The Auditory System
Bi 410/510 – Winter 2019

Lecture 2-2:50 pm MWF 225 Friendly Hall
Lab/Discussion Section 11-11:50 W 129 Huestis Hall

Instructor: Terry Takahashi
Office hrs: 1-2 pm MF & by appointment
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Office: 224A Huestis Hall
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Course materials:
Text (recommended) - The Sense of Hearing by Christopher J. Plack (Lawrence Earlbaum Associates, Mahwah ISBN 0-8058-4884-3)
Spreadsheet - Microsoft Excel (download from https://it.uoregon.edu/about-office-365)
DAW - Audacity v 2.1.2 (freeware download from http://www.audacityteam.org/)
Headphones (bring your own)

Hearing is the ability to use sound. This simple statement encompasses the abilities to map out our environment without sight, to be moved by music, and to communicate with one another. Helen Keller said, “Blindness separates people from things; deafness separates people from people.”, thus emphasizing the importance of hearing to human life.

This course is an introduction to the physiology and psychophysics of hearing. We will start with the physics of sound and its analysis, and proceed into the auditory system starting at the periphery, with emphasis on the neural mechanism of auditory perception. Although most of the topics will be based on the normal function of the human auditory system, as time allows, I will introduce topics of clinical interest and the question of what it means to be deaf in a species, such as humans, where vocal communication is paramount. We will also study active echolocation in bats and time-allowing, acoustically guided navigation in blind humans.

The lectures are accompanied by discussion sections in which students will explore the synthesis and analysis of sounds, discuss the primary literature, and explore the deafness culture.

Your grade is based on an average of the scores of a set of assignments, a midterm exam, and a non-cumulative final all equally weighted. The questions will be of the short-answer and multiple-choice types. Materials covered in lecture, readings, and discussions will be covered in the tests. To be successful in this class, you must keep up with the material. If you have any questions, ask immediately. The grading scale is as follows:

A 100 - 90
B 89 - 80
C 79 - 70
D 69 - 60
F < 59

The exam dates on the schedule are approximate and should not be used to plan trips etc that will cause you to miss class. Exams must be taken at the time and place scheduled. There are no early or make-up exams, except in the case of a medical emergency.

1. Learning Outcomes: If you passed this course, you should be able to explain basic acoustics, auditory transduction and processing, and the neural mechanisms of some aspects of auditory perception.

2. The University of Oregon is working to create an inclusive learning environment. Please notify me, within the first 2 weeks of class, if you have a disability that could impede your learning experience in this class. Please contact Disability Services for further information (164 Oregon Hall; 6-1155 or disabserv@uoregon.edu). I will work with you and Disabilities Services to help facilitate your learning experience.
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**Journal Articles** (Available on Canvas)


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**Other Resources**

Houtsma AJM, Rossing TD, Wagenaars WM 1987 *ASA Auditory Demonstrations*, Philips

Geisler CD 1998 *From Sound to Synapse*, Oxford Press, NY

Hartman WM *Signals, Sound, and Sensation*, Springer NY


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