COMMUNICATION SCIENCES AND DISORDERS

https://communication.northwestern.edu/academics/communication-sciences-and-disorders/index.html (https://communication.northwestern.edu/academics/communication-sciences-and-disorders/)

The Roxelyn and Richard Pepper Department of Communication Sciences and Disorders offers a major in human communication sciences, providing undergraduate students with a foundation for the study of hearing, speech, swallowing, language, and learning, and their disorders. The department's classroom and research facilities are located in the Frances Searle Building on the Evanston campus, adjacent to the Northwestern University Center for Audiology, Speech, Language, and Learning clinic. The undergraduate program emphasizes the basic science principles underlying all human communication and cognition, and introduces students to clinical issues and research findings that pertain to lifespan development and disorders of communication. The department and field are highly interdisciplinary, drawing on neuroscience, data science, technology, and more. The major in human communication sciences is appealing to students who plan to attend graduate or professional school in fields such as speech-language pathology, audiology, education, medicine, dentistry, and biomedical engineering, as well as for research. It is an attractive major particularly for students who plan to become health practitioners, providing opportunities for students to connect their study of basic scientific principles to research and clinical activities as well as real-life issues. Students who do not pursue medical, clinically based, or research graduate degrees may enter careers in health-related private industry or the public sector.

Undergraduate majors in human communication sciences can pursue a course of study tailored to their goals, including coursework to prepare specifically for a career in audiology and hearing sciences, or in speech-language pathology.

Audiology and hearing sciences encompasses the study of hearing, hearing disorders, and the treatment of hearing disorders. Emphasis is on basic communication science, including study of the anatomical, physiological, and physical bases of hearing. Undergraduate courses present information on normal communication processes, and provide an introduction to audiologic assessment and hearing loss management.

Speech-language pathology introduces students to the psychological, linguistic, neurological, acoustic, anatomical, and physiological bases of typical speech, swallowing, language, and learning behavior. As their familiarity with typical processes increases, students explore the communicative disorders that result from the disruption of these processes. Advanced undergraduate courses expand students' knowledge in such areas as learning and neurodevelopmental disorders (including autism), the neuroscience of communication, cultural and socio-economic influences on language acquisition and usage, and clinical practice.

Research Practicum

Students may register for a research practicum in which they gain research experience by working with a faculty member on design, execution, and presentation of a research project. Students may develop ideas for an independent study based on their research practicum experience.

Independent Study

Students may register for units of independent study, in which they work closely with a faculty member on a topic of mutual interest. Students interested in independent study should select courses that may lead to more advanced library or laboratory research.

Programs of Study

- Human Communication Sciences Major (https://catalogs.northwestern.edu/undergraduate/communication/communication-sciences-disorders/human-communication-sciences-major/)
- Human Communication Sciences Minor (https://catalogs.northwestern.edu/undergraduate/communication/communication-sciences-disorders/human-communication-sciences-minor/)

Learning Objectives

Students should be able to…

- Summarize the biological and physiological mechanisms, acoustic phenomena, and scientific theories that underlie human communication.
- Compare and contrast typical development and presentation with disorders of speech, language, learning, hearing, and swallowing.
- Describe equity-informed principles and methods of prevention, assessment, and intervention for communication disorders.
- Relate the scope of practice of audiologists and speech language pathologists to broader services and systems in community, school, and medical settings.
- Recognize the value of communication diversity across society, including from minoritized groups.
- Interpret data and critique research studies in the field of communication sciences and disorders.

Courses

Undergraduates may take some 400-level courses with permission of the instructor.

CSD 108-0 Sound and Communication Health (1 Unit) Introduction to communication sciences and disorders. Role of sound in basic human communication; hearing, speech, language, and learning mechanisms required to process and produce sound; assessment and treatment of disorders caused by a breakdown in sound processing. May not be taken with or after CSD 318-0, CSD 320-0, or CSD 373-0. *SoC Mathematics, Science, and Technology Distro*

CSD 110-0 Introduction to Hearing and Speech Acoustics (1 Unit) Introduction to acoustics, measurement of hearing, and the acoustical properties of speech sounds. Sound waves; standards of measuring magnitude; audiograms; source-filter theory; spectrograms. *SoC Mathematics, Science, and Technology Distro*

CSD 112-0 The Scientific Exploration of Communication (1 Unit) Introduction to biology and physics of human communication. Basic properties of speech sounds and how they are produced and received; relation between human anatomical structures involved in sound

production, modulation, and reception; brain mechanisms of processing speech sounds. *SoC Mathematics, Science, and Technology Distro*

CSD 202-0 Neurobiology of Communication (1 Unit) Human anatomy, physiology, and neurology in relation to communicative behavior. Sensory, perceptual, cognitive, and motor processes. *SoC Mathematics, Science, and Technology Distro*

CSD 205-0 Study of Learning and Learning Problems in the Classroom (1 Unit) Study of children's learning in classroom settings. Field placement, using informal assessments of social, cognitive, and communication functioning, for children with and without exceptionalities. *SoC Mathematics, Science, and Technology Distro*

CSD 207-0 Seminar in Communication Sciences & Disorders (1 Unit)
Throughout this course, students will consider what it means to be ? bilingual,? and explore how bilingualism shapes human communication, including language development and learning, the production and perception of speech, cognitive function, and neural activity, as well as the perceived benefits and pitfalls of bilingualism from a cognitive and educational perspective. *SoC Individual and Social Behavior Distro SoC Mathematics, Science, and Technology Distro*

CSD 301-0 Anatomy and Physiology of the Vocal Mechanism (1 Unit)
Anatomical and physiological mechanisms of breathing, phonation, and articulation. Laboratories include dissection and participation in physiological research. Prerequisite: sophomore standing or above. *SoC Mathematics, Science, and Technology Distro*

CSD 302-0 Anatomy and Physiology of the Peripheral Hearing Mechanism (1 Unit)
Gross and fine structure; function of the peripheral auditory system. Prerequisites: junior standing or above, CSD 202-0, or consent of instructor.
SoC Mathematics, Science, and Technology Distro

CSD 303-0 Brain and Cognition (1 Unit) Neural bases of cognitive processing with emphases on neuroimaging approaches in the areas of encoding, perception, attention, memory, language, reading, motor control, and executive functioning. Taught with Psych 327-0; students may not earn credit for both courses. *SoC Individual and Social Behavior Distro SoC Mathematics, Science, and Technology Distro*

CSD 304-0 Statistics in Communication Sciences and Disorders (1 Unit)
Introduction to research design and data analysis in communication sciences and disorders; statistical inference. *SoC Mathematics, Science, and Technology Distro*

CSD 305-0 Phonetics (1 Unit) Training in transcription of English speech sounds. Introduction to phonological analysis, dynamics of articulation, and dialect variations. *SoC Individual and Social Behavior Distro SoC Mathematics, Science, and Technology Distro*

CSD 306-0 Psychoacoustics (1 Unit)
Principles underlying perception of pitch, loudness, auditory space, auditory patterns, and speech. Psychophysical procedures for studying psychoacoustics and the impact of hearing impairment are considered. *SoC Individual and Social Behavior Distro SoC Mathematics, Science, and Technology Distro*

CSD 309-0 Culture, Language and Learning (1 Unit) Language and culture; transmission of culture through language; effects of cultural variety on perception, cognition, and learning; implications of cultural and linguistic diversity in communicative disorders. *SoC Individual and Social Behavior Distro*

CSD 310-0 Biological Foundations of Speech and Music (1 Unit)
Anatomy and physiology of the central auditory pathway, experience-related neural plasticity, right/left brain specialization, audiovisual integration, auditory learning and perception, and neural encoding of speech and music. Crosslisted with CSD 410-0 and SAI 502-0.Prerequisite: junior standing or consent of instructor.
SoC Mathematics, Science, and Technology Distro

CSD 318-0 Introduction to Audiology (1 Unit) Introduction to the measurement of hearing in humans. Basic anatomy of the ear, measurement of hearing, potential disorders of hearing. *SoC Mathematics, Science, and Technology Distro*

CSD 319-0 Aural Rehabilitation (1 Unit) Principles and practices in rehabilitation of children and adults, including use of sensory aids, counseling, communication remediation (emphasizing speech reading), and auditory training techniques. Prerequisite: CSD 318-0. *SoC Mathematics, Science, and Technology Distro*

CSD 320-0 Introduction to Speech, Language, Learning, and Their Disorders (1 Unit) Overview of normal and disordered communication. Speech, language, hearing, and cognitive development disorders and their psychosocial effects, across the age continuum according to etiology, clinical manifestations, and intervention. Anatomy and physiology of speech, language, and hearing. Service-delivery settings; ethical and legal considerations; professional issues. *SoC Individual and Social Behavior Distro SoC Mathematics, Science, and Technology Distro*

CSD 332-0 Clinical Assisting in Speech and Language Pathology (1 Unit) Introduction to clinical practice, the dynamics of the client-clinician relationship and general clinical protocol, and the development and execution of therapy goals and procedures. Prerequisites: CSD 392-0 and CSD 305-0, or consent of instructor. *SoC Individual and Social Behavior Distro*

CSD 334-0 Delivery Systems in Speech & Language Pathology (1 Unit)
Organization and administration of speech language pathology services in schools, health care agencies, and private practice.
SoC Individual and Social Behavior Distro

CSD 342-0 Language and Cognition across Neurodevelopmental Conditions (1 Unit) Description and theory relevant to the cognitive, linguistic, and social development of individuals with different developmental disorders throughout the lifespan. *SoC Individual and Social Behavior Distro*

CSD 369-0 Special Topics in Communication Sciences and Disorders (0.5-1 Unit)
Current scientific and professional issues in communication sciences and disorders. Topics vary by offering.
SOC Additional Distro

CSD 373-0 Introduction to Learning Disabilities (1 Unit) Psychological, neurological, and linguistic theories of language and learning as related to learning disabilities. *SoC Individual and Social Behavior Distro*

CSD 376-0 Diagnostic & Remedial Approaches for Children With Learning Problems (1 Unit)
Introduction to the field of learning disabilities and its theoretical perspectives, assessment, and instruction principles, and to the process of clinical teaching. Emphasis on instruction, accommodation, service delivery, progress monitoring, and transition.
SoC Individual and Social Behavior Distro

CSD 380-0 Introduction to Clinical Procedures in Learning Disabilities (1 Unit) Practicum experience in clinical settings. Learning processes and application of instructional approaches. Field studies, reading, and weekly seminars. Prerequisite: CSD 376-0. *SoC Individual and Social Behavior Distro*

CSD 382-0 The Autism Spectrum (1 Unit) Overview of autism, focusing on its clinical presentation and potential causes, diagnosis, assessments

for characterizing autistic features in research, evaluation (based on behavior, cognition, neuroimaging, and genetics) of theories of autism's causes, and controversies (changing prevalence, myths about causation). *SoC Individual and Social Behavior Distro SoC Mathematics, Science, and Technology Distro*

CSD 392-0 Language Development and Usage (1 Unit) Development of spoken and written language as it relates to child development; includes phonological, morphological, syntactic, semantic, and pragmatic components. Cultural and individual linguistic diversity. *SoC Individual and Social Behavior Distro*

CSD 395-0 Cognitive Neuroscience of Human Communication (1 Unit) In-depth study of cognitive neuroscience methods (MRI, EEG, etc.) and what they have revealed about human communication and its disorders. The focus is on reading and critiquing research papers. Students also work as a team to design, execute hands-on, and analyze data from their own EEG experiment. *SoC Mathematics, Science, and Technology Distro*

CSD 398-0 Research Practicum in Communication Sciences and Disorders (0.5-1 Unit) Working with a faculty member on design, execution, and presentation of a research project. Activities may include a review of literature, design of an experiment, data collection, coding, analysis, and spoken or written presentation of experimental results.

CSD 399-0 Independent Study (0.5-1 Unit) Prerequisite: consent of undergraduate dean after submission of petition. *SOC Additional Distro*