ANAT 321
Circuitry of the Human Brain
2018

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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 1:35 – 2:25 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 *Nature Reviews Neuroscience* **13**:336 – 349.	September 30
Robson, D (2015) Blindsight: the strangest form of consciousness. *BBC Future* http://www.bbc.com/future/story/20150925-blindsight-the-strangest-form-of-consciousness	October 15
Scott, SH (2006) Converting thoughts into action. *Nature* **442**:141 – 142.	November 1
Greene J (2003) From neural "is" to moral "ought": what are the moral implications of neuroscientific moral psychology? *Nature Reviews Neuroscience* 4:847- 850.	November 18
Stafford, T (2015) Why do we intuitively believe we have free will? *BBC Future* http://www.bbc.com/future/story/20150806-why-your-intuitions-about-the-brain-are-wrong	December 1

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

Evaluation

Multiple-Choice Exams (95%)
Midterm: 35%, Oct 17, 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. The assignments will be due before midnight on the dates indicated above.

Course Outline

Date	Topic
Sept 5	Introduction to Neuroanatomy
Sept 7	Introduction to Sensory Systems
Sept 10	Spinal cord and brainstem
Sept 12	Spinal cord and brainstem
Sept 14	Spinal cord and brainstem/thalamus and internal capsule
Sept 17	Thalamus and internal capsule
Sept 19	Thalamus and internal capsule
Sept 21	Cerebral cortex
Sept 24	Cerebral cortex
Sept 26	Cerebral cortex
Sept 28	Cerebral cortex
Oct 1	No class (Election day)
Oct 3	Cerebral cortex/visual system
Oct 5	Visual system
Oct 8	Thanksgiving
Oct 10	Visual system
Oct 12	Visual system
Oct 15	Visual system
Oct 17	Midterm review
Oct 19	Visual system/olfactory system
Oct 22	Olfactory system
Oct 24	Motor systems
Oct 26	Motor systems
Oct 29	Motor systems
Oct 31	Motor systems (basal ganglia)
Nov 2	Motor systems (basal ganglia)
Nov 5	Motor system (basal ganglia/cerebellum)
Nov 7	Motor systems (cerebellum)
Nov 9	Motor systems (cerebellum)
Nov 12	Executive function
Nov 14	Executive function
Nov 16	Executive function/motivation and emotion
Nov 19	Motivation and emotion
Nov 21	Motivation and emotion/learning and memory
Nov 23	Learning and memory
Nov 26	Learning and memory
Nov 28	Blood flow and meninges
Nov 30	Video: dissecting a human brain
Dec 3	Neuroscience of consciousness and conscious will
Dec 4	Final exam review

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McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see http://www.mcgill.ca/students/srr/honest/ for more information).

L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site http://www.mcgill.ca/students/srr/honest/).

In accord with McGill University's Charter of Students' Rights, students have the right to submit in English or in French any written work that is to be graded (except in courses where knowledge of a language is one of the objectives of the course).