

3:185 Hearing Loss & Audiometry

Fall, 2009

3:30 - 4:50 Tuesday & Thursday
Rm 308 WJSHC

Instructor: Shawn S. Goodman, Ph.D., CCC-A
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Office Hrs: MWF 4-5 pm or by appointment

TA:

Department: Communication Sciences & Disorders
119 SHC
335-8718 (Paul Abbas, Chair)
College of Liberal Arts and Sciences

Course Objectives

Students will learn basic principles of testing and diagnosing hearing loss, become familiar with instrumentation commonly used in Audiology, and perform and interpret the tests in a basic audiometric battery. This course is primarily geared toward upper level undergraduate students majoring in Speech and Hearing Science.

For students who choose to pursue a master's degree in speech-language pathology, this course will partially fulfill the requirements for six semester hours of course work in audiology necessary for ASHA certification.

For students who choose to pursue an AuD degree in audiology, this course will be the first in a series of courses and is designed to teach the essentials of audiology. After completing this course, you should be ready to begin your first practicum experience in audiology.

For students who have not yet made the choice between speech-language pathology and audiology, this course will give you an insight into the nature of work done by a clinical audiologist.

Texts

Required Text: There is no required text for this class.

Supplementary Reading (not required): *Introduction to Audiology (10th edition)* by Frederick N. Martin and John Greer Clark. Published by Pearson, copyright 2009. ISBN 0-10-205-59311-9.

Course Format

Tuesdays and Thursdays will be a lecture-style format. There will be several required labs spread over the course of the semester. During these labs, students will practice administering and interpreting hearing tests. Students will sign up for a lab time during the first week of school. Labs will not be held every week, but on weeks that labs are scheduled, students will be expected to attend during their chosen lab time. Announcements regarding labs will be made in class and posted on ICON. The available lab times are shown below:

TA: Sterling Sheffield

Tuesday: 10:00 a.m. – 11:00 a.m.
 11:00 a.m. – 12:00 p.m.
 2:15 p.m. – 3:15 p.m.
 Thursday: 10:00 a.m. – 11:00 a.m.
 11:00 a.m. – 12:00 p.m.
 4:50 p.m. – 5:50 p.m.
 Friday: 2:00 p.m. – 3:00 p.m.

TA: Ian Mertes

Tuesday: 4:50 p.m. – 5:50 p.m.
 Wednesday: 9:00 a.m. – 10:00 a.m.
 10:00 a.m. – 11:00 a.m.
 11:00 a.m. – 12:00 p.m.
 Thursday: 2:15 p.m. – 3:15 p.m.
 Friday: 10:30 a.m. – 11:30 a.m.
 1:00 p.m. – 2:00 p.m.

Because the labs are “hands-on”, requiring specialized equipment and TA supervision, lab sizes will be limited to approximately 6 students. Sign-up sheets will be passed around the first day of class, and you will be asked to indicate your top three choices for lab times. Based on this input, I will assign you a lab time.

Homework Expectations

The general policy of the University of Iowa and the Department of Communication Sciences and Disorders is that for each semester hour of credit that a course carries, students should expect to spend approximately two hours per week outside of class preparing for class sessions. This is a three credit hour course, and course assignments have been designed to require six hours per week in out-of-class preparation.

Homework is due on its assigned due date. **Late assignments will NOT be accepted.**

Grades

The plus/minus system of grading as described by the College of Liberal Arts and Sciences will be used. Grades will be given based on performance on homework, labs, two midterms, and a comprehensive final exam. Grades will be kept current and posted on ICON. Student performance in these areas will count towards the final grade as follows:

- 15% Homework
- 10% Labs
- 20% Midterm Exam 1
- 20% Midterm Exam 2.
- 35% Comprehensive Final Exam.

Attendance Policy

Students are expected to attend each scheduled class and laboratory. If absent from lectures, the student is responsible for obtaining materials and information provided during the class period and for arranging to make up any examinations that may have been missed. If absent from labs, the student is responsible for making arrangements with the TA to make up the work that was missed. Makeup exams and labs may not be the same as the original. **NOTE: makeup exams and labs will only be given for documented, excused absences. (See University policy below.)**

The University policy requires that students be permitted to make up examinations missed because of illness, mandatory religious obligations, certain University activities, or unavoidable circumstances. However, it is the student's responsibility to contact the instructor as soon as the student is aware that the exam will be missed.

(http://www.clas.uiowa.edu/students/academic_handbook/viii.shtml). University policy also requires excused absences to be documented. Excused absence forms are available at the Registrar web site: <http://www.registrar.uiowa.edu/forms/absence.pdf>

Tentative Outline

PART I ELEMENTS OF AUDIOLOGY

Week 1 **Ch 1. The Profession of Audiology**
 Aug 25 The evolution of audiology, licensing & certification, prevalence & impact of hearing loss, audiology specialties, employment settings, professional societies

Aug 27 **Ch 2. The Human Ear and Simple Tests of Hearing**
 Anatomy & physiology of the ear, pathways of sound, types of hearing loss, hearing tests, tuning-fork tests

HOMEWORK #1 Audiology Scope of Practice & Ethics

Week 2 **Ch 3. Sound and Its Measurement**
 Sept 1 Sound, waves, vibrations, frequency, resonance, velocity, wavelength,
 Sept 3 phase, complex sounds, intensity, decibels, psychoacoustics, impedance, sound measurement, calibration.

HOMEWORK #2 Decibels, Audiometric Calibration, Acoustics

Week 3 **Case History & Otoscopy**
 Sept 8 Case history, using an otoscope, images of pinna
 Sept 10 images of ear canal and ear drum, cerumen management

LAB #1 Case History and Otoscopy

PART II HEARING ASSESSMENT

Week 4 **Ch 4. Pure-Tone Audiometry**
 Sept 15 Audiometers, test environment, patient's role, clinician's role, air-
 Sept 17 conduction, bone-conduction, audiogram interpretation, masking

Week 5 **Ch 4. Pure-Tone Audiometry—Continued**
 Sept 22 Pure-tone audiometry training software

HOMEWORK #3 Audiometer Training Software

Sept 24 **Ch 5. Speech Audiometry**
 speech-threshold testing, masking for SRT, bone-conduction testing, most comfortable loudness level, uncomfortable loudness level, speech

Week 6

Sept 29 MIDTERM 1
 Oct 1 Discussion of Midterm 1

LAB #2 Pure-Tone Audiometry and Speech Audiometry

Week 7 Ch 6. Beyond Basic Audiometrics

Oct 6 Acoustic immittance, tympanometry
 Oct 8 Acoustic reflexes, acoustic reflex decay

LAB #3 Tympanometry, Acoustic Reflex, & Reflex Decay

Week 8 Ch 6. Continued

Oct 13 Otoacoustic emissions
 Oct 15 Auditory evoked potentials

Week 9 Ch 7. Hearing Tests for Children

Oct 20 Auditory responses, objective testing, behavioral testing, infants < 3
 Oct 22 months, 3 months – 2 years, 2 – 5 years, language disorders, auditory
 processing disorders, psychological disorders, developmental disabilities,
 hearing loss in the schools, nonorganic hearing loss in children

PART III HEARING DISORDERS

Week 9 Ch 8. The Outer Ear

Oct 20 Anatomy & physiology, development, hearing loss, disorders and
 Oct 22 treatment

Week 10 Ch 9. The Middle Ear

Oct 27 Anatomy & physiology, development, hearing loss, disorders and
 Oct 29 treatment

Week 11 Ch 10. The Inner Ear

Nov 3 MIDTERM 2
 Nov 5 Anatomy & physiology, development, hearing loss, disorders and causes

Week 12 Ch 11. The Auditory Nerve and Central Auditory Pathways

Nov 10 Cochlear to cortex, development, auditory pathways, hearing loss,
 Nov 12 disorders of nerve, disorders of nuclei, disorders of higher pathways, tests

Week 13 Ch 12. Nonorganic Hearing Loss

Nov 17 Terminology, patient characteristics, implications, performance on routine
 Nov 19 hearing tests, tests for nonorganic loss, management of patients with

Nov 21 - Nov 30 THANKSGIVING RECESS

PART IV MANAGEMENT OF HEARING LOSS

Week 14 Ch 13. Amplification / Sensory Systems

Dec 1 Hearing aid development, HA circuits, electroacoustics, binaural
 Dec 3 amplification, types of HAs, HA selection for adults and children, HA
 acceptance and orientation, dispensing HAs, assistive devices

Week 15 Ch 14. Audiologic Treatment

Dec 8 Case histories, referral to other specialties, counseling, management of
 Dec 10 adult hearing impairment, management of childhood hearing impairment,
 the Deaf community, management of auditory processing disorders,
 tinnitus, hyperacusis, vestibular rehab, multicultural considerations,
 evidence-based practice, outcome measures

Week 16 Final Exam Week

Dec 14 – Dec 18 FINAL EXAM WEEK
 Dec 15 (Tuesday) Final Exam, 12:00 P.M.

The College of Liberal Arts and Sciences Policy and Procedures

Administrative Home

The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall or see the Academic Handbook. www.clas.uiowa.edu/students/academic_handbook/index.shtml

Student Attendance

As specified in the University's Operation Manual, students are permitted to make up examinations missed because of illness, mandatory religious obligations, certain University activities, or unavoidable circumstances. Students who miss quizzes or assignment deadlines for other reasons will not be allowed to make them up.

Academic Fraud

Plagiarism and any other activities that result in a student presenting work that is not his or her own are academic fraud. Academic fraud is reported to the departmental DEO and then to the Associate Dean for Academic Programs and Services. See [Academic Fraud](http://www.clas.uiowa.edu/students/academic_handbook/ix.shtml) at www.clas.uiowa.edu/students/academic_handbook/ix.shtml for the complete policy.

Making a Suggestion or a Complaint

Students with a suggestion or complaint should first visit the instructor, then the course supervisor and the departmental DEO (Paul Abbas, 119 SHC, 319-335 -8733, paul-abbas@uiowa.edu). Complaints must be made within six months of the incident. www.clas.uiowa.edu/students/academic_handbook/ix.shtml#5

Accommodations for Disabilities

It is my responsibility as the instructor of this course to make reasonable accommodations for any student with physical, mental, or learning disabilities. I would like to hear from anyone who has a disability which may require seating modifications, testing accommodations, or accommodations of other class requirements, so that appropriate arrangements may be made. Please contact me during my office hours. A student seeking academic accommodations registers with Student Disability Services and meets with a SDS counselor who reviews documentation and determines eligibility for services. A student approved for accommodations should meet privately with the course instructor to discuss particular arrangements. Please visit [Student Disability Services](http://www.uiowa.edu/~sds/) at www.uiowa.edu/~sds/

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. Visit the sexual harassment [awareness site](http://www.sexualharassment.uiowa.edu/) at www.sexualharassment.uiowa.edu/ for definitions, assistance, and the full University policy.

Reacting Safely to Severe Weather

In severe weather, the class members should seek shelter in the innermost part of the building, if possible at the lowest level, staying clear of windows and free-standing expanses. The class will continue if possible when the event is over. (Operations Manual 16.14. i.)

Resources for students

Writing Center. 110 English-Philosophy Building, 335-0188, www.uiowa.edu/~writingc
Speaking Center. 12 English-Philosophy Building, 335-0205, www.uiowa.edu/~rhetoric/centers/speaking
Mathematics Tutorial Laboratory. 314 MacLean Hall, 335-0810, www.uiowa.edu/mathlab
 Tutor Referral Service. Campus Information Center, Iowa Memorial Union, 335-3055,
www.imu.uiowa.edu/cic/tutor_referral_service