

COMMUNICATION SCIENCES AND DISORDERS

Degree Types: PhD

The Department of Communication Sciences and Disorders (<https://phdcsd.northwestern.edu/>) at Northwestern brings together researchers studying mechanisms and disorders of communication in an interdisciplinary setting. Research centers around basic and clinical aspects of speech, language, learning, hearing, and swallowing, but disciplines span physics, engineering, physiology, neuroscience, linguistics, biology, psychology, cognitive science, and education. Investigations range from the level of molecules to clinical trials.

The PhD program is designed to prepare the next generation of leaders in the field by providing coursework and in-depth research experience. Developing critical thinking, scientific writing, publishing, and grant-writing skills are major emphases throughout the program. Opportunities are available to develop skills through training in related areas such as statistics, programming, big data/data science, and teaching. Students are prepared for careers in academia as well as industry, policy, and clinical practice.

Additional resources:

- Department website (<https://phdcsd.northwestern.edu/>)
- Program handbook(s)

Degrees Offered

- Communication Sciences and Disorders PhD (<https://catalogs.northwestern.edu/tgs/communication-sciences-disorders/communication-sciences-disorders-phd/>)

Communication Sciences and Disorders Courses

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.

Natural Sciences Distro Area

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.

Social Behavioral Sciences Distro Area

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.

Natural Sciences Distro Area

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.

Social Behavioral Sciences Distro Area

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.

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.

Social Behavioral Sciences Distro Area

CSD 404-1 Experimental Design and Statistics in Communication Sciences and Disorders (1 Unit)

First Quarter: Experimental design. Higher-order experimental methods; research designs. Applications. Analysis of variance procedures, linear correlation and regression, and problems in design and interpretation of research. Second Quarter: Advanced statistics. Covariance, factor, and nonparametric analysis. Multivariate procedures and test statistics; research applications.

CSD 404-2 Experimental Design and Statistics in Communication Sciences and Disorders (1 Unit)

First Quarter: Experimental design. Higher-order experimental methods; research designs. Applications. Analysis of variance procedures, linear correlation and regression, and problems in design and interpretation of research. Second Quarter: Advanced statistics. Covariance, factor, and nonparametric analysis. Multivariate procedures and test statistics; research applications.

CSD 410-0 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 310-0 and SAI 502-0.

Prerequisite: junior standing or consent of instructor.

CSD 412-0 Scientific Writing (1 Unit)

Principles of scientific writing for journals, dissertations, and grant proposals. Emphasis on mastering the structures for presenting concepts and data.

Prerequisite: course is restricted to CSP PhD students.

CSD 444-0 Development and Disorders of Mathematics (1 Unit)

Theories and research on mathematical development and disorders. Identification, assessment, and remediation of disorders of mathematics and related areas.

CSD 499-0 Independent Study (0.5-3 Units)

May be repeated for credit. Consent of instructor and department required.

CSD 511-0 Translational Research in Communication Sciences and Disorders (1 Unit)

Seminar on how all aspects of communication-sensory processing, cognitive/language factors, and motor processes-interact in normal and disordered functioning, and how research can address treatment outcomes.

CSD 516-0 Seminar: Experimental and Theoretical Aspects of Audiology (1 Unit)

Open to graduate students pursuing the PhD degree.

CSD 544-0 Responsible Conduct of Research in Communication Sciences and Disorders (0 Unit)

Overview of the Responsible Conduct of Research, with topics including the responsible conduct of CSD research in key areas identified by

the National Institutes of Health; expectations about conduct within the research enterprise; research misconduct; and the role of the CSD scientist beyond the lab, including the global implications of research.

CSD 545-0 Seminar: Professional Development (1 Unit)

Professional issues in the field of communication sciences and disorders. Topics include ethics, grants and funding, peer reviews and publishing, postdoctoral experiences, interviewing, and tenure.

CSD 546-0 Directed Teaching in Communication Sciences and Disorders (1 Unit)

Guided teaching experience. Preparation and delivery of class lectures, as well as observation of teaching methods, preparation of the course outline, selection of readings, and writing of exam questions.

CSD 550-1 Research Foundations in Communication Sciences and Disorders (Scientific Thinking) (1 Unit)

An introduction to scientific thinking as applied to Communication Sciences and Disorders. Topics to be covered include the scientific method, hypotheses versus predictions, the purpose of data collection, previous evidence, and scientific argumentation.

CSD 550-2 Research Foundations in Communication Sciences and Disorders (Experimental Design) (1 Unit)

Essential concepts in designing and interpreting experiments in communication sciences and disorders. The range of methods commonly used in sub-disciplines of CSD (i.e., biology, psychology and clinical studies), with an eye to the strengths and weaknesses of each. Selection of papers of interest on a given topic, and critique of the research design.

CSD 550-3 Research Foundations in Communication Sciences and Disorders (Scientific Communication) (1 Unit)

Focus on how to convey scientific ideas and findings, building on scientific thinking and experimental design covered in previous courses. Emphasis is placed on how to communicate effectively across spoken, written, and visual formats, and to a variety of audiences. Iterative assignments on different types of communication (e.g., elevator speech, short research talk, abstract) throughout the quarter.

CSD 551-0 Topics in Communication Sciences and Disorders (1 Unit)

Reading, reviewing, and critiquing published research in a specific topic area in communication sciences and disorders. Topics to be announced.

CSD 552-1 Laboratory Experiences in Communication Sciences and Disorders (1 Unit)

Experience in laboratory research in communication sciences and disorders.

Prerequisites: Faculty permission.

CSD 552-2 Laboratory Experiences in Communication Sciences and Disorders (1 Unit)

Experience in laboratory research in communication sciences and disorders.

Prerequisites: Faculty permission.

CSD 552-3 Laboratory Experiences in Communication Sciences and Disorders (1 Unit)

Experience in laboratory research in communication sciences and disorders.

Prerequisites: Faculty permission.

CSD 590-0 Research (1-3 Units)

Independent investigation of selected problems pertaining to thesis or dissertation. May be repeated for credit.