Independent Study Spring 2018

1. January 12: **Planning Meeting**

2. January 19: **Overview/Background Chapters**

-Neuroanatomy Ch. 1 pg. 1-20 (Overview of Mammalian Auditory Pathways)
-Neurophysiology Ch. 1 pg. 1-28 (Overview of Central Auditory Processing)
-Oxford Handbook Ch. 2 pg. 9-35 (Structural Organization of the Ascending Auditory Pathway)
-Oxford Handbook Ch. 4 pg. 65-67 (Central Auditory Neurotransmitters – Overview)

3. January 26: NGP Interviews – No Meeting

4. February 2: **Peripheral Anatomy**

-Central Auditory System Ch. 1 pg. 3-5 (broader overview)
-Neuroanatomy Ch. 2 pg. 23-57 (Peripheral Innervation, Spiral Ganglion, Central Projections)

5. February 9: **Auditory Nerve Physiology**

-Central Auditory System Ch. 1 pg. 5-16 (broader overview)
-Neurophysiology Ch. 2 pg. 34-73 (Spontaneous Activity, Response to Single Tones, Responses to Simple Broadband Stimuli, Nonlinear Interactions in Responses to Tone Pairs, Responses to Multi-Tone Complexes and Other Complex Stimuli, Timing of Neural Excitation in Relation to Basilar Membrane Motion and Inner Hair Cell Receptor Potentials)

6. February 16 (ARO): **Cochlear Nucleus Anatomy**

-Central Auditory System Ch. 2 pg. 97-130 (Anatomy and Neurotransmitters)
-Neuroanatomy Ch. 3 pg. 66-107 (Subdivisions of the CN, Neuronal Classes and Locations, Sources of Inputs to the CN, Fine Structure of the Different Neuronal Classes, Neuronal Types in Other Species)
-Oxford Handbook Ch. 4 pg. 67-73 (Central Auditory Neurotransmitters – CN)

7. February 23: **Cochlear Nucleus Physiology**

-Central Auditory System Ch. 1 pg. 16-28 (broader overview)
-Central Auditory System Ch. 2 pg. 130-173
-Neurophysiology Ch. 3 pg. 94-144 (Physiological Response Characteristics to Sinusoidal Stimuli, Multiunit Studies, Comparative Studies, Physiological-Morphological Correlations, Models and Computational Simulations, Coding of Complex Signals in the CN, Development)

8. March 2: **SOC/LL Anatomy and Physiology *****

-Central Auditory System Ch. 1 pg. 28-33 (broader overview)
-Central Auditory System Ch. 3 pg. 193-241 (SOC, MNTB, LSO, MSO, PON, OC Neurons, LL)
-Neuroanatomy Ch. 4 pg. 117-154 (SOC, LL and its Nuclei, Functional Considerations)
-Oxford Handbook Ch. 4 pg. 73-78 (Central Auditory Neurotransmitters – SOC/LL)

9. March 9: **Inferior Colliculus and Superior Colliculus Anatomy**

-Central Auditory System Ch. 4 pg. 259-269 (Structure)
-Neuroanatomy Ch. 5 pg. 168-210 (IC – A Structure for the Integration of Ascending Monaural and Binaural Pathways, SC – Morphological Substrates for Integration of Sensory and Motor Systems)
-Oxford Handbook Ch. 4 pg. 78-79 (Central Auditory Neurotransmitters – IC)

10. March 16: **Inferior Colliculus Physiology**

-Central Auditory System Ch. 1 pg. 33-36 (broader overview)
-Central Auditory System Ch. 4 pg. 269-304 (*focus on basic response properties)
Neurophysiology Ch. 4 pg. 153-166 (Frequency Organization and Coding of Frequency Spectrum, Coding of Sound Pressure Level)

11. March 23: March 12-16: **MGN Anatomy and Basic Physiology**

-Neuroanatomy Ch. 6 pg. 222-286
-Central Auditory System Ch. 1 pg. 37-43 (broader overview)
-Central Auditory System Ch. 5 pg. 317-348 (MGN)
-Oxford Handbook Ch. 4 pg. 79-80 (Central Auditory Neurotransmitters – MGN)

12. March 30: **Auditory Cortex Anatomy**

-Neuroanatomy Ch. 6 pg. 287-349
-Oxford Handbook Ch. 4 pg. 80-81 (Central Auditory Neurotransmitters – Cortex)

13. April 6: **Auditory Cortex (and MGN) Physiology: Basic Response Properties *****

-Central Auditory System Ch. 1 pg. 43-55 (broader overview)
-Central Auditory System Ch. 5 pg. 348-371 (Auditory Cortex)
-Central Auditory System Ch. 5 pg. 371-383 (Corticothalamic & Intra/Intercortical Connections)
-Neurophysiology Ch. 5 pg. 232-251 & 282-296 (Coding of Sound Pressure Level, Temporal Coding and Responses to Complex and Natural Stimuli)
-Neurophysiology Ch. 5 pg. 252-282 (Sound Location)

14. April 13: **Information Coding in the Auditory Brain**

-Oxford Handbook Ch. 5 pg. 93-118 (Level and Spectrum)
-Oxford Handbook Ch. 6 pg. 125-145 (Time Varying Sounds: Amplitude Envelope Modulations)
- Central Auditory System Ch. 1 pg. 51-55 Parallel and Hierarchical Organization

15. April 20 (AAA): **Speech and Auditory Streams** ***DATE CHANGE??***

-Oxford Handbook Ch. 9 pg. 193-210 (Speech)
-Oxford Handbook Ch. 10 pg. 215-239 (Formation of Auditory Streams)

16. April 28: **Efferent Auditory Pathway**

-Central Auditory System Ch. 1 pg. 55-64 (broader overview)
-Neuroanatomy Ch. 7 pg. 410-440 (Organization of Olivocochlear Efferent Systems in Mammals)
-Oxford Handbook Ch. 4 pg. 81-82 (Central Auditory Neurotransmitters – Efferent)
-Oxford Handbook Ch. 3 pg. 43-61 (Structural Organization of the Descending Auditory Pathway)
-Oxford Handbook Ch. 11 pg. 247-265 (Role of Descending Control in the Auditory Pathway)

Extra Readings:
Neurophysiology Ch. 2 pg. 73-80 Effects of HC Loss and Cochlear Manipulations
Neurophysiology Ch. 5 Sections 6: Effects of Behavioral State & 7: Development and Plasticity