

## NGG 573: Neuroscience Core III 2021

**Course Directors:** Maria Geffen, Franz Weber

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

**Location:** Virtual -- zoom. Link on canvas.

**Text :** *The Human Brain* (John Nolte [N]; any version) and *Principles of Neural Science* (Kandel & Schwartz [K&S]; 5th Edition). Copy of [K&S] are on canvas. Nolte is available through Penn Library's subscription to ClinicalKey; see also "Course Materials@Penn Libraries" on Canvas. Additional readings are found in the "Reading materials" folder on the Canvas website.

### Goals of Core III

- (1) Learn the basics of neuroanatomy through a targeted series of lectures and dissections (Due to the pandemic, neuroanatomy courses are shortened, and there will be no graded practicals on anatomy).
- (2) Learn about the foundations of systems neuroscience.
- (3) Learn about the applications of systems neuroscience.

**Grading:** Take-home quizzes (90% total) and class participation (10%).

Quizzes will be distributed electronically via Canvas and will be returned electronically to the designated folder on Canvas. Each quiz will contain 2 questions provided by the lecturers from the previous week or that Monday. Quizzes will need to be returned within **72 hours (96 hours** if the time window overlaps with a Day of Engagement).

<i>Day</i>	<i>Date</i>	<i>General Topic</i>	<i>Topic</i>	<i>Lecturer</i>	<i>Quiz</i>
W	Jan 20	Course overview	K&S 1, 2, 15	Geffen/Weber	
F	Jan 22	Anatomy	Lab 1	Cohen	
M	Jan 25		Pathology	Lee	
W	Jan 27		Lab 2	Cohen	
F	Jan 29		Lab 3	Cohen and Lee	
M	Feb 1		Brainstem	Gottfried	
W	Feb 3	Anatomy	Lab 4	Cohen	
F	Feb 5	Development	Basics: development; K&S 52-56	Raper	
M	Feb 8		Basics: development; K&S 52-56	Raper	Quiz 1
W	Feb 10	Theory	Computational Neuroscience 1; K&S 21	Kording	
F	Feb 12	Day of Engagement			
M	Feb 15	Sensory-motor systems	Vision development; K&S 25-29	Arcaro	Quiz 2
W	Feb 17		Vision 1; K&S 25-29	Scholl	
F	Feb 19		Vision 2; K&S 25-29	Contreras	
M	Feb 22		Auditory system 1; K&S 30-31	Eliades	Quiz 3
W	Feb 24		Vision 3	Epstein	
F	Feb 26		Auditory system 2; K&S 30-31	Geffen	
M	Mar 1		Olfactory and gustatory systems 1; K&S 32	Gottfried	Quiz 4

W	Mar 3		Taste; N18; K&S 25-29	Mainland	
F	Mar 5	Hunger		Alhadeff	
M	Mar 8	Spring Break			
W	Mar 10	Spring Break			
F	Mar 12	Spring Break			
M	Mar 15		Somatosensory system; K&S 22	Luo	Quiz 5
W	Mar 17	Learning & Memory	Hippocampus & Neurogenesis	Song	
F	Mar 19		Eye movements; K&S 38-39	Long	
M	Mar 22		Striatum	Fucillo	Quiz 6
W	Mar 24		Hippocampus & Learning; K&S 65	Christian	
F	Mar 26		Hippocampus & Plasticity; K&S 55,56	Cohen	
M	Mar 29		Fear and the amygdala; K&S 65	Thomas	Quiz 7
W	Mar 31		Theory of memory	Kahana	
F	Apr 2	Sleep and Circadian Rhythms	Sleep & Neural circuits; K&S 51	Weber	
M	Apr 5		Sleep & Neuromodulation	Chung	Quiz 8
W	Apr 7		Circadian Rhythms; K&S 51	Raizen	
F	Apr 9		Sleep & Development	Kayser	
M	Apr 12	Day of Engagement			Quiz 9
W	Apr 14		Dopamine & Addiction	Dani	
F	Apr 16		Autism	Zhaolan	
M	Apr 19		Epigenetics and depression	Heller	Quiz 10
W	Apr 21	Techniques & Applications	BMI	Vitale	
F	Apr 23		2p imaging	Orthmann-Murphy	
M	Apr 26		TMS	Hamilton	Quiz 11
W	Apr 28		DBS	Lucas	