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1967

## PACS Bulletin 1967-1968

Program in Audiology and Communication Sciences  
*Washington University School of Medicine*

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**TEACHER EDUCATION  
AND PROFESSIONAL  
COURSES BULLETIN**

**1967-1968**

## **HISTORICAL STATEMENT**

From its founding in 1914, Central Institute has conducted a program of preparation for teachers and other professional personnel in the field of speech, hearing and language disorders. The Institute was a pioneer in this area of specialized professional education and played a major role in developing educational methods and standards.

In February, 1931, the Teacher Training College of Central Institute was officially affiliated with University College of Washington University. By virtue of this affiliation, the degree of Bachelor of Science in Speech and Hearing is granted to qualified graduates who meet the requirements established by the Advisory Board.

In September, 1936, the Board of Graduate Studies of Washington University approved a program leading to the degree of Master of Science in Education for qualified students through the School of Graduate Studies. Subsequently, a combination of course offerings was established to lead to the degrees of Master of Science in Speech and Hearing and Master of Arts in Speech and Hearing. The latter is now offered as Master of Arts in Audiology.

In September, 1947, the curriculum for the Ph.D. in Audiology was established.

### **PROGRAMS AND PURPOSES**

The Department of Speech and Hearing offers courses in two types of programs. The first group of courses constitutes the professional training program in the education of the deaf, in speech pathology, and in audiology. The second set of courses is intended for students pursuing advanced study and degrees in the areas of Audiology, Neurobiology, or Psychology. Many times a student enrolled in one program will elect one or more courses from the other.

This brochure is concerned primarily with the Professional Training Program which may be characterized as preparing students for service-oriented careers. Degrees offered in the program are the B.S. and M.S. in Speech and Hearing. The interdepartmental area of Audiology represents a program more oriented toward research, academic teaching, and professional administration although topics within the field of clinical speech and hearing frequently fall within its interests. Degrees offered in the Audiology area are the M.A. and the Ph.D.

The focus of the Professional Training Program is disordered communication be it expressive (speech), receptive (hearing), content (language), or some combination of these. There are three areas of specializa-

tion resting on a common curricular core required of all students. These are Education of the Deaf, Speech Pathology, and Audiology. Students specializing in the Education of the Deaf are prepared to carry out an oral (speech, lip-reading and auditory training) pre-school and elementary educational program for deaf and hard of hearing children. In Speech Pathology the student is prepared to assess and treat disorders of speech and language. In Audiology the graduate is qualified to administer hearing tests, to carry on work in hearing conservation, and to advise about and participate in the education and rehabilitation of children and adults with hearing handicaps. The program stresses those features that the three fields have in common. The desirability of this emphasis has been recognized by school and clinic authorities who are increasingly seeking the combined preparation as a qualification for professional appointment.

The interdepartmental area of Audiology includes courses relevant to speech and hearing that are offered by the Departments of Anatomy, Education, Electrical Engineering, Otolaryngology, Neuropsychiatry, Physics, Physiology, Psychology, and Zoology. The chief subdivisions within the area of Audiology, one or more of which will form the core of a student's program of study, are Physical Acoustics, Electroacoustics, Auditory Biophysics, Neurophysiology of Audition, Psychoacoustics, Education of the Deaf, and Speech Pathology. (See Bulletin of the Graduate School of Arts and Sciences.)

The demand for qualified graduates far exceeds the supply and the opportunities for constructive service are practically unlimited. Graduates are practicing their profession in public and private residential and day schools for the deaf, in school systems, in universities, in centers, and in hospitals throughout the United States and in other parts of the world.

#### THE STUDENT BODY

The students in the program are a group of men and women carefully selected on the basis of academic, physical and psychological qualifications. The members of the group come from many different places. Not only have most of the states of the Union been represented at some time or other, but foreign countries including Argentina, Australia, Canada, Chile, China, Colombia, Denmark, El Salvador, England, Finland, Formosa, French Morocco, Guatemala, Honduras, India, Israel, Jamaica, Japan, Mexico, Norway, Philippines, South Africa and Venezuela have had their share of representation. The influence of the Institute training program is, therefore, truly international.

Students enrolled at Washington University may take selected courses in the department. Experienced workers who are interested in advanced or refresher work are encouraged to consult the Registrar about courses that may meet their needs.

#### THE FACULTY

The faculty of the Department is comprised of highly qualified individuals, each of whom is a specialist in his own field. Originating in many academic institutions, the faculty constitutes an educationally and scientifically cosmopolitan group. Although members of the faculty are specialists in different fields, they are ever sensitive to the broad purposes of Central Institute.

The Department faculty also directs its attention to vital problems of research in the classrooms, laboratories and clinics of the Institute. With

the assistance of students, who gain valuable experience therein and, in some instances, in cooperation with various departments of Washington University, the answers to many challenging questions are sought. The research program is described in more detail in the annual reports of the Research Department.

Visiting lecturers from other divisions of Washington University working in fields related to speech and hearing frequently address the students.

#### AFFILIATION WITH WASHINGTON UNIVERSITY

An advisory board, composed of members of the staff of Washington University in cooperation with administrative officers of the Department of Speech and Hearing at Central Institute, supervises the relations between the University and the Institute. Requirements for admission, comprehensive examinations and appointments to the faculty fall within the jurisdiction of the appropriate officers of the University.

#### GENERAL PLAN OF INSTRUCTION FOR PROFESSIONAL TRAINING PROGRAM

The program is broad in scope and after the student has acquired basic fundamentals in the core studies he is encouraged to follow in his practicum that particular branch of work for which he shows preference and aptitude.

The availability on the premises of a functioning school for the deaf, for the hard-of-hearing and for speech and language handicapped individuals, and associated clinics makes possible a desirable balance between theory and practice. In preliminary stages of his preparation the student is assigned to observe special groups and the schedule is so rotated that he is exposed to every phase of the Institute's service program. The student is then given an opportunity to put into practice under competent supervision what he has observed and studied. In addition to opportunities for practice in the clinics and classrooms of the Institute, the clinics of Children's Hospital, of MacMillan Hospital (Otolaryngology), the Irene Johnson Rehabilitation Institute, the School of Dentistry of the University and the Jewish Hospital of St. Louis are open to students. The student is not just a "taker of courses." He is a member of a professional community, accepting its responsibilities as well as enjoying its privileges.

Students are often called upon to assist counsellors in directing children during out-of-school hours. Since the Institute is also a residential establishment an important function devolves upon the counsellors. They play a vital role in directing the child's individual and social development through games, hobbies, athletic contests, dances, trips, scout work, and other similar experiences. In this way the child is encouraged to implement outside the schoolroom what he has learned in it and the student teacher gains invaluable experience in assisting him. Holders of scholarships, fellowships, or traineeships are required to spend a designated number of hours (usually a minimum of 6 hours) in these activities.

The Institute houses one of the outstanding libraries in the nation devoted to speech and hearing and related fields. In the Clinic and Research building are the significant Max A. Goldstein collections that include specimens showing the evolution of the non-electrical hearing aid and early editions of books dealing with Speech and Hearing. The libraries of Washington University are available to registered students.

## FEEs AND EXPENSES

An application fee of \$10.00 is required upon filing. A matriculation fee of \$5.00 is required upon registration. Tuition for each year is \$1,000.00 payable as follows: \$50.00 initial payment upon acceptance for admission, \$450.00 at the opening of the first semester, and \$500.00 at the beginning of each subsequent semester.\*

A diploma fee of \$3.00 is payable prior to graduation.

A laboratory fee of \$10.00 is payable in those graduate courses requiring the use of animal material.

An outlay of \$125.00 for books and supplies is sufficient to carry the student for the entire course.

Candidates for a degree at Washington University are covered by health insurance at the Health Center of the University. The fee for this insurance is paid by the Institute.

Room and board are available to college students at the following rates:

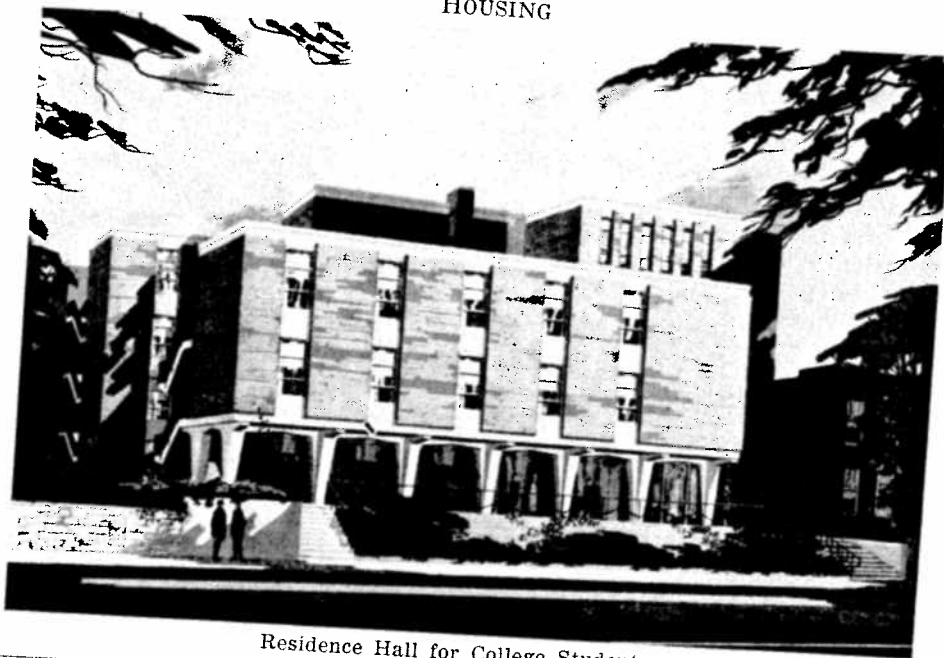
\$880.00 †per student in double room including meals.

\$975.00 †per student in single room including meals.

\$ 25.00 security deposit — refundable at termination of residence, subject to check of room damage. The entire security deposit is payable on entrance.†

\$ 25.00 Room reservation fee is required. This reservation fee will be credited to the 2nd semester account.†

## HOUSING



Residence Hall for College Students

\*If the student withdraws from the course before four weeks of the semester have elapsed tuition will be refunded on a prorata basis. No refunds will be made for subsequent withdrawal except for reason of poor health or other extenuating circumstances; the decision as to amount of refund in the latter case to rest with administrative officers of the college.

†A student's room may not be used by anyone other than the students assigned to it, except with special permission. \$120.00 allowance for students who do not take suppers at the Institute. (per year)

The Institute reserves the right to:

- a) Make all final decisions on room assignments.
- b) Check rooms at any time.

The Institute shall not be responsible for the loss of or damage to any of the student's personal property from any cause whatsoever.

The assignment of a room is made with the understanding that the student agrees to occupy the room for the academic year.

Failure to pay bills on due dates or to make arrangements for them is cause for immediate dismissal.

There is no provision for serving specially prepared food in the dining room, and cooking in the residence hall is not permitted.

The residence of any student may be terminated by the Institution if his continued presence is not in the best interest of the Residence Hall.

#### SCHOLARSHIPS, FINANCIAL AID, AND SELF-HELP

The Institute has grants from the Office of Vocational Rehabilitation of the Department of Health, Education and Welfare, and the National Institute of Neurological Diseases and Blindness, of the United States Government that provide a limited number of traineeships and fellowships for graduate study. It is likely that Federal Fellowships from the Office of Education under Public Law 88-164 will be available.

Formal application for scholarships and grants-in-aid is not necessary. The request should be made along with application for admission. Other scholarships and some grants-in-aid are available to qualified students. In recent years scholarships and grants-in-aid have been received by the Institute from the Parent Teachers Association of Central Institute for the Deaf, W. T. Grant Foundation, The Quota Club of St. Louis, The District Quota Club, Lionettes, Danforth Foundation, Delta Theta Tau Sorority (Iota Nu Chapter), Mr. and Mrs. Lloyd Farquhar, Johnnie Ray Foundation and others.

Opportunities for self-help through remunerative employment on the premises of the Institute are available. This employment usually consists of serving as counsellors with the children after school hours, study hall, clerical duties, or acting as subjects in the research laboratories. Students are also permitted to sign promissory notes to meet tuition obligations. Requests for financial assistance, employment and loans should be addressed to the Registrar.

#### RECREATION

The City of St. Louis affords excellent opportunities for recreation and cultural activities. The location of the Institute across from Forest Park places facilities for walking, boating, tennis, golf, skating, and riding at the easy disposal of the student. The park also contains an outstanding zoo, an excellent art museum, and a new planetarium. Activity cards entitling students to the use of the facilities of Washington University are available without cost to the student.

#### DISMISSALS

The administrative officers reserve the right to dismiss a student who fails to show professional promise or who is guilty of infraction of rules and discipline.

ENTRANCE REQUIREMENTS FOR PROFESSIONAL TRAINING PROGRAM  
UNDERGRADUATE

Among the three professional programs, only the Education of the Deaf is open to undergraduates at the junior level. Students should make application well in advance of the junior year preferably in the first semester of the sophomore year.

Undergraduate applicants must successfully complete in the College of Liberal Arts or University College of Washington University or in any other University or accredited College, the pre-professional curriculum outlined below. A total of 64 units must be completed.

	Units
English Composition .....	6
English Literature <sup>1</sup> .....	6
Modern Foreign Language (two years) <sup>2</sup> .....	12
Two Natural Sciences .....	12
(6 units in a biological and 6 units in a physical science) <sup>3</sup>	
Sociology <sup>4</sup> .....	6
Education .....	6
(Educational Psychology 3, Principles, Introduction, History, or Philosophy of Education 3)	
General Psychology* .....	6
Physical Education .....	4
(Mathematics, though not required, is strongly urged.)	

GRADUATE

Graduates of universities or colleges of recognized rank are eligible to be considered for admission to the graduate programs (below), Education of the Deaf, Speech Pathology or Audiology, provided their transcripts show a reasonably well-rounded and pertinent undergraduate curriculum of studies and provided their grades in undergraduate study were distinctly above the minimum requirements for the Bachelor's degree. However, not only grades, but also test scores, letters of recommendation, and other evidence of professional promise are taken into account.

All students seeking admission should make application well in advance of the time set for registration preferably before March 1. Application forms may be obtained from the Registrar of the Institute.

The Graduate Record Examination (both Aptitude and Advanced Sections) or the Miller Analogies Test is recommended for admission. Applicants are urged to take the examination early in the academic year preceding that for which admission is sought. Information and application forms are available at most colleges and universities or may be requested directly from the Educational Testing Service, Princeton, New Jersey 08540.

Applicants for admission who are unable to meet the above conditions, but who present evidence of being capable of doing acceptable graduate work, may be admitted at the discretion of the Dean of the Graduate School of Arts and Sciences after consultation with the Department Chairman.

<sup>1</sup>American Literature does not satisfy this requirement.

<sup>2</sup>This may be waived if equivalent courses were completed in high school, the equivalent to be two years of high school language for each 6 units of college language. Students presenting two years of one language may satisfy the requirement by completing one year of an advanced course in the same language.

<sup>3</sup>Biology, Physiology, or Zoology under biological science, and Physics under physical science are desirable. A course in Physical Science, Basic or General, and in Biological Science, Basic or General, will satisfy the requirements in the Natural Sciences.

<sup>4</sup>Educational Sociology is acceptable.

\*In 1967-68 3 units in Child Development is required. This will substitute for 3 units of the 6 unit Psychology requirement.

All foreign students are required to present certification of financial support of at least \$3,800.00 and those from non-English-speaking countries must take the Test of English as a Foreign Language (TOEFL), administered by the Educational Testing Service in most countries.

**Students Not Candidates For A Degree:** Students otherwise qualified who do not wish to proceed toward a degree may be admitted as students not candidate for a degree on recommendation of the department with the approval of the Dean. In order to remain in the program, however, course work must be satisfactory to the department and to the Dean.

**Physical:** Applicants should be free of any defects which could interfere with instruction in Speech and lipreading. Good hearing is essential.

### PROGRAMS OF STUDY

Certain general statements pertain to all students taking courses in the Speech and Hearing Department. The unit of credit is the semester hour. All courses numbered 400 or higher carry graduate credit; courses numbered 500 or higher are open only to graduate students. All programs of study must be approved by the Department and, in the case of graduate students, by the Dean prior to registration. Students in the graduate program must maintain an average of B or better in their work. Candidates for the M.S. in Speech and Hearing or M.A. in Audiology must complete the requirements for that degree within a six-year period, and candidates for the Ph.D. in Audiology within a period of seven years. Exceptions may be made in individual cases where the student has been continuously engaged in the field of work in which the degree is to be taken.

Undergraduate students who are candidates for the B.S. in Speech and Hearing (with specialization in education of the deaf) must complete a minimum of 120 units.

Graduate students in the Professional Training Program who are candidates for the M.S. in Speech and Hearing must complete a minimum of 33 units of graduate credit and the prescribed professional curriculum. They will concentrate in one of three programs of study (education of the deaf, speech pathology, or audiology) and should choose some professional courses in a second area. Where the situation warrants, individual accommodations outside of the prescribed groupings can be made. At least 6 units of credit must be elected from courses open only to graduate students. In one of these courses the candidate is expected to do some individual work, not necessarily of an experimental nature. (Admission to the interdepartmental area of Audiology is by recommendation of the Faculty. Potential students are advised to consult the Bulletin of the Graduate School.)

All students in the Professional Training Program are required to complete the core group of courses common to all areas of concentration. These are:

### THE COMMON CORE COURSES

Sp. & Hr.

- 301—Introduction to Study of Communication Disorders
- 401—Anatomy & Physiology of Speech and Hearing
- 402—Pathology of Hearing and Elements of Neurology
- 417—Psychological Tests and Measurements.
- 421—Introduction to Electroacoustics
- 430—Audiometry and Hearing Aids (Audiology I)
- 439—Language Development and Hearing Impairment
- 441—Speech Pathology
- 458—Phonetics and Speech for the Deaf



## Typical Course Sequence — *EDUCATION OF THE DEAF*

(Small type indicates common-core or other required courses—capitals indicate the professional courses for that area.)

### First Semester

- 301- 2 —Introduction to the study of communication disorders.
- 401- 2 —Anatomy and physiology of speech and hearing.
- 417- 2 —Psychological tests and measurements.
- 421- 3 —Introduction to electroacoustics.
- 439- 3 —Language development and hearing impairment.
- 441- 3 —Speech pathology.
- 451- 3 —LANGUAGE FOR THE DEAF.

### Second Semester

- 402- 2 —Pathology of hearing and elements of neurology.
- 430- 3 —Audiometry and hearing aids.
- 444- 3 —REMEDIAL APPROACHES TO LANGUAGE DISORDERS OF COM-  
POUND ORIGIN.
- 452- 3 —LANGUAGE FOR THE DEAF.
- 456- 3 —EARLY EDUCATION OF YOUNG HEARING HANDICAPPED CHIL-  
DREN.
- 458- 3 —PHONETICS AND SPEECH FOR THE DEAF.

### Third Semester

- 441- 3 —Speech pathology.
- 445- 3 —REMEDIAL APPROACHES TO LANGUAGE DISORDERS OF COM-  
POUND ORIGIN.
- 453- 3 —SCHOOL CURRICULA FOR THE DEAF.
- 459- 3 —PHONETICS AND SPEECH FOR THE DEAF.
- (352- 2)—PRACTICE TEACHING.
- Elective.

### Fourth Semester

- 454- 3 —SCHOOL CURRICULA FOR THE DEAF.
- (352- 4)—PRACTICE TEACHING.
- Electives.

### ELECTIVES

- 415 —Acoustical phonetics and speech perception.
- 419 —Administration of psychological tests for the deaf.
- 550 —Seminar in psychology of deaf and speech handicapped.
- 551-52 —Readings in speech and hearing.
- 560 —Independent work in speech and hearing disorders.

## Typical Course Sequence — *AUDIOLOGY*

### First Semester

- 301- 2 —Introduction to the study of communication disorders.
- 401- 2 —Anatomy and physiology of speech and hearing.
- 417- 2 —Psychological tests and measurements.
- 421- 3 —Introduction to electroacoustics.
- 439- 3 —LANGUAGE DEVELOPMENT AND HEARING IMPAIRMENT.
- 441- 3 —Speech pathology.

### Second Semester

- 402- 2 —Pathology of hearing and elements of neurology.
- 430- 3 —AUDIOMETRY AND HEARING AIDS. (AUDIOLOGY I)
- 436- 2 —AURAL REHABILITATION (AUDIOLOGY V).
- 456- 3 —EARLY EDUCATION OF YOUNG HEARING HANDICAPPED CHIL-  
DREN.
- 458- 3 —Phonetics and speech for the deaf.

### Third Semester

- 415- 3 —Acoustical phonetics and speech perception.
- 423- 3 —Electroacoustics for applied audiology.
- 431- 3 —HEARING EVALUATION AND DIAGNOSIS. (AUDIOLOGY II AND  
III).
- 435- 3 —AUDIOLOGY IN EDUCATION! (AUDIOLOGY IV).
- Elective.

### Fourth Semester

- 414- 3 —Hearing.
- 432- 3 —HEARING EVALUATION AND DIAGNOSIS! (AUDIOLOGY II AND  
III).
- Electives.

## ELECTIVES

- 411 —Methods of psychophysics.
- 425 —Communications engineering and signal analysis.
- 451-52 —Language for the deaf.
- 501 —Seminar in physiology of hearing.
- 511 —Seminar in hearing.
- 512 —Sound and behavior.
- 513 —Independent work in psychoacoustics.
- 530 —SEMINAR IN CLINICAL AUDIOLOGY.
- 550 —Seminar in psychology of deaf and speech handicapped.
- 551-52 —Readings in speech and hearing.

### Typical Course Sequence — *SPEECH PATHOLOGY*

#### First Semester

- 301- 2 —Introduction to the study of communication disorders.
- 401- 2 —Anatomy and physiology of speech and hearing.
- 417- 2 —Psychological tests and measurements.
- 421- 3 —Introduction to electroacoustics.
- 439- 3 —Language development and hearing impairment.
- 441- 3 —SPEECH PATHOLOGY.

#### Second Semester

- 402- 2 —Pathology of hearing and elements of neurology.
- 430- 3 —Audiometry and hearing aids. (AUDIOLOGY I).
- 442- 3 —SPEECH PATHOLOGY.
- 444- 3 —REMEDIAL APPROACHES TO LANGUAGE DISORDERS OF COMPOUND ORIGIN.
- 458- 3 —Phonetics and speech for the deaf.

#### Third Semester

- 445- 3 —REMEDIAL APPROACHES TO LANGUAGE DISORDERS OF COMPOUND ORIGIN.
- 415- 3 —Acoustical phonetics and speech perception.
- 446 —Stuttering (Proposed 1968-69)
- 459- 3 —PHONETICS AND SPEECH FOR THE DEAF.
- 541- 3 —APHASIA AND RELATED DISORDERS OF COMMUNICATION.  
Elective.

#### Fourth Semester

- 447 —Voice Disorders (Proposed 1968-69).
- 540- 3 —Seminar in speech pathology.  
Electives.

## ELECTIVES

- 419 —Administration of psychological tests for the deaf.
- 550 —Seminar in psychology of deaf and speech handicapped.
- 551-52 —Readings in speech and hearing.
- 560 —Independent work in speech and hearing disorders.

Students may elect courses from other departments at Washington University. Information can be found in the appropriate bulletins (College of Arts and Sciences, University College, Graduate School of Arts and Sciences) of the University.

## DESCRIPTION OF COURSES

### 301. INTRODUCTION TO THE STUDY OF COMMUNICATION DISORDERS

Silverman

Two class hours a week. Credit 2 units.

Historical approaches to the study and treatment of disordered communication, including audiology, speech pathology and the education and guidance of deaf and language-handicapped children. Current professional trends and issues.

### 332. PRACTICE IN AUDIOMETRY AND PSYCHOMETRY\*

Staff

Credit 2 units. Spring semester

Observation in various clinics of the Institute and in the Audiology section of Mc-Millan Hospital, Washington University; opportunities to assist senior clinicians.

\*The requirement is generally from 2 to 6 hours per week.

- 333-334. **AURAL-REHABILITATION CLINIC\*** Simmons  
 Credit 1 unit each semester  
 Application of methods under supervision in Aural Rehabilitation for children and adults; preparation of supplementary graded material.
- 341-342. **SPEECH CLINIC\*** Kleffner, Britton, Schwankhaus  
 Credit 2 units each semester  
 The operation of a speech clinic; diagnosis, observation and practice with various types of speech defects.
351. **PRACTICE TEACHING\*** Staff  
 Credit 2 units Fall semester  
 Systematic training in the technique of teaching deaf and speech handicapped children; classroom procedure; clinical practice; demonstrations and practice following these methods.
352. **PRACTICE TEACHING\*** Staff  
 Credit 6 units Spring semester  
 Continuation of 351.
401. **Anatomy and Physiology of Speech and Hearing.** Davis  
 A condensed course on the anatomy and physiology of the organs of speech and of the ear. Two class hours a week. Credit 2 units.
402. **Pathology of Hearing and Elements of Neurology.** Davis  
 A review of the pathology of hearing with special attention to middle ear infection, otosclerosis, congenital defects, presbycusis and other forms of cochlear and central impairments of hearing; a neurophysiological approach to the problems of sensory and motor aphasia. Two class hours a week. Credit 2 units.
411. **Methods of Psychophysics.** Miller  
 Lectures and laboratory in relevant aspects of traditional psychophysical methods, theory of signal detectability, information theory and choice models, as well as elements of sensory-scaling technique. Prerequisite Psychology 418 and/or permission of instructor. Three class hours a week. Credit 3 units.
414. **Hearing.** Hirsh, Elliott  
 Study of the basic auditory phenomena: sensitivity, psychophysical attributes, masking, localization, adaptation and complex auditory perception. Prerequisites: Speech and Hearing 421 and 430, or permission of instructor. Three class hours a week. Credit 3 units.
415. **Acoustical Phonetics and Speech Perception.** Hirsh  
 Acoustical analysis of speech sounds; cues and features of speech in perception; effects on speech perception of linguistic rules and learning. Prerequisites: Speech and Hearing 421 or 423, and 430 or 414, or permission of instructor. Three class hours a week. Credit 3 units.
417. **Psychological Tests and Measurements.** Lane  
 Study of tests used to measure the intelligence and school achievement of children; history of testing the deaf child; application of standardized tests to deaf and speech-handicapped children; demonstrations of administration and scoring and interpretation and use of these tests; interpretation and use of test results. Three class hours a week and observation. Credit 2 units.
419. **Administration of Psychological Tests for the Deaf.** Lane  
 Practice in the administration, scoring and interpretation of individual performance tests of intelligence, and of school-achievement tests; use of test scores in counselling. Two class hours a week and practicum. Credit 2 units.
421. **Introduction to Electroacoustics.** Eldredge  
 Principles of acoustics and electricity basic to the understanding of auditory stimuli, speech production, and instruments used by workers with the deaf and speech handicapped, for example, tuning forks, audiometers, individual and group hearing aids, and other electroacoustic devices. Three class hours a week. Credit 3 units.
423. **Electroacoustics for Applied Audiology.** Niemoeller  
 Fundamentals of practical acoustics, terminology, with applications to room acoustics and noise problems; electroacoustic transducers, and systems such as hearing aids,

- audiometers and recording systems. Prerequisite: Speech and Hearing 421 or equivalent, and college algebra. Three class hours a week. Credit 3 units.
- 425. Communications Engineering and Signal Analysis.** Niemoeller  
 Fundamental concepts of electrical communication engineering; analysis of periodic, transient, and random signals including power spectra and correlation functions; transmission of signals through linear systems, amplifiers, filters. Prerequisite: College algebra and calculus. Three class hours a week. Credit 3 units.
- 430. Audiometry and Hearing Aids. (Audiology I).** Hirsh, Shore  
 Principles and practice of tests of auditory functions; pure tones and speech audiometry; diagnostic and prognostic significance of tests; clinical selection of hearing aids for children and adults. Two class hours a week and practicum. Credit 3 units.
- 431-432. Hearing Evaluation and Diagnosis. (Audiology II and III).** Shore  
 Discussion and practice of the implementation of the tests of auditory function; principles and techniques of audiological assessment; selection of hearing aids; management of audiology clinic and its relation to the community. Two class hours a week and practicum. Credit 3 units each semester.
- 435. Audiology in Education. (Audiology IV).** Shore  
 The course will aim to relate audiology to education and rehabilitation of deaf and hard of hearing children and adults. Includes principles of audiometer, hearing tests, testing procedures, interpretation of test results, hearing aids—physical characteristics and what can and cannot be expected of them—audiological recommendations and reasons for them. There will be an opportunity to observe hearing evaluations of children and adults. Three class hours a week. Credit 3 units.
- 436. AURAL REHABILITATION (Audiology V).** Simmons  
 Presentation of systems of teaching lip-reading to children and adults; principles and methods of training in the use of residual hearing through amplifying devices. Demonstration and practice. Two class hours a week. Credit 2 units.
- 439. Language Development and Hearing Impairment.** Simmons and Staff  
 The course will describe language development stages of hearing and hearing-impaired children in order to develop a linguistic and aural curriculum for language teaching of children from infancy through primary. Four class hours a week. Credit 3 units.
- 441-442. Speech Pathology.** Wilson  
 Study of manifestations, causes and treatment of defects of speech and voice. Introduction to basic clinical techniques of evaluation and therapy. Lectures, reading, observation and practice. Three class hours a week. Credit 3 units.
- 444-445. Remedial Approaches to Language Disorders of Compound Origin.** Kleffner, Armbruster  
 Instructional methods and innovations for teaching speech and language to children for whom the learning of language has been delayed or frustrated beyond social, auditory or intellectual potential. Lectures, demonstrations, supervised practice. Four class hours a week. Credit 3 units.
- 446. Stuttering (Proposed 1968-69)**  
 Study of the manifestations, causes and clinical management of stuttering in children and adults. Prerequisite 441-442 or equivalent. Lectures, reading observations and practice. Three class hours a week. Credit 3 units.
- 447. Voice Disorders (Proposed 1968-69)**  
 Study of the manifestations, causes and clinical management of disorders of voice production in children and adults. Prerequisite 441-442 or equivalent. Lectures, reading, observation and practice. Three class hours a week. Credit 3 units.
- 451-452. Language for the Deaf.** Woodward  
 Principles and methods of developing language competence in deaf children with emphasis on stages of development and appropriate teaching sequences. Four class hours a week. Credit 3 units.
- 453-454. School Curricula for the Deaf.** Simmons, Woodward  
 Principles and methods of teaching reading and school subject matter to deaf children; demonstration and observation. Four class hours a week. Credit 3 units each semester.

- 456. Early Education of Young Hearing Handicapped Children.** Simmons  
An examination of instructional materials, learning experiences, language needs and counseling procedures appropriate to the education of parents and their young child. An analysis of pre-nursery and nursery practices based upon the child's developmental needs. Opportunities provided for observation and laboratory experience. Four class hours a week. Credit 3 units.
- 458-459. Phonetics and Speech for the Deaf.** Silverman  
Systems of orthography; including International Phonetic Alphabet; study of factors influencing intelligibility of speech of hearing-impaired children; development of speech in hearing-impaired children through the multisensory approach; demonstrations and practice. Three class hours a week. Credit 3 units each semester.
- 501. Seminar in Physiology of Hearing.** Davis, Eldredge  
Experimental and theoretical issues in auditory physiology. Particular topics change from year to year. Three class hours a week. Credit 3 units.
- 502-503. Independent Work in Auditory Physiology.** Staff  
Credit to be arranged.
- 511. Seminar in Hearing.** Hirsh, Miller, Elliott  
Discussion of topics, selected year by year, in hearing, auditory perception and speech perception. Three class hours a week. Credit 3 units.
- 512. Sound and Behavior.** Miller  
Relation of sound to the behavior of organisms throughout the phylogenetic scale. Observational and experimental studies are considered in addition to relevant anatomical and physiological data. Lecture and seminar format combined. Prerequisite: Speech and Hearing 414. Three class hours a week. Credit 3 units.
- 513-514. Independent Work in Psychoacoustics.** Staff  
Credit to be arranged.
- 521. Independent Work in Electroacoustics.** Niemoeller  
Credit to be arranged.
- 530. Seminar in Clinical Audiology.** Shore, Silverman  
Three class hours a week. Credit 3 units.
- 540. Disorders of Articulation.** Wilson  
Study of the nature, causes and remedial approaches for disorders of articulation. Lectures, reading, observation and practice. Three class hours a week. Credit 3 units.
- 541. Aphasia and Related Disorders of Communication.** Kleffner  
Survey of historical and contemporary literature dealing with disorders of communication associated with neuropathologies. Study of evaluative tests, systems of classification, therapy. Topical emphasis changes from year to year. Three class hours a week. Credit 3 units.
- 550. Seminar in Psychology of Deaf and Speech Handicapped.** Lane  
Discussion of the effect of deafness on behavior of children, on their educational achievement, on personality development; problems of adjustment to a hearing environment in school and vocational placement, counseling and guidance. Three class hours a week. Credit 3 units.
- 551-552. Readings in Speech and Hearing.** Silverman  
Critical discussion of professional periodicals and current books dealing with speech and hearing disorders and related fields. One and one-half class hours a week. Credit 1 unit.
- 553. Curriculum Development and Supervision in the Education of the Deaf.** Woodward  
Analysis of selected subject areas in the education of deaf children and consideration of appropriate teaching sequences and materials. Three class hours a week. Credit 3 units.
- 560. Independent Work in Speech and Hearing Disorders.** Staff  
Credit to be arranged.  
Not all of the above courses are offered annually. Course offerings will depend on demand. The department reserves the right to cancel courses.

ADVISORY BOARD

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Marion E. Bunch, Ph.D.....Professor of Psychology
Joseph H. Ogura, M.D. ....Professor of Otolaryngology
S. Richard Silverman, Ph.D., D.Litt., L.H.D, L.L.D. ....Director
Helen S. Lane, Ph.D. ....Principal

ADMINISTRATIVE OFFICERS

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S. Richard Silverman, Ph.D., D.Litt., L.H.D., L.L.D.
Director of Central Institute
Helen S. Lane, Ph.D.....Principal of Central Institute

FACULTY

Virginia Armbruster, M.A.....Lecturer in Speech Pathology
William S. Brandhorst, D.D.S., M.S.....Lecturer in Clinical Orthodontics
(Visiting)
Dorothy Britton, M.A.....Lecturer in Speech Pathology
Jerome R. Cox, Sc.D.....Professor of Electrical Engineering (Visiting)
Harold Cutler, M.D.....Instructor in Clinical Otolaryngology
Hallowell Davis, M.D., Sc.D. .... Lecturer in Physiology and in
Otolaryngology
Donald Eldredge, M.D.....Research Professor of Otolaryngology,
Lecturer in Physics of Sound
Lois L. Elliott, Ph.D.....Associate Professor of Psychology
Ira J. Hirsh, Ph.D.....Research Associate in Audiology,
Professor of Psychology
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Helen S. Lane, Ph.D.....Professor of Education
James D. Miller, Ph.D. .... Associate Professor of Psychology
Arthur F. Niemoeller, Sc.D. Associate Professor of Electrical Engineering
L. Woodrow O'Brien, D.D.S.....Associate Professor of Clinical Prosthesis
(Visiting)
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Audrey Ann Simmons, Ed.D. .... Associate Professor of Education
of the Deaf
May Templeman, B.S. ....Lecturer in Pre-School Methods
Chas. S. Watson, Ph.D. .... Research Associate in Psychology
Frank B. Wilson, Ph.D. .... Assistant Professor of Speech Pathology
Helen M. E. Woodward, M.A. .... Instructor in Education of the Deaf

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Laurel Wilson .....Assistant to the Registrar
Katherine Blinn .....Residence Hall Counselor

## CALENDAR

Classes for the first semester usually commence the latter part of September.

There are extended recesses for Christmas and Easter.

The following legal holidays are observed: Thanksgiving, Washington's Birthday and Memorial Day.

The school year is usually concluded during the early part of June.

A detailed calendar is posted at the beginning of each semester.

There are no mid-year admissions. Students must enter in the fall.

All inquiries should be addressed to:

REGISTRAR  
CENTRAL INSTITUTE FOR THE DEAF  
818 S. Euclid  
St. Louis, Missouri 63110