Mammalian Neurobiology: 2013

PSYC 531 Mammalian Neurobiology (3:2:3)
BIOS 516 Mammalian Neurobiology (3:2:3)
NEUR 603 Mammalian Neurobiology (3:2:3)

Tues 9:30 – 11:20, KB 229 and Thurs 9:00 – 11:40, KI 128

Last day to add class: Jan. 29th / Last day to drop class: Feb 22nd

Prerequisite: PSYC 527 or BIOS 515 (Introduction to Neurobiology) or NEUR 601 (Developmental Neurobiology).

Instructor: Dr. Butler
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Office Hours: T 11:30 – 12:30 by appointment


Prerequisite: Introduction to Neurobiology, taught each fall semester, is a prerequisite for Mammalian Neurobiology. Mammalian Neurobiology may be audited with permission of the instructor, but no student who has not successfully completed Introduction to Neurobiology for academic credit may take Mammalian Neurobiology for academic credit.

Lab Supplies: All lab supplies will be provided in the laboratory.

Goals and Requirements: The goals of this course are to achieve a specific knowledge base in mammalian neurobiology and to achieve a detailed understanding of the functional anatomy of mammalian brains. Examples from human clinical material are used where possible to illuminate anatomical relationships. The requirements are to learn the material presented in lecture and laboratory, as augmented and assisted by attending the lectures and the laboratories and by reading the relevant portions of the text and atlas.

Nature of Course Content: See the list of lectures and laboratories below.

Method of Instruction: The lecture part of the course consists of a series of didactic lectures. The laboratory part of the course includes sheep brain dissections, examination of microslides of monkey brain sections and other related histological materials, examination of embedded slices of human brain material, and study of human brain sections as provided in the laboratory atlas and with projected 35 mm slides. A series of videotapes demonstrates aspects of human brain dissection. Various human neurological case histories are analyzed in order to integrate anatomical relationships.
**Attendance and Assignments:** Lecture and laboratory attendance is very important since the material presented constitutes the core material of the course. There are no specific assignments of work outside the class. It is expected that you will read your textbook and use your atlas in addition to studying the lecture notes in order to learn the material discussed and presented in both the lectures and the laboratories. On the lecture exams, you are responsible for **everything that the Instructor discusses during the lectures and also in the laboratories.** The lecture notes are provided as a courtesy in order to help you focus your studying, but whenever the actual lecture content goes beyond the handed-out notes, you are responsible for that as well. Thus, taking your own notes during lecture is highly recommended, particularly when the Instructor goes beyond the handout-notes. Occasionally the reverse may be true, i.e., the Instructor may discuss a particularly complex topic in order to give you an appreciation for it but specify that that material will not be covered on the exam. Class attendance is thus highly important for both of these aspects.

**Method of Evaluation – Exams:** Two interim exams on the lecture material will be given during the course of the semester, and the final lecture exam will be comprehensive. Lecture exams will consist of questions in the form of multiple choice, fill in a blank or short list, or fill in labels on a figure. Because the time for the lectures does not match any of the scheduled exam times in the Schedule of Classes, the **final lecture exam** will be held one week after the last laboratory and in the same weekly period as the laboratories, i.e., on **Thursday, May 9, beginning at 9:30 am.**

Laboratory exam questions will involve straight identification of structures from material studied in the laboratory. An interim laboratory exam will be given, and a **final laboratory exam** will be given during the last scheduled laboratory period or as arranged, depending on scheduling issues. The lab exam will begin at **10:00 am.**

The average score for the two lecture exams will be weighted as 33% of the final grade; the final exam on the lecture material will be weighted as 34% of the final grade; and the average of the two lab exams will be weighted as 33% of the final grade. The instructor reserves the option of weighting the final lecture and/or lab exams to a greater percentage if marked improvement over the interim exam scores has occurred. A course score of 90 or above generally results in a grade of A- or above, 80 or above in B- or above, and 70 or above in C- or above. The numerical score is only a guideline, however, and is not absolute. The final grades may be determined on a curve if this is to the students’ favor and justified in the opinion of the instructor. Note that the grade for both the laboratory and lecture portions of the class is determined on a combined basis, so the grade for each section on your transcript will be the same, i.e., a grade of B+, for example, for the course will result in a grade of B+ for the lecture section and B+ for the laboratory section, even if your performance has been better in one than in the other. This policy reflects the integrated nature of the material.

**Policy regarding missed exams:** Unless the student has the previously obtained consent of the instructor for postponing an exam or has written medical documentation for absence from an exam, an automatic grade-loss penalty of 10% may be deducted from
the score for the make-up exam. Permission to postpone an exam can be granted for various reasons, **usually for a maximum of one week**, since such arrangements are potentially unfair to the other students in the class. Examples of valid reasons, with prior (or same day) permission, include illness, a major exam in another course very close in time, needing to take one’s pet to the veterinarian, or the chance to take a trip to Paris. No more than one trip to Paris should be invoked per semester, however. The make-up exam will either be structured like the original exam or will be a combination of short-answer, essay, and/or oral questions. The type of make-up exam will be chosen by the instructor based on what is most convenient for her.

**Honor Code, Incompletes, and Disability Accommodation:** University policy on the honor code and incompletes applies to the lecture and laboratory parts of this course. **When taking exams, no books, notes, or student interaction is allowed, and the exams are to be taken in the place and within the time limits specified by the Instructor.** If you are a student with a disability and you need academic accommodations, please inform the Instructor and contact the Disability Resource Center (DRC) at 703-993-2474. All academic accommodations must be arranged through that office.

**Statement Required on All Syllabi by University Policy:** "**Official Communications via GMU E-mail:** Mason uses electronic mail to provide official information to students. Examples include communications from course instructors, notices from the library, notices about academic standing, financial aid information, class materials, assignments, questions, and instructor feedback. Students are responsible for the content of university communication sent to their mason e-mail account, and are required to activate that account and check it regularly."
**Mammalian Neurobiology Lectures**

[Reading the corresponding chapters in Haines is highly recommended but not required.]

| Week 1     | 1. Skull, Meninges, and Sinuses  
|            | 2. Ventricles and Vasculature |
| Week 2     | 3. Spinal Cord I  
|            | 4. Spinal Cord II |
| Week 3     | 5. Peripheral Cranial Nerves  
|            | 6. Hindbrain I: Medulla Oblongata and Medullary Cranial Nerve Nuclei |
| Week 4     | 7. Hindbrain II: Pons, Cerebellum, and Pontine Cranial Nerve Nuclei  
|            | 8. Midbrain and Cranial Nerve Nuclei |
| Week 5     | 9. Diencephalon: Epithalamus, Hypothalamus (brief) and Dors. Thalamus  
|            | 10. Overview of Forebrain and Midbrain-Basal Ganglia Connections |
| Week 6     | **EXAM I on Lectures 1 – 9 on Feb. 26**  
|            | 11. Ventral Thalamus and Basal Telencephalon |
| Week 7     | 12. Cerebral Cortex  
|            | 13. Review of Visual System |
|            | **Spring Break** |
| Week 8     | 14. Somatosensory System  
|            | 15. Auditory System |
| Week 9     | 16. Vestibular System  
|            | 17. Olfactory and Gustatory Systems |
| Week 10    | **EXAM II on Lectures 10 – 17 on April 2**  
|            | 18. Comparative Aspects of Sensory Systems in Mammals |
| Week 11    | 19. Motor Systems I: Brainstem and Spinal Pathways  
|            | 20. Motor Systems II: Corticofugal Pathways |
| Week 12    | 21. Motor Systems III: Basal Ganglia  
|            | 22. Motor Systems IV: Cerebellum |
| Week 13    | 23. Hypothalamus and Autonomic Nervous System  
|            | 24. Limbic System |
| Week 14    | 25. Higher Cortical Functions: Frontal & Parietal Lobes; Lateralization  
|            | 26. Review: Analysis of a Minute of a Life |
| Exam Week  | **FINAL LECTURE EXAM: Thursday, May 9, 9:30 am.** |
Mammalian Neurobiology Labs

1. Introduction; Meninges, Vasculature, and Ventricular System
2. Histology and Gross Anatomy of Sheep Brain: Transverse and Mid-sagittal Sections
3. Spinal Cord and Brainstem
4. Pons, Cerebellum, and Midbrain
5. Forebrain I
6. Forebrain II
7. Complete dissections in progress and Review

SPRING BREAK

8. Complete dissections in progress and Review
9. **EXAM – March 28, beginning at 10:00 am**
10. Higher Functions I
11. Higher Functions II and Olfactory System
12. Higher Functions III and Motor Systems
13. Higher Functions IV and Review
14. **FINAL LAB EXAM – May 2, beginning at 10:00 am**