave beams; light-matter quantum interactions; incoherent and laser light sources; modulators and detectors. Applications in data transmission, measurement, and materials processing.

E E 546. Optical Fiber Communications Systems (3)

Prerequisite: Electrical Engineering 434.

Optical fiber attenuation and dispersion, light-emitting diodes and laser diodes, PIN diodes and avalanche photodiodes, receiver designs, optical power budgets and rise time budgets, applications in digital and analog communication systems.

E E 553. Stochastic Signals (3)

Prerequisite: Electrical Engineering 410.

Random signals, correlation functions, power spectral densities, the Gaussian process, narrow band processes. Applications to communication systems.

E E 556. Digital Signal Processing (3)

Prerequisite: Electrical Engineering 410 or Physics 516.

Digital signal processing. Discrete-time signals, transform techniques, and digital filters. Design of FIR and IIR filters, FFTs, and finite length effects on digital systems.

E E 558. Digital Communications (3)

Prerequisite: Electrical Engineering 458.

Design of baseband digital communication systems; noise characterization, sampling, quantization, matched filter receivers, bit-error performance, inter-symbol interference, link budget analysis.

E E 558L. Communications and Digital Signal Processing Laboratory (1)

Prerequisite: Credit or concurrent registration in Electrical Engineering 556 or 558.

Experiments in modulation techniques, effects of noise on system performance, digital filters, and signal processing.

E E 580. Power System Analysis (3)

Prerequisites: Engineering 280, Electrical Engineering 310 and 380.

Modern power system elements; calculation of load flow, fault currents, and system stability.

E E 581. Power System Dynamics (3)

Prerequisite: Electrical Engineering 580.

Three-phase faults, symmetrical components, unsymmetrical faults, protective relay operating principles, economic dispatch of thermal power generation units, power system controls, voltage and power stability.

E E 596. Advanced Electrical Engineering Topics (1-3) I, II

Prerequisite: Consent of instructor.

Modern developments in electrical engineering. See Class Schedule for specific content. Maximum credit of nine units for any combination of Electrical Engineering 496 and 596 applicable to a bachelor's degree. Maximum combined credit of six units of Electrical Engineering 596 and 696 applicable to a 30-unit master's degree.

**GRADUATE COURSES
Refer to the *Graduate Bulletin*.**

Engineering (ENGR)

In the College of Engineering

LOWER DIVISION COURSES

ENGR 280. Methods of Analysis (3) I, II

Prerequisite: Mathematics 151 with minimum grade of C. Recommended: Mathematics 252.

Selected topics from ordinary differential equations, the Laplace transform, Fourier series, and linear algebra, with engineering applications.

ENGR 296. Experimental Topics (1-4)

Selected topics. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree.

UPPER DIVISION COURSES (Intended for Undergraduates)

ENGR 430. Principles of Engineering Economy (3) I, II

Prerequisite: Mathematics 151.

Application of the mathematics of finance to engineering and managerial decision making.

ENGR 496. Advanced Engineering Topics (1-3) I, II

Prerequisite: Minimum grade point average of 2.0 in engineering.

Modern developments in engineering. See Class Schedule for specific content. Maximum credit six units for any combination of 496, 499, and 596 applicable to a bachelor's degree.

UPPER DIVISION COURSE (Also Acceptable for Advanced Degrees)

ENGR 510. Methods of Analysis (3)

Prerequisite: Engineering 280 with minimum grade of C.

Selected topics from vector calculus, partial differential equations, and complex analysis, with engineering applications.

GRADUATE COURSES Refer to the *Graduate Bulletin*.

English (ENGL)

*In the Department of English and
Comparative Literature
In the College of Arts and Letters*

LOWER DIVISION COURSES

ENGL 100. Rhetoric of Written Argument (3) [GE] I, II

(Same course as Rhetoric and Writing Studies 100.)

International students are advised to take Linguistics 100.

Prerequisites: Satisfaction of the SDSU writing competency requirement. (See Graduation Requirements section of catalog.)

Proof of completion of prerequisites required: Copy of EPT or competency scores or verification of exemption; proof of credit (Cr) in Rhetoric and Writing Studies 92A or 92B or 97.

Writing and reading as critical inquiry, designed to help students undertake university-level writing projects. Focus on rhetoric of written arguments. Students learn to use sources in their writing and make appropriate decisions about structure, cohesion, and rhetorical conventions. Not open to students with credit in a higher-numbered composition course or Rhetoric and Writing Studies 100 or 101 or Africana Studies 120 or Chicana and Chicano Studies 111B or General Studies 260A or Linguistics 100.

ENGL 200. Rhetoric of Written Arguments in Context (3) [GE] I, II

(Same course as Rhetoric and Writing Studies 200.)

International students are advised to take Linguistics 200.

Prerequisites: Satisfaction of the SDSU writing competency requirement and Rhetoric and Writing Studies 100 or 101 or Africana Studies 120 or Chicana and Chicano Studies 111B or English 100 or General Studies 260A or Linguistics 100. **Proof of completion of prerequisites required:** Test scores or verification of exemption; copy of transcript.

Further practice in writing, reading, and critical thinking. Emphasis on rhetoric of written arguments in context and using multiple sources in writing. Continued attention to structure, cohesion, and rhetorical conventions. Not open to students with credit in Africana Studies 200, Chicana and Chicano Studies 200, General Studies 260D, or Linguistics 200 or Rhetoric and Writing Studies 200. Completion of Rhetoric and Writing Studies 200 may require completion of the library workbook assignment.

ENGL 220. Introduction to Literature (3) [GE] I, II

Prerequisite: A grade of C (2.0) or better in English 100, Africana Studies 120 or Chicana and Chicano Studies 111B or Linguistics 100 or General Studies 260A or Rhetoric and Writing Studies 100 or 101.

Proof of completion of prerequisite required: Copy of transcript.

Inquiry into basic nature of literature. What prompts humankind to creation of imaginative literature? What purposes does literature serve in cultural life of humanity? What are its social, philosophical, spiritual, and esthetic values? Some consideration may be given to techniques and major critical theories, but focus will be on practical criticism for nonspecialists. Specific works studied will be representative of several genres, cultures, and periods of literature.

ENGL 250A-250B. Literature of the United States (3-3)

Prerequisite: A grade of C (2.0) or better in English 100, Africana Studies 120 or Chicana and Chicano Studies 111B or General Studies 260A or Linguistics 100 or Rhetoric and Writing Studies 100 or 101.

United States literature from colonial period to present. Semester I: from beginning to Civil War. Semester II: Civil War to present. Recommended for English majors.

ENGL 260A-260B. English Literature (3-3) I, II

Prerequisite: A grade of C (2.0) or better in English 100, Africana Studies 120 or Chicana and Chicano Studies 111B or General Studies 260A or Linguistics 100 or Rhetoric and Writing Studies 100 or 101.

English literature from Anglo-Saxon period to present, with emphasis on major works in literary tradition. Semester I: Ends with neoclassical period. Semester II: Begins with Romantic writers.

ENGL 280. Introduction to Creative Writing (3) I, II

Prerequisite: A grade of C (2.0) or better in English 100, Africana Studies 120 or Chicana and Chicano Studies 111B or General Studies 260A or Linguistics 100 or Rhetoric and Writing Studies 100 or 101.

Theory and practice of poetry and fiction, with emphasis on basic concepts and techniques. A research paper on a writer, a technique, a period, or a genre required.

ENGL 281. Creative Writing: Selected Genres (3)

Prerequisite: A grade of C (2.0) or better in English 100, Africana Studies 120 or Chicana and Chicano Studies 111B or General Studies 260A or Linguistics 100 or Rhetoric and Writing Studies 100 or 101.

Guidance and extensive practice in writing in one or more of the major genres: poetry, drama, fiction, or the essay. See Class Schedule for specific content.

ENGL 296. Experimental Topics (1-4)

Prerequisite: A grade of C (2.0) or better in English 100, Africana Studies 120 or Chicana and Chicano Studies 111B or General Studies 260A or Linguistics 100 or Rhetoric and Writing Studies 100 or 101.

Selected topics. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree.

**UPPER DIVISION COURSES
(Intended for Undergraduates)**

ENGL 301. The Psychological Novel (3) [GE] I, II

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities.

Psychological novel from its inception to present, including major works from a variety of cultures. Readings designed to aid students in discovering insights which great novelists have unearthed in their explorations of the human psyche.

ENGL 302. Introducing Shakespeare (3) [GE] I, II

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities.

Representative tragedies, comedies, and histories. Primarily for the general student not specializing in English or comparative literature. This course does not count toward the English or comparative literature majors. Majors are required to take English 533.

ENGL 303. Contemporary World Novel (3)

Selected novels of critical acclaim, first published or first translated within the past 20 years from literatures around the world to include problems of social class and gender roles as well as views of global economic development and aesthetic considerations.

ENGL 306A-306W. Children's Literature and Advanced Composition (3-3) I, II

Prerequisites: English 200 or Rhetoric and Writing Studies 200. English 306A and 306W must be taken concurrently. Satisfies Graduation Writing Assessment Requirement for students who have completed 60 units; completed Writing Proficiency Assessment with a score of 8 or higher (or earned a C or higher in RWS 280, 281, or LING 281 if score on WPA was 7 or lower); and completed General Education requirements in Composition and Critical Thinking. **Proof of completion of prerequisites required:** Test scores or verification of exemption; copy of transcript.

306A: Reading, analysis, and discussion of classic works of children's literature.

306W: Advanced composition; improvement of student skills through writing assignments based upon reading and work in the lecture part. Primarily designed to meet Graduation Writing Assessment and Literature requirements for Liberal Studies-Emphasis in Education, but also open to students with other majors.

ENGL 308W. Literary Study: Analysis, Research, and Writing (3) I, II

Prerequisite: Satisfies Graduation Writing Assessment Requirement for students who have completed 60 units; completed Writing Proficiency Assessment with a score of 8 or higher (or earned a C or higher in RWS 280, 281, or LING 281 if score on WPA was 7 or lower); and completed General Education requirements in Composition and Critical Thinking. **Proof of completion of prerequisites required:** Test scores or verification of exemption; copy of transcript.

Methods of literary analysis; concepts and terminology of literary study; research methods. Modes of writing about literature, with emphasis on the research paper.

ENGL 401. Childhood's Literature (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities.

Influential contemporary and classic literature for children and young adults, such as *Charlotte's Web* and the *Harry Potter* series. Sample topics include construction of childhood, cultural values and ethics, role models, subversion of adult power. Not applicable to English or comparative literature majors. Majors are to take English 501.

ENGL 405. The Bible as Literature (3) [GE] I, II

(Same course as Comparative Literature 405.)

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities.

Prose and poetry of the King James version.

ENGL 409. Science Fiction (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities.

How authors have responded to growing impact of science and technology on people's lives and imaginations. Representative works by authors such as Kobo Abe, Bradbury, Butler, Delaney, DeLillo, Dick, Gibson, Heinlein, Hoban, Huxley, Kapek, LeGuin, Murakami, Orwell, Poe, Russ, Shelley, Verne, Wells, Zamyatin, and others.

ENGL 410. Literature and the Passions (3) [GE]

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities.

Studies literature and the passions (grief and melancholy, anger and rage, and love) with emphasis on language and rhetorical techniques writers employ to construct emotion. Writers may include Emily Brontë, Raymond Carver, Chretien de Troyes, DuBois, Emerson, Homer, Melville, and Shakespeare.

ENGL 491. Contemporary Topics in Literature (3)

Exploration of writers, works and topics in fiction, poetry, drama, and film, emphasizing the relationship between literature and current concerns. Topics include the city in fiction and film, literature and identity, literature of death, literature of contemporary myth and folklore, women in literature. Primarily for the general student not specializing in English or comparative literature. May count only as an elective course toward the English major. May be repeated with new title and content. Maximum credit six units. See Class Schedule for specific content.

ENGL 493. Literature and Film (3)

Relationships between film and genres of literature, focusing on a critical comparison of the techniques of rhetoric, fiction, and drama and those of film. Topics include literature and film, novel into film, drama and film, reading film. Primarily for the general student not specializing in English or comparative literature. May count only as an elective course toward the English major. May be repeated with new title and content. Maximum credit six units.

ENGL 494. Modern Fiction of the United States (3) [GE] I, II

Prerequisite: Completion of the General Education requirement in Foundations II.C., Humanities.

Representative works by twentieth-century American authors such as Cather, Hemingway, Steinbeck, Faulkner, Fitzgerald, Ellison, Welty, Bellow, Vonnegut, Heller, Walker, others. Primarily for the general student not specializing in English or comparative literature. May count toward the English major only as an elective.

ENGL 496. Selected Topics in English (1-4)

Specialized study of a selected topic in literature. May be repeated with new title and content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree. Maximum credit six units.

ENGL 499. Special Study (1-3) I, II

Prerequisites: Consent of instructor and approval of department chair.

Individual study. Maximum credit six units.

**UPPER DIVISION COURSES
(Also Acceptable for Advanced Degrees)**

Prerequisite for all 500-level courses: Six lower division units in courses in literature and/or creative writing.

ENGL 501. Literature for Children (3) I, II

Critical analysis of literature intended for children. Study of texts and illustrations. This course cannot be used in place of English 401 to satisfy General Education requirements.

ENGL 502. Adolescence in Literature (3)

Prerequisite: Six units in literature.

Works centrally concerned with an adolescent protagonist. Includes both traditional novels of development (Bildungsroman) and contemporary young adult novels.

ENGL

ENGL 503. Topics in Children's Literature (3)

Topics in children's and adolescents' literatures such as regionalism, multiculturalism, fantasy, science fiction, non-fiction, illustrated books, nineteenth-century classics, major works by twentieth-century authors, British children's literature, the noir young adult novel, and the history of genre. Maximum credit six units.

ENGL 508W. The Writing of Criticism (3) I, II

Prerequisites: Satisfies Graduation Writing Assessment Requirement for students who have completed 60 units; completed Writing Proficiency Assessment with a score of 8 or higher (or earned a C or higher in RWS 280, 281, or LING 281 if score on WPA was 7 or lower); and completed General Education requirements in Composition and Critical Thinking. **Proof of completion of prerequisites required:** Test scores or verification of exemption; copy of transcript.

Theory and practice of literary criticism. Emphasis on the work of important critics and on development of student's own critical writing.

ENGL 510. Teaching Literature (3)

Prerequisite: Six units in 500-level literature courses.

Theory and practice of teaching literature in high schools, colleges, and universities; various critical approaches (such as feminist, new historical, deconstruction, reader response) to literature and their implications for teaching and developing teaching styles.

ENGL 519. Ethnic Literatures of the United States (3) I, II

Prerequisite: Six units in literature.

Works from United States ethnic literatures, with emphasis on formerly excluded traditions as African-American, Hispanic and Chicano, Asian-American, and American Indian.

ENGL 520. African-American Literary Tradition (3)

Prerequisite: Six units in literature.

African-American literature from its eighteenth-century beginnings to the present. Early political and social concerns and concomitant utilitarian forms; aesthetic concerns and forms in nineteenth and twentieth centuries.

ENGL 521. Early American Literature (3) I, II

Prerequisites: Six lower division units in literature.

Representative works by American writers from the colonial period through the Revolution; to include works by Anne Bradstreet, Phillis Wheatley, Olaudah Equiano, Cotton Mather, Jonathan Edwards, Benjamin Franklin, Thomas Jefferson, various Native American speakers and writers, and others.

ENGL 522. Literature of the United States, 1800-1860 (3) I, II

Representative works by United States writers from 1800 to 1860; likely to include works by Emerson, Hawthorne, Melville, Poe, Stowe, Thoreau, Whitman, and others.

ENGL 523. Literature of the United States, 1860-1920 (3) I, II

Representative works by United States writers from 1860 to 1920; likely to include works by Charles Chesnut, Kate Chopin, Stephen Crane, Emily Dickinson, Henry James, Mark Twain, Edith Wharton, and others.

ENGL 524. Literature of the United States, 1920-1960 (3) I, II

Representative works by United States writers from 1920 to 1960; likely to include works by Willa Cather, T. S. Eliot, William Faulkner, F. Scott Fitzgerald, Ernest Hemingway, Zora Neale Hurston, Eugene O'Neill, Katherine Anne Porter, Ezra Pound, John Steinbeck, and others.

ENGL 525. Literature of the United States, 1960 to Present (3) I, II

United States writers from 1960 to the present; likely to include works by Edward Albee, Saul Bellow, Allen Ginsberg, Joseph Heller, Maxine Hong Kingston, Norman Mailer, Toni Morrison, Sylvia Plath, Adrienne Rich, Kurt Vonnegut, Eudora Welty, and others.

ENGL 526. Topics in Literature of the United States (3)

Topics in United States literature to include the literature of the South, Black writers in the U.S., the frontier and U.S. literature, the outcast in U.S. literature, the immigrant experience in U.S. literature. May be repeated with new title and content. See Class Schedule for specific content. Maximum credit six units.

ENGL 527. Genre Studies (3)

Study of a specific literary genre or genres, such as the novel, tragedy, epic, and lyric. May be repeated with new title and content. See Class Schedule for specific content. Maximum credit six units.

ENGL 528. Authors (3)

Works of a major author or, if useful comparisons and juxtapositions warrant, works of two or three authors, such as Jane Austen, Melville, Emerson, and Thoreau. May be repeated with new title and content. See Class Schedule for specific content. Maximum credit six units.

ENGL 530. Chaucer (3)

Chaucer's works, with emphasis on *The Canterbury Tales* and *Troilus and Criseyde*.

ENGL 533. Shakespeare (3) I, II

An introduction to the writings of Shakespeare. This course cannot be used in place of English 302 to satisfy General Education requirements.

ENGL 534. Study of Shakespeare (3)

Prerequisite: English 533.

Advanced study of Shakespeare's achievement as poet and playwright. May be repeated with new content. See Class Schedule for specific content. Maximum credit six units.

ENGL 536. British Literary Periods, Beginnings to 1660 (3)

Prerequisite: Six lower division units in literature and/or creative writing courses.

Study of a literary period such as the Middle Ages or Renaissance. May be repeated with new content. See Class Schedule for specific content. Maximum credit six units.

ENGL 537. Milton (3)

Milton's writings, with emphasis on *Paradise Lost*.

ENGL 540A-540B. English Fiction (3-3)

The development of English fiction from its beginnings to the end of the nineteenth century. Semester I: The eighteenth century. Semester II: The nineteenth century.

ENGL 541A-541B. English Drama (3-3)

English dramatic literature from its beginnings to the present. Semester I: From the beginning to 1642. Semester II: Period following reopening of the theatres in 1660.

ENGL 542. British Literary Periods, 1660-1800 (3)

Prerequisite: Six lower division units in literature and/or creative writing courses.

Study of a literary period such as the Restoration or Enlightenment. May be repeated with new content. See Class Schedule for specific content. Maximum credit six units.

ENGL 543. British Literary Periods, 1800-1900 (3)

Prerequisite: Six lower division units in literature and/or creative writing courses.

Study of a literary period such as the Romantic or Victorian Age. May be repeated with new content. See Class Schedule for specific content. Maximum credit six units.

ENGL 544. British Literary Periods, 1900-Present (3)

Prerequisite: Six lower division units in literature and/or creative writing courses.

Study of a literary period such as the Postmodern Era. May be repeated with new content. See Class Schedule for specific content. Maximum credit six units.

ENGL 549. Topics in English Literature (3)

The works of Spenser, the metaphysical school of poetry, the English satirists, major movements in contemporary English fiction, and the like. May be repeated with new title and content. See Class Schedule for specific content. Maximum credit six units.

ENGL 563. Literature and Culture (3)

Prerequisite: Six lower division units in literature and/or creative writing courses.

Study of literature in relation to a specific culture idea or phenomenon, such as literature and the law, literature and technology. May be repeated with new content. See Class Schedule for specific content. Maximum credit six units.

ENGL 570. Techniques of Poetry (3)

Prerequisite: English 280.

Techniques of poetry from the creative writer's point of view. Introduction to critical and theoretical literature on poetry. Includes a creative writing workshop.

ENGL 571. Techniques of the Short Story (3)

Prerequisite: English 280.

Techniques of the short story from the writer's point of view. Introduction to critical and theoretical literature on the short story. Includes a creative writing workshop.

ENGL 573. Techniques of the Novel (3)

Prerequisite: English 280.

Techniques of the novel from the writer's point of view. Introduction to critical and theoretical literature on the novel. Includes a creative writing workshop.

ENGL 576. Literary Editing and Publishing (3)

Prerequisite: English 280.

Principles and practices of editing and literary publishing. Workshop on small press publishing. Includes editing and publishing workshop.

ENGL 577. Techniques of Screenwriting (3)

Prerequisite: English 280 or Television, Film, and New Media 110 or 510 for television, film, and new media majors.

Techniques of screenwriting. Introduction to critical and theoretical literature on screenwriting. Includes a creative writing workshop.

ENGL 579. Topics in Creative Writing (3)

Prerequisite: English 280.

Techniques of creative writing focusing on a specialized genre such as comedy, science fiction, and biography. Study of the critical and theoretical literature on the genre. Includes a creative writing workshop. See Class Schedule for specific content. Maximum credit six units.

ENGL 580. Writing of Poetry (3) I, II

Prerequisite: English 570.

A creative writing workshop in poetry. Continuation of English 570. Maximum credit six units.

ENGL 581W. Writing of Fiction (3) I, II

Prerequisites: English 280. Satisfies Graduation Writing Assessment Requirement for students who have completed 60 units; completed Writing Proficiency Assessment with a score of 8 or higher (or earned a C or higher in RWS 280, 281, or LING 281 if score on WPA was 7 or lower); and completed General Education requirements in Composition and Critical Thinking. **Proof of completion of prerequisites required:** Test scores or verification of exemption; copy of transcript.

A creative writing workshop in fiction. Continuation of English 571. Maximum credit six units.

ENGL 583. Writing Long Narrative (3)

Prerequisite: English 573.

A creative writing workshop in long narrative, especially the novella or novel. Continuation of English 573. Maximum credit six units.

ENGL 584W. Writing Informal Essays (3) I, II

Prerequisites: English 280. Satisfies Graduation Writing Assessment Requirement for students who have completed 60 units; completed Writing Proficiency Assessment with a score of 8 or higher (or earned a C or higher in RWS 280, 281, or LING 281 if score on WPA was 7 or lower); and completed General Education requirements in Composition and Critical Thinking. **Proof of completion of prerequisites required:** Test scores or verification of exemption; copy of transcript.

A creative writing workshop in nonfiction, especially the essay as an art form. Maximum credit six units.

ENGL 587. Writing the Screenplay (3)

Prerequisite: English 577 or Television, Film, and New Media 110 or 510 for television, film, and new media majors.

A creative writing workshop in screenwriting with emphasis on the feature film. Continuation of English 577. Includes playwriting and revising a television script or short film. Maximum credit six units.

ENGL 596. Selected Topics in English (1-3)

Selected topics in English. May be repeated with new content and approval of instructor. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree. Maximum credit of six units of 596 applicable to a bachelor's or master's degree. Maximum combined credit of six units of 596 and 696 applicable to a 30-unit master's degree.

Comparative Literature

(See this section of catalog under Comparative Literature.)

GRADUATE COURSES Refer to the *Graduate Bulletin*.

Environmental Engineering (ENV E)

*In the Department of Civil and
Environmental Engineering
In the College of Engineering*

NOTE: Proof of completion of prerequisites (copy of transcript) is required for all courses which list prerequisites.

LOWER DIVISION COURSES

ENV E 101. Environmental Engineering Seminar (2) II

Breadth and depth of environmental engineering field through presentations by invited faculty, graduate students, guests and seminar enrollees; including individual library research with written and oral presentations on selected environmental topics.

ENV E 296. Experimental Topics (1-4) I, II

Selected topics. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree.

UPPER DIVISION COURSES (Intended for Undergraduates)

ENV E 320. Designing Solutions for Environmental Problems (3) [GE] I, II

Prerequisites: Upper division standing and completion of the General Education requirement in Foundations, II.A. Natural Sciences and Quantitative Reasoning.

Human interaction with the land, water and air environment; environmental pollution; role of engineering in solving environmental problems. Not open to civil or environmental engineering majors.

ENV E 355. Environmental Engineering (3) I, II

Prerequisites: Environmental Engineering 101, Civil Engineering 100, Chemistry 200.

Causes and effects of environmental problems and engineering methods to control them.

ENV E 455. Water and Wastewater Engineering (3) I

Prerequisites: Minimum grade of C in Environmental Engineering 355, Civil Engineering 444, and Engineering Mechanics 340.

Water and wastewater. Physical, chemical, and biological methods of treatment. Advanced water treatment processes. Water reclamation. (Formerly numbered Environmental Engineering 555.)

ENV E 496. Advanced Environmental Engineering Topics (1-3) I, II

Prerequisites: Minimum grade point average of 3.0 and consent of instructor.

Modern developments in environmental engineering. See Class Schedule for specific content. Maximum credit six units for any combination of Environmental Engineering 496, 499 and 596.

ENV E 499. Special Study (1-3) Cr/NC I, II

Prerequisites: Minimum grade point average of 3.0 and consent of instructor.

Individual study in the area of environmental engineering. Maximum credit six units for any combination of Environmental Engineering 496, 499 and 596.

**UPPER DIVISION COURSES
(Also Acceptable for Advanced Degrees)**

ENV E 553. Environmental Engineering Laboratory (3)

Two lectures and three hours of laboratory.

Prerequisites: Chemistry 200 and Environmental Engineering 355.

Analysis of natural waters and wastewaters. Sampling and analysis of hazardous environmental pollutants. Techniques to analyze solid waste.

ENV E 554. Process Fundamentals of Environmental Systems (3) I

Prerequisites: Minimum grade of C in Environmental Engineering 355, Civil Engineering 444, Engineering Mechanics 340, and Mechanical Engineering 352.

Equilibrium and kinetics of chemical and biological reactions of environmental systems. Considerations of mass-transfer and fluid dynamics in water quality management and air pollution control.

ENV E 556. Air Pollution Engineering (3)

Prerequisite: Environmental Engineering 355.

Sources of air pollutants. Transportation, dispersion, and transformation of pollutants in the atmosphere. Measurement and control of air pollution.

ENV E 558. Solid and Hazardous Waste Engineering (3)

Prerequisite: Environmental Engineering 355.

Municipal solid and hazardous solid wastes from an environmental engineering perspective, including waste minimization and recycling. Engineered volume reduction through composting, incineration, mechanical compaction, and other methods. Ultimate disposal, landfill design and legislative regulations.

ENV E 596. Advanced Environmental Engineering Topics (1-3) I, II

Prerequisites: Minimum grade point average of 3.0 and consent of instructor.

Modern developments in environmental engineering. See Class Schedule for specific content. Maximum credit of six units for any combination of Environmental Engineering 496, 499 and 596 applicable to a bachelor's degree. Maximum combined credit of six units of Environmental Engineering 596 and 696 applicable to a 30-unit master's degree.

For additional courses which are electives in the environmental engineering program, refer to "Civil Engineering" in this section of the catalog.

**GRADUATE COURSES
Refer to the *Graduate Bulletin*.**

Environmental Sciences (ENV S)

Offered by the College of Sciences

LOWER DIVISION COURSES

ENV S 100. Environmental Sciences (3)

The earth as an ecosystem composed of biological, chemical, and physical systems and how these systems interact with one another and the human population.

ENV S 299. Special Study (3)

Prerequisite: Consent of program director and instructor. Individual Study.

**UPPER DIVISION COURSES
(Intended for Undergraduates)**

ENV S 498A-498B. Senior Seminar in Environmental Sciences (3-3)

Prerequisite: Senior standing in the environmental sciences major. Research projects related to an environmental issue in the San Diego and California region.

European Studies (EUROP)

In the College of Arts and Letters

LOWER DIVISION COURSES

EUROP 101. Introduction to European Studies (3) [GE] I, II

Europe: The land, the people, their artistic, intellectual and cultural movements, including art, architecture, languages and literatures.

EUROP 296. Experimental Topics (1-4)

Selected topics. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree.

**UPPER DIVISION COURSES
(Intended for Undergraduates)**

EUROP 301. Contemporary Europe (3) [GE] I

Prerequisites: European Studies 101 for majors, and completion of the General Education requirement in Foundations II.C., Humanities for nonmajors.

Contemporary Europe, emphasizing artistic, intellectual, and cultural trends, as well as contemporary issues.

EUROP 424. European Cinema (3) [GE]

Two lectures and two hours of activity.

Prerequisites: European Studies 101 for majors, and completion of the General Education requirement in Foundations II.C., Humanities for nonmajors.

Issues and themes in European culture as seen through its films. May be repeated with new title and content. Maximum credit six units.

EUROP 495. European Studies Internship (3) Cr/NC

Prerequisite: Upper division standing in the major and consent of instructor.

Practical work experience in a field related to European studies. Work done under joint direction of activity sponsor and instructor. Approved international internships may count towards international experience requirement for major.

EUROP 496. Experimental Topics (1-4)

Selected topics. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree.

EUROP 499. Special Study (1-3)

Prerequisite: Consent of instructor.

Individual study. Maximum credit six units.

UPPER DIVISION COURSES
(Also Acceptable for Advanced Degrees)

EUROP 501. European Life and Culture (3)

Prerequisite: European Studies 301.

Specialized study of topics such as European union, European women, or European art. May be repeated with new title and content. See Class Schedule for specific content. Maximum credit six units.

EUROP 527. The Holocaust in Feature Films (3) I

(Same course as History 527.)

Two lectures and two hours of activity.

Prerequisite: Upper division or graduate standing.

Depiction of the Nazi policy of destroying European Jewry and its impact on the perpetrators, bystanders, victims, and the post-war world in feature films.

EUROP 560. Technologies and Methodologies: Language Learning and Teaching (3) I

Two lectures and two hours of activity.

Prerequisite: Advanced level foreign language competency.

Understanding foreign language competencies; create and use technology-assisted learning and testing materials; review and evaluate foreign theories and methodologies.

EUROP 596. Topics in European Studies (3)

Prerequisites: European Studies 301 for majors and minors; upper division standing for all others.

Specialized topics in contemporary European culture. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree. Maximum credit of six units of 596 applicable to a bachelor's degree. Maximum combined credit of six units of 596 and 696 applicable to a 30-unit master's degree.

Exercise and Nutritional Sciences (ENS)

In the College of Professional Studies and Fine Arts

LOWER DIVISION COURSES

Courses offered for one unit credit meet two hours per week or equivalent.

"A" signifies a beginning class, "B" intermediate.

Dance activity courses: Ballroom Dance, Ethnic Dance, Ballet, Jazz Dance, Modern Dance. Refer to "Dance" courses in this section of the catalog.

ENS 102. Conditioning (1) I, II**ENS 104A-104B. Weight Training (1-1) I, II****ENS 105. Individual Adaptives (1) I, II**

Prerequisite: Consent of instructor.

A health history record is required of each student.

Individual exercise programs for those who are handicapped in some respect, or who have functional defects or deficiencies amenable to improvement through exercise. May be repeated for credit.

ENS 108A-108B. Basketball (1-1) I, II**ENS 109A-109B. Soccer (1-1) I, II****ENS 110A-110B. Volleyball (1-1) I, II****ENS 111A-111B. Softball (1-1) I, II****ENS 116A-116B. Golf (1-1) I, II****ENS 118A-118B. Tennis (1-1) I, II****ENS 119A-119B. Bowling (1-1) I, II****ENS 120A-120B. Badminton (1-1) I, II****ENS 123A-123B. Racquetball (1-1) I, II****ENS 124. Sailing (1)****ENS 130. Step Training (1) I, II****ENS 137A. Aerobic Dance (1) I, II****ENS 138. Selected Activities (1) I, II**

May be repeated with new activity for additional credit. See Class Schedule for specific content.

ENS 139A. Beginning Rock Climbing (1) I, II

Two hours of activity.

Rock climbing concepts and theories. Active participation using beginning techniques and training concepts.

ENS 139B. Intermediate Rock Climbing (1) I, II

Two hours of activity.

Prerequisite: Exercise and Nutritional Sciences 139A.

Rock climbing concepts and theories. Active participation using advanced techniques, training concepts, and lead climbing concepts expected.

ENS 141A-141B. Martial Arts (1-1) I, II

Exercise and Nutritional Sciences 141A is prerequisite to 141B.

ENS 145. Wakeboarding and Waterskiing (1) I, II**ENS 146. Surfing (1) I, II****ENS 147. Windsurfing and Kiteboarding (1) I, II**

Theory and mechanical skills of windsurfing and kiteboarding. Proper rigging, body position, and sailing theory, right-of-way rules and boating safety for good fundamental base to confidently continue both.

ENS 210. Introduction to Kinesiology (2) I, II

(Selected sections offered as distance education.)

Overview of discipline of kinesiology. Development of a basic philosophy and background for entering profession.

ENS 211. Introduction to Kinesiotherapy (1) I, II

Prerequisites: Exercise and Nutritional Sciences 210 and Biology 212.

Introduction to kinesiotherapy including history, educational requirements, standards of practice, scope of practice and basic skills needed to enter kinesiotherapy.

ENS 241A. Physical Education of Children—Theory (1) I, II

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 241B.

Physical education of elementary school-aged children: Theoretical and scientific bases. Not open to kinesiology majors.

ENS 241B. Physical Education of Children—Activities (1) I, II

Two hours of activity.

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 241A.

Physical education of elementary school-aged children: Activities and instruction. Not open to kinesiology majors.

ENS 265. Techniques in Athletic Training (1) I, II

Prerequisite: Credit or concurrent registration in Biology 212.

Athletic training techniques and emergency field care of athletic injuries. Theory and techniques of basic athletic first aid, emergency procedures including CPR, bandaging and taping.

ENS 265L. Techniques in Athletic Training Laboratory (1) I, II

Three hours of laboratory.

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 265.

ENS 288. Preprofessional Practicum in Kinesiotherapy (1) I, II

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 211.

Basic kinesiotherapy principles and techniques in a variety of clinical settings.

ENS 289. Preprofessional Practicum in Athletic Training (1)

Prerequisite: Credit or concurrent registration in Exercise and Nutritional Sciences 265 and 265L.

Basic athletic training principles and techniques; athletic training event coverage under direct supervision of a certified athletic trainer.

ENS 296. Experimental Topics (1-4)

Selected topics. May be repeated with new content. See Class Schedule for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree.

**UPPER DIVISION COURSES
(Intended for Undergraduates)**

ENS 301. Physical Growth and Development (3) I, II

Prerequisite: Exercise and Nutritional Sciences 210.

Principles of human growth; performance as affected by developmental levels and individual differences in structure and function.

ENS 302. History and Philosophy: Physical Activity and Sport (3) I, II

Prerequisite: Exercise and Nutritional Sciences 210.

Integrated approach to understanding of historical, philosophical, and sociological forces shaping development of physical activity and sport.

ENS 303. Applied Kinesiology (3) I, II

Prerequisites: Grade of C or better in Biology 212 and Exercise and Nutritional Sciences 210 or Dance 181. **Proof of completion of prerequisites required:** Copy of transcript. Limited to kinesiology, exercise physiology, nutritional science and exercise physiology, foods and nutrition and dance majors. Major Codes: 08351, 08355, 08356, 10081, 13061.

Arthrology, syndesmology and myology, with emphasis on movement analysis. Muscle groups and their functional relationships. Application of simple mechanical principles to movement analysis.

ENS 304. Physiology of Exercise (3) I, II

Prerequisites: Grade of C or better in Exercise and Nutritional Sciences 210 or Nutrition 101, and Biology 336. **Proof of completion of prerequisites required:** Copy of transcript. Limited to kinesiology, exercise physiology, nutritional sciences and exercise physiology, and foods and nutrition majors. Major Codes: 08351, 08355, 08356, 13061.

Effects of physical activities on physiological functions of the body.

ENS 304L. Exercise Physiology Laboratory (1) I, II

Three hours of laboratory.

Prerequisite: Credit or concurrent registration in Exercise and Nutritional Sciences 304.

Laboratory experiences in the application of exercises and the analysis of the results.

ENS 305. Measurement and Evaluation in Kinesiology (3) I, II

Prerequisites: Exercise and Nutritional Sciences 210 and one of the following: Biology 215, Economics 201, Psychology 270, Sociology 201, or Statistics 119. Limited to kinesiology majors. Major Code: 08351.

Testing and measurement for assessment and understanding of physical performance and for planning and evaluation of instruction in physical activity settings. Planning, implementation, and evaluation of tests.

ENS 306. Biomechanics of Human Movement (3) I, II

(Selected sections offered as distance education.)

Prerequisite: Exercise and Nutritional Sciences 303. Limited to kinesiology majors (Major Code: 08351) and biology (emphasis in bioengineering) majors (Major Code: 04011).

Mechanical principles as applied to movement; analysis and application to selected motor skills.

ENS 307. Motor Learning and Performance (3) I, II

Prerequisites: Exercise and Nutritional Sciences 210, Psychology 101, and one of the following: Biology 215, Economics 201, Psychology 270, Sociology 201, or Statistics 119. Limited to kinesiology majors (Major Code: 08351).

Psychological parameters related to physical performance and the acquisition of motor skills.

ENS 320. Skin and Scuba Diving (2)

Prerequisites: Medical examination, waiver for hazardous procedures, pass swimming competency test. Concurrent registration in Exercise and Nutritional Sciences 320L.

Function and knowledge of underwater diving to include diving physiology, hyperbaric conditions, medical hazards, safety procedures associated with scuba diving, proper care and operation of equipment. Not open to students with credit in Exercise and Nutritional Sciences 323, 324, Biology 305, 306, 461.

ENS 320L. Skin and Scuba Diving Laboratory (1)

Three hours of laboratory.

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 320.

ENS 323. Advanced Scuba Diving (2)

Prerequisites: Exercise and Nutritional Sciences 320 or Openwater Scuba Certification, medical examination, and acceptable openwater diving equipment. Concurrent registration in Exercise and Nutritional Sciences 323L.

Theory, skills, and technique including underwater navigation, diving physics, diving physiology, diving medicine, diving safety. Qualifies for Advanced Diving Certificate from the National Association of Underwater Instructors. Not open to students with credit in Exercise and Nutritional Sciences 324, Biology 306, 461.

ENS 323L. Advanced Scuba Diving Laboratory (1)

Three hours of laboratory.

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 323.

ENS 324. Assistant Scuba Instructor (2)

Prerequisites: Exercise and Nutritional Sciences 323 or Biology 306, Master Diver Certification, medical examination, and acceptable openwater diving equipment. Concurrent registration in Exercise and Nutritional Sciences 324L.

Qualifies for Assistant Scuba Instructor Certificate from the National Association of Underwater Instructors.

ENS 324L. Assistant Scuba Instructor Laboratory (1)

Three hours of laboratory.

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 324.

ENS 330. Exercise and Wellness Across the Lifespan (3) [GE] I, II

Prerequisite: Completion of the General Education requirement in Foundations II.B., Social and Behavioral Sciences.

Role of physical activity and exercise behavior in health and wellness. Personal applications plus gender and cultural implications of physical activity from childhood through adulthood.

ENS 335. Basic Movement Skills (2) I, II

Prerequisite: Credit or concurrent registration in Exercise and Nutritional Sciences 303. Limited to kinesiology and liberal studies majors. Major Codes: 08351 and 49015.

Terminology, performance, and analysis of elementary-level movement skill themes and concepts, educational gymnastics, rhythms, and dance.

ENS 341. Skill Competency in Physical Education (2) Cr/NC I, II

Four hours of activity.

Prerequisite: Credit or concurrent registration in Exercise and Nutritional Sciences 303.

Demonstrated skill and knowledge competencies in badminton, basketball, outdoor experience, physical fitness, self-defense, soccer, softball, swimming, tennis, volleyball, and one of the following: archery, dance, golf, gymnastics, football, racquetball and wrestling.

ENS 347A. Leadership for Kinesiology (2) I, II

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 347B. Limited to kinesiology and liberal studies majors. Major Codes: 08351 and 49015.

Theory and development of leadership behavior of physical educators, emphasizing leadership qualities unique to diverse physical activity settings.

ENS 347B. Leadership for Kinesiology Activity (1) I, II

Two hours of activity.

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 347A.

ENS 348. Special Physical Education (3) I, II

Prerequisite: Kinesiology or liberal studies upper division major status required.

Etiologies, characteristics, education programs, and activities for individuals with non-physical disabilities (e.g. mentally retarded, learning disabled, etc.).

ENS 350. Sport in Antiquity (3) I, II

Prerequisite: Upper division standing.

Athletics in ancient Greece and Rome. Role and scope of sporting competitions in ancient Greek and Roman cultures, and their influence on modern athletics.

ENS 351. Basic Coaching Theory (2) I

(Selected sections offered as distance education.)

Prerequisites: Exercise and Nutritional Sciences 210, 265, 265L.

Basic principles of coaching and conditioning for various sports. Defining actual physical and mental demands of a competitive activity. Coaching decisions concerning design of physical training programs for high school and club programs.

ENS 363. Corrective Physical Education (3) I, II

Prerequisites: Exercise and Nutritional Sciences 303 and 304.

Etiology, characteristics, and programs for children with corrective and/or physically handicapping conditions. Includes evaluating and implementing prescribed activities for individuals with these types of conditions.

ENS 365. Scientific Management of Sports Injuries (3) I, II

Prerequisites: Biology 201A; Exercise and Nutritional Sciences 265, 265L, 303, credit or concurrent registration in Exercise and Nutritional Sciences 306.

Pathomechanics and pathophysiology of soft tissue and bone injury as it relates to the identification and management of sport related injuries.

ENS 367. Clinical Evaluation of Sports Injuries Part I (2) I

Prerequisites: Credit or concurrent registration in Exercise and Nutritional Sciences 303 and 389A.

Theory of clinical evaluation of sports injuries techniques and scientific basis of techniques. Principles of systematic differential evaluation of upper extremity, cervical spine. (Not open to students with credit in Exercise and Nutritional Sciences 366.)

ENS 367L. Clinical Evaluation of Sports Injuries Part I (1) I

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 367.

Practical experience in clinical evaluation of sports injuries techniques and scientific basis of techniques. Principles of systematic differential evaluation of upper extremity, cervical spine. (Not open to students with credit in Exercise and Nutritional Sciences 366L.)

ENS 368. Clinical Evaluation of Sports Injury Part II (2) II

Prerequisites: Exercise and Nutritional Sciences 367 and 367L.

Theory of clinical evaluation of sports injury techniques and scientific basis of techniques. Systematic differential evaluation process applied to lower extremities, thoracic, and lumbar spine and chest and abdominal injuries. (Not open to students with credit in Exercise and Nutritional Sciences 366.)

ENS 368L. Clinical Evaluation of Sports Injury Part II (1) II

Prerequisites: Exercise and Nutritional Sciences 367 and 367L. Concurrent registration in Exercise and Nutritional Sciences 368.

Practical experience in clinical evaluation of sports injuries techniques and scientific basis of techniques. Principles of systematic differential evaluation process applied to lower extremities, thoracic and lumbar spine and chest and abdominal injuries. (Not open to students with credit in Exercise and Nutritional Sciences 366L.)

ENS 388. Adapted Physical Education Laboratory (1-4) I, II

Three hours of laboratory per unit.

Prerequisite: Credit or concurrent registration in Exercise and Nutritional Sciences 348 or 363 or 367 and 367L; consent of instructor.

Supervised clinical experience working in the adapted physical education laboratory setting on campus with individuals with disabilities. Maximum credit four units.

ENS 389A-389B-389C-389D-389E-389F. Practicum in Athletic Training (1-1-1-1-1-1) I (389A, 389C, 389E), II (389B, 389D, 389F)

389A, 389B, 389C, 389D: Two hours of activity.

389E, 389F: Three hours of laboratory.

Prerequisites: 389A: Grade of B or better in Biology 212, Exercise and Nutritional Sciences 265, 265L, 289, application, letters of recommendation, and interview.

389B: Grade of B or better in Exercise and Nutritional Sciences 389A.

389C: Grade of B or better in Exercise and Nutritional Sciences 389B.

389D: Grade of B or better in Exercise and Nutritional Sciences 389C.

389E: Grade of B or better in Exercise and Nutritional Sciences 389D.

389F: Grade of B or better in Exercise and Nutritional Sciences 389E.

Practical training and clinical applications of basic and advanced techniques of athletic training. Emergency, preventative procedures treatment, and rehabilitation techniques to be performed in actual athletic training settings. Practicum experience offered in conjunction with clinical internship.

ENS 397. Contemporary Topics in Kinesiology (Credit to be arranged) (Offered only in Extension)

Prerequisites: Consent of instructor; bachelor's degree.

Study of specially selected problems in physical education and sport. Does not apply to undergraduate degrees or credentials.

ENS 398. Supervised Field Experience (1-3) Cr/NC I, II

Prerequisite: Consent of department chair. Limited to kinesiology and liberal studies majors. Major Codes: 08351 and 49015.

Supervised practical experience in the area of kinesiology. Maximum credit six units.

ENS 401A. Musculo-Skeletal Fitness (1) I, II

Prerequisites: Exercise and Nutritional Sciences 104A or 104B or 341; Exercise and Nutritional Sciences 304, 304L, 306. Concurrent registration in Exercise and Nutritional Sciences 401B.

Training techniques in areas of strength and flexibility. Examination of facilities and equipment, mechanics of strength and flexibility techniques, development of training program, basic physiology and review of current research in areas of strength and flexibility.

ENS 401B. Musculo-Skeletal Fitness Activity (1) I, II

Two hours of activity.

Prerequisites: Concurrent registration in Exercise and Nutritional Sciences 401A.

Circular respiratory endurance, muscular strength and endurance, selection and care of equipment and facilities, and programs in the areas of flexibility, weight training and aerobics.

ENS 412. Leading Group Aerobic Exercise (1) I, II

Two hours of activity.

Prerequisites: Exercise and Nutritional Sciences 303, 304, 304L.

Teaching group aerobic exercise including aerobic dance, step training, circuit training, and interval training. Students design and lead aerobic, strength, and flexibility segments of a group of aerobic exercise class.

ENS 431. Administration of Exercise and Fitness Program (2) I, II

Prerequisites: Exercise and Nutritional Sciences 303, 304, 304L.

Administration and management of corporate, private, university-based, and hospital-based exercise programs.

ENS 432. Exercise, Fitness, and Health (2) I, II

Prerequisites: Exercise and Nutritional Sciences 303, 304, 304L, 305. Concurrent registration in Exercise and Nutritional Sciences 432L.

Exercise testing, programming and leadership for healthy persons of different ages, capacities, and needs.

ENS 432L. Exercise, Fitness, and Health (1) I, II

Three hours of laboratory.

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 432.

Practicum in exercise testing, programming and leadership for healthy persons of different capacities, and needs.

ENS 433. Exercise, Sport, and Aging (3) I, II

Prerequisites: Exercise and Nutritional Sciences 301 and 304.

Relationships between exercise, sport and human aging including physiological, psychological, sociological, health and program considerations. Aging is viewed developmentally with emphasis on the middle and later years.

ENS 434. Promoting Physical Activity and Health Behavior (3)

Prerequisites: Exercise and Nutritional Sciences 347A and 347B.

Theoretical approaches and personal, client, and population strategies for developing and maintaining health-related physical activity and associated behaviors.

ENS 441. Practicum: Physical Education Activities (2) I, II

Four hours of activity.

Prerequisites: Exercise and Nutritional Sciences 306, 347A, 347B.

Selection and care of equipment and facilities; analysis of skill; progression for skills, drills and the game; lead-up activities; safety; performance cues; terminologies; skill evaluations; tactics and strategies.

A. Sport Applications I

B. Sport Applications II

ENS 442A. Physical Education for Elementary Schools (2) I, II

Prerequisites: Exercise and Nutritional Sciences 335, 347A and 347B.

Objectives, curricula, activities, and application of basic scientific principles for the conduct of physical education in elementary schools.

ENS 442B. Physical Education for Elementary Schools Activity (1) I, II

Two hours of activity.

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 442A.

ENS 445. Current Issues in Physical Education (2) I, II

Prerequisite: Exercise and Nutritional Sciences 441A.

Current issues relevant to physical education. Includes assessment, liability, curriculum standards, appropriate physical activity levels, and safety.

ENS 446A. Physical Education with Adolescents (2)

Prerequisites: Exercise and Nutritional Sciences 441A, 441B, 442A, 442B.

Basic requirements, principles, and concepts for conducting physical education with adolescents.

ENS 446B. Physical Education with Adolescents (1)

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 446A.

Application of basic requirements, principles, and concepts for conducting physical education with adolescents.

ENS 460. Professional Issues (1) Cr/NC I, II

Prerequisite: Senior standing in prephysical therapy specialization.

Current issues relevant for one preparing to enter an allied health profession.

ENS 461. Sport and Exercise Psychology (3)

Prerequisite: Exercise and Nutritional Sciences 307.

Psychological factors underlying behavior in sport and physical activity. Emphasis on personality and motivational factors.

ENS 462. Therapeutic Modalities for Sports Injuries (3) I

Prerequisites: Grade of B or better in Exercise and Nutritional Sciences 365 and 389A.

Theories and techniques for the design, implementation, evaluation, and application of rehabilitation modalities.

ENS 463. Principles and Techniques in Therapeutic Exercise (2) I, II

Prerequisites: Grade of B or better in Exercise and Nutritional Sciences 365. For athletic training students, a grade of B or better in Exercise and Nutritional Sciences 389A. For kinesiotherapy students, credit or concurrent registration in Exercise and Nutritional Sciences 487A.

Design and application of therapeutic exercise programs for athletic injuries.

ENS 463L. Principles and Techniques in Therapeutic Exercise Laboratory (1) I, II

Three hours of laboratory.

Prerequisite: Concurrent registration in Exercise and Nutritional Sciences 463.

ENS 465. Seminar in Athletic Training (2)

Prerequisites: Grade of B or better in Exercise and Nutritional Sciences 365 and 389C.

Professional issues in athletic training discipline, including topics in organization and administration.

ENS 466. Clinical Pathology for Athletic Trainers (3) II

Prerequisites: Grade of B or better in Exercise and Nutritional Sciences 365 and 389C.

Clinical pathology associated with body systems, clinical recognition, management, and referral of non-orthopedic pathologies associated with physically active persons.

ENS 477. Therapeutic Practices of Kinesiotherapy (3)

Prerequisite: Credit or concurrent registration in Exercise and Nutritional Sciences 487A.

Foundations of physical disability and description of pathological processes often treated in kinesiotherapy.

ENS 478. Organization and Administration of Kinesiotherapy (2)

Prerequisite: Credit or concurrent registration in Exercise and Nutritional Sciences 487A.

Principles and practices of administration in kinesiotherapy.