ASTRONOMY* AST

College of Natural Science

119. General Astronomy (PHY 119) Winter, Spring, Summer. 4(4-0) Not open to engineering or physical science majors. Students may not receive credit in both 119 and 217. Physical nature of solar system, star clusters, and galaxies as seen by modern astronomers. Limited opportunity for astronomical observations.

217. General Astronomy (PHY 217) Fall, Winter, 4(4-0) MTH 10. Students may not receive credit in both 217 and 119. 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.

327. Practical Astronomy Fall. 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.


459. Astrophysics Winter. 3(3-0) PHY 289 or approval of department. Properties of a gas under conditions of astrophysical interest. Atomic spectroscopy. Emission and absorption of radiation. Physical properties of stellar atmospheres and other astronomical objects as inferred from the spectra.

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, 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.

819. Stellar Structure Spring. 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 437 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 437 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.

- Effective Fall 1968. Formerly part of Department of Physics and Astronomy.

850. Ionized Gases Spring. 3(3-0) E E 835 or PHY 448. Interdepartmental with and administered by the Electrical Engineering Department. Elasto collision processes; Boltzmann equation; moment equations; basic plasma phenomena; motion of a charged particle in electrical and magnetic fields; individual and collective charged particle behavior.

989. Waves and Radiations in Plasmas Fall of even-numbered years. 3(3-0) E E 880. Interdepartmental with and administered by the Electrical Engineering Department. Plasma oscillation; interaction, electromagnetic fields with plasmas; wave propagation in magnetio metric media; plasma sheath; radiation of electric sources in incompressive and compressive plasmas; electroacoustic waves; magneto-hydrodynamics; research topics in plasmas.

AUDIOLGY 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.

276. Descriptive Phonetics (275.) Fall, Spring, 3(2-2). Detailed description of the principles that underlie the production of speech sounds.


372. Speech Pathology I Fall, Winter. 5(3-0) 276, 277. Etiology, symptomatology, and rationale of therapy for speech and language problems.


454. Audiology I Fall, Winter, Spring, Summer. 3(3-0) 276, 277. Fundamental aspects of hearing; nature, testing and rehabilitation.

460. Audiology II Winter. 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 the classroom.

473. Speech Pathology II Spring. 5(3-0) 372 or approval of department. Etiology and symptomatology of disorders of the nervous system and malo-good facial anomalies resulting in speech and/or language problems of children.

474. Clinical Practice in Speech Correction Fall, Winter, Spring, Summer. 1 to 3 credits. May re-enroll for a maximum of 12 credits. Approval of department.

531. Speech and Hearing Problems of Adults A. NEUROPATHOLOGIES OF SPEECH Winter. 4(3-0) Neuropathology, symptomatology, and speech and language rehabilitation of adults.

A. V.OICE 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 LOSS Summer. 4(2-0) Review, evaluation, and development of techniques employed in lip-reading training, auditory training, hearing aid orientation, and counseling for the acoustically handicapped.

B. CENTRAL PALSY Spring. 4(2-1) Etiology, symptomatology, structural and functional considerations 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 Winter. 4(2-0) Language behavior and speech development of the mentally retarded as related to all facets of personal-social development and adjustment.