ARTS AND LETTERS

College of Arts and Letters

390H. Perspectives in Literature
Fall. 4(3-0) Juniors, approval of Honors College.
Attention will be focused on several major literary works. Students will employ various types of literary analysis, considering theme, idea, structure, etc., and examining some major trends in contemporary literary criticism.

391H. Perspectives in the Social Sciences and Humanities
Fall, Winter, Spring. 2 to 6 credits. May reenroll for a maximum of 12 credits. Approval of Honors College or department.
An integration of subject matter and methodologies of several disciplines as they are relevant to particular topic areas.

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

ASTRONOMY AND ASTROPHYSICS

109. Astronomical Fiction
Winter. 1(1-0) AST 119 concurrently. Concurrent readings of works of science fiction to assist the visualization of the concepts presented in AST 119.

115. Exploring Cosmology
Spring. 2(2-0) Not open to engineering or physical science majors. Nonmathematical view of the origin, history, and overall structure of the universe, based on the Big Bang model of cosmology.

117. Introductory Observing
Fall, Spring. 2(1-2) AST 119, or AST 217, or AST 229 or concurrently and approval of department. Observations of celestial objects, constellation identification, and occasional planetarium exercises.

119. General Astronomy (N)
Fall, Winter, Spring. 4(4-0) Not open to engineering or physical science majors. Students may not receive credit in more than one of the following: AST 119, AST 217, AST 229. A qualitative presentation of man's current view of the universe including birth and death of stars, cosmology, comparisons of planets, and life in the universe.

120. Topics in Astronomy
Winter. 4(4-0) AST 119. Detailed qualitative discussion of currently interesting topics in astronomy. May include such topics as quasars, pulsars, black holes, planetary exploration, cosmology, concepts of relativity.

217. General Astronomy (N)
Fall, Winter. 4(4-0) MTH 102 or MTH 109 or MTH 111. Students may not receive credit in more than one of the following: AST 119, AST 217, AST 229. Intended primarily for physical science majors. A semiquantitative presentation of man's current view of the universe including birth and death of stars, cosmology, comparisons of planets, and life in the universe.

229. General Astronomy
Fall. 4(4-0) PHY 287 or PHY 291H or concurrently. Students may not receive credit in more than one of the following: AST 119, AST 217, AST 229. Fundamental observations in astronomy and their interpretation through physical laws. Intended for physical science majors and recommended for astrophysics majors. Quantitative discussion of orbital motion, time, telescopes, solar system, stars, galaxies, and cosmology. Limited opportunity for astronomical observations.

327. Practical Astronomy
Winter. 2(3-0) AST 217 or AST 229, MTH 113. Celestial coordinate systems. Time conversion and sidereal time. Atmospheric refraction, parallax, proper motion, aberration, and precession. Star catalogs and ephemerides. Finding charts and setting of equatorial telescopes.

375. Contemporary Astronomy
Winter. 3(3-0) AST 217 or AST 229. A continuation of General Astronomy with particular emphasis on modern developments. May include such topics as planetary exploration, interstellar matter, star formation, stellar evolution through giant stages, supernovae, pulsars, neutron stars, black holes, galaxies, and cosmology.

437. Observatory Practice
Spring. 1(1-4) AST 327 and approval of department. Stellar photography. Photoclectric photometry and corrections for atmospheric extinction. Multicolor photometric systems. Astronomical spectroscopy and radial velocity determinations.

455. Astrophysics
Winter. 3(3-0) AST 217 or AST 229, PHY 289, PHY 385, or approval of department. Application of physical principles to the atmospheres and interiors of stars to deduce their physical properties. Discussion of radiation, spectra and gas properties.

459. Solar System Physics
Spring. 3(3-0) PHY 289 or approval of department. Physical properties of the sun, interplanetary space, planets, and satellites as deduced from terrestrial observations and from space probes. Recent results of the NASA space program will be emphasized.

490. Special Problems
Fall, Winter, Spring. Students 1 to 5 credits. May reenroll for a maximum of 10 credits. Approval of department. Individual study or project under the direction of a faculty member. An oral report on the work may be required in department seminar.

800. Research Methods
Fall, Winter, Spring. May reenroll for a maximum of 6 credits. Beginning graduate students. Interdepartmental with and administered by the Department of Physics. Problems and techniques of current research by taking part in the design and setup of experiments, data taking and reduction, study and practice of theoretical methods. Areas of study: solid state and molecular structure, nuclear, elementary particles, astronomy, astrophysics.
AUDIOLGY AND SPEECH SCIENCES  ASC

108. Voice and Articulation  Winter, Summer. 3(4)  ASC 276, ASC 277. The study and development of the skills of voice and articulation.

222. Oral Language Development  Winter, Summer. 3(2)  Emergence and development of receptive and expressive aspects of oral language of the child.

227. Physics for Audiology and Speech Sciences  Fall, Spring. 3(3)  MTH 109. Not open to students with credit in PHY 237. Interdepartmental with and administered by the Department of Physics. The physics of hearing; underpinnings of audiology and speech sciences; perception of sound; resonance; pitch; intensity; vibrations, sound propagation, and speech production.

274. Structures and Functions of Speech and Hearing Mechanisms  Fall, Winter. 4(4)  ASC 108 or approval of department. Peripheral and central auditory mechanisms and the respiratory, phonatory and articulatory mechanisms for speech.

276. Descriptive Phonetics  Winter, Spring. 3(3)  ASC 274 or approval of department. Detailed description of the principles that underlie the production of speech sounds.

277. Scientific Bases of Voice Communication Process  Fall, Spring. 3(3)  ASC 276 and PHY 237 or approval of department. Scientific bases of voice communication with special reference to the acoustic aspect of production.

372. Speech Pathology I  Fall, Winter. 5(3)  ASC 276, ASC 277. Etiology, symptomatology, and rationale of therapy for speech and language problems.

373. Clinical Procedures in Speech Pathology and Audiology  Winter. 5(2)  2.0 grade-point average in ASC 277 and ASC 372 or approval of department. Principles underlying the clinical interview and client relationships essential to diagnosis and therapy. Procedures in obtaining, recording, and evaluating test results and therapeutic methods.

444. Oral Language of Urban Areas  Winter, Summer. 3(3)  Concentration in the characteristics of language and human communication as these relate to studies and practices of those involved in urban affairs.

454. Introduction to Audiology  Fall, Spring. 5(4)  ASC 276, ASC 277. Fundamental aspects of normal hearing; hearing disorders, hearing tests.