Communication Sciences and Disorders

Chair
• Ruth A. Bentler

Undergraduate major: speech and hearing science (B.A.)
Undergraduate minor: communication sciences and disorders
Graduate degrees: M.A. in speech pathology and audiology; Au.D.; Ph.D. in speech and hearing science
Faculty: http://clas.uiowa.edu/comsci/people
Web site: http://clas.uiowa.edu/comsci/

The courses and degree programs of the Department of Communication Sciences and Disorders are planned to meet the needs of students preparing for careers in clinical service, college and university teaching, and research concerned with speech, language, or hearing processes and disorders. The department also offers courses for students with vocational and professional goals in other fields—for example, engineering, psychology, education, speech, theatre arts, dentistry, and medicine—whose preparation may be enriched by the study of speech and hearing processes and their disorders.

Advanced degree holders in communication sciences and disorders provide clinical services for people with speech, hearing, or language problems in hospitals, community clinics, rehabilitation facilities, elementary and secondary schools, and private practice. They teach in colleges and universities and conduct research in laboratories concerned with communication processes and disorders.

The department's programs leading to the M.A. with professional emphasis and the Au.D. are accredited by the Council on Academic Accreditation of the American Speech-Language-Hearing Association (ASHA).

Undergraduate Programs of Study

• Major in speech and hearing science (Bachelor of Arts)
• Minor in communication sciences and disorders

Students who intend to pursue professional careers in communication sciences and disorders must complete a graduate program comparable to the department's Master of Arts in speech pathology and audiology or its Doctor of Audiology (Au.D.). The undergraduate major in speech and hearing science emphasizes the normal processes of speech, hearing, and language and does not qualify an individual to work professionally in the field. Instead, it is designed primarily to prepare students for graduate work. It also may be an appropriate major for students earning College of Liberal Arts and Sciences degrees who are not planning careers in speech pathology and audiology.

Bachelor of Arts

The Bachelor of Arts with a major in speech and hearing science requires a minimum of 120 s.h., including 63-64 s.h. of work for the major. Students must maintain a g.p.a. of at least 2.00 in all courses for the major and in all UI courses for the major. They also must complete the College of Liberal Arts and Sciences General Education Program.

Requirements include 12 core courses offered by the department and eight cognate courses offered by other departments. Transfer students must complete a minimum of 15 s.h. toward the major at the University of Iowa.

The major in speech and hearing science requires the following course work.

CORE COURSES
All of these:

- CSD:1015 Introduction to Speech and Hearing Processes and Disorders 2 s.h.
- CSD:2110 Phonetics: Theory and Applications 3 s.h.
- CSD:2111 Basic Acoustics for Speech and Hearing 3 s.h.
- CSD:3112 Anatomy and Physiology of Speech Production 4 s.h.
- CSD:3113 Introduction to Hearing Science 4 s.h.
- CSD:3116 Basic Neuroscience for Speech and Hearing 3 s.h.
- CSD:3117 Psychology of Language 3 s.h.
- CSD:3118 Language Acquisition 3 s.h.
- CSD:3185 Hearing Loss and Audiometry 3 s.h.
- CSD:4145 Developmental Language Disorders 3 s.h.
- CSD:4148 Developmental Speech Disorders 3 s.h.
- CSD:4244 Rehabilitative Audiology 3 s.h.

COGNATE COURSES
Students may choose cognate courses that help fulfill the College of Liberal Arts and Sciences General Education Program.

Both of these:

- LING:3001 Introduction to Linguistics 3 s.h.
- PSY:1001 Elementary Psychology 3 s.h.

One of these:

- PSQF:1020/STAT:1020 Elementary Statistics and Inference 3 s.h.
- PSQF:4143/STAT:4143 Introduction to Statistical Methods 3 s.h.
- STAT:2010 Statistical Methods and Computing 3 s.h.
- STAT:3510 Biostatistics 3 s.h.

One of these:

- CHEM:1070 General Chemistry I 3 s.h.
- CHEM:1110 Principles of Chemistry I 4 s.h.
- PHYS:1400 Basic Physics (preferably with lab) 4 s.h.
- PHYS:1511 College Physics I 4 s.h.

One of these:

- PSY:2301 Introduction to Clinical Psychology 3 s.h.
- PSY:2930 Abnormal Psychology: Health Professions 3 s.h.
- SSW:1800 Basic Aspects of Aging 3 s.h.

One of these:

- PSQF:4106 Child Development 3 s.h.
- PSY:2401 Introduction to Developmental Science 3 s.h.
One of these:

BIOL:1141 Introductory Animal Biology (with lab)  4 s.h.
BIOL:1411 Foundations of Biology (with lab)  4 s.h.

One of these:

MATH:1440 Mathematics for the Biological Sciences  4 s.h.
MATH:1460 Calculus for the Biological Sciences  4 s.h.
MATH:1850 Calculus I  4 s.h.

This cognate requirement in mathematics may be fulfilled through an acceptable score on the Advanced Placement AB or BC Calculus exam; see Credit by Exam on the Office of Admissions web site. Students without AP credit are encouraged to take first-year calculus to satisfy this requirement, particularly those interested in earning a graduate degree in audiology.

**CLINICAL OBSERVATION**

Students have the opportunity and are encouraged to obtain 25 hours of supervised clinical observation, a prerequisite for participation in clinical practicums at the graduate level. This requirement is satisfied by completion of independent observations or required observations made for elective departmental courses.

**Four-Year Graduation Plan**

The following checkpoints list the minimum requirements students must complete by certain semesters in order to stay on the University's Four-Year Graduation Plan. (Courses in the major are those required to complete the major; they may be offered by departments other than the major department.)

Note: The major requires specific mathematics and science competencies that may be satisfied with courses approved for the General Education Program.

**Before the fifth semester begins:** three courses in the major

**Before the seventh semester begins:** nine courses in the major and at least 90 s.h. earned toward the degree

**Before the eighth semester begins:** 12 courses in the major

During the eighth semester: enrollment in all remaining course work in the major, all remaining General Education courses, and a sufficient number of semester hours to graduate

**Honors in the Major**

Students majoring in speech and hearing science who have a g.p.a. of at least 3.50 may enter the department’s honors program upon recommendation of the departmental honors advisor. To graduate with honors in the major, students must complete at least 10 s.h. of course work for the major by the beginning of their junior year and must maintain a cumulative University of Iowa g.p.a. of at least 3.50. They must complete both CSD:3097 Honors Seminar and CSD:4098 Honors Thesis, registering for CSD:3097 in spring of their junior year and for CSD:4098 in both fall and spring of their senior year.

Students who intend to graduate with honors in the speech and hearing science major must be members of the University of Iowa Honors Program, which requires students to maintain a cumulative University of Iowa g.p.a. of at least 3.33 and to fulfill other requirements; visit Honors at Iowa to learn about the University’s honors program.

**Minor**

The minor in communication sciences and disorders requires a minimum of 15 s.h., including 12 s.h. in courses taken at the University of Iowa. Students must maintain a g.p.a. of at least 2.00 in courses for the minor and in all UI courses for the minor. Course work in the minor may not be taken pass/nonpass.

Students must begin the minor with CSD:1015 Introduction to Speech and Hearing Processes and Disorders, which provides a broad overview of all aspects of the normal communication process and of various disorders. Students complete the minor by choosing from the courses listed below, according to their individual interests.

This course:

CSD:1015 Introduction to Speech and Hearing Processes and Disorders (must be taken first)  2 s.h.

A minimum of 13 s.h. from these:

CSD:2110 Phonetics: Theory and Applications  3 s.h.
CSD:2111 Basic Acoustics for Speech and Hearing  3 s.h.
CSD:2140 Manual Communication  1 s.h.
CSD:3112 Anatomy and Physiology of Speech Production  4 s.h.
CSD:3113 Introduction to Hearing Science  4 s.h.
CSD:3116 Basic Neuroscience for Speech and Hearing  3 s.h.
CSD:3117 Psychology of Language  3 s.h.
CSD:3118 Language Acquisition  3 s.h.
CSD:3185 Hearing Loss and Audiometry  3 s.h.
CSD:4145 Developmental Language Disorders  3 s.h.
CSD:4148 Developmental Speech Disorders  3 s.h.
CSD:4244 Rehabilitative Audiology  3 s.h.

**Graduate Programs of Study**

- Master of Arts in speech pathology and audiology
- Doctor of Audiology
- Doctor of Philosophy in speech and hearing science

The Master of Arts program in speech pathology and audiology is offered with two emphases: research (general), and professional (speech-language pathology).

The M.A. with research emphasis and the Ph.D. are designed to train scholar-researchers; they do not provide preparation for professional work as speech-language pathologists or audiologists.

The M.A. with professional emphasis and the Au.D. provide training for individuals who wish to do clinical work in speech-language pathology or audiology. Graduates of the M.A. professional emphasis program meet all academic and practicum requirements for clinical certification by the American Speech-Language-Hearing Association (ASHA) and for licensure by the State of Iowa. The Au.D. is required for ASHA national certification in audiology.

Students preparing for clinical positions in public schools must meet school licensure or certification requirements
of the states in which they plan to work. See "M.A. with Professional Licensure" later in this section.

**Master of Arts: Research Emphasis**

The Master of Arts program in speech pathology and audiology with research emphasis (general emphasis) requires a minimum of 38 s.h. of graduate credit. The program is designed for students who intend to pursue a Ph.D. or who seek additional education but do not intend to work professionally in the United States as speech-language pathologists or audiologists. It typically includes a substantial portion of the courses in the M.A. with professional emphasis and Au.D. curricula.

Students in the M.A. research emphasis program are required to complete a thesis and defend their research successfully at a final oral examination.

The program typically requires two years to complete. Specific course work required depends on the student's background and interests.

**Master of Arts: Professional Emphasis**

The Master of Arts program in speech pathology and audiology with professional emphasis in speech-language pathology requires a minimum of 38 s.h. of graduate credit, although students typically earn 60-65 s.h. of credit by the time they complete the degree. The program prepares clinicians in speech-language pathology to be able to function independently in a variety of clinical settings. Graduates of the program meet all academic and practicum requirements for clinical certification by the American Speech-Language-Hearing Association and for licensure by the State of Iowa. The program is designed to ensure that upon graduation, the student will meet requirements for immediate professional employment.

M.A. students usually have a background of undergraduate courses in speech and hearing science, psychology of language, and human behavior that is equivalent to an undergraduate major in speech and hearing science at the University of Iowa.

Before registering in the program, entering M.A. students receive descriptive materials about basic science core courses considered to be required preparation for the M.A. program, and required M.A. clinical core courses for which the department may accept comparable courses taken at the undergraduate level. Decisions about incorporating background course work in these areas are made by the faculty advisor in consultation with the student and the instructors of the basic science or clinical core courses. Entering students must have completed the following courses or their equivalents.

All of these:

- CSD:2110 Phonetics: Theory and Applications 3 s.h.
- CSD:2111 Basic Acoustics for Speech and Hearing 3 s.h.
- CSD:3112 Anatomy and Physiology of Speech Production 4 s.h.
- CSD:3113 Introduction to Hearing Science 4 s.h.
- CSD:3116 Basic Neuroscience for Speech and Hearing 3 s.h.
- CSD:3117 Psychology of Language 3 s.h.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CSD:3118</td>
<td>Language Acquisition</td>
<td>1-3 s.h.</td>
</tr>
<tr>
<td>CSD:3185</td>
<td>Hearing Loss and Audiometry</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>PSQF:1020</td>
<td>Elementary Statistics and Inference</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>Biology, physics, chemistry, or mathematics courses (must include at least one biology, physics, or chemistry course)</td>
<td>6 s.h.</td>
<td></td>
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<tr>
<td>Behavioral science or social science courses (must include at least one psychology course)</td>
<td>6 s.h.</td>
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Students pursuing the M.A. with professional emphasis must complete at least 4 s.h. of work related to research. This may be accomplished by any combination of enrollment in seminars (2 s.h. each) and/or research hours. Completion of the research hours may consist of work toward a thesis or preparation of a paper involving one or a combination of the following: literature review, prospectus development, and presentation of data. A paper is required at the end of each semester's enrollment. An exception to this requirement can be made in the case of research hours leading to a thesis.

Candidates for an M.A. with professional emphasis in speech-language pathology are not required to complete a thesis, although all students demonstrating research aptitude and interest are encouraged to do so. Students who do not elect the thesis option are required to take final written comprehensive examinations.

A typical M.A. professional emphasis program usually takes two calendar years to complete but may take longer, depending on the student's background and personal interests.

**CORE REQUIREMENTS**

All students seeking an M.A. with professional emphasis in speech-language pathology must take the following.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tr>
<td>CSD:5135</td>
<td>Foundations of Clinical Practice I</td>
<td>1-3 s.h.</td>
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<tr>
<td>CSD:5136</td>
<td>Foundations of Clinical Practice II</td>
<td>1 s.h.</td>
</tr>
<tr>
<td>CSD:5137</td>
<td>Foundations of Clinical Practice III</td>
<td>1 s.h.</td>
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These courses must be taken during the first year of study.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CSD:5510</td>
<td>Seminar: Introduction to Research</td>
<td>0-1 s.h.</td>
</tr>
<tr>
<td>CSD:6515</td>
<td>Proseminar (taken fall and spring semesters of first year)</td>
<td>0 s.h.</td>
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In addition, they must take the following courses unless they completed equivalent courses as undergraduates.

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<tr>
<th>Course Code</th>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CSD:2140</td>
<td>Manual Communication</td>
<td>1 s.h.</td>
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<tr>
<td>CSD:3116</td>
<td>Basic Neuroscience for Speech and Hearing</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>CSD:3185</td>
<td>Hearing Loss and Audiometry</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>CSD:4114</td>
<td>Introduction to Voice Disorders</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>CSD:4115</td>
<td>Structural Disorders</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>CSD:4145</td>
<td>Developmental Language Disorders</td>
<td>3 s.h.</td>
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<tr>
<td>CSD:4146</td>
<td>Neurogenic Disorders of Language</td>
<td>3 s.h.</td>
</tr>
<tr>
<td>CSD:4147</td>
<td>Neurogenic Disorders of Speech</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>CSD:4183</td>
<td>Introduction to Stuttering</td>
<td>2 s.h.</td>
</tr>
<tr>
<td>CSD:4244</td>
<td>Rehabsabilitative Audiology</td>
<td>3 s.h.</td>
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Also required are additional semester hours of practicum registration sufficient to meet supervised, direct clinical experience requirements for the Certificate of Clinical...
Competence of the American Speech-Language-Hearing Association and the Iowa license, and to provide broad, supervised practicum experience.

In addition to the core requirements listed above, all students preparing to be speech-language pathologists or audiologists in Iowa following criteria meet the requirements for endorsement requirements of the states in which they plan to work. The typically must meet school licensure or certification of Audiology) or the equivalent. Students preparing for careers in audiology should consult their advisors.

M.A. with Professional Licensure

M.A. with Licensure to Work Outside Public Schools

A number of states, including Iowa, require a state license in speech-language pathology or audiology for persons who work in settings outside the public schools. Students who meet the requirements listed above for the M.A. in speech pathology and audiology with professional emphasis also meet the academic requirements for the license in Iowa as well as in most other states. National certification requires a clinical doctoral degree (Doctor of Audiology) or the equivalent. Students preparing for careers in audiology should consult their advisors.

M.A. with Public School Licensure

Students preparing for clinical positions in public schools typically must meet school licensure or certification requirements of the states in which they plan to work. The following criteria meet the requirements for endorsement as speech-language pathologists or audiologists in Iowa and most other states:

- a master’s degree with professional emphasis in speech-language pathology or audiology or the equivalent;
- completion of an approved human relations component;
- completion of courses that cover the education of the disabled and the gifted and talented (e.g., exceptional persons, education of the gifted); and
- completion of the requirements in speech-language pathology or audiology and the 20 s.h. professional education sequence, including EDTL:5104 Language Disorders in School-Aged Children and EDTL:4192 Special Area Student Teaching as a speech-language pathologist or audiologist.

The professional education sequence requires course work in the following areas.

Curriculum (e.g., reading, methods, curriculum development)

Foundations (e.g., philosophy of education, foundations of education)

Educational measurement (e.g., tests and measurements, measures and evaluations of instruction)

Educational psychology (e.g., educational psychology, counseling theories and techniques)

Special education (e.g., introduction to special education, exceptional persons, learning disabilities)

Child development (e.g., human growth and development, principles and theories of child development, history and theories of early childhood education)

Note: General Education Program courses (e.g., introduction to psychology, sociology, history, literature, and humanities) do not meet the requirements of the professional education sequence.

Doctor of Audiology

The Doctor of Audiology (Au.D.) requires 95 s.h. of graduate credit. Individuals who wish to work as audiologists in the United States must hold a clinical doctoral degree or the equivalent.

The four-year Au.D. program is designed for students with an undergraduate degree in speech and hearing science. Au.D. students must complete the following courses. They may be excused from taking courses whose equivalents they completed successfully during undergraduate study.

All of these:

- CSD:4145 Developmental Language Disorders 3 s.h.
- CSD:4244 Rehabilitative Audiology 3 s.h.
- CSD:5135 Foundations of Clinical Practice I 3-4 s.h.
- CSD:5219 Fundamentals of Laboratory Instrumentation 3 s.h.
- CSD:5224 System and Signal Theory for Speech and Hearing Science 3 s.h.
- CSD:5240 Hearing Aids I 3 s.h.
- CSD:5246 Advanced Audiology 3 s.h.
- CSD:5255 Educational Audiology 2 s.h.
- CSD:5256 Anatomy and Physiology of Hearing 3-4 s.h.
- CSD:5311 Clinical Practice in Audiology 2-3 s.h.
- CSD:6230 Advanced Hearing Science 2 s.h.
- CSD:6242 Hearing Aids II 3 s.h.
- CSD:6245 Pediatric Audiology 3 s.h.
- CSD:6247 Medical Audiology 2 s.h.
- CSD:6249 Cochlear Implants 1-3 s.h.
- CSD:6290 Auditory Evoked Potentials 3 s.h.
- CSD:6291 Vestibular Assessment and Rehabilitation 3 s.h.
- CSD:6292 Advanced Rehabilitative Audiology 1 s.h.
- CSD:6317 Audiology Business Practice Management 1 s.h.
- CSD:6318 Hearing Loss Prevention 2 s.h.
CSD:6519 Seminar: Evidence-Based Practice 2 s.h.
CSD:7238 Capstone Requirement 1 s.h.
MATH:1460 Calculus for the Biological Sciences (or one semester of calculus) 4 s.h.

One of these:
BIOS:5120 Design and Analysis of Biomedical Studies 3 s.h.
PSOF:6243 Intermediate Statistical Methods 4 s.h.

Students may select any of the following electives. With their advisors' consent, they may substitute other University of Iowa course work.

CSD:5222 Speech and Hearing Anatomy 2 s.h.
CSD:6538 Seminar: Hearing Science 2 s.h.
ASL:3200 Topics in Deaf Studies 3 s.h.
ASLE:3905 Teaching Deaf and Hard of Hearing Students 3 s.h.
EDTL:5104 Language Disorders in School-Aged Children 3 s.h.
OTO:8199 Basic Otalaryngologic Science 2 s.h.

Doctor of Philosophy

The Doctor of Philosophy program in speech and hearing science requires a minimum of 72 s.h. of graduate credit. The program provides flexible, comprehensive training for scholar-researchers interested in communication processes and their disorders. Students with diverse backgrounds in the natural and behavioral sciences are encouraged to apply and develop their skills in an atmosphere of interdisciplinary research.

The Ph.D. program reflects the broad interests of its multidisciplinary faculty, whose members have diverse backgrounds in speech, language, hearing, engineering, physiology, physics, psychology, linguistics, and bioengineering. Faculty members are committed to an interdisciplinary approach to questions at every level of the speech and language production/perception system.

The purpose of the doctoral program is to provide the integrated knowledge necessary for a productive career in speech-language pathology and audiology, communication science, and related areas.

The department encourages candidates with special interests, goals, or backgrounds to develop individualized programs of study. There is no standard curriculum for the Ph.D.; rather, a program of study is developed by each student in consultation with a faculty committee.

The course of study is developed from courses offered by the department, courses in other areas (e.g., physics, psychology, linguistics, and bioengineering). Faculty members are committed to an interdisciplinary approach to questions at every level of the speech and language production/perception system.

The following courses are offered by the department of Communication Sciences and Disorders primarily for Ph.D. students. Students interested in specific areas of research and selected publication citations of the faculty are encouraged to write to the department.

CSD:5201 Principles of Voice Production 3 s.h.
CSD:5219 Fundamentals of Laboratory Instrumentation 3 s.h.
CSD:5224 System and Signal Theory for Speech and Hearing Science 3 s.h.

In addition, seminars offered by the department cover a broad range of topics relevant to doctoral study.

Students in the Ph.D. program usually are expected to register for research credit (CSD:7590 Research) during each semester of residence and to register for and participate in CSD:6515 Proseminar.

Knowledge in each of the areas of hearing, speech, language, mathematics, statistics, computer science, and instrumentation is required of all students. Decisions regarding the extent of this knowledge and how it is obtained (e.g., course work or independent study) are made jointly by the student and the student's faculty committee.

Doctoral students who have not written a master's thesis must complete the equivalent of a master's thesis project as well as the comprehensive examination. They also must successfully complete and submit a dissertation based on original research.

Joint Au.D./Ph.D.

The Department of Communication Sciences and Disorders and the Graduate College offer the joint Doctor of Audiology/Doctor of Philosophy in speech and hearing science. The joint Au.D./Ph.D. program is especially appropriate for students who would like to practice audiology and hold a faculty position at a university. The program requires 137 s.h., permitting students to count 30 s.h. of the 95 s.h. required for the Au.D. degree toward the 72 s.h. required for the Ph.D. degree. Students complete all of the course work required for the Au.D.; the course of study for the Ph.D. is developed by each student in consultation with a faculty committee (see "Doctor of Philosophy" above). Consult the department to learn more about the joint degree program.

Admission

Applicants must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations of the Graduate College.

Each of the department's graduate programs requires that applicants take the Graduate Record Examination (GRE) General Test before they apply for admission.

Admission to the M.A. and Au.D. programs is competitive; applicants' credentials are considered in relation to those of others in the applicant pool, and a limited number of individuals are admitted to each program. Applicants whose undergraduate g.p.a. is below 3.00 or whose GRE General Test scores are lower than 450 in any area (verbal, quantitative, and analytic) rarely are admitted to either program. Admission is for fall; the application deadline is January 1. All applications to the M.A. and Au.D. programs must be submitted through CSDCAS (Central Application Service for Communication Science and Disorders).

Admission to the Ph.D. program is based on each individual's aptitudes and interests in research areas rather than on admitting a certain number of students. Applicants should be enrolled in a master's degree
program or should have completed a master's degree or equivalent graduate work. They should have a g.p.a. of at least 3.00 and should have GRE General Test scores no lower than 500 in any area (verbal, quantitative, and analytic). For best consideration, applications should be received by January 1. All applications to the Ph.D. program must be submitted through the University of Iowa Biosciences Centralized Application System.

For detailed information regarding evaluation of applicants, applications materials and requirements, and other matters, see Graduate Program on the department's web site.

**Financial Support**

The following information applies to all financial appointments administered by the department. For more detailed information, contact the Department of Communication Sciences and Disorders director of graduate studies.

Graduate appointments usually begin only in fall semester. Students beginning study spring semester or summer session are considered for appointments for the following fall semester.

Appointment applications must be received by January 15 to ensure consideration for an appointment beginning the following fall semester. Initial appointment offers generally are made between April 1 and June 1; however, the department continues to make offers after this time.

Scores on the Graduate Record Examination (GRE) General Test are required for consideration for financial assistance.

**Facilities**

**Clinical Facilities**

The clinical training program benefits greatly from Iowa City's standing as the most comprehensive health sciences center in Iowa and from the ready availability of health service facilities for clinical training of students in speech-language pathology and audiology.

The University of Iowa Affiliated Speech and Hearing Services include the Wendell Johnson Speech and Hearing Clinic; the division of speech and hearing in the University of Iowa Hospitals and Clinics (UIHC) Department of Otolaryngology—Head and Neck Surgery; UIHC Consolidated Speech and Swallowing Services, which provides services to the Departments of Neurology, Child Psychiatry, and Otolaryngology—Head and Neck Surgery; speech and hearing services in the Center for Disabilities and Development; Pediatrics Regional Child Health Specialty Clinics; and the audiology and speech pathology service in the Iowa City Veterans Affairs Medical Center. Directors of these programs form the Council on Speech Pathology and Audiology at the University of Iowa.

The Wendell Johnson Speech and Hearing Clinic serves the University and the general public. Included in its services are outpatient evaluation and rehabilitation programs for speech, hearing, and language problems; one-week intensive summer programs in stuttering, language development, reading, and aural rehabilitation; and a six-week summer preschool program for hearing-impaired children. These clinical programs give students supervised clinical experience with a wide variety of speech, hearing, and language disorders.

In addition to the clinical training in the Wendell Johnson Speech and Hearing Clinic, training also may be acquired in supervised clinical practice with elementary school children through various state area education agencies; in supervised clinical practice in speech, language, and hearing services provided by the University of Iowa Hospitals and Clinics Consolidated Speech and Swallowing Services, the Regional Child Health Specialty Clinics, Center for Disabilities and Development, and the Veterans Affairs Iowa City Health Care System.

Public and private departments and programs in addition to those mentioned above often contribute to the cooperative professional training, research, and service programs.

**Research Facilities**

Facilities in the Wendell Johnson Speech and Hearing Center include audiometric testing suites, diagnostic and remediation suites, equipment for diagnosis and therapy, a closed-circuit television system, and laboratories and equipment for acoustic, physiologic, and perceptual studies of speech, and for audiologic, psychoacoustic, and neurophysiologic studies of hearing. Mechanical and electronic shops and trained technical personnel are available for assistance in research instrumentation.

Cooperation with departments in the Carver College of Medicine, the Department of Psychological and Brain Sciences (College of Liberal Arts and Sciences), and the University of Iowa DELTA Center makes additional laboratory facilities available for research on problems in speech and hearing. The participation and cooperation of specialists from varied fields, including psychology, child development, education, engineering, statistics, and medicine, further broaden the scope of research activities in speech and hearing.

**Courses**

**Lower-Level Undergraduate**

**CSD:1000 First-Year Seminar**  1 s.h.

Small discussion class taught by a faculty member; topics chosen by instructor; may include outside activities (e.g., films, lectures, performances, readings, visits to research facilities). Requirements: first- or second-semester standing.

**CSD:1001 CLAS Master Class**  1-3 s.h.

Exploration of a single topic in a series of lectures by faculty presenting divergent perspectives; illuminates intellectual adventure inherent in liberal arts and sciences; encourages discovery of majors and other areas of study within the College of Liberal Arts and Sciences. Same as CLAS:1001, RELS:1010, THTR:1001, CS:1001, PHIL:1001, ENGL:1001, BIOL:1001, ARTS:1001.

**CSD:1015 Introduction to Speech and Hearing Processes and Disorders**  2 s.h.

Introduction to communication sciences and disorders field; clinical and research works; wide range of readings; survey course with less emphasis on specific disorders.
CSD:1800 Basic Aspects of Aging 3 s.h.

CSD:2110 Phonetics: Theory and Applications 3 s.h.
Basic concepts: articulatory and acoustic description of speech sound production, dialect variations, language differences; development of phonetic transcription skills with emphasis on English phonetics, clinical applications to developing and disordered speech. Offered fall semesters.

CSD:2111 Basic Acoustics for Speech and Hearing 3 s.h.
Principles of sound, simple harmonic motion, sound pressure and intensity, decibels, complex waves, Fourier analysis, resonance and filters, distortion, transmission of sound. Requirements: completion of department math requirement.

CSD:2140 Manual Communication 1 s.h.
Training in use of sign systems in manual communication.

Upper-Level Undergraduate and Graduate
CSD:3097 Honors Seminar 2 s.h.
Research topics and procedures in speech and hearing sciences; ongoing faculty research, research opportunities, possible research projects. Requirements: honors standing with intent to complete an honors thesis.

CSD:3112 Anatomy and Physiology of Speech Production 4 s.h.
Normal anatomy, physiology of structures used to produce speech; principles, methods for instrumental study of speech production. Offered spring semesters. Prerequisites: CSD:2110.

CSD:3113 Introduction to Hearing Science 4 s.h.
Normal auditory process; anatomy and physiology of auditory system; subjective correlates of auditory stimuli. Offered fall semesters. Prerequisites: CSD:2111.

CSD:3116 Basic Neuroscience for Speech and Hearing 3 s.h.
Basic anatomy, physiology of central nervous system; emphasis on neural systems involved in normal and disordered communication. Offered fall semesters. Requirements: biology, zoology, or physiology course. Same as LING:3116.

CSD:3117 Psychology of Language 3 s.h.
Theoretical, empirical investigations of linguistic behavior; behaviorist, rationalist models in context of formal linguistic structure and context of models of speech perception and production. Offered spring semesters. Prerequisites: LING:3001. GE: Social Sciences. Same as LING:3117.

CSD:3118 Language Acquisition 1-3 s.h.

CSD:3122 Speech Production: Anatomy and Physiology 4 s.h.
Anatomy and physiology of the respiratory, phonatory, and articulatory systems and the systems' roles during speech production; approaches to instrumental assessment of speech physiologic events.

CSD:3127 Introduction to Psycholinguistics 3 s.h.
Theoretical and empirical investigations of linguistic behavior in the context of formal linguistic structure, models of speech perception and production; readings of text and research papers; audio-visual demonstrations of classical speech perception and production phenomena.

CSD:3185 Hearing Loss and Audiometry 3 s.h.
Introduction to profession of audiology; overview of hearing disorders, evaluation, treatment; basic pure-tone and speech audiometry. Offered fall semesters. Prerequisites: CSD:3113.

CSD:3187 Early Literacy Instruction for Young Children 3 s.h.
Service-learning involving lecture, class discussion, and student participation in an early literacy program for preschoolers; concepts and skills necessary to conduct story time groups with young children that target development of print knowledge; application of learning by reading to small groups of preschool children. Corequisites: PSQF:4106 or PSY:2401.

CSD:3993 Research Practicum arr.
Individual or small group participation in faculty research projects.

CSD:4098 Honors Thesis 2 s.h.
Close work with a faculty mentor. Prerequisites: CSD:3097.

CSD:4114 Introduction to Voice Disorders 2 s.h.
Basic foundations for management of voice disorders. Offered spring semesters. Prerequisites: CSD:3112.

CSD:4115 Structural Disorders 2 s.h.
Therapy approaches used to treat speech production and swallowing disorders associated with disorders that affect structure and physiology of the speech and swallowing mechanism; basic knowledge necessary for clinical practice by clinicians who do not specialize in management of patients with head and neck cancer, cleft palate, or neurological disorders. Offered fall semesters. Prerequisites: CSD:2110 and CSD:3112.

CSD:4120 Clinical Observations in Communication Disorders 2 s.h.
Diagnosis and treatment of a wide range of speech, language, or hearing disorders in a variety of settings; basic understanding of the evaluation process, goal setting, behavior management, pacing of therapy, shaping of behavior, tracking performance/learning, and professional and ethical behavior through observation of clinical interactions; completion of 25 hours of observation as required by the American Speech-Language-Hearing Association for obtaining national certification. Recommendations: senior or graduate standing in communication sciences and disorders.

**CSD:4125 Clinical Spanish for Speech-Language Pathologists**
3 s.h.
Professional fluency in Spanish; focus on vocabulary and topics commonly encountered in speech and language pathology clinical setting; use of professional vocabulary to discuss research articles; administration of standardized assessments and therapy techniques in Spanish. Taught in Spanish. Prerequisites: CSD:1015 and CSD:2110 and CSD:3112. Requirements: completion or satisfaction of GE language requirement in Spanish through SPAN:1502, and at least one upper-level writing, speaking, or literature course in Spanish. Recommendations: advanced-level verbal and written competency in Spanish.

**CSD:4145 Developmental Language Disorders**
3 s.h.
Nature of developmental disorders; basic concepts including behavioral characteristics, developmental patterns, etiology theories; assessment and intervention principles in semantics, morphology, syntax. Offered fall semesters. Prerequisites: CSD:3118.

**CSD:4146 Neurogenic Disorders of Language**
3 s.h.
Overview of communication disorders secondary to acquired brain damage in adults; focus on aphasia, communication disorders arising from dementia, right-hemisphere stroke, traumatic brain injuries; general principles of diagnosis and intervention. Offered fall semesters. Prerequisites: CSD:1015 and (CSD:2110 or LING:3005) and CSD:3112 and CSD:3116.

**CSD:4147 Neurogenic Disorders of Speech**
2 s.h.
Speech disorders secondary to acquired brain damage in adults; clinical intervention issues. Offered spring semesters. Prerequisites: CSD:3116.

**CSD:4148 Developmental Speech Disorders**
3 s.h.
Review of typical phonological development in children; introduction to assessment and intervention practices for articulation and phonological disorders in children; may include apraxia, cerebral palsy, and cleft palate. Prerequisites: CSD:2110 and CSD:3118.

**CSD:4165 Communication Disorders and Aging**
2 s.h.
Introduction to speech, language, and hearing processes and disorders among older adults; survey of characteristics of communication and communication breakdown, remediation, and strategies for improving communication with older adults with communication disorders; primarily for nonmajors and service providers other than speech-language pathologists and audiologists. Offered spring semesters of even years. Same as ASP:4165.

**CSD:4183 Introduction to Stuttering**
2 s.h.
Theoretical perspectives on the nature of stuttering, including onset and development, basic phenomena, beginning treatment principles. Offered spring semesters. Prerequisites: CSD:3112.

**CSD:4186 Problems: Speech/Hearing Processes and Disorders**
arr.

**CSD:4244 Rehabilitative Audiology**
3 s.h.
Theory, procedures for assessment, rehabilitation of speech, hearing, language deficits of people with hearing impairment. Offered spring semesters. Prerequisites: CSD:3185 and CSD:4145.

**Graduate**

**CSD:5104 Language Disorders in School-Aged Children**
3 s.h.
Emphasis on elementary grades; usually taken in conjunction with EDTL:4192, which provides approximately 70 hours of supervised clinical practice in elementary schools. Recommendations: primarily for communication sciences and disorders majors. Same as EDTL:5104.

**CSD:5135 Foundations of Clinical Practice I**
1-3 s.h.
Basic concepts of clinical practice, including models of diagnosis, fundamentals of clinical data collection and measurement, treatment planning, professional writing. Offered fall semesters. Prerequisites: CSD:1015 and (CSD:2110 or LING:3005) and CSD:3112 and CSD:3118 and PSQF:1020. Corequisites: CSD:4145.

**CSD:5136 Foundations of Clinical Practice II**
1 s.h.
Advanced concepts of clinical practice, including principles of human behavior change, clinical decision making, generalization, transfer and maintenance, models of service delivery, ethical practice, advanced professional writing. Offered spring semesters. Prerequisites: CSD:5135.

**CSD:5137 Foundations of Clinical Practice III**
1 s.h.
Advanced principles of clinical practice, including risk management, public policy and models of third-party reimbursement, professional issues. Offered fall semesters. Prerequisites: CSD:5136.
CSD:5201 Principles of Voice Production 3 s.h.
Basic physical, physiological, pedagogical principles in understanding professional, nonprofessional, impaired voice production; vocal anatomy, voice classification; control of loudness, pitch, register, quality; efficient, inefficient use of voice; instrumentation for voice analysis, synthesis. Offered fall semesters of odd years. Same as MUS:5520.

CSD:5203 Counseling in Communication Disorders 1 s.h.
Collection and integration of case history information from clients/patients, family, caregivers, teachers, relevant others, other professionals; development of appropriate intervention plans that meet client/patient needs in collaboration with client/patient and relevant others; communicating effectively and recognizing needs, values, preferred mode of communication, and cultural linguistic background of client/patient, family, caregivers, relevant others; providing counseling to clients/patients, family, and caregivers regarding communication and swallowing disorders. Prerequisites: CSD:5135.

CSD:5206 Language Disorders: Birth to Five Years 3 s.h.
Disorders resulting from phonological, semantic, pragmatic, and morphosyntactic deficits; receptive, expressive problems; special assessment and intervention procedures. Offered fall semesters of even years. Prerequisites: CSD:4145.

CSD:5213 Voice Habilitation 2-3 s.h.
Application of methods of intervention in development, training, rehabilitation of vocal behavior; motor learning, efficacy of treatment strategies, factors affecting compliance with recommended therapy. Offered fall semesters. Prerequisites: CSD:4114 or CSD:5201. Same as MUS:5555.

CSD:5219 Fundamentals of Laboratory Instrumentation 3 s.h.
Electrical circuits, emphasis on application to instrumentation used in speech and hearing; laboratory focus on instrumentation. Offered spring semesters.

CSD:5222 Speech and Hearing Anatomy 2 s.h.
Laboratory course in anatomy of speech and hearing mechanisms; instruction in dissection techniques. Offered summer sessions. Prerequisites: CSD:3112.

CSD:5223 Pediatric Feeding and Swallowing Disorders 1 s.h.
Development of anatomy and physiology of feeding and swallowing in infants and children; assessment and treatment of pediatric feeding and swallowing disorders. Offered summer sessions. Prerequisites: CSD:3112 and CSD:3116 and CSD:4115.

CSD:5224 System and Signal Theory for Speech and Hearing Science 3 s.h.
Principles of linear-systems theory applied to speech and auditory research, including system functions, filter properties, convolution, Fourier Series, Fourier transform. Offered fall semesters. Requirements: introductory calculus.

CSD:5233 Aphasia 2 s.h.

CSD:5234 Acquired Cognitive-Communication Disorders 1 s.h.
Cognitive, neuropsychological, and social aspects of communication and the management of acquired cognitive-communication disorders associated with traumatic brain injury, right hemisphere damage, and neurodegenerative diseases. Prerequisites: CSD:3116 and CSD:4146.

CSD:5236 Swallowing Disorders 2 s.h.
Physiology of normal, abnormal swallowing; assessment, treatment of swallowing disorders in adults, children. Offered fall semesters. Prerequisites: CSD:3112 and CSD:4115 and CSD:3116.

CSD:5237 Cleft Palate and Related Disorders 2 s.h.

CSD:5240 Hearing Aids I 3 s.h.
Hearing aids, diagnostic procedures; laboratory emphasis on measurement procedures. Offered spring semesters. Prerequisites: CSD:3185.

CSD:5246 Advanced Audiology 3 s.h.
Theory, procedures for assessment of hearing loss in adult and pediatric populations; experience in test administration through supervised laboratory sessions. Offered fall semesters. Prerequisites: CSD:3185.

CSD:5253 Speech Perception in Listeners with Hearing Loss 1-2 s.h.
Introduction to study of speech perception in listeners with normal hearing and those with hearing loss; overview of speech acoustics; theories of speech perception; contributions of auditory, visual, and indexical (talker-specific) information in speech signal; assessment techniques; benefits of hearing aid and/or cochlear implant use; factors influencing speech perception by children and adults with hearing loss.

CSD:5255 Educational Audiology 2 s.h.
Training in skills necessary for working with the school-age population; case management and aural rehabilitation, amplification and classroom hearing technology, identification and assessment practices, federal legislation that affects services. Offered fall semesters. Prerequisites: CSD:3185 and CSD:4244. Requirements: CSD:5240 for Au.D. students.

CSD:5256 Anatomy and Physiology of Hearing 3-4 s.h.
Anatomy of auditory system, cochlear mechanics, electrophysiology of peripheral and central auditory nervous system; laboratory emphasis on physiological techniques for study of ear. Offered spring semesters. Prerequisites: CSD:3113 and CSD:5224.

CSD:5257 Auditory Processing Disorders 1 s.h.
Central auditory processing disorder (CAPD) as a disorder involving auditory processing and not showing as a hearing loss on routine screenings or an audiogram; theories of mechanisms and treatment.

CSD:5260 Designing Assistive Devices 2 s.h.
System design (hardware and software) useful in building augmentative and alternative communication devices for the profoundly impaired; opportunity to build systems for theoretical and/or applied purpose; interdisciplinary, clinical perspectives. Offered summer sessions.

CSD:5282 Phonological Development and Disorders 2 s.h.
Advanced topics in phonological development and disorders; current theoretical approaches to phonological analysis and typical phonological acquisition applied to assessment and intervention with children who have phonological disorders. Offered spring semesters. Prerequisites: (CSD:2110 or LING:3005) and CSD:3118 and CSD:4145 and CSD:5135.

CSD:5283 Clinical Problems 1-2 s.h.

CSD:5301 Practicum: Speech-Language Pathology arr.

CSD:5303 Evidence Based/Emerging Practices in Communication/Social Interaction for Individuals with Autism 1 s.h.
Evidence-based practices and emerging practices for promoting communication and social interaction skills in individuals with autism spectrum disorders; emphasis on intervention strategies specific to receptive and expressive language development, functional communication, social interaction, emotional regulation, play, structured learning environments, and opportunities.

CSD:5304 Speech Pathology Outplacement: School 0-4 s.h.
Supervised teaching and observation in speech-language pathology in an elementary school setting.

CSD:5305 Speech Pathology Outplacement: Non-School 0-4 s.h.
Supervised clinical work and observation in speech-language pathology in a non-school setting.

CSD:5310 Scientific Writing 3 s.h.
Principles of writing for scientific posters, journal articles, grant proposals; effective communication of concepts and data.

CSD:5311 Clinical Practice in Audiology arr.
Varied topics relevant to professional issues in audiology clinical practice; presentations by clinical faculty members and guest speakers. Requirements: M.A. professional emphasis or Au.D. enrollment.

CSD:5314 Audiology Student Teaching arr.
Supervised teaching and observation in an area of audiology in the elementary schools.

CSD:5315 Clinical Rotations in Audiology arr.

CSD:5350 Preceptorship in Augmentative Communication 1 s.h.
Approaches to development of alternate modes of communication for individuals with limited oral communication. Offered fall semesters.

CSD:5510 Seminar: Introduction to Research in Speech and Hearing 0-1 s.h.
Philosophy of science; basic principles of research; issues in conducting research; review of research opportunities in the department. Offered fall semesters.

CSD:5511 Introduction to Doctoral Research 1 s.h.
Topics related to development and execution of research; doctoral program, use of library, human and animal subject issues, philosophy of science, use of common research tools, reading and writing research papers, research grant preparation. Offered fall and spring semesters.

CSD:6101 Cognitive Science of Language Proseminar I 3 s.h.
Survey of five major disciplines within language sciences: formal linguistic, communication disorders, psychological, neuroscience, and computational approaches. Requirements: graduate standing in communication sciences and disorders, linguistics, psychology, or neuroscience. Same as PSY:6101, LING:6101.

CSD:6102 Cognitive Science of Language Proseminar II 3 s.h.
Survey of five major disciplines within language sciences: formal linguistic, communication disorders, psychological, neuroscience, and computational approaches. Requirements: graduate standing in communication sciences and disorders, linguistics, psychology, or neuroscience. Same as PSY:6102, LING:6102.

CSD:6202 Methods of Teaching Voice 3 s.h.
Attitude, musicianship, foreign language aptitude, physical and emotional characteristics; mental images used to modify respiratory, phonatory, articulatory behavior; vocal hygiene; performance anxiety; student-teacher relationships; administration in vocal schools, professional organizations. Offered spring semesters. Same as MUS:6520.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSD:6204</td>
<td>Voice for Performers</td>
<td>2 s.h.</td>
<td>Comparison of Kinesthetic techniques for singing and acting voice; relaxation, posture, breathing, tone quality, diction, interpretation. Same as MUS:6525, THTR:6525.</td>
</tr>
<tr>
<td>CSD:6221</td>
<td>Instrumentation for Voice Analysis</td>
<td>2 s.h.</td>
<td>Glottographic, videostroboscopic, electromyographic, and acoustic analysis for assessment of vocal and respiratory function; using these techniques in conjunction with perceptual evaluation of voice; through the Vocology Institute in Utah. Offered summer sessions of even years. Requirements: enrollment in Summer Vocology Institute, Salt Lake City, Utah. Same as MUS:6525.</td>
</tr>
<tr>
<td>CSD:6230</td>
<td>Advanced Hearing Science</td>
<td>2 s.h.</td>
<td>Basic properties of auditory perception or psychoacoustics from material covered in CSD:5256; perception of loudness, masking frequency selectivity, temporal processing, and spatial perception; basic perceptual properties, methods of measurement, and physiological basis for performance; properties of perception in normal ears, hearing impairment, and auditory prostheses (e.g., cochlear implants). Prerequisites: CSD:3113 and CSD:5256.</td>
</tr>
<tr>
<td>CSD:6231</td>
<td>Speech Perception in Listeners with Hearing Loss</td>
<td>2 s.h.</td>
<td>Introduction to study of speech perception in listeners with normal hearing and those with hearing loss: overview of speech acoustics; theories of speech perception; contributions of auditory, visual, and indexical (talker-specific) information in speech signal; assessment techniques; benefits of hearing aid and/or cochlear implant use; factors influencing speech perception by children and adults with hearing loss. Prerequisites: CSD:6230.</td>
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<tr>
<td>CSD:6242</td>
<td>Hearing Aids II</td>
<td>3 s.h.</td>
<td>Evaluation, verification procedures; emphasis on advanced technologies, strategies. Offered fall semesters. Prerequisites: CSD:5240.</td>
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<tr>
<td>CSD:6245</td>
<td>Pediatric Audiology</td>
<td>3 s.h.</td>
<td>Theory, procedures for assessment, rehabilitation of pediatric populations; laboratory emphasis on test administration. Offered spring semesters. Prerequisites: CSD:3185.</td>
</tr>
<tr>
<td>CSD:6247</td>
<td>Medical Audiology</td>
<td>2 s.h.</td>
<td>Genetic, acquired, traumatic pathologies that affect auditory systems; nature, etiology, principles of assessment, treatment. Offered spring semesters of odd years. Prerequisites: CSD:3185.</td>
</tr>
<tr>
<td>CSD:6249</td>
<td>Cochlear Implants</td>
<td>1-3 s.h.</td>
<td>Introduction to cochlear implantation; history of cochlear implantation, introduction to cochlear technology, basics of device programming and trouble shooting, candidacy issues, outcomes in children and adults, auditory rehabilitation specific to cochlear recipients, the auditory brainstem implant, future trends in cochlear implantation. Offered spring semesters. Prerequisites: CSD:3185 and CSD:4244.</td>
</tr>
<tr>
<td>CSD:6290</td>
<td>Auditory Evoked Potentials</td>
<td>3 s.h.</td>
<td>Introduction to evoked potentials for assessing audiologic function. Offered spring semesters. Prerequisites: CSD:5219.</td>
</tr>
<tr>
<td>CSD:6291</td>
<td>Vestibular Assessment and Rehabilitation</td>
<td>1-3 s.h.</td>
<td>Introduction to otoacoustic emissions, vestibular theory, and testing techniques. Offered fall semesters.</td>
</tr>
<tr>
<td>CSD:6292</td>
<td>Advanced Rehabilitative Audiology</td>
<td>1 s.h.</td>
<td>Current and developing procedures for assessment, habilitation of adults and children with hearing losses. Offered spring semesters.</td>
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<tr>
<td>CSD:6317</td>
<td>Audiology Business Practice Management</td>
<td>1 s.h.</td>
<td>Introduction to the development and management of an audiology practice; topics include short and long range business planning, general accounting, budgeting, establishing fees for service, coding and third party reimbursement, marketing, professional liability, certification and licensure; business and professional ethics. Requirements: 3.00 cumulative g.p.a. and Au.D. second-year or higher enrollment.</td>
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<tr>
<td>CSD:6318</td>
<td>Hearing Loss Prevention</td>
<td>2 s.h.</td>
<td>Incidence and prevalence of hearing loss; risk factors and assessment; noise exposure guidelines; hearing protection devices; education and motivation. Prerequisites: CSD:5219.</td>
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<tr>
<td>CSD:6515</td>
<td>Proseminar</td>
<td>0 s.h.</td>
<td>Presentation of research ideas, results by faculty, students.</td>
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<tr>
<td>CSD:6519</td>
<td>Seminar: Evidence-Based Practice</td>
<td>2 s.h.</td>
<td>Introduction to design and conduct of research and evidence-based clinical practice, observation and measurement, population sampling, group and single-subject research designs, treatment research, data organization and analysis, and presenting research results in graphic and written form; issues concerning research ethics and the protection of human subjects in research. Recommendations: clinical graduate standing in audiology or speech-language pathology.</td>
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<tr>
<td>CSD:6520</td>
<td>Seminar: M.A. Language</td>
<td>2 s.h.</td>
<td>Research literature related to language. Offered spring semesters of odd years.</td>
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</table>
CSD:6522 Clinical Speech Physiology 2 s.h.
Current approaches to the study of speech physiology and application in clinical practice; focus on providing hands-on experiences with common instrumental approaches to studying speech physiology, developing an appreciation of the factors and limitations that must be considered in applying and interpreting the findings of these approaches clinically, and developing abilities to critically evaluate the literature in this area.

CSD:6524 International Service in Communication Disorders 0-2 s.h.
International service in communication and related disorders; foundational knowledge and project-based learning; cultural diversity, international speech-language pathology and audiology practices, disability and poverty, advocacy for individuals with communication and related disorders, staff-caregiver-parent training; required course for students who applied and are accepted for international service projects through the Department of Communication Sciences and Disorders.

CSD:6538 Seminar: Hearing Science 2 s.h.
Selected topics. Offered fall semesters of even years.

CSD:7238 Capstone Requirement 1 s.h.
Individual work with a faculty member on audiology topics; final Au.D. project. Offered spring semesters.

CSD:7528 Seminar: Ph.D. Language 2 s.h.
Theoretical issues related to language. Offered spring semesters.

CSD:7590 Research arr.