

**Biology 109: Human Neuroanatomy and Neurophysiology (Internet Version)
SUMMER 2008**

General Information:

- San Jose State University
- Human Neuroanatomy and Neurophysiology, Biology 109, Section 1; Online
- Summer 2008
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Course Description:

Human Neuroanatomy and Neurophysiology (Biology 109) is an upper division course that explores the structure and function of the human nervous system with the goal of preparing students for advanced study in occupational therapy. The distance version of this course is designed for students who plan to apply to the Occupational Therapy Master's Program, or other interested students, and is open only to students who are NOT current San Jose State University students. The course is a 4-unit course offered through Special Session. The fee for the course is \$1200. For San Jose State students, Biology 109 is offered on campus in both Fall and Spring semesters. Other students can also take the on campus version of the course through Open University.

Registration and Expectations:

One registers for the online course through International and Extended Studies (Special Session). Course information for registration will is now available. One can register for Biology 109 (online) for Summer 2008 by:

1. Going to <http://iesweb.sjsu.edu/specialSession/>
2. Clicking on Registration/drop (Summer 2008)
3. Filling out the form and following the instructions on the form. Put "None" in the blank that asks for your SJSU id.
4. You must fill out two lines on the form (one line for the lecture component of the class and a second for the lab component). The Course information for the form is as follows: Class Number for the Lecture Component: 30579; Subject: Human Neuroanatomy Lecture; Section: 01; Dates: TBA; and Fee: \$1200. Class Number for the Lab Component: 30580; Subject Human Neuroanatomy Lab; Section: 02; Dates: TBA; and Fee: \$0. This course is offered entirely via the Internet, however, students must be able to access a computer for 3 lab exams on Tuesdays and Thursdays from 12:00 noon to 1:30 pm Pacific Time and must be able to take the lecture midterm online at 12:00 noon on the date indicated in the lecture schedule and the lecture final starting at 12 noon on the date indicated in the lecture schedule at a certified testing center. Students will not be required to come to campus for any part of the course. For other questions, email msneary@email.sjsu.edu.

Biology 109 online requires that the student be a highly self-motivated, independent learner who can master large volumes of material in a relatively short time period. The student must also be computer literate, have an email account, have high-speed access to the Internet, and have access to a CD player. Computers with these characteristics are available on campus. Students must also be tolerant of the occasional technical challenges that arise in a distance class.

Course Format:

“Lecture”: The instructional mode for this course is assisted, independent learning. For the lecture portion of the course, students will be responsible for mastering and integrating material covered in the *Lecture Notes* and texts. Each student will be expected to independently answer student objectives at the end of each section of the *Lecture Notes*. Students will then interact on a discussion board to come up with consensus answers to the objectives. Students will form their own groups of 6 to 7 students. I will respond to the consensus answers, indicating where they are correct and where and how they are incorrect. Participation in the discussions is mandatory and will be evaluated.

The purpose of this learning format is to encourage students to work collaboratively (and benefit from each other's contributions) so as to gain a deep understanding of the material. Each individual student's understanding of the material will be evaluated via the midterm and a final lecture exam. I will also randomly evaluate the contribution of individual students to discussions.

Student will be required to take the midterm online and the final exam at a certified testing center at a university or community college in their region. Students who live close to San Jose State University may take the midterm and final exams on campus. Lecture exams will be closed book, closed notes.

Lab: Each lab exercise will require that students study video labs on the lab CD. Students also have the option of studying the Digital Anatomist Web site to assist with their learning. Each student's mastery of the laboratory material will be evaluated via three laboratory midterms. The lab midterms will be open book exams.

* **Prerequisites:** Human Anatomy and Physiology (Biology 65 and 66).

* **Required Texts:**

The REQUIRED text below will serve as a supplement to the *Lecture Notes*. Note that the list of lecture topics does not follow the sequence of chapters in this text. Students must therefore use the table of contents and the index to find information related to the Notes and list of lecture topics. Students also may consult neuroanatomy and neurophysiology reference texts and publications in their regional college or university libraries and consult Internet publications via the Martin Luther King Library.

1. Lundy-Ekman, L.: Neuroscience: Fundamentals for Rehabilitation. W.B. Saunders Co., Philadelphia, 3rd Edition, 2007. This text can be purchased via the web.

* **Other Required Materials:**

1. Veregge, S.: *Human Neuroanatomy and Neurophysiology Lecture Notes*, Available online at class web site or in hard copy from the Department of Biological Sciences at biology@email.sjsu.edu (\$15.00)

2. Vidoli, V. and Veregge, S.: *Neuroanatomy Lab Guide*, Available online at class web site or in hard copy from the Department of Biological Sciences at biology@email.sjsu.edu (included with Lecture Notes)

4. Veregge, S.: Neuroanatomy Laboratory Review. Compact Disks, Available through the Department of Biological Sciences at biology@email.sjsu.edu (\$15.00)

6. Internet Resources: The Digital Anatomist (www1.biostr.washington.edu/DigitalAnatomist.html). This is an excellent, optional tutorial Web site that includes photographs and color diagrams of the brain and spinal cord. You can find it at <http://www9.biostr.washington.edu/da.html>. When you get to this site, click on the icon labeled "Brain" and then click on "Click for Atlas."

* **Optional Materials:**

1. A Medical Dictionary

Examinations:

There will be one "lecture" midterm (worth approximately 100 points each) and a comprehensive "lecture" final (worth approximately 200 points). The lecture exams will cover the material presented in reading assignments, in the *Human Neuroanatomy and Neurophysiology Lecture Notes*, the Student Objectives, and the instructor commentary on the Student Objective assignments. Lecture exams will consist mainly of essay style questions but may also include some multiple choice and short answer questions. Lecture exams will be closed notes and closed book. The lecture midterm will be taken online. The lecture final must be taken at a certified testing center at a university or community college. Students may also come to campus to take the lecture midterm and final exams. Students will have one hour and 30 minutes to complete the lecture midterm and two hours and 30 minutes to complete the lecture final. In addition, there will be 3, 30-minute, lab midterms (worth approximately 15 points each). Lab midterms will consist of both identification and function questions and will be taken online.

Student Objectives:

Students will be expected to complete the Student Objectives at the end of each section of the *Lecture Notes* and participate in the class discussion of the objectives. Additional objectives may be assigned from time to time.

* **Tentative Lecture Exam Dates:**

Midterm- June 23, 2008

Final- July 11, 2008

Lab Exam Dates: See Lab Schedule

STUDENTS WILL RECEIVE A ZERO FOR MISSED EXAMS. Lecture Exams: If a student has an acceptable, documented, written medical excuse for missing a single lecture exam, the percentage score on the lecture final will be substituted for the zero received for the missed lecture exam. If a student misses the final lecture exam and has an acceptable, documented, written medical excuse, she or he will be required to make up the exam at a later date.. Excuses for missed exams will be verified, therefore please include phone numbers of physicians and others who can document your reasons for missing an exam.

Lab Exams: Students who miss a lab exam, and who have an acceptable medical excuse as described above, will be required to make up the lab exam prior to the end of the class.

Course Grade:

The grade you earn will be based on the sum of points you receive on the lecture exams (300 points), all the lab exams (45 points), and your participation in the discussions of the student objectives (8 points). Below is the percentage you need to earn the corresponding grades. To determine your standing in the class at any time during the semester, calculate the percent of total exam points you have accumulated and refer to the percent column of the table below.

(% total pts) = grade

(90-100%) = A (outstanding, exceptional)

(89%) = B+ (very good, above average)

(80-88%) = B

(79%) = C+ (average, acceptable work)

(70-78%) = C

(68-69%) = C- (below average)

(64-67%) = D+

(58-63%) = D

(50%-57%) = D-

(0-49%) = F (failing)

Policies:

* **Withdrawal:** University and Biology Department Guidelines require serious and compelling reasons to withdraw from a course. Grades, alone, do not constitute reason to withdraw from a course. See the schedule and directory for details.

* **Incompletes:** See the schedule and directory for details. Incompletes are reserved for students who are in good standing (C or better) in the class and who have completed the majority of the course requirements.

* **Enrollment:** Occupational Therapy Students must be enrolled in both the lab and lecture portion of Biology 109.

* **Academic Integrity Statement:** “Your own commitment to learning, as evidenced by your enrollment at San Jose State University, and the University’s Integrity Policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Judicial Affairs. The policy on academic integrity can be found at:

http://sa.sjsu.edu/judicial_affairs/index.html

* **Campus policy in compliance with the Americans with Disabilities Act:** “If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities register with the DRC to establish a record of their disability.”

* **Philosophy:** The majority of the students in Biology 109 plan to enter the Occupational Therapy Master’s Program. As health professionals you will be expected to analyze the needs of your clients and apply information that you have learned in your classes to help your client rehabilitate or compensate for his or her deficits. This will require that you integrate information acquired from multiple sources (classes, texts, journals) and formulate a plan to benefit your client. In addition, you should be able to incorporate new knowledge into your practice. My goals for students taking Biology 109 are: 1) to provide them with a framework for understanding concepts in neuroanatomy and neurophysiology that will allow them to incorporate new information into their knowledge base, and 2) to provide them with practice integrating and applying the information they have learned. The lecture, readings, exams, and assignments in Biology 109 are designed to reflect these goals.

Tentative Lecture and Reading Topics

Week of		
6/2	Overview	N: 1
6/2	Cytology and Histology of Neurons and Glia, Blood Brain Barrier	N: 2-19
6/2	Resting Membrane Potential, Action Potential	N: 20-36
6/2	Generator Potential, Synaptic Potential	N: 37-47
6/2	Neuropharm (Epilepsy)	N: 48-62
6/9	Objectives due for pages 1-62 in Neuro Notes	

6/9	Functional Anatomy, Organizational Overview, Sensory Receptors, Sensory Tracts	N: 63-97
6/9	Sensory Tracts Continued	N: 63-97
6/9	Pain:An Example of Sensory Modulation	N: 98-105
6/9	Skeletal Muscle, Lower Motor Neurons, Muscle Spindle, Spinal Cord Reflexes	N: 106-116
6/16	Objectives due for pages 63-116	
6/16	Motor Tracts (Upper Motor Neurons)	N:117-114*
6/16	Motor Cortex	N: 114*-117*
6/16	Clinical Correlations and Review	N: 118*-124
6/16	Cerebellum	N: 125-137
6/16	Basal Ganglia	N: 138-148
6/16	Integration of Movement, Review	N: 149-150
6/23	Midterm: Covers from the beginning of the class through Muscle Spindle and Reflexes (Pages 1-116)	
6/24	Objectives due for pages 117-150	
6/23	Autonomic Nervous System	N: 151-160
6/23	Limbic System, Emotions	N:161-166
6/23	Learning and Memory	N:167-174
6/23	Localization of Function in Cortex	N: 175-181
6/30	Language and Cerebral Dominance	N: 182-188
6/30	Recovery, Repair, Plasticity	N:189-195
7/7	Objectives due for 151-195	
7/11	****Final Examination: The final is comprehensive and will cover all topics. About two thirds of the final will cover topics since the midterm and about one third will cover topics prior to the midterm.	
	Note: You are responsible for all the lecture and reading material. On occasion, additional reading related to one of the topics above may be assigned.	
	Key: N= Lecture Notes	

Tentative Laboratory Schedule

Date	Topic and Reading/CD Viewing Assignment
6/10	Lab 1: <u>Overview of the Brain and Spinal Cord and Coronal Fig 4</u> Lab Guide Pages: 1-4
6/11	Lab 2 and 3: <u>Ventricles of the Brain, Cerebral Spinal Fluid, and Protective Membranes of the Central Nervous System</u> Lab Guide Pages: 5-9
6/12	Lab 4: <u>Vascular Supply of the Central Nervous System*</u> (Intro to Video says Lab 3) Lab Guide Pages: 10-14
6/17	<u>Lab Exam 1: Covers Neuron, Overview of the Brain and Spinal Cord, Ventricles of the Brain, Cerebral Spinal Fluid, and Protective Membranes of the Central Nervous System, and Vascular Supply of the Central Nervous System</u>
6/18	Lab 5: <u>Examination of the Spinal Cord*</u> (Intro to Video says Lab 4) Lab Guide Pages: 15-16
6/19	Lab 6: <u>Anatomy of the Brain Stem*</u> (Intro to Video says Lab 5) Lab Guide Pages: 17-19
6/24	Lab 7 and 8: <u>Cranial Nerves and Cross Sections of the Brainstem</u> Lab Guide Pages: 20-25
6/25	Lab 9 and 10: <u>Cerebellum and Diencephalon</u> Lab Guide Pages: 26-27
6/26	Lab 11: <u>Basal Ganglia</u> Lab Guide Pages: 28
7/1	<u>Lab Exam 2: Examination of the Spinal Cord, Anatomy of the Brainstem, Cranial Nerves, and Cross Sections of the Brainstem</u>
7/2	Lab 12: <u>Limbic System</u> Lab Guide Page: 28
7/3	Lab 13: <u>Cerebral Cortex, Visual and Auditory Pathways and Vestibular System</u> Lab Guide Page: 29
7/8	<u>Lab Exam 3: Covers Cerebellum, Diencephalon, Basal Ganglia, Limbic System, Cerebral Cortex, Visual Pathways, Auditory Pathways, and Vestibular System</u>

*Note that on the first CD, a couple of the labs are numbered incorrectly so go by the titles, not the numbers.