The Division of Speech and Hearing Sciences in the School of Medicine's Department of Allied Health Sciences provides academic and professional education for speech-language pathologists and audiologists. Programs of study are available at the master's level in speech-language pathology. Programs of study at the doctoral level are available in clinical audiology (Au.D.) and in research (Ph.D.). The study of speech and hearing requires knowledge in both normal and abnormal speech, language, and hearing. The speech and hearing sciences curriculum provides a multifaceted learning environment, including classroom, laboratory, and clinical experiences. Three major tracks of study are possible within the curriculum: audiology, speech-language pathology, and speech and hearing sciences. There are three academic degree programs:

1. A master's degree (M.S.) for entry-level clinical practice of speech-language pathology
2. A professional doctorate in clinical audiology (Au.D.)
3. A Ph.D. in speech and hearing sciences for students with a background in speech-language pathology or audiology who desire a research degree

All of these programs are interdisciplinary in nature, involving clinical and research activities with other University departments and centers in addition to the Division of Speech and Hearing Sciences.

The entrance, academic, and residency requirements for the M.S. and Ph.D. degrees correspond to those of The Graduate School. Applicants to the Au.D. program follow the guidelines established by the School of Medicine for that degree program. Students enrolled in clinical degree programs (M.S. and Au.D.) are prepared to meet licensure and certification requirements necessary for the practice of speech-language pathology or audiology. Additional information describing the graduate programs in speech and hearing can be obtained on the division's Web site (http://www.med.unc.edu/ahs/sphs).

Following the faculty member's name is a section number that students should use when registering for independent studies, reading, research, and thesis and dissertation courses with that particular professor.

**Professors**

Elizabeth R. Crais (048), Communication Disorders in Infants, Identification/Intervention with Young Children with Autism
Karen Erickson (045), Assessment of Reading and Writing, Literacy Instruction
John Grose (050), Psychoacoustics, Auditory Evoked Potentials
Melody Harrison (040), Early Speech, Language, and Auditory Development in Children with Hearing Loss
Lee McLean, Early Intervention and Language Development in Children (Emeritus)
Jackson Roush (058), Pediatric Audiology, Newborn Hearing Screening
Stephanie Sjoblad (082), Aural Rehabilitation, Hearing Aids and Assistive Devices

Linda R. Watson (067), Language Disorders in Young Children, Autism, Emerging Literacy

**Associate Professors**

Lisa Domby (025), Phonology, Bilingual Learning
Katarina L. Haley (072), Speech Perception and Production, Neurogenic Communication Disorders
Adam Jacks (085), Aphasia Neurogenic Communication Disorders, Speech Science
Martha Mundy (053), Educational and Pediatric Audiology
Debra R. Reinhartsen, Augmentative Communication, Low-Incidence Disabilities
Sharon Williams (074), Geriatrics, Communication Disorders of Older Adults, Multicultural Issues, Counseling
David Zajac (063), Speech Aerodynamics, Developmental Aspects of Speech Production, Cleft Palate Research

**Assistant Professors**

Penelope Hatch (090), Literacy, Augmentative and Alternative Communication
Patricia Johnson, Hearing Aids and Assistive Devices
Cara McComish (001), Early Identification of Autism and Pediatric Feeding
Nancy McKenna (062), Genetics, Hearing Disorders
Brenda Mitchell (80), Speech and Language Disorders
Philip Griffin, Adult Hearing Aids, Balance and Vestibular Assessment

**Research Professor**

Emily Buss, Psychoacoustic Research

**Adjunct Associate Professors**

Douglas Fitzpatrick, Anatomy and Physiology of the Auditory System
Holly Teagle (084), Cochlear Implants in Children

**Adjunct Assistant Professors**

Margaret Dillon, Adult Cochlear Implants
Jessica Dykstra Steinbrenner, Autism Research

**Adjunct Instructors**

Hillary Bartholomew, Voice
Kristen Brackett, Dysphagia
Geri Chadwick, Intraoperative Monitoring
Hannah Eskridge, Pediatric Aural Rehabilitation
Lynn Fox, Fluency Disorders
Brian Kanapkey, Dysphagia, Neurogenic Speech Disorders
Lisa Markley, Medical Speech-Language Pathology
Stephanie McAdams, Medical Speech-Language Pathology
Gina Vess, Voice and Voice Disorders
Advanced Undergraduate and Graduate-level Courses

SPHS 400. Autism in Our Communities: An Interdisciplinary Perspective. 3 Credits.
Students have 30 hours of service-learning with individuals with autism at community partner sites. Class discussions introduce students to diverse topics related to autism spectrum disorder. This is an APPLES course.
Gen Ed: EE-Service Learning.
Grading status: Letter grade
Same as: EDUC 400.

SPHS 530. Introduction to Phonetics. 3 Credits.
A detailed study of the International Phonetic Alphabet with emphasis on the sound system of American English. Application of phonetics to problems of pronunciation and articulation. Includes broad and narrow phonetic transcription.
Grading status: Letter grade.

SPHS 540. Speech Science. 3 Credits.
Introduction to the science of speech, including production, acoustics, and perception.
Grading status: Letter grade.

SPHS 570. Anatomy and Physiology of the Speech, Language, and Hearing Mechanisms. 3 Credits.
Anatomy and physiology of the speech producing and aural mechanisms.
Grading status: Letter grade.

SPHS 582. Introductory Audiology I. 3 Credits.
Theory and practice of the measurement of hearing, causative factors in hearing loss, evaluation of audiometric results, and demonstration of clinical procedures.
Grading status: Letter grade.

SPHS 583. Introduction to Clinical Practice in Speech-Language Pathology and Audiology. 3 Credits.
Introduction to diagnosis and treatment of communication disorders, including articulation, fluency, voice, and language, and those resulting from autism and hearing loss.
Grading status: Letter grade.

Graduate-level Courses

SPHS 701. Introduction to Research in Speech and Hearing. 3 Credits.
Required preparation, statistics course. Experimental and descriptive research designs in speech and hearing sciences, including both group and single subject.

SPHS 705. CL PRACT OBS/AUDIO. 1-15 Credits.

SPHS 706. Clinical Practicum in Audiology. 1-15 Credits.
Supervised clinical experience. May be repeated for credit.
Repeat rules: May be repeated for credit.

SPHS 707. COMM ASSESS PREESCHLRS. 3 Credits.

SPHS 708. Cochlear Implants. 3 Credits.
Examines fundamentals of cochlear implants, candidacy, evaluation, equipment, programming, and performance outcomes.
Requisites: Prerequisites, SPHS 715 and 811.

SPHS 710. Audiologic Assessment. 3 Credits.
Clinical Audiology assessment including pure-tone audiometry, immittance measures, and other measures commonly employed in the standard diagnostic battery.
Requisites: Prerequisite, SPHS 582 or equivalent.

SPHS 710L. Audiologic Assessment Lab. 1 Credit.
Laboratory exercises in threshold determination, clinical masking and speech recognition testing, all concepts introduced in SPHS 710, Audiologic Assessment.

SPHS 712. Characteristics of Amplification Systems. 3 Credits.
Amplification options for the hearing-impaired; specifically, hearing aid, electroacoustics, and earmold technologies. Additionally, hearing aid selection procedures are presented.

SPHS 712L. Characteristics of Amplification Lab. 1 Credit.
Laboratory activities related to earmolds, hearing aids, and ANSI electroacoustic verification.

SPHS 715. Anatomy and Physiology of Hearing. 4 Credits.
This course will cover anatomy and physiology of the peripheral hearing system (outer, middle, and inner ear) as well as relevant central pathways.

SPHS 717. Professional Considerations in Speech and Hearing. 3 Credits.
To provide the student with information about current issues facing professionals. Issues include changing delivery systems, leadership, treatment efficacy and quality, reimbursement, and ethics.

SPHS 722. Auditory Perception. 3 Credits.
This course provides an overview of psychoacoustics - the psychology of hearing. Content includes introductory acoustics, normal sound perception, and the perceptual consequences of impaired hearing.

SPHS 725. Hearing Disorders. 3 Credits.
Diseases and disorders of the auditory system and their management.
Requisites: Prerequisite, SPHS 582.

SPHS 726. Clinical Issues and Experiences in Audiology. 1 Credit.
Online course covering universal precautions, privacy regulations, clinical practice with diverse cultural groups, report writing, and other aspects of audiology practice.

SPHS 730. Instrumentation and Calibration. 1 Credit.
Principles of instrumentation relevant to clinical practice including study of electronics, filters, and analog and digital processing.

SPHS 733. Auditory Strategies for Spoken Language in Deaf Children. 1 Credit.
Instruction and application of a variety of topics demonstrating the use of auditory techniques, and strategies to promote the use of spoken language in children with hearing loss.

SPHS 740. Principles of Prevention, Assessment, and Intervention in Speech-Pathology. 3 Credits.
Principles and methods of prevention, assessment, and intervention for people with communication and swallowing disorders, including consideration of anatomical/physiological, psychological, developmental, and linguistic and cultural correlates of the disorders.

SPHS 741. Neuroanatomy. 3 Credits.
A survey of neurological anatomy in relation to clinical speech-language pathology. Topics considered include organization of the CNS, neuroanatomy, neurophysiology, and neurochemistry.
Requisites: Prerequisite, SPHS 570.

SPHS 742. Aphasia. 3 Credits.
Discussion of adult aphasia and its clinical management, including assessment, diagnosis, prognosis, counseling, and treatment. Combined lectures and laboratories.
Requisites: Prerequisite, SPHS 570.

Graduate-level Courses

SPHS 710. Audiologic Assessment. 3 Credits.
Clinical Audiology assessment including pure-tone audiometry, immittance measures, and other measures commonly employed in the standard diagnostic battery.
Requisites: Prerequisite, SPHS 582 or equivalent.
SPHS 743. Pediatric Speech Sound Disorders. 3 Credits.
Course deals specifically with the major diagnostic tests of articulation and phonology, and the specific management programs associated with each. Through examination of the research supporting each test and treatment plan is included.

Requisites: Prerequisites, SPHS 530 and 570.

SPHS 744. Motor Speech Disorders. 3 Credits.
Assessment and treatment of adults presenting with disorders of motor speech control (i.e., dysarthria, anarthria, and apraxia of speech).

Requisites: Prerequisites, SPHS 540 and 570.

SPHS 748. Voice Disorders. 2-4 Credits.
Assessment and management of children and adults with fluency or voice disorders (including laryngectomy).

SPHS 749. Evaluation and Clinical Management of Persons with Oral-Facial Anomalies. 3 Credits.
In-depth analysis of the embryologic and physiologic bases of oral-facial anomalies and the team approach to assessment and habilitation. Particular emphasis placed upon the following specialties: genetics, plastic surgery, prosthodontics, orthodontics, otolaryngology, and speech-language pathology.

Requisites: Prerequisites, SPHS 540 and 570.

SPHS 751. Communication Disorders: Global Service Learning. 2 Credits.
This course combines seminars, readings, and service-learning fieldwork, providing students the opportunity to practice and refine language skills for working with culturally and linguistically diverse individuals with communication disorders.

Repeat rules: May be repeated for credit.

SPHS 752. Seminar in Medical Speech Language Pathology. 3 Credits.
Discussion of normal aging and language. Assessment and treatment of cognitive and linguistic problems in persons with dementing conditions, right hemisphere dysfunction, and traumatic brain injury.

SPHS 754. Dysphagia. 3 Credits.
Discussion of the development of the normal swallow, anatomy and physiology of the swallowing mechanism, and assessment and team management of swallowing disorders.

SPHS 760. Neurologic Communication Disorders in Adults. 3 Credits.
Overview of communication disorders commonly seen in adult populations. These include disorders of language, cognition, speech and motor control, voice, and fluency.

SPHS 761. Child Communication Disorders. 3 Credits.
Disorders of child speech and language development, as a prerequisite for advanced specialized coursework and supervised clinical practicum.

SPHS 762. Language and Learning Disorders. 3 Credits.
Course in normal and abnormal learning from a language perspective. Emphasis on evaluation and treatment from a psycholinguistic model.

SPHS 765. Augmentative and Alternative Communication. 3 Credits.
A comprehensive look at the theoretical and clinical issues related to augmentative/alternative communication. Techniques and strategies to provide effective communication for the severely handicapped are discussed.

SPHS 771. Supervised Clinical Experience in Speech-Language Pathology I. 1 Credit.
Supervised clinical experience in Speech-Language Pathology scope of practice.

SPHS 772. Supervised Clinical Experience in Speech-Language Pathology II. 1 Credit.
Supervised clinical experience in Speech-Language Pathology scope of practice.

SPHS 773. Supervised Clinical Experience in Speech-Language Pathology III. 1 Credit.
Supervised clinical experience in Speech-Language Pathology scope of practice.

SPHS 774. Supervised Clinical Experience in Speech-Language Pathology IV. 1 Credit.
Supervised clinical experience in Speech-Language Pathology scope of practice.

SPHS 775. Supervised Clinical Experience in Speech-Language Pathology V. 2 Credits.
Supervised clinical experience in Speech-Language Pathology scope of practice.

Repeat rules: May be repeated for credit. 6 total credits. 6 total completions.

SPHS 776. Contemporary Professional Issues in Speech-Language Pathology I. 1 Credit.
Culturally and linguistically diverse populations; academic program accreditation standards; practice policies and guidelines.

SPHS 777. Contemporary Professional Issues in Speech-Language Pathology II. 1 Credit.
Principles and rules of the current ASHA Code of Ethics; technical reports, diagnostic and treatment reports; treatment plans, and professional correspondence.

SPHS 778. Contemporary Professional Issues in Speech-Language Pathology III. 2 Credits.
Cultural competence; conflict management; effective clinical and professional interaction with clients/patients and relevant others.

SPHS 779. Contemporary Professional Issues in Speech-Language Pathology IV. 2 Credits.
Cultural competence; conflict management; effective clinical and professional interaction with clients/patients and relevant others.

Repeat rules: May be repeated for credit. 6 total credits. 4 total completions.

SPHS 792. Pediatric Dysphagia. 2 Credits.
This is a 2 credit hour course that explores the specialty area of pediatric feeding and dysphagia intervention. This course covers normal development of feeding skills, explores underlying etiologies of feeding disorders, and current methods and philosophies of providing evaluation and intervention.

Requisites: Prerequisite, SPHS 754.

SPHS 802. Problems in Speech and Hearing Sciences. 1-3 Credits.
May be repeated for credit.

SPHS 803. Audiologic Rehabilitation for Children. 3 Credits.
Covers speech perception and the effects of hearing loss on perception and production of speech as background for understanding assessment and treatment, with an auditory-verbal emphasis. Pediatric assessment and amplification are reviewed.

SPHS 804. Audiologic Rehabilitation for Adults. 3 Credits.
Theoretical bases and history of audiologic rehabilitation of adults. Also, practical approaches to assessment and therapeutic intervention are presented. The roles of assistive technology and family-based counseling are included.
SPHS 805. Auditory Verbal Therapy. 2 Credits.

SPHS 806. Communication Assessment and Intervention with Children Birth to Five. 3 Credits.
Stages of communication development of children from birth to five years old; clinical issues related to the assessment tools and intervention and planning for children with disabilities and their families.

SPHS 808. Seminar in Audiologic Rehabilitation. 2 Credits.
Audiologic rehabilitation including counseling, visual speech perception, auditory training, special needs of older adults and psychosocial aspects of hearing loss will be addressed. Review of technology to enhance communication included.
Requisites: Prerequisites, SPHS 712 and 813.

SPHS 809. Introduction to Cochlear Implants. 1 Credit.
Introductory information regarding cochlear implant candidacy, an overview of implant components, the evaluation process, surgery, device programming, and initiation of post implantation therapy. Class meets three hours for five weeks.

SPHS 811. Pediatric Audiology. 3 Credits.
Clinical procedures used in the identification and management of hearing loss in young children.

SPHS 812. Pediatric Amplification and Assistive Listening Devices. 2 Credits.
This course covers prescriptive formulas, verification and fitting of hearing aids and FM systems, and suggested monitoring of progress when working with young children with hearing loss and their families.
Requisites: Prerequisites, SPHS 712 and 811.

SPHS 813. Fitting and Dispensing of Amplification Systems. 3 Credits.
Theoretical and practical approaches to fitting amplification systems and the procedures for dispensing amplification systems to the hearing-impaired.
Requisites: Prerequisite, SPHS 712.

SPHS 813L. Fitting and Dispensing of Amplification Lab. 1 Credit.
Laboratory experiences related to the selection, programming, and fitting of amplification devices to hearing impaired individuals.
Requisites: Prerequisite, SPHS 712.

SPHS 814. Auditory Evoked Potentials I. 3 Credits.
This course explores the field of electrophysiologic responses within the auditory and vestibular systems. Auditory brainstem response (ABR), electrocochleography (ECoG), electroencephalography (EEG), and otoacoustic emissions (OAE) are covered. Spring.
Requisites: Prerequisites, SPHS 710, 715, and 722.

SPHS 814L. The Auditory Evoked Potentials I Lab. 1 Credit.
Electrophysiologic laboratory exercises to accompany Auditory Evoked Potentials I course.
Requisites: Prerequisites, SPHS 710, 715, and 722.

SPHS 815. Auditory Evoked Potentials II. 2 Credits.
Advanced principles of pediatric audiology and intervention strategies for hearing-impaired children. Procedures for counseling and case management.
Requisites: Prerequisite, SPHS 582.

SPHS 816. Occupational and Community Audiology. 2 Credits.
Military and industrial audiology and hearing conservation, including physiological and psychological factors.
Requisites: Prerequisite, SPHS 582.

SPHS 818. Balance Assessment and Rehabilitation. 3 Credits.
Principles of vestibular function and dysfunction, clinical assessment, and management.

SPHS 818L. Balance Assessment Lab. 1 Credit.
Laboratory exercises to accompany Balance Assessment course. To include case history, bedside examination, and objective measurements.
Requisites: Prerequisite, SPHS 710.

SPHS 819. Educational Audiology. 2 Credits.
Examines the provision of services to school-age children, with special focus on eligibility determination and assessment of central auditory perception.
Requisites: Prerequisites, SPHS 710 and 871L.

SPHS 823. Business Management and Professional Issues. 3 Credits.
Examine healthcare and business models that impact audiology practice. Personnel management, marketing, quality assurance, and service reimbursement for audiology practices will be covered.

SPHS 824. Audiology Grand Rounds. 1 Credit.
Examines clinical cases from the perspective of presenting symptoms, test results, and clinical outcomes.

SPHS 825. Embryology and Genetics of Hearing and Deafness. 2 Credits.
Genetics related to developing hearing and balance structures as well as syndromic and nonsyndromic hearing loss and deafness.

SPHS 827. Pharmacology & Tinnitus in Audiology Practice. 2 Credits.
Advanced audiology course that provides fundamental knowledge about pharmacological mechanisms and their impact on hearing and balance, as well as evaluation and management of patients with persistent tinnitus.
Requisites: Prerequisite, SPHS 715 and SPHS 725.

SPHS 830. Independent Study. 1-5 Credits.
This course gives enrolled graduate students in the curriculum an opportunity to pursue research supervised by one or more faculty members, culminating in a written document or special project.
Repeat rules: May be repeated for credit; may be repeated in the same term for different topics.

SPHS 831. Advanced Signal Processing. 1 Credit.
This course will provide information regarding advanced signal processing utilized in digital amplification and cochlear implants.

SPHS 832. Speech Acoustics. 2 Credits.
This course provides information on the fundamentals of speech production, including the acoustic characteristics of normal and disordered speech.
Requisites: Prerequisite, SPHS 833.

SPHS 833. Special Topics. 3 Credits.
This is the foundation course in a series related to providing services to children with hearing loss. Six units focus on working with families, speech acoustics, audiological interpretation, instrumentation, foundations of speech and language, and early literacy.

SPHS 834. Counseling and Communication Disorders. 3 Credits.
This course provides a broad overview of contemporary counseling issues in communication disorders. The impact of subject age, life course, and cultural background on interviewing and counseling is included.

SPHS 836. Audiology Interpretation and Hearing Technologies. 4 Credits.
This course focuses on behavioral and physiologic assessment of hearing in children and how these measures are used in aural habilitation. Fundamentals of hearing instrument technology including the selection and fitting of hearing aids and cochlear implants are addressed.
SPHS 840. Aging and Communication Disorders. 3 Credits.
This course focuses on medical, psychological, and social theories and aspects of aging as they relate to communication processes and disorders.

SPHS 841. Seminar in Speech-Language Pathology. 0.5-15 Credits.
Special topics and significant literature in the field of speech pathology.

SPHS 849. Fluency Disorders. 2 Credits.
Course participants will develop an understanding of evaluation and treatment of acquired and developmental fluency disorders in children and adults through lecture and hands-on practice.

SPHS 850. Language Disorders Encountered in Audiology. 3 Credits.
Students will learn about four areas of language disorders affecting children and adults (receptive and expressive language disorders, communication modalities, social aspects of communication, and cognitive aspects of communication) through readings, posted videos, and online quizzes. This is an asynchronous online course.

SPHS 851. Speech Disorders Encountered in Audiology. 3 Credits.
Students will learn about speech disorders (fluency, voice, articulation, and craniofacial anomalies) through readings, posted videos, and online quizzes. This is an online asynchronous course.

SPHS 852. Speech and Language Disorders Encountered in Audiology. 3 Credits.
Students will select two topics from speech disorders (fluency, voice, articulation, and craniofacial anomalies) and two topics from language disorders (receptive and expressive language disorders, communication modalities, social aspects of communication, and cognitive aspects of communication). This is an online asynchronous course with readings, videos, and quizzes.

SPHS 860. Seminar on Early Communication Disorders. 3 Credits.

SPHS 861. Seminar in Language and Language Disorders. 1-3 Credits.
Special topics and significant literature in the field of language and language disorders. May be repeated for credit.

SPHS 863. Listening and Spoken Language Development and Intervention. 3 Credits.
The course focuses on typical development, impact of hearing loss on listening and spoken language acquisition, assessment, strategies/techniques, and intervention for children birth-5 years who are deaf/hard of hearing.
Requisites: Prerequisites, SPHS 832 and 836.

SPHS 864. Speech and Language Impairments of Children. 3 Credits.
Seminar course exploring categorical classifications of young children and the impact of these categories on assessment and intervention. Common topics include autism, visual impairments, fragile X syndrome, and Down syndrome.

SPHS 865. Doctoral Seminar in Grant Writing. 3 Credits.

SPHS 870. Directed Research Experience. 2 Credits.
This course gives enrolled audiology and Speech-language pathology graduate students an opportunity to pursue research supervised by one or more faculty members culminating in a document, project, or presentation (1-3).

SPHS 871. Teaching and Supervision. 1 Credit.
Course regarding teaching of skills and supervision of individuals conducting screening programs. Introduction to teaching and development of assessment tools provides a background for the teaching lab associated with this course.