

ARTS AND LETTERS A L

College of Arts and Letters

390H. Perspectives in Literature

Fall. 4(3-0) Juniors, approval of the 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 Philosophy

Winter. 4(3-0) Juniors, approval of the Honors College.

The two primary areas of concern will be ethics and aesthetics, the emphasis on one or the other to be determined by the professor. The course will include reading of major works, discussion of major figures in the field, and the preparation of a substantial paper.

392H. Perspectives in History

Spring. 4(3-0) Juniors, approval of the Honors College.

The focus will be on the nature of international diplomacy in the 20th century, the development of nationalism, the balance of power system, the influence of new ideologies, and the developments of the power structure since 1945.

450. Arts Management

Fall, Winter, Spring. 3 to 5 credits. May re-enroll for a maximum of 9 credits. Seniors or Graduate Students or approval of department.

Administration of arts organizations, management of facilities, understanding operational methods and procedures of performing companies, financial structure and funding of arts centers, study of audience development, contemporary trends in arts management field.

ASTRONOMY AST

College of Natural Science

119. General Astronomy

Fall, Winter, Spring, Summer. 4(4-0) Not open to engineering or physical science majors or minors.

Physical nature of solar system, star clusters, and galaxies as seen by modern astronomers. Limited opportunity for astronomical observations.

217. General Astronomy

Fall, Winter. 4(4-0) MTH 102.

Descriptive course intended primarily for physical science majors. A semi-quantitative discussion of time, telescopes, the solar system, stars, clusters of stars, galaxies, and cosmology. Limited opportunity for astronomical observations.

229. General Astronomy

Spring. 4(4-0) PHY 287 or 291 or concurrently. Students may not receive credit in more than one of the following: 119, 217, 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

Spring. 3(3-0) 217, 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.

378. Contemporary Astronomy

Winter. 3(3-0) 119 or 217; MTH 113.

A continuation of 119 or 217 with particular emphasis on modern developments. Includes interstellar matter, star formation, stellar evolution through final stages, supernovae, pulsars, neutron stars, galaxies and cosmology.

437. Observatory Practice

Fall. 3(1-4) 327.

Stellar photography. Photographic photometry. Photoelectric photometry and corrections for atmospheric extinction. Multicolor photometric systems. Astronomical spectroscopy and radial velocity determinations.

458. Astrophysics

Winter. 3(3-0) 217 or 229, PHY 289, 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

Fall. 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, Summer. 1 to 5 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.

801. Seminar

Winter. 1(1-0) May re-enroll for a maximum of 2 credits. Graduate students or approval of department.

Seminars to be presented by both faculty and students to review papers in the current astronomical research literature.

819. Stellar Structure

Spring of even-numbered years. 3(3-0) 458 or PHY 395 or approval of department.

Physical properties of the stellar interior. Methods of calculating models. Stellar evolution. Comparison of theory with current observations.

828. Galactic Structure

Winter of even-numbered years. 3(3-0) PHY 427 or approval of department.

Distribution and dynamics of stars and interstellar material in our galaxy. Spiral structure. Galactic evolution.

839. Celestial Mechanics

Spring of even-numbered years. 3(3-0) PHY 427 or approval of department.

Two-body, three-body, and n-body problems. Orbital elements. Potential of solid objects. Orbital motion and perturbations for planets, rockets, and satellites.

850. Ionized Gases

Spring. 3(3-0) E E 835 or PHY 448. Interdepartmental with and administered by Electrical Engineering.

Elastic collision processes; Boltzmann equation; moment equations; basic plasma phenomena; motion of a charged particle in electrical and magnetic field; individual and collective charged particle behavior.

859. Stellar Atmospheres

Spring of odd-numbered years. 3(3-0) 458 or PHY 395 or approval of department.

The physics of radiation and the equation of its transfer. Theory of absorption coefficient and line absorption profile. The gray atmosphere and calculation of model atmospheres.

860. General Relativity and Cosmology I

Fall of even-numbered years. 3(3-0) PHY 859 or approval of department. Interdepartmental with and administered by the Physics Department.

Conceptual foundations of general relativity theory; elements of tensor calculus; Riemann-Christoffel curvature tensor; the field equations; experimental tests; special solutions; the extension to cosmology.

861. General Relativity and Cosmology II

Winter of odd-numbered years. 3(3-0) 860. Interdepartmental with and administered by the Physics Department.

Relativistic cosmology: the model universes; steady-state theory; observational evidence and possibilities for decision among models; current problems.

989. Waves and Radiations in Plasmas

Fall of even-numbered years. 3(3-0) 850. Interdepartmental with and administered by Electrical Engineering.

Plasma oscillation; interaction, electromagnetic fields with plasmas, wave propagation in magnetoionic media; plasma sheath; radiation of electric source in incompressible and compressive plasmas; electroacoustic waves; magneto-hydrodynamics; research topics in plasmas.

AUDIOLOGY AND SPEECH SCIENCES ASC

College of Communication Arts

093. Remedial Speech

Fall, Winter, Spring, Summer. 0(2-0) [2(2-0)]†.

Special help in relieving or compensating for disorders of speech.

108. Voice and Articulation

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

The study and development of the skills of voice and articulation.

222. Oral Language Development

Winter, Summer. 3(2-0)

Emergence and development of receptive and expressive aspects of oral language of the child.

274. Structures and Functions of Speech and Hearing Mechanisms

(854A., 475.) Fall, Winter. 3(3-0) 108 or approval of department.

Peripheral and central auditory mechanisms and the respiratory, phonatory and articulatory mechanisms for speech.

276. Descriptive Phonetics

(275.) Winter, Spring. 3(3-0) 274 or approval of department.

Detailed description of the principles that underlie the production of speech sounds.

277. Scientific Bases of Voice Communication Process

(275.) Fall, Spring. 3(3-0) 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(3-0) 276, 277.

Etiology, symptomatology, and rationale of therapy for speech and language problems.

373. Clinical Procedures in Speech Pathology and Audiology

Winter, Spring. 4(2-2) 2.00 grade-point average in 277 and 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(3-0)

Concentration in the characteristics of language and human communication as these relate to studies and practices of those involved in urban affairs.

454. Audiology I

Fall, Spring. 5(4-1) 276, 277.

Fundamental aspects of hearing; nature, testing and rehabilitation.

460. Audiology II

Winter, Summer. 5(3-0) 454 or approval of department.

Theory and methodology in the teaching of lip-reading and auditory training to the acoustically handicapped.

470. Speech Correction for Teachers

Fall, Winter, Spring, Summer. 3(3-0)

Juniors. Not open to speech pathology and audiology majors.

Meeting needs of the speech handicapped child in classroom.

474. Clinical Practice in Speech Correction

Fall, Winter, Spring, Summer. 1 to 3 credits. May re-enroll for credit. Six credits required for certification. No more than 2 credits may be taken during the preprofessional program. 372.

476. Speech Pathology II: Diagnostics (473.)

Fall, Winter, Spring, Summer. 5(3-2) 474 or approval of department.

Test procedures and analysis; supervised clinical experience in language and speech evaluations and report writing.

477. Methods in Public School Speech and Hearing Therapy

Fall, Winter, Spring. 4(3-4) 372.

Must be taken prior to term of student teaching. Administration and organization, procedures and materials in public school speech and hearing therapy.

499. Independent Study

Fall, Winter, Spring, Summer. 1 to 6 credits. May re-enroll for a maximum of 12 credits. Approval of department.

801. Advanced Study of Articulatory Behavior

Fall. 4(3-1) Approval of department.

Theoretical and pragmatic implications of the interrelationships of articulatory behavior and language production, especially as related to investigating procedures and results.

831. Speech and Hearing Problems of Adults

A. NEUROPATHOLOGIES OF SPEECH

Winter. 4(3-0)

Neuropathology, symptomatology, and speech and language rehabilitation of adults.

B. VOICE DISORDERS

Spring. 4(3-0)

Etiology, symptomatology, and therapeutic procedures for disorders of voice. Speech pathologist and audiologist in relation to other disciplines in the rehabilitation of adults with voice disorders.

832. Speech and Hearing Evaluation and Therapy

A. HEARING HANDICAP

Summer. 4(2-2)

A theoretical approach to the study of the aural rehabilitative process.

B. CEREBRAL PALSY

Spring. 4(3-0)

Etiology, symptomatology, structural and functional consideration of cerebral palsy. Therapeutic procedures for the speech of the cerebral palsied.

C. DELAYED LANGUAGE DEVELOPMENT

Winter. 4(3-0)

Evaluative techniques including audiometry, psychometry, and case history as aids to the differential evaluation of delayed language development.

D. MENTAL RETARDATION

Summer. 4(3-0)

Language behavior and speech development of the mentally retarded as related to all facets of personal-social development and adjustment.

E. STUTTERING

Summer. 4(3-0)

Longitudinal studies of stuttering theories and the therapies accompanying them.

F. CLEFT PALATE

Fall. 4(2-0)

Etiology, symptomatology, structural and functional consideration of cleft palate. Therapeutic procedures for the speech habilitation of cleft palate individuals.

833. Specialized Clinical Audiology

A. DIFFERENTIAL AUDIOMETRY

Fall. 4(3-0)

Pure tone audiometric tests as an aid to the otologist in evaluating the pathology of hearing loss; including the development of norms. Consideration of nonorganic loss.

B. SPEECH AUDIOMETRY AND EVALUATION OF HEARING AIDS

Fall. 4(4-0)

Speech audiometry; principles and methods in the selection of hearing aids; physical characteristics of hearing aids.

C. INDUSTRIAL AUDIOLOGY

Spring. 4(2-2)

Evaluation of the role of the audiologist in industry emphasizing identification procedures, damage-risk criteria, measurement and control of noise, conservation procedures, and medico-legal problems.

D. ADVANCED AUDIOLOGICAL EVALUATION

Winter. 4(3-1)

Theory, administration and evaluation of selected tests including Bekesy, EDR, EEG, and advanced speech-audiometric tests.

E. PEDIATRIC AUDIOLOGY

Winter. 4(2-2)

Evaluative procedures including play audiometry, language assessment, and case studies as aids to the differential diagnosis of auditory disorders in children; habilitative procedures for the acoustically handicapped child.

853. Speech Perception: Theory and Measurement

Spring. 4(4-0) Approval of department.

Evaluation and analysis of various theories of speech perception and their implications for speech and language pathologists, audiologists, and speech and hearing scientists.

854. Psychophysics and Theories of Audition

(854B.) Summer. 4(3-0)

Nature of auditory stimuli and the results of psychophysical experimentation in audition.

874. Speech and Hearing Problems in Public Schools

Summer. 4(3-0) May re-enroll for a maximum of 16 credits.

Graduate seminar in speech and hearing involving problems that arise in relation to speech and hearing therapy in the public schools.

876. Communication Disorders: Neuroanatomy-Neurophysiology

Fall. 4(3-1) Approval of department.

Neuroanatomical and neurophysiological correlates of speech, language, and hearing.

880A. Algorithms for Speech and Hearing Sciences

Fall. 4(4-0)

A discussion of useful algorithms applicable to quantification of phenomena related to audiology and speech sciences.

880B. Acoustic Phonetics

(875C.) Winter. 4(2-2) 880A or approval of department.

An analytic study of the acoustics of speech.

880C. Instruments and Electronics for Audiology and Speech Sciences

(875A.) Spring. 4(3-3) 880B or approval of department.

A discussion of the electronic principles and instruments necessary to measure parameters related to hearing and speech processes.

880D. Experimental Phonetics

(875B.) Summer. 4(2-0) 880C or approval of department.

Critical review of the literature in experimental phonetics with special reference to the historical development of the field and subsequent experimentation in physiological and acoustical phonetics.

899. Research

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

940. Seminar in Audiology and Speech Sciences

Spring, Summer. 4(2-0) May re-enroll for maximum of 16 credits.

990. Special Problems in Audiology and Speech Sciences

Fall, Winter, Spring, Summer. 1 to 6 credits.

Special projects in audiology and speech sciences.

999. Research

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

BIOCHEMISTRY

BCH

College of Agriculture and
Natural Resources

College of Human Medicine

College of Natural Science

College of Osteopathic Medicine

163. Biochemistry Laboratory

Spring. 2(0-6) Honors section of CEM 162, and approval of department.

Experimental aspects of biochemistry for biochemistry majors with an honors chemistry background.