ASIAN LANGUAGES ASN

Department of Linguistics and Germanic, Slavic, Asian and African Languages
College of Arts and Letters

290. Independent Study
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 9 credits in all enrollments for this course. R: Approval of department.
Special projects in an Asian Languages arranged by an individual student and a faculty member in areas supplementing regular course offerings.

291. Special Topics in Asian Languages
Fall. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. Not open to students with credit in ASN 491.
Special topics supplementing regular course offerings proposed by faculty on a group study basis.

401. East Asian Cultures (W)
Fall. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. P: IAH 211B or approval of department. R: Completion of Tier I writing requirement.
Selected topics in the history and culture of China, Japan, and Korea. Topics vary.
SA: AL 401

464. Studies in the Literature of Asia and the Asian Diaspora (W)
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. Interdepartmental with English. R: Not open to freshmen. Completion of Tier I writing requirement.
Selected writers, genres, themes, or regions in Asian and Asian diasporic literature.

490. Independent Study
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 9 credits in all enrollments for this course. R: Open only to juniors and seniors. Approval of department.
Special projects in Asian Languages arranged by an individual student and a faculty member in areas supplementing regular course offerings.

491. Special Topics in Asian Languages
Fall, Spring. 1 to 6 credits. A student may earn a maximum of 9 credits in all enrollments for this course. R: Open only to juniors and seniors. Approval of department.
Special topics supplementing regular course offerings proposed by faculty on a group study basis.

ASTRONOMY AND ASTROPHYSICS AST

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.

201. Astrophysics and Astronomy I
Fall. 3(4-0) P: (PHY 183 or PHY 183B or PHY 193H) and (MTH 132 or MTH 152H or LBS 118)
Overview of the universe: the celestial sphere, orbits, spectra, the solar system, stars, and stellar evolution.

202. Astrophysics and Astronomy II
Spring. 4(3-2) P: (AST 201) and (PHY 184 or PHY 184B or PHY 294H) and (MTH 234 or concurrently or MTH 254H or concurrently or LBS 220 or concurrently)
Interstellar medium, the milky way, galaxies, and the large-scale structure of the universe. Coordinate systems, instruments, and data analysis.

207. The Science of Astronomy
Fall. 3(3-0) P: (PHY 231 or concurrently or PHY 231B or concurrently or ISP 205 or concurrently or PHY 181B or concurrently or PHY 183 or concurrently or PHY 183B or concurrently or LBS 164 or concurrently or PHY 231C or concurrently) and (MTH 116 or concurrently or MTH 104 or concurrently or LBS 117 or concurrently) Not open to students with credit in AST 201.
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. Observing with portable telescopes.

301. Junior Research Seminar
Fall, Spring. 1(1-0) P: (AST 202) and completion of Tier I writing requirement.
Preparation and presentation of a review paper on a current topic in astronomy or astrophysics.

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. P: (AST 202) R: Approval of department.
Individual study or project in astronomy or astrophysics under the direction of a faculty member.

401. Stars
Fall. 3(3-0) P: (AST 202 and PHY 321)
Physical processes that determine the structure and evolution of stars. Results of stellar evolution theory. Stellar atmospheres. Observations of stars.

402. Galaxies
Spring. 3(3-0) P: (AST 401 and PHY 481)
Contents and dynamics of the milky way. Mass and luminosity distributions of galaxies. Stellar populations. The interstellar medium. Evolution of galaxies. Active galactic nuclei.

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 6 credits in all enrollments for this course. P: AST 801.
Apprenticeship in astrophysical research; student will work closely with individual faculty member learning research techniques.

801. Introduction to Astrophysics
Fall. 3(3-0)
Survey of contemporary astrophysics. Stellar evolution, the structure of the Milky Way, the properties of external galaxies, and cosmology.

802. Techniques of Modern Astrophysics
Fall, Spring. 3 credits. P: (AST 801)
Students are introduced to modern astrophysics through participation in short projects involving literature surveys, professional planning, and research in observational, theoretical, and computational astrophysics.

810. Radiation Astrophysics
Spring of odd years. 3(3-0) P: (AST 801 and PHY 841)
Transfer of radiation through plasmas and processes for emission and absorption of photons. Interpretation of the spectra of stars, interstellar medium, and galaxies.

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

830. Galactic and Extragalactic Dynamics
Fall of even years. 3(3-0) P: AST 801, PHY 820.
Implications of gravitational dynamics and stellar evolution on galactic and extragalactic systems.

840. Stellar Astrophysics
Spring of even years. 3(3-0) P: AST 801.
Physics of stellar interiors. Methods for calculating stellar models. Principles of stellar evolution.

850. Electrodynamics of Plasmas
Spring of odd years. 3(3-0) Interdepartmental with Electrical and Computer Engineering; Physics; and Astronomy and Astrophysics. Administered by Electrical and Computer Engineering. P: ECE 835 or PHY 488.
Plasma kinetic and macroscopic plasma transport theory. Electromagnetic wave propagation and charged particle diffusion processes in plasma. Electromagnetic energy absorption via elastic and inelastic collisions. Dc, rf, and microwave discharges.

860. Gravitational Astrophysics and Cosmology (MTC)
Fall, Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course.
Topics in general relativity, gravitational astrophysics, and cosmology.

870. Astronomical Instrumentation and Data Analysis
Fall of odd years. 3(3-0) P: AST 801.
Theory and techniques of astronomical data acquisition and analysis.