Descriptions—Astronomy and Astrophysics

ASTRONOMY AND ASTROPHYSICS  AST

Department of Physics and Astronomy
College of Natural Science

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

courses, instruments, and data analysis.

P: PHY 183 or PHY 184B or PHY 184H; MTH 132 or MTH 152.
Overview of the universe, the celestial sphere, orbits, spectra, the solar system, stars, and stellar evolution.
QF: PHY 287, PHY 291H, MTH 113 QA: AST 229, AST 237

202. Astrophysics and Astronomy II  Spring, 4(3-2)

P: AST 201; PHY 184B or PHY 184H or PHY 294H; MTH 214 or MTH 254H, or concurrently. Interstellar medium, the Milky Way, galaxies, and the large-scale structure of the universe. Coordinate systems, instrumentation, and analysis.
QF: AST 239 QA: AST 230, AST 327

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

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.

340. Senior Thesis  Fall, Spring, Summer: 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.

401. Stars  Fall, 3(3-0)
QF: AST 327, PHY 396 QA: AST 442

402. Galaxies  Spring, 3(3-0)
P: AST 401, PHY 481.

QF: PHY 427, PHY 447 QA: AST 462, AST 463

410. Research Methods  Fall, Spring, Summer: 3(3-0)

A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to seniors in Astrophysics. Design and execute an original research or computational project. A written and oral report of the research is required.
QF: AST 406

501. 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.

Astronomy and Astrophysics of the Universe

201. Introduction to the Universe Fall, 3(3-0)

P: AST 201. Survey of the universe, including the Milky Way, the properties of external galaxies, and cosmology.
QF: PHY 300

202. Advanced Topics in Astrophysics (MTG) Fall, Spring, 4(3-2)

A student may earn a maximum of 6 credits in all enrollments for this course. P: AST 201. Implications of gravitational dynamics and stellar evolution on galactic and extragalactic systems.
QF: AST 289

301. Junior Research Seminar  Spring, 1(1-0)

A student may earn a maximum of 6 credits in all enrollments for this course. P: AST 202. R: Approval of department.

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.

340. Senior Thesis  Fall, Spring, Summer: 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.

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P: AST 401, PHY 481.

QF: PHY 427, PHY 447 QA: AST 462, AST 463

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Astronomy and Astrophysics of the Universe

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QF: AST 327, PHY 396 QA: AST 442

402. Galaxies  Spring, 3(3-0)
P: AST 401, PHY 481.

QF: PHY 427, PHY 447 QA: AST 462, AST 463

410. Research Methods  Fall, Spring, Summer: 3(3-0)

A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to seniors in Astrophysics. Design and execute an original research or computational project. A written and oral report of the research is required.
QF: AST 406

501. 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.
494. Clinical Practicum in Communication Disorders
Fall, Spring, Summer. 1 credit. A student may earn a maximum of 2 credits in all enrollments for this course.
P: ASC 463. R: Open only to Audiology and Speech Sciences majors. Approval of department.
Supervised provision of clinical services to individuals with speech, language, and/or hearing disorders.
QP: ASC 474

803. Research Methods in Communication Sciences and Disorders
Fall (3-0)
R: Open only to graduate students in Audiology and Speech Sciences.

813. Neuroanatomy and Neurophysiology of Speech-Language, and Hearing
Fall (3-0)
R: Open only to graduate students in Audiology and Speech Sciences.

829A. Acquired Language Disorders
Spring (3-0)
R: ASC 813 or concurrently. R: Open only to graduate students in Audiology and Speech Sciences.
Neuropathology, symptomatology, and speech-language rehabilitation of individuals with aphasia and related disorders.
QP: ASC 876 QA: ASC 841A

829B. Motor Speech Disorders
Fall (3-0)
R: ASC 813 or concurrently. R: Open only to graduate students in Audiology and Speech Sciences.
Neuropathology, symptomatology, and speech-language habilitation and rehabilitation of individuals with motor speech disorders.
QP: ASC 876 QA: ASC 841B

829C. Voice Disorders
Summer (3-0)
R: Open only to graduate students in Audiology and Speech Sciences.
Etiology, symptomatology, diagnosis, and treatment of voice disorders in children and adults.
QA: ASC 841C

829D. Fluency Disorders
Fall (3-0)
R: Open only to graduate students in Audiology and Speech Sciences.
QA: ASC 841D

829E. Assessment of Childhood Language Disorders
Fall (3-0)
R: Open only to graduate students in Audiology and Speech Sciences.
Evaluation of language disorders of preschool, school-aged, and adolescent populations.
QA: ASC 841F

829F. Language Intervention: Early Stages
Spring (3-0)
P: ASC 829E or approval of department. R: Open only to graduate students in Audiology and Speech Sciences.
Principles of intervention in language disorders for children functioning at or below preschool levels, regardless of chronological age.
QP: ASC 841F QA: ASC 841G

829G. Language Intervention: Later Stages
Summer (3-0)
P: ASC 829E or approval of department. R: Open only to graduate students in Audiology and Speech Sciences.
Principles of intervention in language disorders for school-age children and adolescents functioning above preschool levels.
QP: ASC 841F QA: ASC 841H

823X. Augmentative Communication
Fall (3-0)
R: Open only to graduate students in Audiology and Speech Sciences.
History and philosophy of augmentative communication. Assessment, system selection, and intervention considerations for aided and unaided systems. Topics include synthesized voice output and microprocessor-based systems.
QP: ASC 842

833. Auditory Psychophysics
Spring (3-0)
P: ASC 803 or concurrently. R: Open only to graduate students in Audiology and Speech Sciences.
Psychophysical theory and methods as applied to the study of hearing.
QP: COM 405 QA: ASC 854

842A. Hearing Assessment
Fall (3-0)
R: Open only to graduate students in Audiology and Speech Sciences.
Clinical evaluation of hearing. Pure tone and speech audiometry. Immitance testing.
QA: ASC 853A, ASC 853B

842B. Differential Diagnostic Audiology
Spring (3-0)
P: ASC 843A. R: Open only to graduate students in Audiology and Speech Sciences.
Tests of peripheral and central auditory function for differential diagnosis of hearing impairment.
QP: ASC 833A QA: ASC 833B

844C. Hearing Amplification and Rehabilitation
Spring (3-0)
P: ASC 843A. R: Open only to graduate students in Audiology and Speech Sciences.
Clinical management of the hearing impaired. Amplification and other forms of aural rehabilitation.
QP: ASC 833A QA: ASC 833C

844D. Electrophysiologic Assessment
Fall (3-0)
P: ASC 813 or concurrently. R: Open only to graduate students in Audiology and Speech Sciences.
Theory and methods of electrophysiologic testing of the auditory and vestibular systems.
QP: ASC 876 QA: ASC 833H, ASC 833J

844E. Special Populations in Audiology
Summer (3-0)
P: ASC 843C. R: Open only to graduate students in Audiology and Speech Sciences.
Audioligic considerations and evaluative procedures for infants, pediatrics, developmentally delayed, multiply-handicapped, and psychiatric populations.
QP: ASC 833A, ASC 853G, ASC 853H

844F. Hearing Conservation
Fall (3-0)
P: ASC 833, ASC 843A, or approval of department. R: Open only to graduate students in Audiology and Speech Sciences.
Hearing conservation programs in educational, community, and medical settings. The role of the audiologist.
QP: ASC 854, ASC 853A QA: ASC 853C

894. Research Practicum in Communication Sciences and Disorders
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Open only to graduate students in Audiology and Speech Sciences. Approval of department.
Supervised clinical experience in the management of clients with speech-language disorders.
QA: ASC 875A

894A. Clinical Practicum in Speech-Language Pathology
Fall, Spring, Summer. 1 credit. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to graduate students in Audiology and Speech Sciences. Approval of department.
Supervised clinical experience in the management of clients with speech-language disorders.
QA: ASC 875A