

**423. Seminar in Comparative Literary Criticism**  
Fall, 3(3-0) A student may earn a maximum of 3 credits in all enrollments for this course. Interdepartmental with English, Romance Languages, and Linguistics and Languages.  
P: AL 822. R: Approval of college.

Theory and practice of comparative literary criticism, with attention to the development of critical approaches and to current topics in the critical literature.

**425. Comparative Critical Theory**  
Spring, 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with English, Romance Languages, and Linguistics and Languages.  
P: AL 822 or approval of college. R: Open only to graduate students in College of Arts and Letters.

Critical theory of comparative literature, including comparative studies in rhetorical theory and discourse analysis.

**429. Capstone Seminar in Health and Humanities**  
Spring, 2(2-0)

R: Approval of college.  
Peer review of master's theses completed or near completion. Recent works in interdisciplinary approaches to health and humanities.

**499. Master's Thesis Research-Plan A**  
Fall, Spring, Summer, 1 to 6 credits. A student may earn a maximum of 15 credits in all enrollments for this course.

Directed research leading to a master's thesis, used in partial fulfillment of plan A master's degree requirements.

**999. Doctoral Dissertation Research**  
Fall, Spring, Summer, 1 to 12 credits. A student may earn a maximum of 50 credits in all enrollments for this course.

## ASIAN LANGUAGES ASN

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

**250. Hanzi Writing System and Calligraphy**  
Spring, 3(3-0)  
P: CHS 101 or JPN 102 or approval of department.  
Structure and history of Chinese characters. Calligraphy. Use of Chinese dictionary.

**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.  
R: 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.

**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; MTH 132 or MTH 152H.  
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; PHY 184 or PHY 184B or PHY 294H; MTH 234 or MTH 254H, or concurrently.  
Interstellar medium, the milky way, galaxies, and the large-scale structure of the universe. Coordinate systems, instruments, and data analysis.

**301. Junior Research Seminar**  
Spring, 1(1-0) A student may earn a maximum of 4 credits in all enrollments for this course.  
P: AST 202. R: 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 6 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, PHY 321 or concurrently.  
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, 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, 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.  
R: Open only to seniors in Astrophysics. 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.

**810. Radiation Astrophysics**  
Spring of odd-numbered years, 3(3-0)  
P: AST 801.  
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-numbered 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-numbered 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-numbered years, 3(3-0) Interdepartmental with Electrical Engineering and Physics. Administered by Electrical Engineering.  
P: EE 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-numbered years, 3(3-0)  
P: AST 801.  
Theory and techniques of astronomical data acquisition and analysis.