

Audiology

Joint Doctoral Program between San Diego State University and the University of California, San Diego

DIRECTORS:

Steven J. Kramer, Ph.D., *San Diego State University*
Jeffrey Harris, M.D., Ph.D., *University of California,
San Diego*
<http://chhs.sdsu.edu/slhs/audmain.php>.

Faculty

San Diego State University
Arthur Boothroyd, Ph.D.
Laura Dreisbach, Ph.D.
Steven J. Kramer, Ph.D.
Carol Mackersie, Ph.D.
Radha Simhadri, Ph.D.
Peter Torre, Ph.D.
Derin Wester, Ph.D.

University of California, San Diego
Luis D. Benitez, M.D.
Jeffrey P. Harris M.D., Ph.D.
Elizabeth M. Keithley, Ph.D.
Lina M. Mullen, Ph.D.
Allen F. Ryan, Ph.D.
Erik Viire, M.D., Ph.D.

Professional Doctorate in Audiology (Au.D.)

A professional doctorate in audiology (Au.D.) is offered jointly by San Diego State University (SDSU) and the University of California, San Diego (UCSD). The Au.D. program is a four-year graduate degree program designed for individuals who intend to specialize in clinical practice and to meet professional standards requiring a clinical doctorate as the entry-level degree for a certified audiologist. Graduates of this program will have the knowledge base, research exposure, and advanced clinical skills to enter the workforce in any setting, and will be prepared to function as independent audiology professionals in the expanding health care arena. The program encompasses academic, clinic, and research experiences in audiology and otology, through the combined resources from the Department of

Communicative Disorders at SDSU and the Department of Surgery (Otolaryngology) in the School of Medicine at UCSD. More information about the program and admission can be found on the Web site, <http://chhs.sdsu.edu/slhs/audmain.php>.

Faculty members of the cooperating institutions teach courses, provide clinic instruction and research experiences, and are available as members of joint doctoral committees and advisers for student doctoral projects.

Admissions

Students will apply to the Au.D. Joint Doctoral Program through SDSU. It is expected that students will come into this program from a variety of different science backgrounds, including communicative disorders, biological and physical sciences, engineering, psychology, nursing, or a pre-med curriculum. Applicants for admission to the Au.D. program must meet the general requirements for admission to both universities with classified graduate standing as outlined in the respective catalogs. Applicants must also meet the special requirements of this program. These include (a) overall grade-point average of 3.20 or better in undergraduate courses and in any graduate courses completed; (b) submission of scores on the GRE with satisfactory performance on both quantitative and verbal portions of the examination; (c) prerequisite completion of at least one course in statistics, three courses in biological/physical sciences, two courses in behavioral/social sciences, and one course in American Sign Language. Deficiencies in these areas may be completed after admission to the program if approved by the admissions committee.

Applicants must submit transcripts of all postsecondary coursework, three letters of recommendation from former or current professors, supervisors, or other appropriate persons able to judge their academic potential, and an applicant essay (statement of purpose) indicating their interests and strengths relative to their career objectives. Details of these requirements will be made available with the application form. Assuming that students meet the requirements for admission outlined above, each student admitted to the program will have a program advisor evaluate their preparation in view of their needs and career goals, as well as professional certification requirements.

Applicant files are reviewed as a group by an admissions committee composed of Au.D. pro-

gram faculty from each campus. Other Au.D. program faculty may review files and make recommendations to the admissions committee. Given the limited number of spaces available (ten new admissions each year are anticipated, subject to available facilities), the admissions committee will select the best-qualified applicants to fill the available spaces. No minimum set of qualifications will guarantee an applicant admission to the program. The admissions committee will make recommendations for admission to the graduate deans from each campus.

Students seeking admission to the Au.D. program should consult the program's Web site or contact the Au.D. program directors for more information, online applications, and application instructions. A complete application requires the following:

- appropriate application form
- applicant essay (detail provided in application packet)
- transcripts of academic work complete
- results of Graduate Record Examination
- three letters of recommendation

Students will be admitted to the Au.D. program only in the fall semester (first year is at SDSU). Complete applications must be received by January 20 to be considered for the program beginning in the following fall semester.

Post Master's Degree Admissions: Students admitted to the Au.D. program with a master's degree in audiology will be expected to complete the four-year Au.D. curriculum. However, some students may have had a master's preparation in audiology in which some of the course work was similar to some of the foundation courses in the Au.D. program. Upon entering the program, each individual will be assessed to determine competencies/knowledge in material that would put them on par with expectations for the Au.D. program. For some of the foundation core courses offered the first year at SDSU, e.g., Audiology 705, 710, 725, students may be given credit for the courses or be required to substitute a Doctoral Special Study (Audiology 798) course for one or more of these courses to ensure competencies or remediate deficiencies if approved by the program faculty. Credit for some of the first year clinic units may also be approved based on work experience; however, a full-complement of expected clinical skills must be demonstrated.

REQUIREMENTS FOR THE AU.D. DEGREE

Upon admission to the program, each student will be assigned a faculty adviser. The faculty adviser will help the student select a program of study to meet all program requirements. The Au.D. program is a four-year program, including summer semesters (summer semester between year two and year three may be optional if the requirements are satisfied in other ways). An exact unit minimum is not specified due to the mixing of semester units (SDSU) and quarter units (UCSD) and differences in clinical hours at different settings; however, the program is approximately 134 semester-equivalent course units. All students in the Au.D. program will fulfill the following requirements. Any alternative method of fulfilling these requirements requires advanced written permission from the program directors.

Residency

After formal admission to the Au.D. program, the student must complete a minimum of course hours equivalent to one year's full-time enrollment at each campus. The definition of residence must be in accord with the regulations of San Diego State University and the University of California, San Diego. The program is designed to be shared between the two campuses. The first year is entirely at SDSU, the second year is entirely at UCSD, and the third year will have options from both campuses. The fourth year of the program will be a full-time clinical externship at a program-approved clinic agency or site. Both campuses will share equally in the academic, clinic, and research components of the program.

Courses

The program for each student will consist of prescribed set of courses, with the first year of courses entirely at SDSU and the second year of courses entirely at UCSD. The student's faculty advisor will approve any changes to the standard curriculum.

Clinic

Each student will progress through a variety of clinical experiences involving patient assessment and management throughout their program of study. Clinic experiences will require concurrent enrollment in clinic courses appropriate for the campus in which they are doing the clinical work. These supervised clinical experiences are completed in the SDSU Audiology

Clinic, UCSD Otology Clinics, and in community field sites. Clinic courses may be repeated as needed and require adviser approval prior to enrollment. Prior to the fourth year externship, each student will obtain approximately 500 hours of clinic experience. A minimum of 2,000 clinical hours is required by the end of the program.

- *Clerkship in Otology.* All students will have at least one quarter of a clinical rotation with otology staff associated with UCSD. Students will accompany one of the otology faculty during their clinics and receive training in one or more of the following areas—clinical otology, pre-and post-operative assessment of patients, pharmacology related to otology, design and implementation of clinical trials with balance disorders, and pediatric otology.
- *Clinical Staffings.* In addition, all students will be required to regularly participate in formal clinical case study/staffing experiences. At SDSU, these clinical staffings include student and faculty presentations and discussions of interesting cases seen in their clinics. At UCSD, these staffings include, the Chairman's Conference, where Au.D. students/residents and medical staff discuss otological problem cases and disorders and the Neurotology Conference, where UCSD and community physicians, and students/residents discuss cases dealing with neurological diseases and vestibular disorders.
- *Fourth-Year Externship.* The fourth-year externship is a full-time clinical experience in an approved agency/site. These externships may require a competitive interview process by the agency. Externship sites may be in other parts of the country. All students in their fourth-year externship must also enroll in the online clinical seminar at SDSU each semester.

Research Practicum

Each student will spend at least two semesters or quarters participating in research being done by program faculty. Students are encouraged to spend time in two different laboratories (one on each campus) with different methodologies. Students will not be conducting independent research, but will actively participate in data collection and analysis at the discretion of the lab director. Students must enroll in the research practicum course for the appropriate campus.

Examinations

All students in the program will be evaluated at the following levels:

- *First Year.* Students must have achieved a 3.0 grade-point average on all core and elective courses during the first year, and have appropriate clinical skills as determined by the student's clinic supervisors. The student's ability to integrate the academic material and clinic procedures appropriate for the end of the first year will be assessed through a first year qualifying exam. This examination will be a written examination to be taken at the end of the spring semester. The first year qualifying exam may be repeated once following additional directed study by the student's adviser. Students must pass the first year evaluation in order to enroll in second year courses.
- *Second Year.* Students must have achieved a cumulative grade-point average of 3.0 on all core and elective courses, and have appropriate clinical skills as determined by the student's clinic supervisors. The student's ability to integrate the academic and clinic procedures appropriate for the end of the second year will be assessed through a second year qualifying examination. This examination will be a written examination to be taken at the end of the spring semester. The second year qualifying examination may be repeated once following additional directed study by the student's adviser. Students must pass the second year evaluation in order to enroll in third year courses.
- *Comprehensive Examination.* At the end of the third year, and after advancement to candidacy (see below), the student will take a comprehensive examination, which has an integrative written component and a practical component involving clinical procedures. The comprehensive examination must be passed before a student can be registered for the externship.

Advancement to Candidacy

Candidates will be recommended for advancement to candidacy after successfully completing all course, laboratory rotation, and clinic requirements for Year 1 and Year 2 (with a minimum grade-point average of 3.0), satisfactory performance on the first and second year evaluations, and approval of the doctoral project

proposal. Students cannot enroll in the doctoral project course, take the comprehensive examination, or register for their externship until advanced to candidacy. The program's executive committee recommends students eligible for advancement to candidacy to the graduate deans of both institutions

Doctoral Project

Each student will complete an innovative doctoral project. The doctoral project can take the form of a number of different options, e.g., a research-based investigation, evidence-based position paper, critical literature review with applications to clinical problem solving, grant proposal, development of a clinical protocol based on published research findings, or other projects proposed by the student that are accepted by the committee. The project should be designed to allow an opportunity to demonstrate critical thinking on clinical issues. Each student will select a doctoral project committee comprised of two Au.D. program faculty (one from each campus) and a faculty member external to the program. The chair of the committee can be from either campus. The executive committee will approve each student's doctoral project committee. All doctoral projects will be written in a format approved by the student's doctoral project committee. The student's final written document will be approved by the student's doctoral project committee. Each student will enroll in the appropriate doctoral project course depending on the campus in which their committee chair resides.

The Doctor of Audiology (Au.D.) degree will be awarded jointly by the Regents of the University of California and the Trustees of The California State University in the names of both cooperating institutions.

Funding for graduate students cannot be guaranteed, although every effort will be made to provide some financial support for as many students as possible, through graduate/teaching assistantships, research grants, clinical traineeships, and/or scholarships. Financial support will be awarded consistent with the policies of the two universities. Tuition and fees will be charged in accordance with the extant policies at the campus in which the student is matriculated in a given year.

COURSES

AUD 236. Neuro-otology Preceptorship (2)

Students observe in UCSD Otology clinics, learning the procedures for taking histories and performing clinical examinations, as well as providing treatment and patient education. *Prerequisites: second-year Au.D. student or consent of instructor.*

AUD 255. Anatomy and Physiology of the Auditory and Vestibular Systems (4)

This course describes the detailed anatomy of the auditory and vestibular systems, from the external ear to the central pathways associated with each system. This includes the ultra-structure, histology and neuronal connections of the systems. In addition, they physiological responses that underlie the actions of each system are described, from the cellular to the systems levels. *Prerequisites: second-year Au.D. student or consent of instructor.*

AUD 256. Pathophysiology of the Auditory and Vestibular Systems (4)

This course describes the known physiological and anatomical substrates of auditory and vestibular disorders. This includes conductive, sensorineural and retrocochlear hearing loss, and peripheral vestibular disorders. Congenital disorders due to genetic causes or infections, as well as acquired ototoxic, noise-induced, infective, autoimmune, age-associated, and traumatic disorders will be described. The influences of neurological disorders upon these two sensory systems will also be covered. *Prerequisites: AUD 255 or consent of instructor.*

AUD 257. Ear Diseases and Treatment (3)

This course describes the differential diagnosis and treatment of auditory and vestibular disorders, audiological components of neuro-otology, as well as interactions between the audiologist and neuro-otologist in a clinical setting. *Prerequisites: second-year Au.D. student or consent of instructor.*

AUD 263. Physiological and Behavioral Tests of Vestibular Function (3)

This course will discuss the clinical evaluation of vestibular function, using techniques such as caloric and rotational electronystagmography and posturography. The interpretation of clinical findings and implications for rehabilitative strategies will be covered. The course will include observation of testing in an otology clinic setting. *Prerequisites: second-year Au.D. student or consent of instructor.*

AUD 264. Auditory and Vestibular Development and Genetics (3)

This course describes the embryology and functional development of the auditory and vestibular systems, from their initial appearance to achievement of adult function. Inherited disorders of these two sensory systems are also addressed, including phenotypic description and, when known, the genetic basis. Genetic counseling and the potential for gene therapy will also be discussed. *Prerequisites: second-year Au.D. student or consent of instructor.*

AUD 270. Newborn Hearing Screening and Management (3)

This course describes procedures and requirements for newborn hearing screening, and the detection and clinical management of congenital auditory disorders. This will include the opportunity to observe newborn screening demonstrations in a neonatal ICU environment. *Prerequisites: second-year Au.D. student or consent of instructor.*

AUD 271. Temporal Bone Anatomy (4)

This course will describe the detailed anatomy of the temporal bone, including surgical approaches. Students will participate in dissecting a human cadaver temporal bone specimen, and observe medical residents/staff learning to perform surgical drilling of temporal bone under the supervision of experienced otologic surgeons. In addition, radiographic and magnetic resonance imaging of the temporal bone will be described and discussed. *Prerequisites: second- or third-year Au.D. student or consent of instructor.*

AUD 275. Intraoperative Monitoring (3)

This course will detail the methods and procedures required for monitoring of evoked auditory responses in the operating room. The indications for the use of intraoperative monitoring will be covered, as will difficulties that are unique to this setting. The responses of auditory potentials to surgical levels of anesthesia will also be described. The course will include the opportunity to observe auditory potential monitoring in the operating room. *Prerequisites: second- or third-year Au.D. student or consent of instructor.*

AUD 276. Cochlear Implants and Other Implantable Sensory Aids (3)

This course will cover the theory and practice of cochlear implantation. Current concepts regarding the activation of primary auditory neurons by electrical stimulation are discussed. Indications for cochlear implantation and surgical procedures are described. Audiological management of patients after implantation forms the bulk of the material presented. *Prerequisites: second- or third-year Au.D. student or consent of instructor.*

AUD 277. Seminar in Advanced Topics and Research in Audiology (3)

Discussion of advanced topics in audiology and hearing science. Reading and critiquing journal articles and data emerging from research laboratories. *Prerequisites: second-year Au.D. student or consent of instructor.*

AUD 284. Clinical Practice in Audiology II (1-4)

Applications of clinical procedures to patient assessment. Includes clinical observation, interaction with otologists, and supervised patient care involving diagnostics and hearing aid evaluations in the UCSD audiology clinics. This course may be taken more than once. *Prerequisites: open to second- or third-year doctoral students or consent of instructor. One quarter unit represents 3 to 4 hours per week.*

AUD 291. Clinical Case Studies/Staffing (1)

Presentations and discussion of clinical cases and issues related to clinical practice. Students' clinical experiences are discussed relative to medical and audiological assessment and management. This course may be taken more than once. *Prerequisite: second-year Au.D. student or consent of instructor. Must be taken concurrently with AUD 284.*

AUD 296. Independent Research (1-4)

Independent research on topics relevant to audiology, consisting of literature review, data collection. Faculty supervision and mentoring on practical elements of research design and methodology. *Prerequisite: consent of instructor.*

AUD 301. Doctoral Project (3)

Individual investigation and preparation of the doctoral project for the Au.D. degree will be performed under the supervision of an experienced research mentor. This course may be taken more than once. *Prerequisite: advancement to candidacy.*