
Passion into Practice

PACS

Program in Audiology and
Communication Sciences

2021-22



Washington University in St. Louis

SCHOOL OF MEDICINE

Why Washington University?

CULTURE

The Program in Audiology and Communication Sciences has a uniquely supportive and approachable atmosphere where students are encouraged and respected by one another and faculty as they develop their passion, knowledge, and experience.

ACCESS

With hearing research programs, a school for children who are deaf or hard of hearing, and audiology clinics located on campus, students gain a breadth and depth of firsthand experience with opportunities to further their education and career.

PRESTIGE

As one of the oldest and most respected centers for education, clinical care, and research in hearing disorders, balance and language, our history is rich in groundbreaking discoveries and our highly ranked graduate programs are taught by some of the leading minds in the fields.





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“PACS has provided numerous opportunities for me as a student outside the classroom and clinic, including participating in research, observing surgery, and attending Grand Rounds.”

BRIANNE NOUD, AUD '19 | Clinical audiologist, The Center for Hearing and Speech

The Program in Audiology and Communication Sciences (PACS) at Washington University School of Medicine offers exceptional graduate education in audiology, deaf education, and speech and hearing sciences. PACS is a renowned academic center with a supportive, inviting culture and access to opportunities that allow our students to put their **passion into practice**. By preparing passionate and experienced graduates, we strive to improve outcomes for people with hearing disorders.

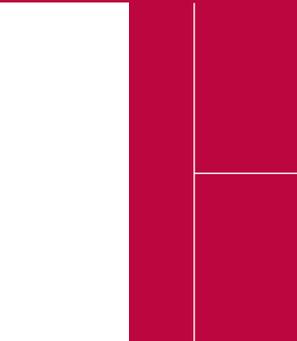
We invite you to join us in this mission and become a part of our extraordinary community of educators, scholars, and clinicians.

Degrees Offered

Doctor of Audiology (AuD): prepares students as clinical audiologists

Master of Science in Deaf Education (MSDE): prepares students as teachers of children who are deaf or hard of hearing

Doctor of Philosophy (PhD): prepares students for academic and research careers in speech and hearing sciences



25–30 students admitted
to PACS each year

The Doctor of Audiology (AuD) Program

The Doctor of Audiology (AuD) program is a four-year course of study that prepares students as independent clinical audiologists. Established in 1947, the audiology program is among the oldest and most prestigious of its kind.

Today, its curriculum serves as a national model, immersing students in academic coursework, clinical experiences, and research opportunities. Ranked No. 6 in the country by *U.S. News & World Report*, the program and its faculty are internationally recognized and attract a diverse body of students.

PEDIATRIC AUDIOLOGY TRACKS

The Pediatric Audiology Elective offers AuD students the opportunity to gain additional knowledge and experience related to pediatric audiology, focusing on listening and spoken language for children who are deaf or hard of hearing. The requirements include additional coursework and experiences, with funding provided for up to 10 students per year. A Pediatric Audiology Specialization is also available for students who go on to complete a fourth-year externship that emphasizes pediatrics.

No. 6 ranked audiology program in the country
by *U.S. News & World Report*



CLINICAL EXPERIENCES

Clinical experiences begin in the first semester and become more prominent with each successive semester, culminating in a full-time clinical externship in the fourth year. Approximately 50 sites in the St. Louis area and 150 more sites around the country are affiliated with the AuD program. These sites provide clinical experiences across the lifespan and scope of practice, including comprehensive audiologic evaluations, hearing aids, cochlear implants, aural rehabilitation, vestibular evaluation and treatment, electrophysiology, and much more. In addition, our world-class medical school and hospitals provide students with unique opportunities such as attending Grand Rounds, observing cochlear implant surgery seminars and participating in optional research training programs.

RESEARCH

The integration of research into the curriculum is a distinctive feature of the program. All students receive research experience through coursework and the completion of the Capstone Project in the third year. Interested students also are encouraged to pursue their individual research interests through a variety of elective, interdisciplinary research opportunities, including an elective summer research experience.

ACCREDITATION AND CERTIFICATION

The AuD program is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association (ASHA). Graduates will meet the academic, clinical, and research requirements for the Certificate of Clinical Competence (CCC) of ASHA.

The Field of Audiology

Audiology is the science of hearing and the study of auditory and vestibular processes. Audiologists work with patients of all ages, from infants to the elderly, in clinical settings such as hospitals, schools and clinics, in government, industry, and research. They measure hearing ability, identify hearing and balance disorders, provide rehabilitative services and speechreading training, assist in differential diagnosis of sensory and neurological disorders, and assess the need for amplification devices.

Curriculum

During the first three years, coursework is integrated with clinical training and research experiences, with students completing a Capstone Project in the third year. The fourth year is fully dedicated to clinical training. The curriculum emphasizes hands-on experiences and covers the scope of practice for the profession.

YEAR ONE

Fall Semester

- 401 Anatomy and Physiology of Speech and Hearing
- 421 Introduction to Electroacoustics
- 434 Typical Language Development*
- 460 Staffing
- 4611 Observation and Practicum in Audiology
- 5601 Clinical Audiology I
- 5651 Hearing Devices I

Spring Semester

- 460 Staffing
- 4612 Observation and Practicum in Audiology
- 505 Auditory Neuroscience
- 510 Auditory Perception
- 551 Research Seminar
- 5602 Clinical Audiology II
- 569 Hearing Disorders

Postsession

- 517 Counseling for Audiology

Summer Semester

- 4613 Practicum in Audiology

YEAR TWO

Fall Semester

- 4301 Sign Language I*
- 460 Staffing
- 4621 Practicum in Audiology
- 468 Pediatric Audiology
- 5001 Electrophysiologic Techniques I
- 5652 Hearing Devices II

Intersession

- 4622 Practicum in Audiology

Spring Semester

- 460 Staffing
- 507 Vestibular Assessment
- 5653 Hearing Devices III
- 574 Statistics and Research Methods

Postsession

- 5002 Intraoperative Monitoring
- 502 Pharmacology

Summer Semester

- 4623 Practicum in Audiology



YEAR THREE

Fall Semester

- 460 Staffing
- 466 Rehabilitative Audiology
- 470 Business Practices
- 506 Genetics in Hearing Loss

Intersession

- 511 Hearing Conservation

Spring Semester

- 460 Staffing
- 4632 Practicum in Audiology
- 543 Survey of Speech and Language Disorders*
- 5700 Capstone Project

Summer Semester

- 4633 Clinical Externship

YEAR FOUR

Fall Semester

- 4641/4651 Clinical Externship

Spring Semester

- 4642/4652 Clinical Externship

Additional Elective Course:

- 4302 Sign Language II

**These courses may be waived if an equivalent course has been completed.*



“The integration and importance of research stressed throughout the AuD curriculum is distinctive to PACS. The optional research training programs available allow for the opportunity to explore individual interests, both outside of the classroom and clinic.”

KAITLYN WENRICH, '18 | Associate clinical territory manager, Cochlear Americas

The Master of Science in Deaf Education (MSDE) Program

The Master of Science in Deaf Education (MSDE) program is a two-year course of study that prepares students as teachers of children from birth to grade 12 who are deaf or hard of hearing. With origins dating back to 1914, the program is recognized internationally as one of the most prestigious of its kind. The program's intensive curriculum, emphasis on immersion in practice teaching, and experienced faculty attract students nationally from a wide variety of backgrounds.

400 hours of in-classroom
practicum experience



STUDENT TEACHING EXPERIENCES

Our students build their knowledge and skills through classroom instruction and immersive, hands-on student-teaching experiences. They learn about and engage in the teaching process, from the first diagnosis and early intervention through family-centered counseling and educational options for the child. Teaching experiences are available at approximately 12 local sites, which include both public and private schools serving more than 700 children who are deaf or hard of hearing; this includes the on-campus Central Institute for the Deaf. Teaching experiences outside of the St. Louis area are also available.

In addition, our nationally recognized medical school and hospitals provide unique opportunities, such as observing cochlear implant surgery seminars and touring a hospital neonatal intensive care unit.

RESEARCH

The integration of current research into the curriculum is a unique feature of the program. Through coursework in the fields of speech and hearing, education, psychology, and deafness, students learn how to be consumers of research, and to apply the knowledge gained to their own teaching.

ACCREDITATION AND CERTIFICATION

The program is accredited by the Missouri Department of Elementary and Secondary Education and the Council on Education of the Deaf (CED). All graduates of the two-year program will meet the academic, practical and research requirements for recommendation for initial certification in Missouri (Deaf/Hearing Impaired, Birth–Grade 12) and by CED.

Deaf Education: A Listening and Spoken Language Approach

Many parents of children who are deaf or hard of hearing desire that their children learn how to listen and talk. Teachers who specialize in this educational philosophy help children develop their spoken and written language skills through current teaching strategies and auditory technologies, such as cochlear implants and digital hearing aids.

Curriculum

The two-year curriculum is rooted in the development of speech, language, and social skills. With that as a foundation, students study the factors necessary for high-quality education for children who are deaf or hard of hearing. A one-year curriculum option is available for select students with a degree and significant teaching experience in deaf education. All students must complete a comprehensive examination and Independent Study in the second year.

YEAR ONE

Fall Semester

- 401 Anatomy and Physiology of Speech and Hearing
- 4011 Behavior Management
- 424 Speech and Hearing Sciences
- 434 Typical Language Development*
- 438 Early Literacy Development of Children Who are Deaf or Hard of Hearing
- 4515 Language Instruction for Children Who are Deaf or Hard of Hearing
- 5601 Clinical Audiology I

Spring Semester

- 444 Amplification Systems and Aural Rehabilitation for Children
- 4525 Foundations of Literacy Theory and Instruction
- 4526 Literacy Lab: A Focus on Typical and Atypical Learners
- 454 Mathematics and Content-Area Instruction for Children Who are Deaf or Hard of Hearing I
- 458 Speech for Children Who are Deaf or Hard of Hearing
- 551 Research Seminar
- 554 Fundamentals of Early Intervention and Child Development

YEAR TWO

Fall Semester

- 416 Evaluation Techniques for Children Who are Deaf or Hard of Hearing
- 4301 Sign Language I*
- 4511 Practicum in Deaf Education
- 455 Mathematics and Content-Area Instruction for Children Who are Deaf or Hard of Hearing II
- 555 Early Intervention: Serving Children Who are Deaf or Hard of Hearing Birth to Age 5
- 558 Pre-Service Teacher Preparation

Spring Semester

- 4512 Practicum in Deaf Education
- 457 Counseling Parents of Children Who are Deaf or Hard of Hearing
- 519 Psychosocial and Educational Foundations of Deafness
- 570 Independent Study

Additional Elective Course:

- 4302 Sign Language II

Additional Courses Required for Teacher Certification:

- Child and Adolescent Psychology*
- Education and Psychology of the Exceptional Child*

*These courses may be waived if an equivalent course has been completed.



“The professors here are actually working every day with children who are deaf, so they have the experience, knowledge, and know-how, and they bring it into the classroom.”

CHRISTY CHADWICK, MSDE '16 | Teacher of the deaf or hard of hearing, independent consultant, Kahului, Hawaii

The Doctor of Philosophy (PhD) Program

The Doctor of Philosophy (PhD) program prepares students for academic and research careers in speech and hearing sciences. Established in 1947, the program is dedicated to fostering scientific inquiry in speech and hearing sciences and related disciplines. The program is administered through The Graduate School at Washington University in St. Louis.

“While the program’s academic rigor is second to none, its supportive faculty truly make the student experience a great one.”

JENNA VOSS, PHD, '14 | Director of Deaf Education and assistant professor, Fontbonne University, St. Louis, Missouri



CURRICULUM

The curriculum combines interdisciplinary academic coursework, teaching experiences, and research training, culminating in a dissertation. Each student's experience can be tailored to his or her individual interests. The PhD requires 72 hours of graduate credit. Generally, 24 hours of graduate credit may be transferred toward the PhD from another institution; graduates of our AuD and MSDE programs are provided advanced standing and may transfer up to 48 or 36 hours respectively.

TEACHING EXPERIENCES

Teaching experiences prepare students to become effective teachers and communicators of their discipline and their own research. All PhD students receive training in pedagogy and complete teaching experiences at the introductory and advanced levels under the guidance of a faculty mentor.

RESEARCH

Students immerse themselves in the world-class research environment of Washington University. As they conduct their own original work, they participate in colloquia, Grand Rounds, brown bag seminars, research seminars, journal clubs, and similar opportunities. The program fosters opportunities to publish and participate in professional conferences. In the final year, students present and defend their dissertation.

Affiliated Research

PACS is affiliated with the Department of Otolaryngology, which operates one of the nation's largest hearing and deafness research programs.

Topics include:

- Adult aural rehabilitation
- Biology of hearing and deafness
- Childhood deafness
- Cochlear implants
- Dizziness and balance
- Hearing aids
- Tinnitus



“The program excels at providing the people and resources each student needs to pursue his or her individual interests to the fullest.”

MICHAEL VALENTE, PHD | Professor of otolaryngology

Washington University School of Medicine

The School of Medicine, founded in 1891, has a rich history of success in research, education, and patient care. *U.S. News & World Report* ranks the school among the top medical schools in the United States, and our students bring impressive credentials to their studies. Each year, many Washington University physicians are listed in *The Best Doctors in America*. 15 faculty members are fellows of the National Academy of Sciences; 27 have been elected to membership in the National Academy of Medicine. 18 Nobel laureates have been associated with the School of Medicine.

Washington University Medical Campus

Ranked among the nation's best by *U.S. News & World Report*, the campus is home to:

- The Alvin J. Siteman Cancer Center
- Barnes-Jewish Hospital
- St. Louis Children's Hospital
- Washington University School of Medicine

The school operates one of the nation's largest academic clinical practices in partnership with nationally ranked hospitals. Our research enterprise is among the most extensive in the world. Groundbreaking multidisciplinary work in neuroscience, diabetes, diagnostic imaging, cardiovascular diseases, genetics, immunology, and many other fields are among our strengths.

Why St. Louis?

St. Louis' affordability and friendly character make it an attractive location for graduate students. The excitement and culture of a big city are here, but living is easy and accessible. The university helps by providing students a free pass to the metro-area public transportation system — MetroBus and MetroLink light rail.

The Washington University Medical Center campus is located in the beautiful and eclectic Central West End neighborhood. Housing options include affordable apartments in the Central West End and the School of Medicine's Core Apartment Residences on campus.

St. Louis has much to offer, from plentiful music venues and museums for the arts lover to St. Louis Cardinals baseball and St. Louis Blues hockey for the sports enthusiast. Outdoor activities can be found in and around the metropolitan area, with riverfront bike trails, and the nearby Ozark mountains and river valleys are perfect for backpacking, camping, fishing, and canoeing. Forest Park lies across the street from the medical campus. This massive green space — 500 acres larger than New York's Central Park — offers countless facilities for athletics, cultural activities, and leisure.

Discover more at [EXPLORESTLOUIS.COM](https://www.explorestlouis.com).

HISTORY OF AUDIOLOGY IN ST. LOUIS

St. Louis has a rich history as a hub for audiology and the deaf community, with many leaders in the field studying, researching, and practicing here.

CENTRAL INSTITUTE FOR THE DEAF

Central Institute for the Deaf (CID), located on our campus, has been a national leader in deaf education and research for more than a century. In 1914, CID was founded to serve people who were deaf or hard of hearing. Washington University and CID joined forces in 1931, when CID's established teacher training program became the first deaf education undergraduate program to affiliate with a university. Graduate programs soon followed.

During World War II, CID's research on hearing loss in military personnel laid the foundation for the field of audiology. CID also pioneered hearing testing, digital hearing aids, and hearing research, and opened the country's first hearing aid clinic in 1941. In September 2003, a new affiliation transferred CID's graduate degree programs, research programs, and adult audiology clinic, along with its building, to Washington University School of Medicine. The CID school continues to operate on the School of Medicine campus.



Today, these programs continue to work together to fulfill a shared mission to serve people who are deaf or hard of hearing.

Faculty

Childhood Deafness •

Adult Aural Rehabilitation

Brent P. Spehar, PhD
Nancy Tye Murray, PhD
Rosalie Uchanski, PhD

Clinical Audiology •

Hearing Aids • Cochlear Implants

Greta M. Bohnenkamp, MS
Lisa S. Davidson, PhD
Lauren E. Felton, AuD
Jill B. Firszt, PhD
Dorina Kallogjeri, MD
Amanda Ortmann, PhD
Kimberly K. Ott, MS
Kay R. Park, AuD
Judy Peterein, AuD
Lisa G. Potts, PhD
Belinda Sinks, AuD
Steven Smith, AuD

Deaf Education

Lauren Abel, MA
Lynda C. Berkowitz, MSSH
Amy L. Birath, AuD
Betsy Moog Brooks, EdD
Elizabeth A.C. Elliott, MAT
Laura Ferguson, MS
Heather Grantham, PhD
Dawn Grempler, MS
Christine H. Gustus, MSSH
Jean S. Moog, MS
Justine L. Preston, MA
Casey Reimer, PhD
Mary A. Shortal, MA
Karen S. Stein, MAEd

Biology of Hearing and Deafness •

Dizziness and Balance

Carl D. Bohl, ScD
Craig Buchman, MD
Richard A. Chole, MD, PhD
William W. Clark, PhD
Brian T. Faddis, PhD
Keiko Hirose, MD
Jeffery Lichtenhan, PhD
James D. Miller, PhD
Kevin K. Ohlemiller, PhD
Mark E. Warchol, PhD





“The learning atmosphere is open and encouraging. Students are challenged to think, their opinions are valued, and creative thinking and problem solving are highly encouraged.”

LYNDA BERKOWITZ, MSSH | Instructor in audiology and communication sciences and principal, Central Institute for the Deaf

Application and Admission Information

PREREQUISITES

To be considered for admission, applicants must hold a bachelor's degree or higher from an accredited university. There are no specific prerequisite courses for applicants to the AuD and MSDE programs. Courses listed below are required for professional certification and/or licensure upon graduation. Unless otherwise noted, coursework in each subject must be equivalent to three semester hours or more of academic credit.

Completion of the courses listed below is recommended, but not required, prior to enrollment. Any deficits generally can be completed during graduate studies without an extension of the program.

AuD Program

- Typical language development
- Disordered speech and language development
- Sign language¹

PhD Program

- Competitive applicants generally hold a graduate degree in a related field and/or have relevant research experience.

MSDE Program

- General coursework in the arts, history and government, English composition, mathematics, oral communication, science, behavioral sciences, and multicultural issues²
- Child and adolescent psychology
- Education and psychology of the exceptional child
- Typical language development
- Sign language¹

¹ *Must be equivalent to two semester hours or more of academic credit.*

² *A degree in the liberal arts generally fulfills these requirements.*

APPLICATION PROCEDURES

Individuals interested in applying must do so online. A link is available at pacs.wustl.edu. The following items are required and must be received by the stated application deadline:

- Completed application, including personal statement
- Application fee (non-refundable) of \$25
- Official transcripts from all college/university coursework (international applicants must submit an official evaluation of transcripts from a credentialing agency)
- Three letters of recommendation
- AuD and PhD applicants only: Official scores from the GRE, submitted to Institution Code 6929 (Washington University) Department Code 0602 (Audiology)
- All applicants are encouraged to arrange an interview after submission of the application. Please visit the website for information on scheduling.
- Official scores from the Test of English as a Foreign Language (TOEFL) for all international applicants whose native language is not English

APPLICATION DEADLINES

Online applications open September 1 of each year. All application materials must be received by the following dates:

- PhD program — January 15
- AuD program — February 15
- MSDE program — December 15 (early decision), February 15 (priority decision), or June 1 for rolling admissions (fall entry, as available)

TUITION AND FEES

Full-time tuition for students entering the AuD and MSDE programs during the 2021–22 academic year is \$42,750 per year plus a non-refundable matriculation fee of \$200. Part-time tuition is \$700 per semester hour. Tuition rates will not increase above the amount set at the time of enrollment, assuming continuous full-time enrollment. Full-time tuition also includes student health, life, and disability coverage through Washington University School of Medicine. Full-time tuition will be reduced by 50 percent for AuD students during the Clinical Externship in Audiology (fourth year).

The PhD program follows the tuition and fee structure of The Graduate School. For more information, please visit

[GRADUATESCHOOL.WUSTL.EDU](https://graduateschool.wustl.edu).

Additional fees may be required for international students.

FINANCIAL ASSISTANCE

PACS is committed to enrolling talented, motivated students from diverse backgrounds. Historically, we have provided financial assistance to 100 percent of our students through a variety of support mechanisms.

SCHOLARSHIPS

Scholarships are the primary form of financial support for our students. Offered at the time of admission, scholarships generally provide support to students for all years of study. There is no work requirement in exchange for the scholarship during the student's enrollment. A service obligation may be required for some scholarship recipients.

- AuD student scholarships generally reduce the amount of the annual tuition by 25 percent to 50 percent.
- MSDE student scholarships generally reduce the annual tuition by 50 percent to 100 percent.
- PhD students are generally provided a minimum of 80 percent tuition remission.

OTHER OPPORTUNITIES

Following admission, a number of other opportunities providing partial support may also be available. Announcements and information are distributed to students directly as these are available. These generally range from \$2,000–\$5,000 each.

- A limited number of assistantships are available on a competitive basis. These positions typically provide a financial award in exchange for a work commitment to PACS, such as serving as a teaching or clerical assistant.
- Federal work-study positions may be available to qualified students. Such positions generally involve clerical work within PACS.
- Part-time, paid positions are often available. Recent positions have involved working with children in the CID school or a position in a research lab.
- A number of other internal scholarships and awards are also available on an annual basis following matriculation.

For information about loans:

- AuD and MSDE applicants may contact the Office of Student Financial Planning at (888) 840-3239, medfinancialaid@wustl.edu or **FINAID.MED.WUSTL.EDU**.
- PhD applicants may call (314) 935-6821.

Non-Discrimination Statement

Washington University encourages and gives full consideration to all applicants for admission, financial aid, and employment. The university does not discriminate in access to, or treatment or employment in, its programs and activities on the basis of race, color, age, religion, sex, sexual orientation, gender identity or expression, national origin, veteran status, disability, or genetic information. Inquiries about compliance should be addressed to the university's Vice Chancellor for Human Resources, Washington University, Campus Box 1184, One Brookings Drive, St. Louis, MO 63130. The School of Medicine is committed to recruiting, enrolling, and educating a diverse student body.

Criminal Background Check and Drug Screening

Incoming students in the School of Medicine must undergo criminal background checks and drug screening before matriculation because of requirements of the Joint Commission on Accreditation of Health Organizations (JCAHO). These confidential procedures are required of all health care workers, students, and volunteers who participate in patient-related health care activities at the hospitals and health care facilities with which Washington University School of Medicine is affiliated. In order to matriculate, a student who has accepted admission must consent to criminal background checks, which must be completed successfully before he or she can matriculate in the School of Medicine. Consent forms will be distributed to applicants who are offered positions in the incoming class. Similarly, at the time of orientation, all incoming pre-matriculant students must submit to screening for the following substances: THC-cannabis, cocaine, opiates, amphetamines, and PCP-phencyclidine. A confirmed positive test will preclude enrollment into the School of Medicine. All costs for U.S. background checks and drug screenings are included in the stated tuition and fees. The student will be responsible for any costs associated with international background checks required for matriculation and/or practicum placements.



CID AT WASHINGTON UNIVERSITY
SCHOOL OF MEDICINE
CENTRAL INSTITUTE FOR THE DEAF
Oral School and Outreach Center

CID AT WASH
SCHOOL

C



You want an environment
where discoveries are
happening every day.

You are committed to
the population you serve.

In a perfect world, you do
more than treat patients,
you improve outcomes.

We hear you.

Program in Audiology and Communication Sciences

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