

## NGG 573: Neuroscience Core III 2022

**Course Directors:**

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

**Location:** Lectures are in BRB 253. 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 is available through Penn Library's subscription to ClinicalKey; see also "Course Materials@Penn Libraries" on Canvas. Additional readings can be found in the "2022 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>
W	Jan 12	Course overview		K&S 1, 2, 15	Maria Geffen and Franz Weber	
F	Jan 14	Development	Development 1	K&S 52-56	Jonathan Raper	
M	Jan 17	<i>No class</i>				
W	Jan 19		Development 2	K&S 52-56	Jonathan Raper	
F	Jan 21	Theory	Computational Neuroscience 1	K&S 21	Konrad Körding	
M	Jan 24		Computational Neuroscience 2	K&S 21	Vijay Balasubramanian	<b>HW 1</b>
W	Jan 26	Sensory-motor systems	Vision 1	K&S 25-29	Michael Arcaro	
F	Jan 28		Vision 2	K&S 25-29	Ben Scholl	
M	Jan 31		Vision 3		Russell Epstein	<b>HW 2</b>
W	Feb 2		Auditory system 1	K&S 30,31	Katherine Wood	
F	Feb 4		Auditory system 2	K&S 30,31	Maria Geffen	

M	Feb 7		Olfactory system 1	N18; K&S 25-29	Jay Gottfried	<b>HW 3</b>
W	Feb 9		Taste & Olfaction 2	N18; K&S 25-29	Joel Mainland	
F	Feb 11		Hunger & Feeding		Amber Alhadeff	
M	Feb 14		Somatosensory system	K&S 22	Wenqin Luo	<b>HW 4</b>
W	Feb 16		Lab 1		Yale Cohen	
F	Feb 18		Pathology		Edward Lee	
c	Feb 21		Lab 2		Cohen and Lee	
W	Feb 23		Lab 3		Cohen and Lee	
F	Feb 25		Lab 4		Cohen and Lee	
M	Feb 28		Lab 5		Cohen and Lee	
W	Mar 2		Practical		Cohen and Geffen	<b>Practical</b>
F	Mar 4		Brainstem		Jay Gottfried	
M	Mar 7	<i>Spring Break</i>				
W	Mar 9	<i>Spring Break</i>				
F	Mar 11	<i>Spring Break</i>				
M	Mar 14	Motor Systems	Eye movements	K&S 38,39	Long Ding	
W	Mar 16		Striatum		Marc Fuccillo	
F	Mar 18	Hippocampus, Amygdala, & learning	Hippocampus & Plasticity	K&S 55,56	Akiva Cohen	
M	Mar 21		Hippocampus & Learning	K&S 65	Kimberly Christian	<b>HW 5</b>
W	Mar 23		Fear and amygdala	K&S 65,66	Steven Thomas	
F	Mar 25		Pain and amygdala		Greg Corder	
M	Mar 28		Hippocampus & neurogenesis		Hongjun Song	<b>HW 6</b>
W	Mar 30		Theory of memory		Michael Kahana	
F	Apr 1	Sleep & Circadian Rhythms	Sleep & Neural circuits	K&S 51	Franz Weber	
M	Apr 4		Circadian Rhythms	K&S 51	David Raizen	<b>HW 7</b>
W	Apr 6		Sleep & Neuromodulation		Shinjae Chung	
F	Apr 8		Sleep & Development		Matthew Kayser	
M	Apr 11	Psychiatric Disorders	Addiction 1		Heath Schmidt	<b>HW 8</b>
W	Apr 13		Addiction 2		John Dani	
F	Apr 15		Autism	K&S 64	Zhou Zhaolan	
M	Apr 18		Neuro-epigenetics and depression		Elizabeth Heller	<b>HW 9</b>

W	Apr 20	Techniques & Applications	BMI		Flavia Vitale	
F	Apr 22		2p imaging		Jennifer Orthman-Murphy	
M	Apr 25		TMS		Roy Hamilton	<b>HW 10</b>
W	Apr 27		fMRI/TMS		Desmond Oathes	