Astronomy

Department of Physics and Astronomy

*ASTR 120. The Solar System. 3 credits.
An introductory course in astronomy, which includes the following topics: motions of celestial objects, eclipses, historical development, the nature of light, telescopes, properties and evolution of the solar system.

*ASTR 220. General Astronomy I: The Night Sky, the Solar System and Stars. 3 credits.
ASTR 220 is the first in a two-course sequence in general astronomy intended for students with a background in physics. Topics covered include: appearance and movements of the night sky, astronomical coordinate systems and timekeeping; seasons, eclipses and planetary configurations; planetary motions and gravitation; fundamental forces; electromagnetic radiation and its detection; content, structure, formation and evolution of solar system; observations and models of the Sun, stellar interior models; stellar magnitudes and spectra, classifications; Hertzsprung-Russell diagram. Prerequisite: PHYS 140 or PHYS 240.

ASTR 221. General Astronomy II: Star Systems, the Interstellar Medium and Cosmology. 4 credits.
ASTR 221 is the second in a two-course sequence in general astronomy intended for students interested in science. Topics covered include: stellar evolution; variability and high-energy phenomena in stars and multiple-star systems; content, structure, and dynamics of the Milky Way; external galaxies, quasars and AGN; large-scale structures and the distance scale of the universe; the Big Bang model and alternative cosmologies, possible geometries and eventual fates of the universe. An observational astronomy laboratory component is part of this course. The lab component will cover basics of telescope set up and operation as well as astronomical coordinate systems. Prerequisite: ASTR 220.

ASTR 297. Topics in Astronomy. 1-4 credits.
Topics in astronomy at the second year level. May be repeated for credit when course content changes. Topics selected may dictate prerequisites. Students should consult instructor prior to enrolling for course. Prerequisite: Permission of the instructor.

ASTR 301. Searching for Life in the Universe. 3 credits.
A study of the search for life in the universe, with emphasis on teacher preparation. Topics include how life on earth can guide the search, conditions for life within our solar system, extrasolar planets that may be conducive to life, possible radio communications with other civilizations and technologies necessary for search. Significant time is spent developing student lesson plans. Prerequisites: GSCI 161, GSCI 162, GSCI 183 and GSCI 184.

ASTR 320. Astronomical Techniques. 3 credits.
An overview of modern astronomical techniques with an emphasis on quantitative data collection and analysis. The design and use of various astronomical devices will be covered. Topics will include visible light telescopes and radio telescopes as well as CCD data collection in addition to other current astronomical techniques. Data reduction software will also be addressed. Prerequisites: ASTR 220 and ASTR 221.

ASTR 397. Topics in Astronomy. 1-4 credits.
Topics in astronomy at the intermediate level. May be repeated for credit when course content changes. Topics selected may dictate prerequisites. Students should consult instructor prior to enrolling for course. Prerequisite: Permission of the instructor.

ASTR/PHYS 398. Independent Study in Physics or Astronomy. 1-3 credits, repeatable to 4 credits.
An individual project related to some aspect of physics or astronomy. Must be under the guidance of a faculty adviser. A student may not earn more than a total of four credits for PHYS/ASTR 398.

ASTR 480. Astrophysics. 3 credits.
An introduction to the problems of modern astronomy and the quantitative application of physical principles to these problems. Topics of study include stellar structure and evolution, the interstellar medium and star formation, cosmic rays, pulsars, galactic structure, extragalactic astronomy and cosmology. Prerequisites: PHYS 340 and PHYS 380.

ASTR 497. Topics in Astronomy. 1-4 credits.
Topics in astronomy at the advanced level. May be repeated for credit when course content changes. Topics selected may dictate prerequisites. Students should consult instructor prior to enrolling for course. Prerequisite: Permission of the instructor.

ASTR/PHYS 498R. Undergraduate Research in Physics or Astronomy.
Research in a selected area of physics or astronomy as arranged with a faculty research advisor. A student may not earn more than a total of six credits for PHYS/ASTR 498R. Prerequisite: Proposal for study must be approved prior to registration.

Athletic Training Education Program

Department of Health Sciences

ATEP 205. Introduction to Athletic Training (2, 2). 3 credits. Offered fall, spring and summer.
This course provides a broad introduction to the profession of athletic training. Lectures will focus on the domains of athletic training. Emphasis will be placed on basic emergency management as well as injury prevention including environmental issues, strength and conditioning, and selection of equipment. Laboratory will mirror lecture. Prerequisite: ATEP or HS major, coaching minor, or permission of instructor.

ATEP 206. Recognition and Management of Athletic Injuries. 3 credits. Offered spring and summer.
Building on the concepts learned in ATEP 205, the course will emphasize the recognition of common athletic injuries. Pathology, mechanisms of injury, signs and symptoms, evaluation findings, and basic management of injuries will be explored. Athletic injuries of special populations will also be addressed. Prerequisites: BIO 290 and ATEP 205 with a grade of “C” or better.

ATEP 291. Pre-Professional Practicum in Athletic Training. 2 credits. Offered spring.
This course is designed to help students better understand the duties and responsibilities of the athletic trainer. By focusing on psychomotor skills and the application of didactic knowledge, students build a foundation which prepares them for future clinical rotations. Prerequisite: Permission of the instructor.

ATEP 304A. Lower Quarter Evaluation (2, 2). 3 credits. Offered fall.
This course systematically focuses on orthopedic and neurological evaluation including functional testing of athletic injuries. The lower quarter consists of the lower extremity, pelvis and lumbar spine. Other topics include management of internal injuries and sudden death related to athletic participation. Prerequisite: ATEP 291 and admission to the clinical component of the athletic training curriculum.

ATEP 304B. Upper Quarter Evaluation (2, 2). 3 credits. Offered spring.
This course systematically focuses on orthopedic and neurological evaluation including functional testing of athletic injuries. The upper quarter consists of the upper extremity, head, neck and thorax. Other topics include management of crisis situations and facial injuries related to athletic participation. Prerequisite: ATEP 304A.

ATEP 305. Rehabilitation in Athletic Training: Lower Extremity (2, 2). 3 credits. Offered spring.
This course explains the rehabilitation process of lower extremity muscular and joint injuries related to athletic activities. Additional topics include reimbursement, facility design, budget preparation and pre-season assessment. Prerequisite: BIO 290 and admission to the clinical component of the athletic training curriculum.

ATEP 306. Therapeutic Modalities (3, 2). 4 credits. Offered fall.
This course provides a thorough overview of tissue injury, inflammatory response, healing process and neurophysiology applied to musculoskeletal injuries. Theory, application and clinical decision-making processes using therapeutic modalities during rehabilitation will be emphasized. Documentation, purchasing and maintenance are also addressed. Prerequisites: ATEP 206 and admission to the clinical component of the athletic training curriculum.

ATEP 307. Acute Care of Injuries and Illnesses. 3 credits. Offered fall.
This course is designed for student athletic trainers to meet the educational competencies for national accreditation in the following areas: development of risk management/emergency action plans, primary assessment of athletic injuries, emergency care of athletic injuries, immediate care of spine injuries, prevention of injuries associated with the physically active, utilization of diagnostic tools and an overall understanding of protective equipment. Prerequisite: Admission to clinical component of athletic training curriculum.