Structure and Function of the Auditory and Vestibular Brain. 580.626, Fall 2012.

Meets T, Th 9-10:30 in 529 Ross at the SOM. Contact ED Young or X Wang.

9/4 Introduction, organization. Overview of labyrinthian transduction – endorgan structure, hair cells, auditory tuning, vestibular sensitivity, everything up to the nerve synapse. (Young)

9/6, 11 Auditory stimulus encoding – tuning, representation of simple and complex stimuli, nonlinearities, reverse correlation. Representation of information in spike trains. (Young)

9/13 Speech production, the speech signal. Envelope and fine structure. What the brain must decode. (Young)

9/18, 20 Anatomical organization of the auditory brainstem. Cochlear nucleus cell types, synaptic organization, response properties, biophysical properties. (May)

9/25 Internal organization of the inferior colliculus, inputs, stimulus representation. (May)

9/27 Anatomy lab. (May)

10/2 Auditory efferents, cortex to cochlea. (May)

10/4, 9 Basic psychophysics with clinical implications. Masking and auditory filters, pitch, loudness, and detection theory. (May)

10/11,18 Sound localization, psychophysics and physiology. (Young) No class on 10/16 because of Fall Break Day.

10/23,25 Overview of vestibular function: transduction and endorgan specificity, neural representation of orientation and movement, eye movements and the VOR, posture. (Della Santina, Carey).

10/30 Modeling vestibular and VOR function. (Della Santina)

11/1 Vestibular adaptation, space (Shelhamer)

11/6 Clinical aspects of vestibular and oculomotor physiology (Zee)

11/8 Vestibular afferents and efferents (Sadeghi)

11/13 Vestibular compensation (Shubert)

11/15, 20, 27, 29, 12/4 Auditory thalamocortex, structure and function (Wang)

12/6 Psychophysics of complex sounds, chosen from, speech perception, auditory grouping, segregation, auditory objects, attention (Wang)