

ANTHROPOLOGY 305: THE HUMAN BRAIN (Fall 2015)

T/Th 2:30-3:45

White Hall 110

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Office hours: Wednesday 1-3, or by appointment

**Content:** This course is an upper level introduction to the basis of complex human behavior in the brain. We will focus on human brain structure and function with a view toward mastering the anatomy that underlies cognition and emotion. We will give significant attention to the phylogenetic context of human brain evolution, with reference to comparative neuroanatomy of primates, other mammals, and other vertebrates. We will then proceed to study some of the most interesting new models of higher brain function. The overall goal is to master the anatomy underlying higher human capacities, but without losing sight of the ways in which our brain's evolutionary past can inform our understanding of how that brain works now.

**Texts:**

- Nolte, John, *The Human Brain: An Introduction to Its Functional Anatomy, Seventh Edition.* (N)
- Allman, John, *Evolving Brains.* (A)—pdf will be on Blackboard
- Readings postings on BB (B)

**Particulars:**

- Exams: Three hour-examinations and a cumulative final, all True/False and Multiple Choice
- Grading: 70 percent for the hour-exams (20+25+25), 30 percent for the final.
- The third hour exam is optional and occurs during the last class. If you don't take it, the calculation will be 30 percent for the first exam, 40 percent for the second, and 30 percent for the final. Your grade will not get worse if you take the optional exam – I will calculate your best score!
- Bonus assignment: There will be one bonus assignment worth 2 percentage points. This assignment will not only help you learn anatomy, it may be enough to change your letter grade! The instructions for this assignment will be posted on BB. Assignment due date is posted below and late assignments WILL NOT be accepted.

Prerequisite: One or more of: Anthropology 210, NBB 201/Anth 200, Psych 103, or Psych 110; or permission of the instructor

Comments: Recommended for strongly motivated students

**General advice:**

Read and keep this syllabus. It is your permanent guide to the course and your responsibilities. This is your contract with us, and by staying here you agree to it. The syllabus may be altered during the semester, and if so, the amended syllabus will be uploaded to blackboard with an announcement.

Reading assignments are due by the class under which they are listed. Nolte (“N”) is a dense but well written and beautifully illustrated textbook on human brain structure and function; we will read most of it, at a rate of about 15 pages per class. Allman (“A”) is a Scientific American-level account of brain evolution; we will read about 20-30 pages per class. The blackboard readings that are assigned in the third section of the course are diverse, newer accounts of what makes the human brain special.

Please note: This is a highly visual course. You are responsible for the information in the photographs, drawings, and diagrams, as well as the captions, within the assigned pages, in all readings. Some of you may want to get the study guide that accompanies Nolte’s book, available at Amazon.com.

Class lectures will stay close to the reading, using mainly the same illustrations, explaining and emphasizing the most important and subtle concepts. PowerPoints will be posted on the Blackboard site. You may find it helpful to bring the book to class. The goal is for you to come away feeling much more comfortable with human brain structure and function and with how the brain generates complex behavior.

Announcements will also be posted on Blackboard, although they will usually also be made in class. I will conduct review sessions before each exam, time and place to be announced. I will also post optional, but highly recommended quizzes each week. Each quiz will comprise 3-5 multiple choice questions meant to serve as study tools, and will only be available for one week. These quizzes will NOT affect your grade, but will help you prepare for the exams.

I attempt to minimize overlap with courses in neurobiology and psychobiology. Accordingly I will say only a bit about neurotransmitters and membrane function, and less about most sensory and motor systems. I will skip the visual and auditory system, most of the somatosensory system, much of the spinal cord and brain stem, and the cerebellum. Topics I consider include the autonomic nervous system, pain pathways, some aspects of gustatory and olfactory senses, the thalamus, the basal ganglia, the limbic system, the cerebral cortex, brain evolution, human specializations and the basis of emotion and reason in the brain.

**Missed exams:** Exams make-ups will only be allowed if it is accompanied by one of the following:

- 1) A doctor’s note verifying an illness that creates an inability to complete the assignment/attend the exam
- 2) A note from an Emory administrative office (such as the Dean’s Office) explaining the circumstances that require you to miss or hand in the assignment on time (for example, a death in the family)
- 3) Prior arrangement with Dr. Mascaro ***at least two class periods in advance***. This pertains to, among other reasons, religious holidays that overlap with class sessions or exams. This arrangement must be confirmed by Dr. Mascaro; sending an email with no follow-up is not sufficient.

**Class Etiquette:** Because this is a large class, it is very important that you observe certain courtesies to avoid distracting your fellow students and your instructors! The following rules apply during class:

- Please silence your cell phones!
- Please take care of “necessities” before you come to class – once class has begun please do not get up and leave class unless you have an emergency. Climbing over your fellow students while they are trying to take notes will not endear you to them.
- A simple statement: Please do not talk while the instructors are talking!

- Laptop policy: Laptops will be allowed in class, but instructors reserve the right to ask you to close your laptop if it becomes a distraction to students around you.
- E-mail policy: Since this is a large class, please do not e-mail with questions that can be answered during office hours. Any questions about grading, course expectations, and other course mechanics can usually be answered by a careful reading of the syllabus. Questions about reading and lecture material should be addressed during office hours (that's what we schedule them for!). As stated above, however, please notify Dr. Mascaro by email if you are ill and cannot take an exam.

**\*\*\*HONOR CODE REMINDER\*\*\***

**\*\*An important reminder about the HONOR CODE:** *Every student who applies to and is accepted by Emory College, as a condition of acceptance, agrees to abide by the provisions of the Honor Code so long as he or she remains a student at Emory College. By his or her continued attendance at Emory College, a student reaffirms his or her pledge to adhere to the provisions of the Honor Code.*

**Please note:** Any *appearance* of cheating in this class will result in a referral to the Honor Council. Please remember that conviction on an Honor Code violation carries the possible penalty of a notation on the student's Personal Performance Record, meaning that the student will not be accepted to medical, and other professional, schools.

## Lecture outline and reading assignments

Aug. 27, Th	Overview: A ch. 1
Sep. 1, T	Introduction: N ch. 1
Sept. 3, Th	Brain development: N ch. 2; N 608-15; A ch. 3
Sept. 8, T	CNS organization: N ch. 3 <b>*In class neuroanatomy lesson; bring your laptop for most benefit and come willing to share*</b>
Sept. 10, Th	Ventricles, CSF, Blood flow, blood-brain barrier: N 103-111; 136-151: <b>*Bonus assignment (neuroanatomy lab) due at the beginning of class. Instructions on BB.</b>
Sept. 15, T	Imaging: N 111-121
Sept. 17, Th	Nerve impulse, synapses: N 154-176
Sept. 22, T	Neurotransmitters: N ch. 8
Sept. 24, Th	FERN visit – split into 2 groups
Sept. 29, T	<b><u>Exam 1</u></b>

Oct. 1, Th	Spinal cord and brainstem organization: N 238-44; 248-64; 272-4; Brainstem reticular core: N 287-95; Cranial nerves: N 301-305
Oct. 6, T	Chemical senses: N ch. 13
Oct. 8, Th	Thalamus and thalamic projections: N ch. 16
Oct. 13, T	<b>Fall Break, no class</b>
Oct. 15, Th	Basal ganglia: N ch. 19
Oct. 20, T	Cerebral cortex: N 541-57
Oct. 22, Th	Higher cortical functions: N 558-78
Oct. 27, T	Hypothalamus: N 579-94
Oct. 29, Th	Hippocampus and amygdala: N 594-604; 616-25
Nov. 3, T	<b><u>Exam 2</u></b>
Nov. 5, Th	Comparing brains: A ch. 2
Nov. 10, T	Mammalian brains: A ch. 5
Nov. 12, Th	Primate brains and brain expansion: A 121-28; 146-57; 160-174
Nov. 17, T	Hominid brains: A 175-203
Nov. 19, Th	Human specializations: Interoception (BB)
Nov. 24, T	Human specializations: Somatic marker hypothesis (BB) <a href="http://www.radiolab.org/story/91642-overcome-by-emotion/">http://www.radiolab.org/story/91642-overcome-by-emotion/</a>
Nov. 26, Th	<b>Thanksgiving Break, no class</b>
Dec. 1, T	Human specializations: The brain as a contingency organ (BB)
Dec. 3, Th	Human specializations: Special social relationships (BB)
Dec. 8, T	Last Class (Optional Third Exam)

The third hour exam is optional for those who are not satisfied with their performance on the first two exams. If you don't take the optional third hour exam, your grade will be calculated as 30 percent for the first exam, 40 percent for the second exam, and 30 percent for the final exam. If you do, the percentages will be: Exam 1, 20; Exam 2, 25; Exam 3, 25; Final Exam, 30. The final exam will be on the Emory College schedule: **Monday, Dec. 14, from 8:00-10:30**, in our regular classroom, WH 110.