

**Descriptions — Astronomy and Astrophysics
of
Courses**

**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**

**Department of Audiology and
Speech Sciences
College of Communication Arts
and Sciences**

**012A. Development and Improvement of Oral
Communication Skills**

Fall, Spring, Summer. 0 credit. [2 credits. See page A-2, item 3.]

R: Approval of department.

Oral communication skills emphasizing articulation, voice, and fluency.

**012B. Development and Improvement of Oral
Communication Skills**

Fall, Spring, Summer. 0 credit. [2 credits. See page A-2, item 3.]

R: Approval of department.

Oral communication skills emphasizing articulation, voice, and fluency.

**012C. Development and Improvement of Oral
Communication Skills**

Fall, Spring, Summer. 0 credit. [2 credits. See page A-2, item 3.]

R: Approval of department.

Oral communication skills emphasizing articulation, voice, and fluency.

**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.

**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.

**214. Anatomy and Physiology of the Speech
and Hearing Mechanism**

Fall. 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.

232. Descriptive Phonetics

Fall. 2(1-2)

Principles of speech production. Transcription of speech using the International Phonetic Alphabet.

255. Speech and Hearing Sciences

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.

333. Oral Language Development

Fall, Spring. 3(3-0)

P: PSY 101; LIN 200 or LIN 401 or ENG 302. R: Not open to freshmen.

Development of receptive and expressive aspects of child language.

344. Evaluation Procedures in Audiology

Fall. 4(3-2)

P: ASC 255. R: Completion of Tier I writing requirement.

Classification of hearing disorders. Behavioral and electrophysiological measurement of hearing, including subjective and objective testing procedures.

**364. Evaluation Procedures in
Speech-Language Pathology**

Fall. 4(3-2)

P: ASC 333. R: Open only to Audiology and Speech Sciences majors. Completion of Tier I writing requirement.

Evaluation procedures in speech-language pathology, test procedures, evaluation of results, and report writing.

394. Guidelines for Clinical Practice

Fall, Spring, Summer. 2(2-0)

P: ASC 344, ASC 364. R: open only to majors in Audiology and Speech Sciences

Policies and practices operative in speech and hearing clinics. Interviewing techniques. Behavioral observation and data collection. Behavior management. Counseling. Session plan and report writing.

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.

**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.

443. Aural Rehabilitation

Spring. 3(3-0)

P: ASC 344.

Fundamental aspects of auditory rehabilitation, including individual and group amplification systems, auditory training, speechreading, and counseling with children and adults.

**463. Intervention Procedures in
Speech-Language Pathology**

Spring. 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.

**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.

490. Independent Study

Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.

R: Approval of department, application required.

Individualized student activities in human communication sciences and disorders.

**494. Clinical Practicum in Communication
Disorders**

Fall, Spring, Summer. 2 credits. A student

may earn a maximum of 4 credits in all enrollments for this course.

P: ASC 394. A minimum of 25 hours of approved clinical observation. R: Open only to Audiology and Speech Sciences majors. Approval of department.

Supervised clinical experiences, working with individuals who have speech, language and/or hearing disorders.

**803. Research Methods in Communication
Sciences and Disorders**

Fall. 3(3-0)

R: Open only to graduate students in Audiology and Speech Sciences.

Hypothesis generation, experimental design, data collection, data analysis and presentation.

**813. Neuroanatomy and Neurophysiology of
Speech, Language, and Hearing**

Fall. 3(3-0)

R: Open only to graduate students in Audiology and Speech Sciences.

Structural and functional descriptions of the nervous system as it relates to communication sciences and disorders.

823A. Acquired Language Disorders

Spring. 3(3-0)

P: 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.

823B. Motor Speech Disorders

Fall. 3(3-0)

P: 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.

823C. Voice Disorders

Summer. 3(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.

823D. Fluency Disorders

Fall. 3(3-0)

R: Open only to graduate students in Audiology and Speech Sciences.

History, theories, symptomatology, diagnosis, and treatment of fluency disorders in children and adults.

**823E. Assessment of Childhood Language
Disorders**

Fall. 3(3-0)

R: Open only to graduate students in Audiology and Speech Sciences.

Evaluation of language disorders of preschool, school-aged, and adolescent populations.

823F. Language Intervention: Early Stages

Spring. 3(3-0)

P: ASC 823E 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.

823G. Language Intervention: Later Stages

Summer. 3(3-0)

P: ASC 823E 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.

BIOCHEMISTRY

BCH

**Department of Biochemistry
College of Human Medicine
College of Natural Science
College of Osteopathic Medicine**

- 823X. Augmentative Communication**
Fall. 3(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 micro-processor-based systems.
- 833. Auditory Psychophysics**
Spring. 3(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 phenomena.
- 843A. Hearing Assessment**
Fall. 3(3-0)
R: Open only to graduate students in Audiology and Speech Sciences.
Clinical evaluation of hearing. Pure tone and speech audiometry. Immittance testing.
- 843B. Differential Diagnostic Audiology**
Spring. 3(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.
- 843C. Hearing Amplification and Rehabilitation**
Spring. 3(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.
- 843D. Electrophysiologic Assessment**
Fall. 3(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.
- 843E. Special Populations in Audiology**
Summer. 3(3-0)
P: ASC 843C. R: Open only to graduate students in Audiology and Speech Sciences.
Audiologic considerations and evaluative procedures for infant, pediatric, mentally-impaired, multiply-handicapped, and geriatric populations.
- 843F. Hearing Conservation**
Fall. 3(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 occupational, educational, and community settings. The role of the audiologist.
- 890. Independent Study**
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Open only to M.A. students in Audiology and Speech Sciences. Approval of department.
Individualized study under faculty direction.
- 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.
- 894B. Clinical Practicum in Audiology**
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 hearing disorders.
- 899. Master's Thesis Research**
Fall, Spring, Summer. 1 to 4 credits. 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.
- 914A. Speech Production and Perception I**
Fall of even-numbered years. 4(3-2)
P: ASC 803 or concurrently. R: Open only to graduate students in Audiology and Speech Sciences.
Classroom and laboratory study of issues regarding speech production and perception.
- 914B. Speech Production and Perception II**
Spring of odd-numbered years. 4(3-2)
P: ASC 914A. R: Open only to graduate students in Audiology and Speech Sciences.
Further classroom and laboratory study of issues regarding speech production and perception.
- 990. Independent Study**
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 16 credits in all enrollments for this course.
R: Open only to Ph.D. students. Approval of department.
Individualized study under faculty direction.
- 991. Special Topics in Communication Sciences and Disorders**
Fall, Spring, Summer. 3(3-0) 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.
Topics vary.
- 992. Seminar in Communication Sciences and Disorders**
Fall, Spring, Summer. 3(3-0) 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.
Topics vary.
- 994. Research Practicum in Communication Sciences and Disorders**
Fall, Spring, Summer. 1 credit. A student may earn a maximum of 12 credits in all enrollments for this course.
P: ASC 803 or concurrently. R: Approval of department.
Individual research under faculty supervision.
- 999. Doctoral Dissertation Research**
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course.
R: Open only to Ph.D. students in Audiology and Speech Sciences. Approval of department.
- 100. Current Issues in Biochemistry**
Spring. 1(1-0)
R: Open only to freshmen or sophomores.
Contemporary biochemistry: its impact on environmental, medical, and social sciences.
- 200. Introduction to Biochemistry**
Fall. 4(4-0)
P: CEM 143. R: Not open to students with credit in BCH 401 or BCH 461.
Basic structures of major classes of biologically important molecules and metabolic activities of major importance in living organisms.
- 401. Basic Biochemistry**
Fall, Spring. 4(4-0)
P: CEM 252 or CEM 352. R: Not open to students with majors in Biochemistry. Not open to students with credit in BCH 200 or BCH 461.
Structure and function of major biomolecules, metabolism, and regulation. Examples emphasize the mammalian organism.
- 461. Biochemistry I**
Fall. 3(4-0)
P: CEM 252 or CEM 352; MTH 120 or MTH 124 or MTH 132; BS 110, BS 111. R: Not open to students with credit in BCH 200 or BCH 401.
Protein structure and function, enzymology, bioenergetics, and intermediary metabolism.
- 462. Biochemistry II**
Spring. 3(4-0)
P: BCH 461.
Continuation of BCH 461 with emphasis on metabolic regulation and nucleic acid structure, replication and protein synthesis.
- 471. Biochemistry Laboratory (W)**
Spring. 3(0-9)
P: BCH 401 or BCH 461; BS 110, BS 111; CEM 262; MTH 120 or MTH 124 or MTH 132 or LBS 118. R: Biochemistry majors or approval of department. Completion of Tier I writing requirement.
Modern biochemical techniques used in the study of enzymes (proteins), carbohydrates, lipids, and cell organelles.
- 472. Biochemistry Laboratory**
Fall. 3(0-9)
P: BCH 462, CEM 262. R: Biochemistry majors or approval of department.
Methods of molecular biology and the underlying principles on which these methods are based.
- 490. Research**
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Approval of department.
Participation in laboratory or library research projects.
- 495. Undergraduate Seminar**
Spring. 2(2-0)
P: BCH 462 or concurrently. R: Open only to majors in Biochemistry.
Extension and synthesis of concepts of biochemistry. Relationships to societal issues.