



Course Syllabus
Hearing Aids I

HESP 700
Fall 2018

Learning Outcomes

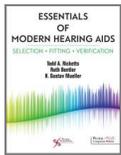
This course is the first of two graduate courses in the use of amplification devices for the treatment of hearing impairment. The courses are augmented by concurrent clinical education in rehabilitative audiology. At the end of the sequence, students will be prepared to independently perform the assessment, selection, fitting, verification, validation, adjustment, modification, counselling, and troubleshooting activities required for amplification-based rehabilitation. The focus of the present course is an introduction to the practical and theoretical bases of modern hearing aid technology in clinical use.

After successful completion of this course you will be able to:

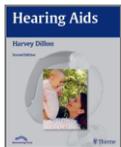
- Assess hearing aid candidacy based on objective and subjective measures.
- Fit and validate hearing aids using current software and device platforms.
- Understand the mathematical and psychoacoustical bases of amplification.
- Measure and evaluate the acoustics of amplification in idealized (coupler) and real-world (on-ear) settings.
- *See Knowledge and Skills below for a complete list of learning outcomes.*

Resources

Course website: elms.umd.edu



Essentials of Modern Hearing Aids **Required**
Selection, Fitting, and Verification
Ricketts, T. A., Bentler, R., & Mueller, H. G.
First edition (2019).
ISBN: [978-1-59756-853-1](https://www.amazon.com/dp/9781597568531)



Hearing Aids **Recommended**
Dillon, H.
Second edition (2012).
ISBN: [978-1-60406-810-8](https://www.amazon.com/dp/9781604068108)

Campus Policies

It is our shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like:

- Academic integrity
- Student and instructor conduct
- Accessibility and accommodations
- Attendance and excused absences
- Grades and appeals
- Copyright and intellectual property

Please visit www.ugst.umd.edu/courserelatedpolicies.html for the Office of Undergraduate Studies' full list of campus-wide policies and follow up with me if you have questions about how they apply to graduate students. These policies are superseded by this document, your CAUD program handbook, and any relevant policies of the Department of the Hearing and Speech, the College of Behavioral and Social Sciences, and the Graduate School.

Eric C. Hoover,
Ph.D.

ehoover@umd.edu

Class Meets

Tuesdays
5:00pm - 7:30pm
LeFrak Hall 0104

Office Hours

LeFrak Hall 0119E
Wednesdays
9:30am - 11:30am
and by appointment

Course Communication

Subscribe to course announcements via ELMS. Students may contact the instructor via ELMS or email to discuss questions, absences, or accommodations. Consider the following helpful guidance on writing professional emails (ter.ps/email).

Activities, Learning Assessments, & Expectations for Students

The format of the course is a combination of lecture and laboratory instruction. PowerPoint slides will be available on the course website prior to each meeting. The content of the lectures is a combination of material from the required text and additional sources available through the University of Maryland library or the course website. Laboratory instruction will take place both in the scheduled meeting room and in the audiology clinic in LeFrak Hall. Laboratory instruction will occur during the second half of the scheduled meeting time on the dates listed in the course calendar.

Prior to each class meeting, students are strongly encouraged to read the material listed on the course calendar for that meeting. Students are also strongly encouraged to review the material from the previous week prior to each meeting. A review of the material from the previous week, possibly including an unannounced, no-credit quiz, will occur prior to each lecture. The purpose of the review is to reinforce learning and to provide a mechanism for communicating expectations and competency prior to the exams.

Student grades will be based on a combination of **laboratory assignments, evidence-based practice report and presentation, and three exams**. See the table below for a breakdown of relative weighting and details of the grading policy. In addition to graded assignments and exams, students are expected to achieve mastery of the software and devices used in the course. This includes the assembly and insertion of all styles of hearing aids, connection to the fitting computer through all available interfaces, NOAH and all recent manufacturer fitting software, and hearing aid verification systems. Mastery should be achieved by locating and reading the manuals for each system, practicing the use of each system and all its available features, and disassembling and reassembling all components and connections. You will be guided through the development of this mastery by completing the laboratory assignments, however it is up to you to practice the skills needed to complete the laboratory assignments with the different systems available in the clinic to the point of mastery. Mastery in this context will be achieved when, asked by the clinical faculty or an audiologist at an outside placement to perform any of the tasks associated with hearing aid fitting, you are able to do so immediately without referring to notes or manuals, without any trial-and-error hunting for cables, buttons, menus, etc., and in the most efficient and effective of available methods.

Laboratory Assignments

A total of six laboratory assignments will be assigned following an in-class demonstration of the techniques required to complete the assignment. Each assignment consists of an activity that must be completed by following step-by-step instructions. Students are encouraged to work together and to seek the assistance of clinical faculty and AuD students in their second year, if available. However, each student must turn in an independent laboratory report for grading. The details of the laboratory assignments and reports will be provided when each laboratory is assigned (see calendar). Laboratory reports submitted by the assigned deadline (see calendar) will be scored and returned to the student with feedback in a timely manner. For reports that do not receive a satisfactory score, students will have the ability to revise and resubmit the report once for up to 90% of available credit. Reports submitted after the deadline will be scored but may not be returned with feedback and revisions will not be accepted. In other words, the penalty for late assignments is that you forfeit the ability to receive and respond to feedback. The final deadline to receive credit for completing the laboratory assignments is the date of the final exam.

Evidence-Based Practice Report & Presentation

A written report and in-class presentation will be completed by each student on the state of the scientific evidence for a specific topic in the scope of device-based hearing rehabilitation. Students will select a topic from a provided list of available topics; additional topics may be accepted upon request. The goal of the assignment is to make each student an expert on the literature supporting their topic, and for the students to share their knowledge with their

classmates. After the presentations, all students will have a broad understanding of the state of the evidence as well as a knowledgeable member of their cohort to consult on each topic in the future. Due to the importance of the co-teaching aspect of this assignment, students will be expected to achieve a high level of expertise in their topic and demonstrate this expertise both in the written report and presentation. Feedback on the report will be provided prior to the presentation to help ensure that material presented to the class is accurate. Each student is expected to complete their own report and presentation.

The report will consist of a detailed description of the current best-practice guidelines for the selected topic, and an annotated bibliography of at least five peer-reviewed manuscripts including a complete citation, summary, and critical evaluation of the quality of the evidence supporting the conclusions in each. The reports must be completed by the assigned deadline (see calendar). Reports will be critically evaluated and scored, and students will have the ability to revise and resubmit the reports by the date of the final exam for up to 90% of available credit.

Presentations will consist of a description of best-practice guidelines for the selected topic and a brief overview of the relevant scientific literature. Fifteen minutes of class time will be provided for each presentation, including up to three minutes for questions, during which time at least one question will be asked with time provided for a response. Presentations that exceed the time limit will be cut off, but time will be allowed for a question. Students will be graded based on content, delivery, and response to questions.

A topic list, detailed instructions, and grading criteria for both the report and presentation will be provided in class. See the grade weighting below.

Exams

Three exams will be administered throughout the course on the dates listed on the calendar. Each exam will focus on the material covered since the previous exam, but they will be considered “comprehensive” and may contain content from the entirety of the course. The exams will include material from the assigned readings, lectures, laboratory demonstrations, and laboratory assignments. The third exam will also include content presented by classmates during the evidence-based practice presentations. Each exam will last approximately one hour and contribute equally to the exam portion of the grade; see the weighting below.

Course-Specific Policies

Please refrain from using smartphones and related communication technology during class. If you have critical communication to attend to, please excuse yourself and return when you are ready. I expect you to maintain a high level of respect for myself and your fellow classmates in your use of digital technology, and refrain from all non-essential activities during class including visiting websites for news, social media, shopping, or searching for information that is not directly related to the current course discussion.

Attendance is expected for the entirety of each course meeting. No accommodations will be made for unexcused absences or class time missed. Please inform me of an excused absence in a timely manner so that we can make a reasonable plan to accommodate your absence.

Grades

Grades are not given, but earned. Your grade is determined by your performance on the learning assessments in the course and is assigned individually (not curved). If earning a particular grade is important to you, please speak with me at the beginning of the semester so that I can offer some helpful suggestions for achieving your goal.

All assessment scores will be posted on the course ELMS page. If you would like to review any of your grades (including the exams), or have questions about how something was scored, please email me to schedule a time for us to meet in my office.

Late work will not be accepted for course credit except where specified above. I am happy to discuss any of your grades with you, and if I have made a mistake I will immediately correct it. Any formal grade disputes must be submitted in writing and within one week of receiving the grade.

Learning Assessments	#	Points Each	Category Total	Category Weight
Pop-quizzes	??	0	0	0%
Laboratory Assignments	6	20	120	33.3%
Evidence-Based Practice Report	1	40	40	11.1%
Evidence-Based Practice Presentation	1	20	20	5.6%
Exams	3	60	180	50.0%
Total Points:			360	

Final letter grades are assigned based on the percentage of total assessment points earned.

Final Grade Cutoffs					
+	97.0%	+	87.0%	+	77.0%
A	94.0%	B	84.0%	C	74.0%
-	90.0%	-	80.0%	-	70.0%
		D	64.0%	F	<60.0%
		-	60.0%		

Course Schedule

CLASS MEETING	READING	TOPICS	DUE
Tuesday 8/28	Ch 1	Course overview Evidence-based practice	
Tuesday 9/4	Ch 3	Candidacy Demonstration: NOAH, software, & connections Lab 1: Documentation discovery	
Tuesday 9/11	Ch 5	Frequency-specific measures	
Tuesday 9/18	Ch 8a	Hearing Aid Styles I Demonstration: Hands-on hearing aids Lab 2: First fit	Lab 1
Tuesday 9/25	Ch 10a	Exam #1 Hearing aid components	
Tuesday 10/2	Ch 13	Test box measures Demonstration: Coupler measures Lab 3: Intake check	Lab 2
Tuesday 10/9	Ch 7	Self-assessment scales	
Tuesday 10/16	Ch 10b	Compression I: Theory Demonstration: Manipulating compression	Lab 3
Tuesday 10/23	Ch10b	Compression II: Practice Demonstration: Measuring compression Lab 4: Dynamic range	

Tuesday	10/30	Ch 14a	Exam #2 Fitting I: Theory	
Tuesday	11/6	Ch 14b	Fitting II: Practice Demonstration: Patient profiles Lab 5: Audibility	Lab 4
Thursday	11/15	Ch 16	Real ear I: Theory Demonstration: Real-ear signals	Evidence-based practice report
Tuesday	11/20	Ch 17a	Real ear II: Practice Demonstration: Real-ear validation Lab 6: Fit-to-target	Lab 5
Tuesday	11/27	Ch 9	Earmold acoustics Demonstration: Passive acoustics	
Tuesday	12/4	-	Presentations	Lab 6
Tuesday	12/11	-	Reading day (<i>no class meeting</i>)	
Monday	12/17	-	Exam #3	Final deadline for credit

Note: This is a tentative schedule, and subject to change as necessary – monitor the course ELMS page for current deadlines. Details about chapter sections assigned to ‘a’ and ‘b’ portions will be determined based on material covered in class for exam purposes; please read all of the listed chapter prior to class. Additional recommended readings will be posted to the course ELMS page. In the unlikely event of a prolonged university closing, or an extended absence from the university, adjustments to the course schedule, deadlines, and assignments will be made based on the duration of the closing and the specific dates missed.

Knowledge and Skills for Audiology (KASA)

3.1.1A PROFESSIONAL PRACTICE COMPETENCIES

- Clinical Reasoning
- Evidence-Based Practice
- Effects of hearing loss on the speech and language characteristics of individuals across the life span and the continuum of care

3.1.2A FOUNDATIONS OF AUDIOLOGY PRACTICE

- Effects of hearing impairment on educational, vocational, social, and psychological function and, consequently, on full and active participation in life activities
- Physical characteristics and measurement of simply and complex acoustic stimuli
- Methods of biologic, acoustic, and electroacoustic calibration of clinical equipment to ensure compliance with current American National Standards Institute (ANSI) standards (where available) and other recommendations regarding equipment function
- Principles of psychoacoustics as related to auditory perception in individuals with normal hearing and those with hearing loss

3.1.3A IDENTIFICATION AND PREVENTION OF HEARING LOSS, TINNITUS, AND VESTIBULAR DISORDERS

- Applying the principles of evidence-based practice
- Selection and use of outcomes measures that are valid and reliable indicators of success of prevention programs

3.1.4A ASSESSMENT OF THE STRUCTURE AND FUNCTION OF THE AUDITORY AND VESTIBULAR SYSTEMS

- Evaluate information from appropriate sources to facilitate assessment planning
- Obtain a case history
- Perform an otoscopic examination
- Perform audiologic assessment using techniques that are representative of the challenges listeners may face in everyday communication situations
- Perform assessment to plan for rehabilitation
- Perform assessment to characterize tinnitus
- Document evaluation procedures and results
- Interpret results of the evaluation to establish type and severity of disorder
- Generate recommendations and referrals resulting from the evaluation processes
- Provide counseling in a culturally sensitive manner to facilitate understanding of the hearing loss, tinnitus, or balance disorder of the individual being served
- Maintain records in a manner consistent with legal and professional standards
- Communicate results and recommendations orally and in writing to the individual being served and other appropriate individual(s)
- Assign the correct Common Procedural Terminology (CPT) code(s) and the correct International Classification of Diseases (ICD) code(s)
- Apply the principles of evidence-based practice
- Select and use outcomes measures that are valid and reliable indicators of success in assessment protocols that are used

3.1.5A ASSESSMENT OF THE IMPACT OF CHANGES IN THE STRUCTURE AND FUNCTION OF THE AUDITORY AND VESTIBULAR SYSTEMS

- Administer clinically appropriate and culturally sensitive self-assessment measures for communication function for individuals across the lifespan and the continuum of care
- Determine contextual factors that may facilitate or impede an individual's participation in everyday life
- Select and use outcomes measures that are valid and reliable indicators of success in determining the impact of changes in structure and function of the auditory and vestibular systems

3.1.6A INTERVENTION TO MINIMIZE THE EFFECTS OF CHANGES IN THE AUDITORY AND VESTIBULAR SYSTEMS ON AN INDIVIDUAL'S ABILITY TO PARTICIPATE IN HIS OR HER ENVIRONMENT

- Develop culturally sensitive and age-appropriate management strategies
- Perform hearing aid, assistive listening device, and sensory aid assessment
- Perform assessment of device used to manage tinnitus
- Recommend, dispense, and service prosthetic and assistive devices
- Provide hearing aid, assistive listening device, and sensory aid orientation
- Serve as an advocate for individuals served, their families, and other appropriate individuals
- Monitor and summarize treatment progress and outcomes
- Assess efficacy of interventions for auditory, tinnitus, and balance disorders
- Apply the principles of evidence-based practice
- Document treatment procedures and results
- Communicate results, recommendations, and progress in a culturally sensitive and age-appropriate manner to appropriate individual(s)
- Select and use outcomes measures that are valid and reliable indicators of success in determining the impact of the interventions used to minimize the effects of changes in structure and function of the auditory and vestibular systems