

ANAT 321
Circuitry of the Human Brain
2017

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Course Content

ANAT 321 (*Circuitry of the Human Brain*) examines how the anatomical organization of the human brain determines its function. The course begins with a broad overview of the organization of the nervous systems. We then work our way methodically from the spinal cord to the forebrain, addressing the brain systems responsible for sensory perception, movement, cognition, motivation and emotion and learning and memory.

The class meets Mondays, Wednesdays and Fridays, from 4:35 – 5:25 in M1, Strathcona. There is no required text; however, there are five reading assignments, which are available on mycourses:

Reading	Due date
Bullmore E and Sporns O (2012) The economy of brain network organization <i>Nature Reviews Neuroscience</i> 13 :336 – 349.	September 28
Ajina S and Bridge H (2016) Blindsight and unconscious vision: what they teach us about the human visual system. <i>The Neuroscientist</i> (epub ahead of print).	October 15
Graziano MSA and Aflalo TN (2007) Rethinking cortical organization: moving away from discrete areas arranged in hierarchies. <i>The Neuroscientist</i> 13 :138 – 147.	October 28
Greene J (2003) From neural "is" to moral "ought": what are the moral implications of neuroscientific moral psychology? <i>Nature Reviews Neuroscience</i> 4 :847- 850.	November 16
Haggard P (2011) Decision time for free will. <i>Neuron</i> 69 :404-406.	November 30

Each reading is associated with a short written assignment, as described below.

Evaluation

Multiple-Choice Exams (95%)

Midterm: 35%, Oct 18, 7:00 – 9:00 PM

Final exam: 60%, TBA

Readings (5%)

Each reading is associated with a short written assignment, which is due no later than midnight on the due-date indicated in the above table. The written assignment for each reading, will answer the following three questions (no more than two sentences per question):

1. *What is one thing you learned from reading this article?*
2. *What is one thing you did not understand or found especially challenging about this article or one question you would like to ask the authors?*
3. *What is the main point of this article?*

Each assignment will be graded pass-fail and will be worth 1% of the total grade.

Office Hours

I'm available to meet with students in my office on Thursdays from 10:30 – 11:30 AM and on Fridays from 1:30 – 2:30 PM.

Course Outline

Date	Topic
Sept 6	Introduction to Neuroanatomy
Sept 8	Introduction to Sensory Systems
Sept 11	No Class
Sept 13	Spinal cord and brainstem
Sept 15	Spinal cord and brainstem
Sept 18	Spinal cord and brainstem/thalamus and internal capsule
Sept 20	Thalamus and internal capsule
Sept 22	Thalamus and internal capsule
Sept 25	Cerebral cortex
Sept 27	Cerebral cortex
Sept 29	Cerebral cortex
Oct 2	Cerebral cortex
Oct 4	Cerebral cortex/visual system
Oct 6	Visual system
Oct 9	Thanksgiving
Oct 11	Visual system
Oct 13	Visual system
Oct 16	Visual system
Oct 18	Midterm review
Oct 20	Visual system/olfactory system
Oct 23	Olfactory system
Oct 25	Motor systems
Oct 27	Motor systems
Oct 30	Motor systems
Nov 1	Motor systems (basal ganglia)
Nov 3	Motor systems (basal ganglia)
Nov 6	Motor system (basal ganglia/cerebellum)
Nov 2	Motor systems (cerebellum)
Nov 8	Motor systems (cerebellum)
Nov 10	Executive function
Nov 13	Executive function
Nov 15	Executive function/motivation and emotion
Nov 17	Motivation and emotion
Nov 20	Motivation and emotion/learning and memory
Nov 22	Learning and memory
Nov 24	Learning and memory
Nov 27	Blood flow and meninges
Nov 29	Video: dissecting a human brain
Dec 1	Neuroscience of consciousness and conscious will

Dec 4	Review for final exam
Dec 6	Review for final exam

Academic Integrity:

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