

ARABIC

- 290*** **Independent Study**
Fall, Spring, Summer. 1 to 4 credits.
May reenroll for a maximum of 8 credits.
R: Approval of the Department

Special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.

- 490*** **Independent Study**
Fall, Spring, Summer. 1 to 4 credits.
May reenroll for a maximum of 8 credits.
R: Approval of the Department

Special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.

- 491*** **Special Topics in Arabic Studies**
Fall, Spring, Summer. 1 to 4 credits.
May reenroll for a maximum of 8 credits.
R: Approval of the Department

Special topics supplementing regular course offerings proposed by faculty on a group study basis.

ARTS AND LETTERS AL

- 192H*** **Arts and Humanities Freshmen Seminar**

Fall, Spring. 4(4-0)
R: Open only to freshmen Honors College students in the College of Arts and Letters. Designated score on English placement test.

Critical reading, writing and understanding of modes of discourse. Interdisciplinary topics vary by instructor. Fulfills Tier I writing requirement.
QP: ATL 121 ATL 122 QA: AL 150

- 250*** **Hanzi writing system and calligraphy**
Spring. 3(3-0)
P: CHS 102 or permission of department.

Structure and history of Chinese characters and use of Chinese dictionary.
QP: CHS 103 QA: CHS 250

- 380*** **Methods of Teaching Foreign Languages**
Spring of odd-numbered years. 3(3-0)
P: GRM 202

Methods of teaching foreign languages for teacher education candidates; theories of language acquisition and practical application of teaching strategies.
QP: GRM 203 QA: TE 340

- 390H*** **Interdisciplinary Perspectives in the Arts and Humanities**
Fall, Spring. 3(3-0) May reenroll for a maximum of 6 credits.

Interdepartmental with the Department(s) of English, Philosophy, History, Romance Language Courses, Music.
R: Honors College Honors College members; approval of Honors College

In-depth selected topics in the arts and humanities drawing on materials and methods of several disciplines.

- 400*** **Overseas Study in Arts and Letters**
Fall, Spring, Summer. 2 to 8 credits.
May reenroll for a maximum of 8 credits.
P: CIS/AH 240 (East Asia) or permission of department

R: Not open to freshmen and sophomores. Approval of college.
Supervised study of selected topics in the arts, languages, history, philosophy, and religious studies, in relation to particular cultural sites, museums and institutions.

- 450*** **Arts Management**
Fall of even-numbered years. 3(3-0)
May reenroll for a maximum of 6 credits.
R: Juniors and above

Arts organization administration and facilities management. Operational methods and procedures of performing companies. Funding and financial structure. Audience development and marketing.
QA: AL450

- 464*** **Studies in Literature of Asia and the Asian Diaspora**

Spring. 3(3-0) May reenroll for a maximum of 9 credits. Interdepartmental with the Department(s) of Linguistics and Oriental and African Language Courses, English.
R: Sophomores and above

Selected writers, genres, themes or regions in Asian and Asian diasporic literature.
QA: CHS 420

- 493A*** **Arts and Letters Internship**
Fall, Spring, Summer. 2 to 8 credits.
May reenroll for a maximum of 8 credits.
R: Not open to freshmen and sophomores.

A student may earn a maximum of 8 credits in AL 493A and AL 493B combined. Completion of Tier I writing requirement, 12 credits in the major. Approval of college.
Supervised preprofessional field experience in the arts and humanities.
QA: AL499

- 493B*** **Arts and Letters Publications Internship**

Fall, Spring, Summer. 2 to 4 credits.
R: Not open to freshmen and sophomores.
A student may earn a maximum of 8 credits in AL 493A and AL 493B combined. Completion of Tier I writing requirement. Approval of college.
Introduction to all aspects of preparing College of Arts and Letters publications. Newsletters, brochures, and special events flyers.

- 820*** **Humanistic Perspectives on Health**
Fall. 3(3-0)
R: Approval of Director of IPHH

Multidisciplinary perspectives on health care and medicine, emphasizing linkages among the humanistic and scientific disciplines.
QA: AL 820

- 821*** **Proseminar in Comparative Literature**

Fall. 3(3-0) Interdepartmental with the Department(s) of English, Romance Language Courses, Linguistics.
R: seniors and above Arts and Letters

advanced reading knowledge of languages
History and practice of comparative literature including foundational concepts and current directions in the field.
QA: AL 820

- 822*** **Methods of Comparative Literature**

Spring. 3(3-0) May reenroll for a maximum of 6 credits. Interdepartmental with the Department(s) of English, Romance Language Courses, Linguistics.
P: AL 821; or approval of college

R: seniors and above Arts and Letters advanced reading knowledge of languages

Case studies in international literary tradition, reception, and transmission, including approaches to genre and period, and to the history and aesthetics of reception.
QA: AL 822

- 823*** **Seminar in Comparative Literary Criticism**

Fall. 3(3-0) May reenroll for a maximum of 6 credits. Interdepartmental with the Department(s) of English, Romance Language Courses, Linguistics.
P: AL 821, AL 822; or approval of college

R: seniors or above Arts and Letters reading knowledge of languages

Theory and practice of comparative literary criticism, with attention to the development of critical approaches and to current topics in the critical literature.
QA: AL 823

- 824*** **Comparative Critical Theory**
Spring. 3(3-0) May reenroll for a maximum of 6 credits.

Interdepartmental with the Department(s) of English, Romance Language Courses, Linguistics.
P: AL 821, 822; or approval of college

R: seniors or above Arts and Letters reading knowledge of languages

Critical theory of comparative literature, including comparative studies in rhetorical theory and discourse analysis.
QA: AL 824 AL 825

- 829*** **Capstone Seminar in Health and Humanities**
Spring. 1(1-0)
R: Approval of Director of IPHH

Peer review of master's theses completed or near completion. Discussion of recent works in interdisciplinary approaches to health and humanities.
QA: AL 829

ASTRONOMY AND ASTROPHYSICS AST

- 201*** **Astrophysics and Astronomy I**
Fall. 3(04-0)

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.
QP: PHY 287 PHY 291HMTH 113 QA: AST 229 AST 217

- 202*** **Astrophysics and Astronomy II**
Spring. 4(03-2)

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.
QP: AST 229 QA: AST 230 AST 327

- 301*** **Junior Research Seminar**
Spring. 1(01-0) May reenroll for a maximum of 4 credits.

P: AST 202.
Preparation and presentation of a review paper on a current topic in astronomy or astrophysics.
QP: AST 230 AST 327 QA: AST 399

- 310*** **Directed Studies**
Fall, Spring, Summer. 1 to 3 credits.
May reenroll for a maximum of 6 credits.

P: AST 202. R: Approval of department.

Individual study or project in astronomy or astrophysics under the direction of a faculty member.
QP: AST 230 QA: AST 490

- 401*** **Stars**
Fall. 3(03-0)

P: AST 202, PHY 410, PHY 321 or concurrently.

Physical processes that determine the structure and evolution of stars. Results of stellar evolution theory. Stellar atmospheres. Observations of stars.
QP: AST 327 PHY 396 QA: AST 442

ASTRONOMY AND ASTROPHYSICS

- 402*. Galaxies**
 Spring. 3(03-0)
 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.
 QP: PHY 427 PHY 447 QA: AST 462 AST 463
- 410*. Senior Thesis**
 Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 4 credits.
 R: Open only to seniors in Astrophysics.
 Design and execute an original experiment or computation. A written and oral report of the research is required.
 QA: AST 406
- 800*. Research Methods**
 Fall, Spring, Summer. 3(3-0) May reenroll for a maximum of 6 credits.
 P: AST 801.
 Apprenticeship in astrophysical research; student will work closely with individual faculty member learning research techniques.
 QA: PHY 800
- 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.
 QA: AST 442
- 820*. Advanced Topics in Astrophysics(MTC)**
 Fall, Spring. 3(3-0) May reenroll for a maximum of 9 credits.
 P: AST 801.
 Advanced work in a specialized astrophysical topic.
 QA: AST 820
- 820A*. Astrophysics of the Interstellar Medium**
 3(3-0)
 P: AST 810, PHY 851.
 Relationships of the physical processes and radiative properties of diffuse interstellar material to observed characteristics.
 QP: PHY 837 QA: AST 820
- 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.
 QA: AST 820
- 860*. Gravitational Astrophysics and Cosmology(MTC)**
 Fall, Spring. 3(3-0) May reenroll for a maximum of 6 credits.
 Topics in general relativity, gravitational astrophysics, and cosmology.
 QA: PHY 860 PHY 861

- 860A*. Cosmology**
 3(3-0)
 R: Open only to graduate students in Astronomy, Astrophysics and Physics.
 Current research in cosmology: observational basis for the Big Bang, the cosmic background radiation, primordial nucleosynthesis, content and distribution of matter, cosmic geometry, growth of perturbations.
 QA: PHY 861
- 860B*. Gravitational Astrophysics**
 3(3-0)
 P: PHY 820, 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
 QP: PHY 857 PHY 847 QA: PHY 860
- 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.

AUDIOLOGY AND SPEECH SCIENCES ASC

- 113. Oral Communication Principles and Skills**
 Fall, Spring, Summer. 3(2-2)
 Study, development and enhancement of oral communication skills including speech, voice, language and listening.
 QP: COM 115 QA: ASC 108
- 203. Introduction to Communication Sciences and Disorders**
 Fall, Spring. 3(3-0)
 R: Not open to students with credit in ASC
- 403.**
 Survey of research and practice regarding speech, hearing and language disorders in children and adults.
 QA: ASC 201
- 214. Anatomy and Physiology of the Speech and Hearing Mechanism**
 Fall, Spring. 4(3-2)
 P: ASC 203 or concurrently.
 Structural and functional analyses of the central and peripheral auditory mechanisms, and of the respiratory, phonatory, and articulatory mechanisms for speech.
 QP: ASC 108 QA: ASC 274
- 232. Descriptive Phonetics**
 Spring. 2(1-2)
 Principles of speech production. Transcription of speech using the International Phonetic Alphabet.
 QP: ASC 274 QA: ASC 276
- 255. Speech and Hearing Sciences**
 Fall, Spring. 5(4-2)
 P: ASC 214, ASC 232 or concurrently, MTH 110 or MTH 116, one ISP course.
 R: Not open to freshmen.
 Application of the scientific method to the studies of audition, speech perception and speech production.
 QP: ASC 274 ASC 276 QA: ASC 277
- 333. Oral Language Development**
 Fall. 3(3-0)
 P: ASC 203 or one LIN course or one PSY course. R: Not open to freshmen.
 Development of receptive and expressive aspects of child language.
 QA: ASC 222
- 344. Evaluation Procedures in Audiology**
 Spring. 4(3-2)
 P: ASC 255. R: Open only to Audiology and Speech Sciences majors.
 Classification of hearing disorders. Behavioral and electrophysiological measurement of hearing, including subjective and objective testing procedures.
 QP: ASC 276 ASC 277 QA: ASC 454
- 364. Evaluation Procedures in Speech-Language Pathology**
 Spring. 4(3-2)
 P: ASC 333. R: Open only to Audiology and Speech Sciences majors.
 Evaluation procedures in speech-language pathology, test procedures, evaluation of results, and report writing.
 QP: ASC 201 ASC 277 QA: ASC 373
- 403. Communication Sciences and Disorders**
 Fall. 3(3-0)
 R: Not open to freshmen and sophomores.
 Not open to Audiology and Speech Sciences majors. Not open to students with credit in ASC 203.
 Research and practice regarding communication disorders and the professions of speech-language pathology and audiology.
 QP: ASC 201 QA: ASC 470
- 433. Language Dialect Differences in Applied Contexts**
 Spring. 3(3-0)
 R: Not open to freshmen and sophomores.
 Regional, ethnic, and cultural characteristics of American English. Comparison of speech-language differences and disorders.
 QA: ASC 444
- 443. Aural Rehabilitation**
 Fall. 3(3-0)
 P: ASC 344. R: Open only to Audiology and Speech Sciences majors.
 Fundamental aspects of auditory rehabilitation, including individual and group amplification systems, auditory training, speechreading, and counseling with children and adults.
 QP: ASC 454 QA: ASC 460
- 463. Intervention Procedures in Speech-Language Pathology**
 Fall. 3(3-0)
 P: ASC 364. R: Open only to Audiology and Speech Sciences majors.
 Intervention procedures for individuals with developmental and acquired communication disorders.
 QP: ASC 373 QA: ASC 476
- 483. School-Based Communication Disorders Programs**
 Spring. 3(3-0)
 P: ASC 463, ASC 494 or concurrently. R: Open only to Audiology and Speech Sciences majors.
 Administrative and regulatory aspects of school-based programs for persons with communication disorders.
 QP: ASC 201 ASC 373 QA: ASC 477
- 490. Independent Study**
 Fall, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 8 credits.
 R: Open only to juniors and seniors.
 Approval of department, application required.
 Individualized student activities in human communication sciences and disorders.
 QA: ASC 499
- 494. Clinical Practicum in Communication Disorders**
 Fall, Spring, Summer. 1(-) May reenroll for a maximum of 2 credits.
 P: ASC 463. R: Open only to Audiology and Speech Sciences majors.
 Supervised provision of clinical services to individuals with speech, language and/or hearing disorders.
 QP: ASC 201 ASC 373 QA: ASC 474