NGG 573: Neuroscience Core III 2025

Course Directors:
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Teaching Assistant:

Time: MWF, 10:00am-12:00pm
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.

Day	***Date***	***General Topic***	***Topic***	***Reading***	***Lecturer***	***Assignment***
F	Jan 17	Course overview		K&S 1, 2, 15	Course directors	
W	Jan 22	Anatomy	Anatomy/Lab 1	N 1,3	Yale Cohen and Edward Lee	
F	Jan 24		Pathology	N 4-6	Edward Lee	
M	Jan 27		Brainstem	N 11		
W	Jan 29		Lab 2	N 16,19,20,22	Cohen	
F	Jan 31		Anatomy		Cohen	
M	Feb 3		Lab 3		Cohen	
W	Feb 5		Lab 4		Cohen	
F	Feb 7		Lab 5		Cohen	
M	Feb 10		Practical		Yale Cohen	**Practical**

W	Feb 12	Development	Development 1	N 2; K&S 52-56	Jonathan Raper	
F	Feb 14		Development 2	K&S 52-56	Jonathan Raper	
M	Feb 17	Approaches & Computation	2P imaging		Tim Machado	**HW 1**
W	Feb 19		Computational Neuroscience	K&S 21	Konrad Körding	
F	Feb 21		On the grand plan of brain and mind research		Nicole Rust	
M	Feb 24	Sensory Systems	Vision 1	N 17; K&S 25-29	Diego Contreras	**HW 2**
W	Feb 26		Vision 2	K&S 25-29	Michael Arcaro	
F	Feb 28		Auditory System 1	N 14; K&S 30,31	Maria Geffen	
M	Mar 3		Auditory System 2	K&S 30,31	Nate Vogler	**HW 3**
W	Mar 5		Somatosensory System	K&S 22	Wenqing Luo	
F	Mar 7		Nociceptive System		Greg Corder	
M	Mar 10	*Spring Break*				
W	Mar 12	*Spring Break*				
F	Mar 14	*Spring Break*				
M	Mar 17		Olfactory System 1	N 13; K&S 25-29	Kevin Bolding	**HW4**
W	Mar 19		Olfactory System 2	K&S 25-29	Joel Mainland	
F	Mar 21	Motor Systems & Innate Behaviors	Motor System	N 18	Bijan Pesaran	
M	Mar 24		Eye Movements	N 21; K&S 38,39	Long Ding	**HW 5**
W	Mar 26		Hunger Circuits		Amber Alhadeff	
F	Mar 28		Striatum		Marc Fuccillo	
M	Mar 31		Addiction 1		Heath Schmidt	**HW 6**
W	Apr 2		Addiction 2		John Dani	
F	Apr 4	Limbic systems	Hippocampus, Plasticity, and TBI	K&S 55,56	Akiva Cohen	
M	Apr 7		Hippocampus & Learning	K&S 65	Kimberly Christian	**HW 7**
W	Apr 9		Hippocampus & Neurogenesis		Hongjun Song	
F	Apr 11	Sleep & Circadian Rhythms	Sleep and Development		Matthew Kayser	
M	Apr 14		Circadian Rhythms	K&S 51	David Raizen	**HW 8**
W	Apr 16		Neural Circuits of Sleep	K&S 51	Franz Weber	
F	Apr 18		Sleep and Neuromodulation		Shinjae Chung	

M	Apr 21	Techniques & Applications	Neuroimaging		David Roalf	**HW 9**
W	Apr 23		fMRI/TMS		Desmond Oathes	
F	Apr 25		BMI		Flavia Vitale	
M	Apr 28		DBS		Halpern	**HW 10**
W	Apr 30		TMS / Lab tour		Hamilton lab	