Astronomy (ASTRON)

ASTRON 1010: Introduction to Astronomy
Survey of methods of astronomy; description of the solar system, stellar astronomy, structure of the galaxy and the universe. Three hours of lecture and one hour of lab per week (scheduled by the instructor). Satisfies physical science laboratory requirement. Laboratory section: Survey of astronomical methods, instruments, observations and measurement techniques.
Credit Hours: 4
Recommended: MATH 1100 or MATH 1120 or equivalent

ASTRON 1020: Introduction to Laboratory Astronomy
Laboratory supplement to Astronomy 1010. Satisfies physical science laboratory requirement. Survey of astronomical methods, instruments, observations and measurement techniques.
Credit Hours: 2
Recommended: MATH 1100 or MATH 1120

ASTRON 1200: History of Astronomy
Astronomy is the oldest and yet the newest science discipline that has far-reaching impact on our civilization. This course aims to provide a brief historical account of the major milestones in Astronomy that have led to our current understanding of the universe. Graded on A-F basis only.
Credit Hours: 3

ASTRON 3010: Introduction to Modern Astrophysics
(same as PHYSCS 3010). Elements of stellar, and galactic astrophysics. Interpretation of observations and physical conditions of various astronomical objects including stars, gaseous nebulae and, galaxies.
Credit Hours: 3
Prerequisites: PHYSCS 2760

ASTRON 4020: Astrophysical Techniques
(same as PHYSCS 4020; cross-leveled with PHYSCS 7020). Elements of modern astronomical instruments, observations and analysis, with the emphasis in the optical regime. Graded on A-F basis only.
Credit Hours: 3
Prerequisites: ASTRON 3010

ASTRON 4180: Solar System Science
(same as PHYSCS 4180, GEOL 4180; cross-leveled with GEOL 7180). Investigates physical states, interior structures and comparative geology of solar systems bodies: planets, moons, asteroids, comets, sun. Solar system formation and evolution.
Credit Hours: 3
Prerequisites: ASTRON 3010
Recommended: MATH 1700

ASTRON 4250: Stellar Astrophysics
(same as PHYSCS 4250). Basic astrophysics of stable and unusual stars, stellar systems. Investigates stellar dimensions, radiation, spectra, energy, evolution, populations; interstellar medium, stellar motions and aggregation.
Credit Hours: 3
Prerequisites: ASTRON 3010

ASTRON 4350: Galactic Astronomy
(same as PHYSCS 4350; cross-leveled with ASTRON 7350). Observational properties of normal galaxies and clusters of galaxies, Seyfert and emission-line structure and dynamics of galaxies; interacting galaxies, quasi-steller objects. Introduction to cosmology.
Credit Hours: 3
Prerequisites: ASTRON 3010 or PHYSCS 3010

ASTRON 4360: Extragalactic Astronomy
(same as PHYSCS 4360; cross-leveled with ASTRON 7360). This course introduces students to the most basic knowledge of extragalactic astronomy, starting from Milky Way and extending to the most distant universe. Topics covered will include galaxy morphology and classification, groups and clusters of galaxies, active galactic nuclei, and galaxy formation and evolution.
Credit Hours: 3
Prerequisites: ASTRON 3010

ASTRON 4550: Cosmochemistry
(same as PHYSCS 4550; cross-leveled with ASTRON 7550, PHYSCS 7550). Cosmic dust, stardust, spectra, energy, interstellar medium, meteorites, astromineralogy.
Credit Hours: 3
Prerequisites: ASTRON 3010

ASTRON 4950: Undergraduate Research in Astronomy
Special studies in astronomy; covers subjects not included in courses regularly offered.
Credit Hour: 1-99
Prerequisites: instructor's consent

ASTRON 4960: Senior Thesis in Astronomy
Special studies for senior undergraduate students in astronomy. The course requires an oral or poster presentations, or faculty-guided writing of a senior thesis involving independent research. Departmental consent required for repetition. Enrollment limited to students who have completed 3 credit hours of ASTRON 4950 or PHYSCS 4950.
Credit Hours: 3
Prerequisites: instructor's consent

ASTRON 7180: Solar System Science
(same as PHYSCS 7180, GEOL 7180; cross-leveled with ASTRON 4180, PHYSCS 4180, GEOL 4180). Investigates physical states, interior structures and comparative geology of solar systems bodies: planets, moons, asteroids, comets, sun. Solar system formation and evolution.
Credit Hours: 3
Prerequisites: PHYSCS 1220 or PHYSCS 2760 or instructor's consent
ASTRON 7350: Galactic Astronomy
(cross-leveled with PHYSCS 4350, ASTRON 4350). The course aims to introduce students to the basic knowledge of our Galaxy: how it looks like, how it might be formed, and how we have gained knowledge about it through observations. The main topics include distance measurement of stars, evolution of stars, interstellar medium, star clusters, the structure of Galaxy. The course will also briefly touch on “Near-field Cosmology” (sometimes referred to as “Galactic Archeology”), i.e., what we can infer from our Galaxy the general picture of galaxy formation and evolution.

Credit Hours: 3

ASTRON 7550: Cosmochemistry
(same as PHYSCS 7550; cross-leveled with ASTRON 4550, PHYSCS 4550). Cosmic dust, stardust, spectra, energy, interstellar medium, meteorites, astromineralogy.

Credit Hours: 3
Prerequisites: ASTRON 3010

ASTRON 8550: Stellar Structure and Evolution
(same as PHYSCS 8550). Reviews of atomic and molecular spectra. Investigates quantum radiation law, emission and absorption processes, radiation transfer theory, continuous and discrete line spectra of stars, stellar composition.

Credit Hours: 3
Prerequisites: ASTRON 4250, PHYSCS 4800, or instructor's consent