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 9 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.

491  Special Topics in Asian Languages
Fall. 3(4-0) P:M: (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.

201  Astrophysics and Astronomy I
Fall. 3(4-0) P:M: (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.

202  Astrophysics and Astronomy II
Spring. 4(3-2) P:M: (AST 2) and (PHY 184 or PHY 184B or PHY 294H) and (MTH 234 or concurrently or MTH 254H or concurrently or LBS 220 or concurrently) Stellar atmospheres. Observations of stars. Physical processes that determine the structure and evolution of stars. Results of stellar evolution theory. Stellar atmospheres. Observations of stars.

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.

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:M: (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:M: (AST 2) 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:M: (PHY 231 or concurrently or PHY 231B or concurrently or ISP 205 or concurrently or PHY 183 or concurrently or PHY 183B or concurrently or LBS 271 or concurrently or PHY 231C or concurrently) and (MTH 116 or concurrently or MTH 114 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:M: (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:M: (AST 202) R: Approval of department. Individual study or project in astronomy or astrophysics under the direction of a faculty member.

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

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

840  Stellar Astrophysics

850  Electrodynamics of Plasmas

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.