

NEUS 639

**Topics in the Auditory System, Winter term 2018**

Tuesdays and Thursdays from 1:15-2:45 pm in Richard Jones Hall, RJH 5501

Course director(s): Lina Reiss  
Laurence Trussell  
Course administrator: Liz Lawson-Weber

The class has two components, a main lecture/journal paper discussion component and an optional independent study (critical essay review) component:

- 1) NEUS 639A: Lecture/journal paper discussion: 3 credits
- 2) NEUS 639B: Optional independent study (critical essay review): 1 credit

Course Description

Auditory scientists need to understand the field in breadth from basic to translational science, and from periphery to central function. The ability to communicate and collaborate with a broad range of auditory scientists is necessary to be successful in research and to obtain funding. The goal of the course is to provide an overview of emerging topics in the auditory system and the associated disorders, and provide students with these skills. This course can be used to document training in the auditory system for NRSA proposals, especially important for trainees coming from non-auditory fields.

Format:

Each topic consist of 1-2 lectures and 1 journal paper presentation (selected by lecturer). The guideline for lectures will be to have the first half of lecture on normal function to provide background, and the second half on dysfunction. A minimum of two faculty will assigned to moderate journal paper discussions along with course directors.

Grading policy:

NEUS 639A (3 credits): Grading will be based on class participation (60%) and journal paper presentation (40%). Background reading will also be assigned.

NEUS 639B (1 credit): Grading will be based on a critical essay review of the literature (50%). Students will be assigned a faculty mentor from the course (not their advisor) for the critical essay and choose an essay topic on the auditory system, and can submit a draft for feedback from the mentor. The final essay will be due the last day of class and will be graded by the mentor and course directors.

Open to graduate students for credit, also postdocs and research staff who are interested in auditing.

Schedule of Topics:

Date	Lecturer	Topic
Jan. 9	Reiss and Trussell	Course introduction and perspective on the impact of hearing loss (at a personal level, social level, and economic and public health level) (45 min)
	Reiss	Transmission of sound: the outer and middle ear (45 min)
Jan. 11	Barr-Gillespie	The inner ear and sound transduction
Jan. 16	Nuttall, Ren	Cochlear mechanics
Jan. 18	Barr-Gillespie, Nuttall, Ren	Journal paper discussion
Jan. 23	Nicolson, von Gersdorff	Auditory nerve: afferent and efferent synapses, and "hidden" hearing loss

Jan. 25	Brigande	Inner ear development
Jan. 30	Shi, Steyger	Cochlear blood flow and the stria vascularis, and role in noise-induced hearing loss and ototoxicity
Feb. 1	Nicolson, von Gersdorff, Brigande	Journal paper discussion
Feb. 6	Trussell	Sound localization and the brainstem
Feb. 8	David, Mello	Cortical processing of speech – primary auditory cortex and beyond
Feb. 13	BREAK FOR ARO CONFERENCE	
Feb. 15	Trussell, David, Mello	Journal paper discussion
Feb. 20	Gallun	Auditory perception and psychophysics
Feb. 22	Molis, Reiss	Speech perception; neural coding of speech in the brainstem
Feb. 27	Gallun, Molis, Reiss	Journal paper discussion
Mar. 1	Reiss	Cochlear implants and other auditory prostheses
Mar. 6	Barr-Gillespie, Brigande	Hair cell regeneration and other therapies (precursor to Jeffrey Holt seminar on March 8 at noon).
Mar. 8	Feeney, Billings	Tympanograms, evoked potentials, and other human clinical measures
Mar. 13	Reiss, Feeney, Billings	Journal paper discussion
Mar. 15	Peterka	The Vestibular System and Multisensory Integration
Mar. 20	Trussell, Gallun	Tinnitus and central auditory processing disorders
Mar. 22	Daniel Polley (Harvard-MIT and Mass Eye and Ear)	Outside invited talk/OHRC Seminar: <i>Title TBA. Vollum M1441 for talk, Vollum M1446 for Q&amp;A with students and postdocs.</i>