

ANAT 321: Circuitry of the Human Brain

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Course Format

This course examines how the organization and function of our brains enable us to perceive, move and think. The course has three components: pre-recorded lectures, readings, and in-class sessions.

Pre-recorded lectures

Lectures have been pre-recorded and will be available on mycourses. Each recording is from 15 to 30 minutes long. Typically, there are three to five recordings (around 100 minutes total) per week. The schedule for the recordings is given below in Table 1.

Table 1: Outline

Section 1: Introduction to sensory systems, the somatic sensory system			
Week 1 Sept 2 - 4	Recording 1	Introduction	Reading 1: Introduction to the Nervous System
Week 2 Sept 7 - 11	Recordings 2-5	Peripheral nerves, spinal cord	
Practice midterm: Sept 14, 12:00 PM – Sept 17, 12:00 PM			
Week 3 Sept 18	Recordings 6-8	Brainstem	Reading 2: Clinical Effects of Cranial Nerve and Brainstem Damage
Week 4 Sept 21 - 25	Recordings 9-13	Brainstem thalamus, Introduction to cerebral cortex	Reading 3: Association Nuclei of the Thalamus
Week 5 Sept 28 – Oct 2	Recordings 14-17	Cerebral cortex	Reading 4: The Cerebral Cortex
Midterm 1: Oct 5, 12:00 PM – Oct 8, 12:00 PM			
Section 2: The visual system			
Week 6 Oct 9	Recording 18	Introduction to the visual system, the retina	
Week 7 Oct 12 - 16	Recordings 19 - 23	Visual processing from the retina to primary visual cortex	
Week 8 Oct 19 - 23	Recordings 24 - 26	The dorsal and ventral visual streams, blindsight	Reading 5: How Do Visual Neurons Detect Direction of Motion?
Midterm 2: Oct 26, 12:00 PM – Oct 29, 12:00 PM			
Section 3: Movement systems			
Week 9 Oct 30	Recording 27	Introduction to motor systems	
Week 10 Nov 2 - 6	Recordings 28 – 30	Motor cortex, brainstem, spinal cord	
Week 11 Nov 9 - 13	Recordings 31 – 35	Basal ganglia and cerebellum	Reading 6: Control of Saccadic Eye Movements

Midterm 3: Nov 16, 12:00 PM – Nov 19. 12:00 PM			
Section 4: Cognitive systems			
Week 12 Nov 20	Recording 36	Introduction to cognitive systems	
Week 13 Nov 23 - 27	Recordings 37 – 41	Executive functions, decision-making, learning and memory	Reading 7: The Neuroscience of Consciousness
Week 14 Nov 30 – Dec 2	Recording 42	Blood supply, meninges, and ventricles	
Final exam: Finals week			

Readings

There are seven readings spread out over the course of the semester. They are available on mycourses. The readings assume that you have covered a certain amount of material in the course, so it's best to do them around the times indicated in Table 1.

In class-sessions

We will hold in-class sessions, during the scheduled class times (Monday, Wednesday, Friday, 10:35 – 11:25 Eastern Standard Time) according to the schedule given below in Table 2. (Note that we meet only once or twice each week.) The in-class sessions will be roughly like office hours: they are opportunities for discussion and for me to answer your questions and to clarify any confusing or difficult concepts. The discussion could be specifically about course material or about related topics that interest you. You can submit questions to me in one of three ways: 1) through the mycourses discussion board; 2) by email (**note: any emails sent to me must have ANAT 321 in the subject line**); 3) in-class, using the chat function in Zoom. Attendance at the in-class sessions is not required. All sessions will be recorded and made available on mycourses.

Table 2: In-class sessions

Week 1	Sept 2
Week 2	Sept 11
Week 3	Sept 14
	Sept 18
Week 4	Sept 21
	Sept 23
Week 5	Sept 30
	Oct 2
Week 6	Oct 5
	Oct 9
Week 7	Oct 16
Week 8	Oct 21
	Oct 23
Week 9	Oct 26
	Oct 30
Week 10	Nov 2
	Nov 4
Week 11	Nov 9
	Nov 13

Week 12	Nov 16
	Nov 20
Week 13	Nov 23
	Nov 25
Week 14	Nov 30
	Dec 2

Assessment

Assessment will comprise a practice midterm, three midterm exams and a final. The purpose of the practice midterm is to give you practice with the exam format and to test for any bugs in the exam system. A summary of the exams is given below in Table 3.

Table 3: Exam Schedule

	Date of exam and material covered	Duration	# of questions	Weight
Practice midterm	Sept 14, 12:00 PM – Sept 17, 5:00 PM Recordings 1 – 5, Reading 1	2 ½ hours	15	3%
Midterm 1	Oct 5, 12:00 PM – Oct 8, 5:00 PM Recordings 6 – 17, Readings 2 – 4.	4 ½ hours	40	25%
Midterm 2	Oct 26, 12:00 PM – Oct 29, 5:00 PM Recordings 18 – 26, Reading 5	4 ½ hours	35	20%
Midterm 3	Nov 16, 12:00 PM – Nov 19, 5:00 PM Recordings 27 – 35, Reading 6	4 ½ hours	37	22%
Final exam	Finals Week (72 hours)	6 ½ hours	50	30%

Exam format

All the exams will be take-home using the quiz function in mycourses. The exams are open-book; you are free to refer to the recordings, readings, and class notes during the exams. The format is short answer (i.e. answers will require anywhere from a single word to one or two sentences). You must complete each exam during the designated period (e.g. Sept 14, 12:00 PM – Sept 17, 5:00 PM for the practice midterm). You can begin the exam any time during the designated period, but once you start, you will have a specified duration to complete the exam (e.g. 2½ hours for the practice midterm; note, you will be locked out of the exam at the end of the designated exam period, e.g. if you start the practice exam after 2:30 PM on Sept 17, you will not have the full 2½ hours for the exam.) The midterm exams are cumulative in the sense that it will be expected that you understand material covered in previous sections; nevertheless, each midterm will emphasize the previously covered section of the course (e.g. midterm 2 will mainly focus on the visual system). The final exam is cumulative, covering all 42 recordings and seven readings.

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