ASTR - ASTRONOMY

ASTR 600 Order-of-Magnitude Astrophysics
Credit 1. 1 Lecture Hour. Introduction to the utility of order of magnitude calculations and the ability to think intuitively; short overviews of basic physical concepts followed by interactive activities and problem solving at the board. May be repeated for credit. Prerequisite: ASTR 314 or equivalent, or approval of instructor.

ASTR 601/PHYS 641 Extragalactic Astronomy
Credits 3. 3 Lecture Hours. Overview of observations of galaxies and large-scale structures in the Universe to understand their formation and evolution from theoretical and observational perspectives; galaxy luminosity functions; evolution of stellar populations and chemical enrichment; clusters and AGN. Prerequisites: PHYS 601, or ASTR 314 and PHYS 302, or approval of instructor. Cross Listing: PHYS 641/ASTR 601.

ASTR 602/PHYS 642 Astronomical Observing Techniques and Instrumentation
Credits 3. 3 Lecture Hours. Theory and practice of obtaining and analyzing astrometric, photometric, spectroscopic, and interferometric measurements of astronomical sources across the electromagnetic spectrum; principles of design, fabrication, assembly, test, deployment, and use of astronomical instruments. Prerequisites: PHYS 615 or equivalent, or approval of instructor. Cross Listing: PHYS 642/ASTR 602.

ASTR 603/PHYS 643 Stellar Astrophysics
Credits 3. 3 Lecture Hours. Theoretical and observational aspects of stellar astrophysics; thermodynamic properties of stellar interiors; energy sources; nuclear processes and burning stages; convective and radiative energy transport; evolutionary models; atmospheres; stability and pulsations; chemical enrichment processes; population synthesis. Prerequisites: PHYS 606 and PHYS 607 or equivalents, or approval of instructor. Cross Listing: PHYS 643/ASTR 603.

ASTR 604/PHYS 644 Cosmology
Credits 3. 3 Lecture Hours. Basic principles of modern cosmology and particle physics; general relativity; cosmic inflation; Big Bang nucleosynthesis; expansion of the universe; cosmic microwave background; large-scale structure of the Universe; properties of particles; dark matter; dark energy. Prerequisites: PHYS 615 or equivalent, or approval of instructor. Cross Listing: PHYS 644/ASTR 604.

ASTR 605/PHYS 645 Galactic Astronomy
Credits 3. 3 Lecture Hours. Basic nature and structure of constituents of Milky Way galaxy; distribution and motions of stars and gas; origin evolution and distribution of large-scale chemical abundances and kinematic patterns across populations; models of galaxy formation and implications of modern observations. Prerequisites: PHYS 601 and PHYS 607 or equivalents, or approval of instructor. Cross Listing: PHYS 645/ASTR 605.