

## 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 "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 Director
W	Jan 14	Course overview		K&S 1, 2, 15	Course directors	
F	Jan 16	Anatomy	Anatomy/Lab 1	N 1,3	Yale Cohen	Cohen
M	Jan 19		<b>MLK</b>			
W	Jan 21		Pathology	N 4-6	Edward Lee	Weber
F	Jan 23		Brainstem	N 11	Sonia Ajmera	Weber
M	Jan 26		Lab 2	N 16,19,20,22	Cohen	Cohen
W	Jan 28		Lab 3		Cohen	Cohen
F	Jan 30		Lab 4		Cohen	Cohen
M	Feb 2		Lab 5		Cohen	Cohen
W	Feb 4		Lab 6		Cohen	
F	Feb 6		Practical		Cohen	<b>Practical</b> Cohen

M	Feb 9	Approaches & Computation	Social Neuroscience		Michael Platt		Weber
W	Feb 11	Development	Development 1	N 2; K&S 52-56	Jonathan Raper		
F	Feb 13		Development 2	K&S 52-56	Jonathan Raper		Weber
M	Feb 16	Approaches & Computation	2P imaging		Tim Machado	<b>HW 1</b>	Weber
W	Feb 18		Neuro AI	K&S 21	Konrad Körding		Weber
F	Feb 20	Sensory Systems	Vision 1	N 17; K&S 25-29	Diego Contreras		Chung
M	Feb 23		Vision 2	K&S 25-29	Michael Arcaro	<b>HW 2</b>	Chung
W	Feb 25		Olfactory System 1	N 13; K&S 25-29	Kevin Bolding		Chung
F	Feb 27		Olfactory System 2	K&S 25-29	Joel Mainland		Chung
M	Mar 2		Auditory System	N 14; K&S 30,31	Audrey Drotos	<b>HW 3</b>	Chung
W	Mar 4		Daedalus Quartet	K&S 22	Maria Geffen		Chung
F	Mar 6		Nociceptive System		Greg Corder		Chung
M	Mar 9	<i>Spring Break</i>					
W	Mar 11	<i>Spring Break</i>					
F	Mar 13	<i>Spring Break</i>					
M	Mar 16		Somatosensory system	K&S 25-29	Wenqing Luo	<b>HW4</b>	Chung
W	Mar 18	Motor Systems & Innate Behaviors	Motor System	N 18	Bijan Pesaran		Ding
F	Mar 20		Eye Movements	N 21; K&S 38,39	Long Ding		Ding
M	Mar 23		Striatum		Marc Fuccillo	<b>HW 5</b>	Ding
W	Mar 25		Decision Making		Josh Gold		Ding
F	Mar 27		Value-based decision making		Joe Kable		Ding
M	Mar 30		Addiction		TBD	<b>HW 6</b>	Ding
W	Apr 1	Limbic systems	Hippocampus, Plasticity, and TBI	K&S 55,56	Akiva Cohen		Jiang-Xie
F	Apr 3		Hippocampus & Neurogenesis		Hongjun Song		Jiang-Xie
M	Apr 6		Hippocampus & Learning	K&S 65	Kimberly Christian	<b>HW 7</b>	Jiang-Xie
W	Apr 8	Sleep & Circadian Rhythms	Sleep and Development		Matthew Kayser		Jiang-Xie
F	Apr 10		Daedalus Quartet				Jiang-Xie
M	Apr 13		Neural Circuits of Sleep	K&S 51	Franz Weber	<b>HW 8</b>	Jiang-Xie

W	Apr 15		Sleep and Neuromodulation		Shinjae Chung		Jiang-Xie
F	Apr 17		Glymphatics		Li-Feng Jiang-Xie		Jiang-Xie
M	Apr 20	Human Systems Neuroscience	Neuroimaging		David Roalf	<b>HW 9</b>	Roalf
W	Apr 22		fMRI/TMS		David Oathes		Roalf
F	Apr 24		BMI		Flavia Vitale		Roalf
M	Apr 27		DBS		TBD	<b>HW 10</b>	Roalf
W	Apr 29		TMS / Lab tour		Hamilton lab		Roalf