ASTRONOMY AND ASTROPHYSICS

Department of Physics and Astronomy
College of Natural Science

101 The Celestial Clockworks
Spring. 1(1-0)
Relationship between ancient skylore and timekeeping. Establishment of a calendar and celestial navigation. Development of the Greek horoscope as a time recorder and coordinate system.

207 The Science of Astronomy
Fall. 3(3-0) P: ((PHY 231 or concurrently) or (PHY 231C or concurrently)) or (PHY 183 or concurrently) or (PHY 185B or concurrently) or (ISP 205 or concurrently) or (LB 273 or concurrently) and (MTH 114 or concurrently) or (MTH 116 or concurrently) or (MTH 132 or concurrently)
In-depth study of one topic in astronomy with emphasis on key discoveries. Topics may be cosmology, the solar system, and the life of stars.

208 Planets and Telescopes
Spring. 3(3-0) P: (PHY 183 or PHY 183B or PHY 193H or LB 273) and (MTH 103 or concurrently) or (MTH 114 or concurrently) or (MTH 116 or concurrently) or (MTH 132 or concurrently) or (LB 118 or concurrently)
RB: AST 207 SA: AST 303, AST 312

301 Junior Research Seminar
Fall, Spring. 1(1-0) P: Completion of Tier I writing requirement.
Preparation and presentation of a review paper on a current topic in astronomy or astrophysics.

304 Stars
Fall of even years. 3(3-0) P: AST 208 and (PHY 215 or PHY 215B) and (PHY 321 or concurrently) RB: AST 208

308 Galaxies and Cosmology
Spring of odd years. 3(3-0) P: AST 208 and (PHY 215 or concurrently) or PHY 215B) and (PHY 321 or concurrently) SA: AST 402

310 Directed Studies
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 4 credits in all enrollments for this course. R: Approval of department.
Individual study or project in astronomy or astrophysics under the direction of a faculty member.

410 Senior Thesis
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 5 credits in all enrollments for this course. P: (AST 301) and completion of Tier I writing requirement. Design and execute an original experiment or computation. A written and oral report of the research is required.

800 Research Methods
Fall, Spring, Summer. 3(3-0) A student may earn a maximum of 12 credits in all enrollments for this course. RB: AST 801
Apprenticeship in astrophysical research. Student will work closely with faculty member to learn research techniques.

805 Research Project
Fall, Spring. 3(0-3) A student may earn a maximum of 6 credits in all enrollments for this course. Research project to be completed under the guidance of an astronomy faculty member.

810 Radiation Astrophysics
Fall of odd years. 3(3-0)
Transfer of radiation through plasmas and processes for emission and absorption of photons. Interpretation of the spectra of stars, the interstellar medium, and galaxies.

820 Advanced Topics in Astrophysics
Fall, Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. RB: AST 801
Advanced work in a specialized astrophysical topic.

825 Galactic Astronomy
Spring of odd years. 3(3-0)
The Milky Way as a galaxy. Observations and techniques of theoretical analysis that are used to discover the features of our galaxy.

835 Extragalactic Astronomy
Fall of even years. 3(3-0)
Galaxies beyond the Milky Way. Large-scale structure of the universe. Cosmology.

840 Stellar Astrophysics
Spring of even years. 3(3-0)

850 Electrodymanics of Plasmas
Spring of odd years. 3(3-0) Interdepartmental with Electrical and Computer Engineering and Physics. Administered by Electrical and Computer Engineering. RB: ECE 835 or PHY 488 SA: EE 850

860 Gravitational Astrophysics
Fall. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. RB: PHY 820 and PHY 841
Experimental foundations, theory, and applications of gravitational physics and general relativity. Tests of the equivalence principle, modern solar system tests of general relativity, Schwarzschild metric, Hawking effect, Einstein’s field equations.

891 Master’s Thesis Research
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 36 credits in all enrollments for this course. R: Open to doctoral students in the Astrophysics and Astronomy major.
MS Thesis Research

999 Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 36 credits in all enrollments for this course. R: Open to doctoral students in the Astrophysics and Astronomy Major.
Doctoral dissertation research.