

NEUS 639

Topics in the Auditory System, Winter term 2021

Tuesdays and Thursdays from 1:30-3 pm

Course director(s): Lina Reiss
Laurence Trussell

Course administrator: Jessica Parks

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. 5	Reiss and Trussell	Course introduction: impact of hearing loss, structure of virtual course – 30 min
	Feeney	The outer and middle ear – 1 hour
Jan. 7	Ren	Cochlear mechanics and the travelling wave
Jan. 12	Barr-Gillespie	The inner ear and sound transduction
Jan. 14	Nuttall/Shi	Cochlear blood flow and the stria vascularis
Jan. 19	Ren, Barr-Gillespie, Nuttall, Shi	Journal paper discussion – 2 papers, 40 min each student or postdoc
Jan. 21	von Gersdorff	Auditory nerve and afferent synapses

Jan. 26	Brigande	Inner ear development
Jan. 28	von Gersdorff, Brigande	Journal paper discussion
Feb. 2	Trussell/Romero	Brainstem processing and efferent feedback
Feb. 4	David	Primary auditory cortex and beyond
Feb. 9	Trussell, David	Journal paper discussion
Feb. 11	Gallun	Auditory perception and psychophysics
Feb. 16	Molis	Speech perception
Feb. 18	Gallun, Molis	Journal paper discussion
Feb. 20-24	BREAK FOR ARO CONFERENCE	
Feb. 25	Reiss	Cochlear implants and other auditory prostheses
Mar. 2	Garinis	Human clinical measures of peripheral function
Mar. 4	Billings	Evoked potentials, and other human clinical measures of central function
Mar. 9	Reiss, Garinis, Billings	Journal paper discussion
Mar. 11	Mello	Song learning and production in songbirds
Mar. 16	Peterka	Vestibular system and multisensory integration
Mar. 18	Potpourri or external speaker	TBD