Course: CSD 850 Hearing Science I: Basic Acoustics and Psychoacoustics
Fall term 2017

This course covers physical aspects of sound, anatomy and physiology of the auditory system, and basic concepts in psychoacoustics.

Schedule
Time: Mondays and Wednesdays 9-10:15 AM (except Monday the 18th of Sep 2017 – see table below)
Location: Goodnight hall Rm 412

Instructor
Name: Viji Easwar, PhD, MSc Audiology
Email: veaswar@wisc.edu **(**Please include "CSD 850" in the subject line of emails)
Office hours: Mondays 1 – 2:30 PM and Wednesdays 10:30 AM – 12 PM
Office location: Room 475, Goodnight Hall, 1975 Willow Dr, Madison, WI 53706

Required texts
1. Moore, B.C.J. (2012) An Introduction to the Psychology of Hearing. 6th Edition. Emerald press: Bingley. ISBN: 9004252428
2. Schnupp, J., Nelken, I., & King, A.J. (2011) Auditory Neuroscience – Making sense of sound. MIT Press: Cambridge. ISBN: 9780262113182

Course webpage
Access through https://canvas.wisc.edu/
All course materials (lectures, assignments) will be available on canvas. It is your responsibility to check for updates. Lectures slides will be made available at least 2 hours before class.

Course Objectives
Upon successful completion of this course, students will be able to
- Describe physical aspects of sound as it pertains to auditory perception
- Explain the role of the peripheral and central auditory pathway in sound perception
- Explain key psychological concepts in sound processing involved in human communication
- Describe the consequences of hearing loss and the use of prosthesis on perception

Objectives for each topic in calendar below
Answer the following questions:
a) Why is this important for an audiologist to understand this topic?
b) How will knowing this information improve my clinical practice?
c) If I do not understand this topic, what kind of mistakes would I likely make when treating my patients?

Calendar

Week	Topic	Readings	Due
Wednesday 6th Sep 2017	Review of syllabus and introductions	No readings	Sign up for presentation dates (in class)

Monday 11th Sep 2017	Acoustics – taught by Sriram Boothalingam	See syllabus of CSD 854	
Wednesday 13th Sep 2017	Acoustics – taught by Sriram Boothalingam	See syllabus of CSD 854	
Monday 18th Sep 2017	Acoustics – taught by Sriram Boothalingam	See syllabus of CSD 854	One question for acoustics; Request for special accommodations if needed
Monday 18th Sep 2017 4:15 – 5:55 PM Goodnight hall Rm 412	Outer and middle ear	Schnupp Chapter 2 (until 2.2)	Question for the day
Wednesday 20th Sep 2017	Inner ear and neural transduction	Schnupp Chapter 2 (2.2, 2.3)	Question for the day
Monday 25th Sep 2017	Neural responses in the auditory nerve	Moore Chapter 1 (section 7) Schnupp Chapter 2 (2.4)	Question for the day
Wednesday 27th Sep 2017	Central auditory nervous system	Schnupp Chapter 2 (2.5) Moore Chapter 1 (section 8)	Question for the day
Monday 2nd Oct 2017	Auditory thresholds	Moore Chapter 2	Question for the day
Wednesday 4th Oct 2017	Frequency selectivity	Moore Chapter 3 (sections 1-4)	Question for the day
Monday 9th Oct 2017	Masking	Moore Chapter 3 (sections 5-12)	Question for the day
Wednesday 11th Oct 2017	Loudness perception	Moore Chapter 4	Question for the day
Monday 16th Oct 2017	Exam review & feedback		
Wednesday 18th Oct 2017	mid-term EXAM I (in-class closed book)	Acoustics (taught by Prof Boothalingam) will not be included here	
Friday 20th Oct 2017 (To be confirmed)	Lab tours in UW Madison		
Monday 23rd Oct 2017	NO CLASS		
Wednesday 25th Oct 2017	Pitch perception	Moore Chapter 6 Schnupp Chapter 3	Question for the day
Monday 30th Oct 2017	Spatial/binaural hearing	Moore Chapter 7 Schnupp Chapter 5	Question for the day
Wednesday 1st Nov 2017	Spatial/binaural hearing	Moore Chapter 7 Schnupp Chapter 5	Question for the day

Monday 6th Nov 2017	Auditory scene analysis	Moore Chapter 8 Schnupp Chapter 6	Question for the day
Wednesday 8th Nov 2017	NO CLASS		
Monday 13th Nov 2017	Presentations I (Normal aspects)	TBD by presenters	Question for the day
Wednesday 15th Nov 2017	Effects of cochlear hearing loss	TBD	Question for the day
Monday 20th Nov 2017	Presentations II (hearing loss)	TBD by presenters	Question for the day
Wednesday 22nd Nov 2017	Speech perception I	Moore Chapter 9 Schnupp Chapter 4	Question for the day
Monday 27th Nov 2017	Speech perception II	Moore Chapter 9 Schnupp Chapter 4	Question for the day
Wednesday 29th Nov 2017	Plasticity (intro to auditory prosthesis)	Schnupp Chapter 7	Question for the day
Monday 4th Dec 2017	Presentations III (perception/plasticity with auditory prostheses)	TBD by presenters	Question for the day
Wednesday 6th Dec 2017	Exam review & feedback		
Monday 11th Dec 2017	NO CLASS		Prosem summaries due
Monday 13th Dec 2017	EXAM II (in-class closed book)	Non-cumulative	

Grades are based on

- Two in-class exams - 40 points each
- One presentation - 15 points
- Contributions to the question bank - 5 points

Grading scale

Points	100-92	91.9-88	87.9-82	81.9-78	77.9-72	71.9-68	67.9-60	<60
UW-Madison letter grade	A	AB	B	BC	C	CD	D	F

In-class exams

- are closed book
- Questions regarding exams sent after 6PM the day before the exam may not be answered
- Short answers, multiple choice, fill in the blanks, True/False

Presentations

- There are 3 classes dedicated for presentations with specific themes (normal hearing, hearing loss, prostheses)
- Based on the theme for the day you choose to present, select 1 to 3 journal articles that will provide an overview or contemporary view of the topic you would like to present on. Examples for normal aspects of hearing are hearing sensitivity in children, binaural hearing in children, hearing in animal species, effects of aging. Examples for hearing loss are the effect of degree of hearing loss on temporal processing, speech perception in individuals with auditory neuropathy. Examples of plasticity/perception with auditory prostheses are sound localization with two cochlear implants, speech perception in noise with hearing aids.
- Discuss the topic with me along with choice of journal articles at least 3 weeks before your presentation date.
- The presentation must be 10 minutes with an additional 2-3 minutes for questions. This will allow ~5/6 presentations per class.
- Grading scale: 0 (did not present) to 10 (covered important aspects, able to answer questions about the topic with adequate detail).
- Upload your article(s) to canvas ("Discussions") at least a week before your presentation.
- Upload your presentation slides (PDF/ppt) to canvas ("Discussions") by midnight of the day before your presentation.

Question bank

- At the end of each class (by midnight on Mondays and Wednesdays), each student must contribute a minimum of ONE question to the CSD850_2017 question bank via "Assignments" on canvas.
- Questions must be one of the 3 types: multiple choice, fill in the blanks or short answers and can be based on lectures and/or readings. These questions will be reviewed in class before each exam and may appear in the exam.
- 0.25 point will be awarded for each submitted question (maximum of 5 points).
- Only one question is required for the first 3 classes (i.e., taught by Prof. Sriram Boothalingam).

Requirement for UW-Madison students

- UW-Madison students are required to attend a minimum of 4 Prosem seminars during the fall semester.
- Each student will be required to write a 300-500 word summary of the prosem that week. The summary should include: research questions asked, methods used, results, conclusions. They will not be graded as part of the final grade for CSD 850 but submission is required.
- Submit 4 summaries in ONE word/pdf document via "Assignments".

Lab tours

- Friday the 20th of October – date yet to be confirmed
- Students from Stevens points arrive the previous night (19th of Oct) and join for dinner at the Great Dane
- Attend Brains and Bagels at 830 AM at Waisman centre 8th floor Zeiman room B.
- Rest of the schedule (until 4PM) TBD
- Breakfast and lunch will be provided
- Talk to your clinical supervisor about compensating for missed clinic hours

Academic honesty
It is the responsibility of students to read and understand the UW-Madison Misconduct Guidelines, posted at https://conduct.students.wisc.edu/.

Special accommodations
If you need any special accommodations in the curriculum, instruction or assessments of this course to enable you to fully participate, please let me know within the first 2 weeks of class (by the 18th of Sep, 2017). If students require special accommodation due to religious observance, please let me know within the first 2 weeks of class (also by the 18th of Sep, 2017).

ASHA standards addressed by this course:

Knowledge assessed through written or oral exam Upon successful completion of this course, the student will:	**ASHA Reference**	**Assessed through**
be able to describe embryology and development of the auditory and vestibular systems, anatomy and physiology, neuroanatomy and neurophysiology, and pathophysiology	A1	Assignments and Exams
be able to describe normal aspects of auditory physiology and behavior over the life span	A3	Assignments and Exams
be able to understand principles, methods, and applications of psychometrics	A11	Assignments and Exams
Be able to understand principles, methods, and applications of psychoacoustics	A12	Assignments and Exams
Be able to understand and conduct principles and practices of research, including experimental design, statistical methods, and application to clinical populations	A18	Assignments and Exams