



Course Syllabus

# Advanced Clinical Audiology

**HESP 706**  
Spring 2017

Instructor: Samira Anderson, Au.D., Ph.D.  
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Meeting Time: Wednesdays, 3:30 – 6:00 PM  
Meeting Location: Lefrak Hall, Room 0135  
Prerequisites: HESP 606

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Office: 0119B  
Office Hours: by  
appointment

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## **Learner Outcomes**

This course covers advanced clinical and experimental methods for evaluation of the peripheral and central auditory systems, including procedural considerations and interpretation of test results. After completing this course, you will be able to:

1. Demonstrate the ability to administer, interpret, and report the results of advanced audiological evaluations that incorporate advanced immittance measures, otoacoustic emissions testing, auditory processing evaluations, tinnitus evaluations, and tests of non-organic hearing loss.
2. Demonstrate knowledge of the underlying physiological mechanisms contributing to auditory disorders and the ability to communicate this information to patients and other professionals in everyday language.
3. Critically evaluate new research that aims to improve diagnosis and management of auditory disorders.

## **REQUIRED READINGS**

### **Required Texts:**

Dhar, S. and Hall, J.W. (2012). *Otoacoustic Emissions: Principles, Procedures, and Protocols*. San Diego: Plural Publishing.

Katz, J. (2015). *Handbook of Clinical Audiology, 7<sup>th</sup> Edition*. Philadelphia: Lippincott Williams & Wilcott.

### **Recommended Texts:**

Musiek, F. and Chermak, G. (2013) *Handbook of Central Auditory Processing Disorder, Volume I: Auditory Neuroscience and Diagnosis, 2<sup>nd</sup>. Edition*. San Diego: Plural Publishing.

Musiek, F. and Chermak, G. (2013) *Handbook of Central Auditory Processing Disorder, Volume II: Comprehensive Intervention, 2<sup>nd</sup>. Edition*. San Diego: Plural Publishing.

Hunter, L. and Shahnaz, N. (2013) *Acoustic Immittance Measures: Basic and Advanced Practice*. San Diego: Plural Publishing.

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## **Course Schedule**

## Module 1 - Auditory Processing Disorders

January 25	Introduction; Class expectations; APD: Normal development, neural mechanisms of dysfunction
In-class activities	Class introductions Lecture
Outside activities	Quiz 1 Readings: <ol style="list-style-type: none"> <li>1. Katz, Text, Chapters 27-28</li> <li>2. *Sanes, D., &amp; Constantine-Paton, M. (1985)</li> <li>3. Kopp-Scheinflug, C., and Tempel, B. L. (2015)</li> </ol>
February 1	APD screening
In-class activities	Review questions Article review #1 Lecture
Outside activities	Readings: <ol style="list-style-type: none"> <li>1. *Ahmmed, A. U., and Ahmmed, A. A. (2016)</li> <li>2. *Del Zoppo, C., Sanchez, L., and Lind, C. (2015)</li> </ol>
February 8	APD evaluation
In-class activities	Review questions Article review #2 Lab 1 review Lecture
Outside activities	Quiz 2 Lab 1 Readings: <ol style="list-style-type: none"> <li>1. Katz, Text, Chapters 29</li> <li>2. *Moore, D. R., Ferguson, M. A., Edmondson-Jones, A. M., Ratib, S., and Riley, A. (2010)</li> <li>3. Saunders, G.H., Frederick, M.T., Arnold, M., Silverman, S., Chisolm, T.H., and Myers, P. (2015)</li> </ol>
February 15	APD differential diagnosis
In-class activities	Review questions APD debate Lecture
Outside activities	Quiz 3 Readings: <ol style="list-style-type: none"> <li>1. Katz, Text, Chapters 30</li> <li>1. Moore, D. R., and Ferguson, M. A. (2014)</li> <li>2. McFarland, D. J., and Cacace, A. T. (2014)</li> <li>3. *Gyldenkaerne, P., Dillon, H., Sharma, M., and Purdy, S. C. (2014)</li> <li>4. *Sharma, M., Purdy, S. C., and Kelly, A. S. (2009)</li> </ol>
February 22	APD management
In-class activities	Review questions APD counseling presentation Review for midterm Lecture
Outside activities	Readings: <ol style="list-style-type: none"> <li>1. Katz, Text, Chapters 30</li> <li>2. *Loo, J. H., Rosen, S., &amp; Bamiou, D. E. (2016)</li> <li>3. *Hornickel, J., Zecker, S. G., Bradlow, A. R., &amp; Kraus, N. (2012)</li> </ol>

March 1	<b>Midterm</b>
<b>Module 2 – Tinnitus; Non-organic Hearing Loss</b>	
March 8	Tinnitus: Neural mechanisms
In-class activities	Review midterm Lecture
Outside activities	Readings: <ol style="list-style-type: none"> <li>Henry, J. A., Roberts, L. E., Caspary, D. M., Theodoroff, S. M., &amp; Salvi, R. J. (2014)</li> <li>*Gu, J.W., Herrmann, B.S., Levine, R.A., and Melcher, J.R. (2012)</li> <li>*Engineer, N. D., Riley, J. R., Seale, J. D., Vrana, W. A., Shetake, J. A., Sudanagunta, S. P. et al. (2011)</li> <li>*Leaver, A.M., Renier, L., Chevillet, M.A., Morgan, S., Kim, H.J., and Rauschecker, J.P. (2011)</li> </ol>
March 15	Tinnitus: Assessment; Non-organic hearing loss
In-class activities	Review questions Tinnitus counseling presentation Lab 2 Review Lecture
Outside activities	Quiz 4 Lab 2 Readings: <ol style="list-style-type: none"> <li>*Cianfrone, G., Mazzei, F., Salviati, M., Turchetta, R., Orlando, M. P., Testugini, V., Carchiolo, L., Cianfrone, F., and Altissimi, G. (2015)</li> <li>*Meikle, M. B., Henry, J. A., Griest, S. E., Stewart, B. J., Abrams, H. B., McArdle, R. et al. (2012)</li> <li>Henry, J.A., Roberts, L.E., Ellingson, R.M., and Thielman, E.J. (2013)</li> <li>*Ioannis, P., Georgios, K., Alexandra, K., Dimitrios, D., &amp; Michael, T. (2009)</li> </ol>
<b>Module 3 – Otoacoustic emissions</b>	
March 22	Otoacoustic Emissions: Overview, anatomy and physiology
In-class activities	Review questions Lecture
Outside activities	Readings: <ol style="list-style-type: none"> <li>Dhar and Hall, Text, Chapters 1 and 2</li> <li>Kemp, D. T. (2002). Otoacoustic emissions, their origin in cochlear function, and use. <i>British Medical Bulletin</i>, 63, 223-241.</li> <li>*Abdala, C., &amp; Keefe, D. H. (2006)</li> </ol>
March 29	Otoacoustic Emissions: Classification, instrumentation, calibration
In-class activities	Review questions Lecture Lab 3 demo
Outside activities	Quiz 5 Lab 3 Readings: <ol style="list-style-type: none"> <li>Dhar and Hall, Text, Chapters 3 and 4</li> <li>Shera, C. A., &amp; John J. Guinan, J. (1999)</li> <li>*Reuven, M.L., Neely, S.T., Kopun, J.G., Rasetshwane, D.M., Allen, J.B., Tan, H., and Gorga, M.P. (2012)</li> </ol>
April 5	Otoacoustic Emissions: Clinical measurement and protocols
In-class activities	Review questions Article review #3 Lecture

Outside activities	Quiz 6 Readings: 1. Dhar and Hall, Text, Chapter 5 2. *Fitzgerald, T. S., & Prieve, B. A. (2005) 3. *Garner, C. A., Neely, S. T., & Gorga, M. P. (2008)
April 12	Otoacoustic Emissions: Clinical applications
In-class activities	Review questions Article review #4 Lecture
Outside activities	Readings: 1. Dhar and Hall, Text, Chapters 6-8 2. Botelho, C. T., Carvalho, S. A., and Silva, I. N. (2014)
April 19	Otoacoustic Emissions: Efferent measurement, future Directions
In-class activities	Review questions Article review #5 Lecture
Outside activities	Quiz 7 Readings: 1. Dhar and Hall, Text, Chapters 9-10 2. *Abdala, C., Dhar, S., Ahmadi, M., & Luo, P. (2014) 3. *De Boer, J., Thornton, A.R.D., and Krumbholz, K. (2012)
<b>Module 4 - Advanced Immittance Measures</b>	
April 26	Multifrequency tympanometry; Wideband reflectance
In-class activities	Review questions Article review #6 Lab 4 demo Lecture
Outside activities	Lab 4 Readings: 1. Katz, Text, Chapter 9, pp 149-161 2. Sugasawa, K., Iwasaki, S., Fujimoto, C., Kinoshita, M., Inoue, A., Egami, N., Ushio, M., Chihara, Y., and Yamasoba, T. (2013)
May 3	Wideband reflectance: Clinical applications
In-class activities	Review questions Objective measures counseling Lecture
Outside activities	Quiz 8 Readings: 1. Feeney, M. P., Keefe, D. H., Hunter, L. L., Fitzpatrick, D. F., Garinis, A. C., Putterman, D. B., and McMillan, G. P. (2016) 2. Hunter, L. L., Keefe, D. H., Feeney, M. P., Fitzpatrick, D. F., and Lin, L. (2015) 3. *Prieve, B.A., Feeney, M.P., Stenfelt, S., and Shahnaz, N. (2013). Prediction of conductive hearing loss using wideband acoustic immittance. <i>Ear and Hearing</i> , 34, 54S-59S
May 10	<b>Case studies and review</b>
May 17	<b>Final</b>

## Learning Assessments

- 1. Review Questions:** Students will post one question per week on class lecture material that reflects an important “take-home” message *or* will post one question on material that was unclear to students.
- 2. Practical Lab Exercises and Reports:** Students will complete practical lab assignments using appropriate assessment tools and will submit a report for each lab. See the course ELMS site for more specific information on these assignments, including due dates.
- 3. Counseling presentations:** Students will work in pairs to prepare a demonstration of a clinician-patient discussion regarding a specific case history that involves APD, tinnitus, and OAEs/Wideband reflectance. The demonstration will be presented in powerpoint form, using slides that could be presented in a flip-chart format. A grading rubric will be posted on ELMS.
- 4. Online Reading Quizzes:** Students are expected to be familiar with the assigned readings prior to coming to class. Each student will be required to complete 8 quizzes on the course ELMS site that cover lecture content and readings from the textbook and articles. These quizzes are “open-book” in that students have access to the text while taking the quiz. The students will have one week to complete the quiz. The quizzes are timed – but you will have 4 hours to complete it. Once you’ve started the quiz, you must finish it – you can’t go back to it later.
- 5. Article reviews:** Student will choose one article from the syllabus and will prepare and present powerpoint slides that summarize the article’s introduction, method, results (review each figure), and discussion. In addition, students will critique the article, suggest ways to improve the research, and propose a new research question. The presentation should not exceed 15 minutes. A grading rubric will be posted on ELMS.
- 6. Exams:** One midterm and final examination will be given. Exam questions will come from class lectures, quizzes, review questions, and assigned readings.

## Guidelines for Practical Lab Exercises & Reports

The lab exercises are designed to help you put into practice the concepts and procedures we cover in class. Handouts outlining instructions for the test procedures and reports can be obtained on the ELMS site.

### Lab Reports

You must follow all guidelines for written work listed in this syllabus. The typed portion of the lab report should be limited to one page or less. Electronic copies of all relevant printouts, graphs, tables or other raw data must be submitted online by the due date. Although you may consult your textbooks and other resources, including your classmates, as you work on each lab, please make sure your write-up is your own.

## Submission of Reports

Lab reports are by midnight on the dates indicated below. Three points will automatically be deducted from your lab grade for every day the report is late. The labs will cover the following topics:

Lab #1: Auditory Processing Evaluation	due February 17
Lab #2: Nonorganic Hearing Loss	due March 23
Lab #3: Otoacoustic Emissions Testing	due April 13
Lab #4: Advanced Immittance Measures	due April 27

## Questions/Difficulties

Please contact me as soon as possible if you have difficulties with or questions about a particular lab assignment, so that they can be resolved in plenty of time for you to complete the lab by the due date, and so that you have a better understanding the relevant concepts prior to exams.

Learning Assessments	#	Points Each	Category Total	Category Weight
Review Questions	16	2.5	40	7%
Labs	4	25	100	17%
Counseling presentations	1	25	25	4%
Quizzes	8	20	160	26%
Article review	1	25	25	4%
Midterm	1	100	100	17%
Final	1	150	150	25%
<b>Total Points:</b>			<b>600</b>	

Final Grade Cutoffs									
+	98.00%	+	88.00%	+	78.00%	+	68.00%		
A	94.00%	B	84.00%	C	74.00%	D	64.00%	F	<60.0%
-	90.00%	-	80.00%	-	70.00%	-	60.00%		

## 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 <http://apps.gradschool.umd.edu/Catalog/policy.php?the-academic-record> for the Graduate School's full list of campus-wide policies and follow up with me if you have questions.

### **Make-up Exams/Assignments**

If you are aware ahead of time that you will be absent on the day of an exam, you may schedule a make-up exam provided that (1) you have an approved University Acceptance (e.g., religious observance) and (2) I am notified in writing within the first two weeks of the semester. Assignments are expected to be submitted by the dates indicated on the syllabus or in advance of the due date if you anticipate being absent from class on the due date. You should inform me that you will be absent ahead of time to make arrangements to submit the assignment.

When the reason for an absence on the day of an exam or assignment is not foreseeable, you must inform me as soon as possible. Please make every effort to contact me by phone or by email prior to class if you will be absent due to illness or other emergency. Campus Senate policy requires students who are absent due to illness/injury to furnish documentary support to the instructor. You must provide written documentation verifying your illness/injury on the day that you return to class. You will not be allowed to turn in missed assignments or make up exams if you have not provided this documentation. In addition, if it is found that you have falsified the documentation provided, you will be referred to the University's Student Conduct Office.

Make-up exams will be scheduled at a time that is mutually agreeable to both the instructor and the student. Assignments are due immediately by electronic submission if possible or upon the student's return to school. All missed exams and assignments not turned in will result in a grade of zero for that exam/assignment.

### **Problems/Questions**

Please do not hesitate to make an appointment to speak with me if you are having difficulty with the material or with an assignment, if you have questions about how something was graded, or if you have other problems or issues related to the course you wish to discuss. Email is an excellent way to reach me outside of course meetings.

## **Get Some Help!**

You are expected to take personal responsibility for your own learning. This includes acknowledging when your performance does not match your goals and doing something about it. Everyone can benefit from some expert guidance on time management, note taking, and exam preparation, so I encourage you to consider visiting <http://ter.ps/learn> and schedule an appointment with an academic coach. Sharpen your communication skills (and improve your grade) by visiting <http://ter.ps/writing> and schedule an appointment with the campus Writing Center. Finally, if you just need someone to talk to, visit <http://www.counseling.umd.edu>.



Everything is free because you have already paid for it, and **everyone needs help**... all you have to do is ask for it.

**FORMATIVE ASSESSMENTS**

Student \_\_\_\_\_

Semester: SPRING 2017

ASHA Standard

Method of Assessment (denoted by \*)

Verification of Assessment (denoted by ✓)

No.	Title	Exam questions	Project	Lab Assignments
A31	Understand the roles and responsibilities of health-care and related professionals with whom audiologists interact to successfully engage in collaborative practice			
B2	Patient characteristics and how they relate to clinical services	*	*	*
B4	Anatomy and physiology, pathophysiology and development of the auditory system	*	*	*
B9	Principles, methods and applications of psychoacoustics	*		*
B12	Infectious/contagious diseases and universal precautions			*
B15	Principles and practices of research, including experimental design, statistical methods, and application to clinical populations		*	
B20	Laws, regulations, policies and management practices relevant to the profession of audiology		*	*
C4	Screen individuals for hearing impairment and disability/handicap using clinically appropriate and culturally sensitive screening measures.	*	*	*
D7	Perform audiologic assessment using physiologic, psychophysical and self-assessment measures	*		*
D8	Perform electrodiagnostic test procedures	*		*
D11	Document evaluation procedures and results			*
D12	Interpret results of the evaluation to establish type and severity of disorder	*	*	*
D13	Generate recommendations and referrals resulting from the evaluation process	*		*
D15	Maintain records in a manner consistent with legal and professional standards			*

Instructor Signature: \_\_\_\_\_

Samira Anderson, Au.D., Ph.D.