

NGG 573: Neuroscience Core III 2024

Course Directors:

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Teaching Assistant:

Time: MWF, 10:15am-12:15pm

Location: John Morgan Building 62' Auditorium. Anatomy labs meet in 210 Stemmler.

Text : *The Human Brain* (John Nolte [N]; any version) and *Principles of Neural Science* (Kandel & Schwartz [K&S]; 5th Edition). Copies of [K&S] are on reserve in the Biomedical Library, see "Course Materials@Penn Libraries" on the Canvas course page (only 3 persons can watch the book at a time). In addition K&S is available as pdf on the Canvas course page. Nolte [N] is available through Penn Library's subscription to ClinicalKey; see also "Course Materials@Penn Libraries" on Canvas. In addition N is available as pdf on the Canvas page. Additional readings can be found in the "2024 Readings" folder on the Canvas website.

Goals of Core III

- (1) Learn the basics of neuroanatomy through a targeted series of lectures and dissections.
- (2) Learn about the foundations of systems neuroscience.
- (3) Learn about the applications of systems neuroscience.

Grading: Homework (HW) assignments (90% total) and class participation (10%).

HWs will be distributed electronically via Canvas and will be returned electronically to the designated folder on Canvas. Each HW will contain 1 question provided by a lecturer from the previous week or that Monday. You should expect to spend about 2-3 hours to answer the question, including researching relevant information. HW will need to be returned on Canvas within 7 days.

<i>Day</i>	<i>Date</i>	<i>General Topic</i>	<i>Topic</i>	<i>Reading</i>	<i>Lecturer</i>	<i>Assignment</i>
F	Jan 19	Course overview		K&S 1, 2, 15	Franz Weber and Greg Corder	
M	Jan 22	Anatomy	Anatomy/Lab 1	N 1,3	Yale Cohen and Eduard Lee	
W	Jan 24		Pathology	N 4-6	Eduard Lee	
F	Jan 26		Brainstem	N 11	Sonia Ajmera	
M	Jan 29		Lab 2	N 16,19,20,22	Cohen	
W	Jan 31		Anatomy		Cohen	
F	Feb 2		Lab 3		Cohen	
M	Feb 5		Lab 4		Cohen	
W	Feb 7		Lab 5		Cohen	
F	Feb 9		Practical		Yale Cohen	Practical
M	Feb 12	Development	Development 1	N 2; K&S 52-	Jonathan Raper	

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W	Feb 14		Development 2	K&S 52-56	Jonathan Raper	
F	Feb 16	Theory	Computational Neuroscience 1	K&S 21	Konrad Körding	
M	Feb 19	Theory	Computational Neuroscience 2	K&S 21	Vijay Balasubramanian	HW 1
W	Feb 21	Sensory-motor Systems	Vision 1	N 17; K&S 25-29	Johannes Burge	
F	Feb 23		Vision 2	K&S 25-29	Michael Arcaro	
M	Feb 26		Vision 3		Nicole Rust	HW 2
W	Feb 28		Auditory System 1	N 14; K&S 30,31	Maria Geffen	
F	Mar 1		Auditory System 2	K&S 30,31	Nate Vogler	
M	Mar 4	<i>Spring Break</i>				
W	Mar 6	<i>Spring Break</i>				
F	Mar 8	<i>Spring Break</i>				
M	Mar 11		Auditory System 3	K&S 30,31	Michael Beauchamp	HW 3
W	Mar 13		Olfactory System 1	N 13; K&S 25-29	Kevin Bolding	
F	Mar 15		Olfactory System 2	K&S 25-29	Joel Mainland	
M	Mar 18		Somatosensory System	K&S 22	Wenqing Luo	HW 4
W	Mar 20		Nociceptive System		Greg Corder	
F	Mar 22		Striatum		Marc Fuccillo	
M	Mar 25	Motor Systems	Eye Movements	N 21; K&S 38,39	Long Ding	HW 5
W	Mar 27		Hunger Circuits		Amber Alhadeff	
F	Mar 29		Motor System	N 18	Bijan Pesaran	
M	Apr 1		Spatial Navigation		Russell Epstein	HW 6
W	Apr 3	Hippocampus & Learning	Hippocampus, Plasticity, and TBI	K&S 55,56	Akiva Cohen	
F	Apr 5		Hippocampus & Learning	K&S 65	Kimberly Christian	
M	Apr 8		Hippocampus & Neurogenesis		Hongjun Song	HW 7
W	Apr 10	Amygdala	Fear and Amygdala	K&S 65,66	Steven Thomas	
F	Apr 12	Addiction	Dopamine and Addiction		Heath Schmidt	
M	Apr 15	Sleep & Circadian Rhythms	Circadian Rhythms	K&S 51	David Raizen	HW 8
W	Apr 17		Sleep and Development		Matthew Kayser	

F	Apr 19		Neural Circuits of Sleep	K&S 51	Franz Weber	
M	Apr 22		Sleep and Neuromodulation		Shinjae Chung	HW 9
W	Apr 24	Techniques & Applications	TMS / Lab tour		Roy Hamilton	
F	Apr 26		fMRI/TMS		Desmond Oathes	
M	Apr 29		Imaging Techniques		Tim Machado	HW 10
W	May 1	Last day of class	Brain Machine Interfaces		Flavia Vitale	