Texas A&M University - Corpus Christi

SPRING SEMESTER 2010

COURSE: BIOMEDICAL SCIENCES BIMS 4323.001

NEUROBIOLOGY

Faculty: Riccardo Mozzachiodi, Ph.D.
Class schedule: MW: 7:00 - 8:15 PM, room ST 104
Office: ST 321
Phone: 361-825-3634
Email: riccardo.mozzachiodi@tamucc.edu
Office hours (subject to change pending advance notice): MT: 10:00 a.m. – 12:00 p.m.,
W: 10:00 a.m. – 11:00 a.m.; other times available by appointment

COURSE DESCRIPTION
This course focuses on the physiology and morphology neurons and their role in generating
critical functions, such as vision and movements. Topics include: morphology and physiology of
the neuron; genesis of resting and action potential; electrical and chemical transmission; brain
development and neuroanatomy; sensory and motor systems; neural basis of leaning and
memory; mental illness. This is a rigorous course containing a large amount of information that
is covered rapidly. It will require a great deal of time and effort on the part of the student. Input
from the students into the class is welcomed and encouraged. We all benefit when students
contribute their personal and professional perspectives.

STUDENT LEARNING OUTCOMES
At the conclusion of this course, the student will have gained facility in describing:
• The morphology and physiology of neurons;
• How neurons generate and propagate electrical signals;
• How information is communicated from one neuron to another;
• Development and Anatomy of the nervous system;
• How neurons sense the external and internal environments;
• How movements are generated;
• How behaviors and complex functions, such as learning and memory are generated

COURSE REQUIREMENTS
Required Textbook:
edition, Philadelphia, PA, Lippincott Williams & Wilkins. The lectures (titles and chapters
numbers) listed in the tentative schedule correspond to the chapters of this book. Also, some of
the material illustrated in the lectures and in the handouts is derived from the chapters of this
book. This text is available at the campus bookstore.
Required Material:
• Textbook
• Handouts, which will be distributed by the instructor before class
• Additional material that will be provided by the instructor

Having a binder for your handouts and notes is a good idea.

If you miss a class, the handouts will be available in the Neurobiology holder outside my office, ST 321.

ASSESSMENT AND GRADING CRITERIA

Assessment = Exams + In-Class Learning Exercises

Exams: There will be 5 comprehensive Exams (4 during the semester + final Exam). Each Exam is worth 100 points. Each Exam will focus on the material covered during lectures and is listed in bold in the tentative schedule (see below). For example, Exam 2 will cover material from chapters 7-10, but it may also contain questions about the previous section (chapters 1-6).

In addition to the handouts, students are responsible for all material, such as videos, guest lectures, websites etc. covered during class. Exams may contain questions in the following formats: multiple choice, matching, true/false, making/labeling drawings, short answer questions, and essay questions. All the exams are comprehensive. The lowest grade of the 5 exams will be automatically dropped.

Exams are completed on a scantron answer sheet, which will be provided; you will need number two (#2) pencils for the scantron sheet. Both Exam and scantron answer sheet must be submitted at the end of the test. An Exam lasts as a regular class (approximately 1 h, 15 min); there will be no lecture on Exam days.

• During testing, students should remove their caps and avoid looking around the room. Also all the electronic devices (computers, cell phones and portable music players) must be silenced at the beginning of class.
• Different test forms may be prepared for an individual Exam. Follow instructions.
• If you leave an examination room for any reason you must hand in your test and you will not be allowed to resume the examination. Attend to personal matters (e.g., rest room visits) before the beginning of the exam.
• Be on time! Anyone arriving after someone has completed an examination and left the room will not be allowed to take that examination.
• Academic integrity is expected. The student is not to give or receive help during testing. Remember that cheating and plagiarism are unacceptable behaviors. All students are expected to conform to college level standards of ethics, academic integrity, grammar and spelling. Review the appropriate pages of the 2008-2009 TAMU-CC catalog.

There is no make-up Exams! If you miss an Exam, that is the grade that will be dropped. If you are not able to attend one of the 4 Exams, contact the instructor ASAP (see below).

In-Class Learning Exercises: At random times during the course, students will do an in-class learning exercise. These exercises will require the students to answer questions about topics covered during class. These in-class learning exercises will not be announced in advance. During the in-class learning exercises students will be allowed to use textbook and handouts, but not electronic devices including portable computers and phones. There will be 8 in-class learning exercises, each worth 10 points. In class-learning exercises will last 10 minutes and will
be done any time during class (at the beginning, at the end or during class). In-class learning exercises will not be scheduled on a day when an Exam is already scheduled. **In class-learning exercises cannot be made up.**

The final grade is based on the sum of 4 Exams (400 points) and 8 in-class learning exercises (80 points), for a total of 480 points.

**Grading Scale:**

480-424 = A  
423-376 = B  
375-328 = C  
327-280 = D  
Below 279 = F

**ATTENDANCE**

**Students are expected to attend every class.** If absent, it is the student's responsibility to obtain missed information from a classmate. Missed information includes not only lecture notes, but also any possible information regarding changes to the agenda. The student is expected to arrive prepared to take notes and should bring textbook and handouts. Points missed because of an **unexcused absence** (including tardiness and leaving early) **cannot** be recovered. An excused absence allows us to make alternative arrangements for completing assignments. The documentation required for an absence to be excused must be:

- From an appropriate source (e.g., doctor, dentist, funeral director) who states the nature of the event that caused (or will cause) your absence.
- In writing, on official stationery, and signed (I do **not** return excuses to you). Telephone calls, FAXes, and e-mails are **not** acceptable.
- Presented prior to the absence for a scheduled event (e.g., university-sponsored activity, recognized religious holiday, military service).
- Presented no more than one week after the date of an unexpected absence.
- In case a student cannot attend class because he/she officially representing TAMU-CC (e.g., meetings or sports events), the documentation required for an absence to be excused must be obtained from the Office of Dr. Eliot Chenaux, Vice President for Student Affairs. Refer to the student handbook on obtaining an excused absence from his office.

**Unacceptable excuses:** Only unavoidable absences are excused, so you should schedule routine personal events (e.g., vacations, weddings, reunions, non-emergency medical or dental visits, parent-teacher conferences, household or auto repairs) to avoid conflicts with your classes. Oversleeping is never an acceptable excuse. Employment conflicts are not acceptable excuses for absences, tardiness, or leaving class early. Once enrolled in a class, it is the student’s responsibility to arrange his or her work schedule so that no regularly scheduled class, laboratory, or examination time is missed. Texas waives jury duty for students, so jury duty is not an acceptable excuse.

If a student experiences academic difficulty, the instructor is available for consultation and extra help. However, it is the responsibility of the student to seek help, preferably while the investment made by the student can still be salvaged. Please contact the instructor by phone (361-825-3634) or via email (riccardo.mozzachiodi@tamucc.edu) to arrange an appointment. All students are required to access and use their university Islander email accounts to communicate with the instructor. To find out more about your TAMU-CC email account go to: [http://www.tamucc.edu/ise.html](http://www.tamucc.edu/ise.html). The instructor will use these addresses to create a class email
list to disseminate important course information.

The instructor will not reply to personal emails (Gmail, yahoo, etc.) other than the student's islander email

About the Final Exam
Students are not required to take more than two final examinations in any one day. The student who need to take the Neurobiology Final Exam and have three or more final examinations scheduled on the same day may request to take this exam on another day during the final examination period. The process is described below:
1) The student should first try to resolve the matter with the appropriate instructor(s). If this is the case, students are strongly encouraged to contact Dr. Mozzachiodi in a timely manner.
2) If the matter remains unresolved, the student should submit a request for an alternative final exam time in writing to the Office of Student Affairs. This request must be submitted by the drop date (the last day to drop a course for the semester with an automatic grade of W as stated in the semester class schedule).
3) The Office of Student Affairs will select which of the exams should be taken at an alternative time and formally contact the faculty member at least 15 working days before the final examination period. Preference for selection of which course would have an alternative final exam time must be based on the course with the smaller class size and, then, courses with final exam times in between other exams.
4) The faculty member will then arrange an alternative time for the student to take the final exam for that course that does not conflict with the student's final exam schedule or require the student to take more than two final exams in one day. If students have difficulties in rescheduling the examination, they should consult with the Office of Student Affairs. Final exams given outside the regularly scheduled time may vary in content and format at the discretion of the faculty member.

Opportunities listserv
Students are strongly encouraged to subscribe to the opportunities listserv, which announces scholarships, fellowships, internships, seminars, jobs, etc. Some SPAM filters will not accept mass mailings, but you can adjust your settings to accept messages from this listserv. To subscribe:
1) Send an email message to: opportunities-list-request@sci.tamucc.edu
2) Make sure that your e-mail address appears in the "From:" heading, and that the word "subscribe" is typed in the subject line.
3) You will receive a subscription acknowledgement from the listserv letting you know that you have subscribed successfully.
4) To post a message to all members of the listserv, send the message to: opportunities-list@sci.tamucc.edu
You must be subscribed to the listserv to send messages.

GRADE APPEAL PROCESS
As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter
with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

**ACADEMIC ADVISING**

The College of Science and Technology requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. The College's Academic Advising Center is located in Faculty Center 178, and can be reached at 825-6094.

**DISABLING CONDITIONS**

Texas A&M University-Corpus Christi is committed to providing persons with disabilities with an equal opportunity to access campus facilities, resources and programs. The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. Support and accommodations are also available for returning veterans who experience cognitive and/or physical access issues in the classroom or on campus. Our Office of Disability Services arranges such support and academic accommodations. To make a request, or for more information, call (361) 825-5816 or visit Driftwood 101. It is important to contact the Office of Disability Services in a timely fashion as it will take time for them to review requests and prepare accommodations and accommodation letters. Upon receipt of accommodation letters, a student should take them to appropriate instructors as soon as possible. Instructors are not required to make accommodations prior to receipt of an official accommodation letter. Should the student have mobility problems, please notify the lecture and laboratory instructors so that they may seek assistance for you in the case of fire drills or emergencies. Also, any student having a medical condition that may fulminate (i.e., “flare-up” without warning such as diabetes, epilepsy, etc.) should notify the instructors.

**RELIGIOUS HOLIDAYS**

Any student who will miss class and/or test days because of recognized religious holidays should notify the instructor as soon as possible so that alternative arrangements can be made. Prior notification is required for such absences to be excused.

**GENERAL DISCLAIMER:**

The Instructor reserves the right to modify the schedules and policies in this syllabus if and when necessary. Such changes will be announced during regularly scheduled lecture periods, but no attempt will be made to contact students who were absent when an announcement was made. Nevertheless, all students are responsible for abiding by all announced changes, and it is a student’s responsibility to obtain this information. Changes will be announced in a timely manner, but students should be aware that some modifications may be implemented without prior warning.
TENTATIVE COURSE SCHEDULE

This schedule may change depending on unforeseen events. Numbers in parenthesis refer to specific chapters of the textbook.

January
13 Review of the syllabus and course introduction (chapter 1)
18 Martin Luther King Day, no class
20 Neurons and glia (chapter 2)
25 The neuronal membrane at rest (chapter 3)
27 The action potential (chapter 4)

February
1 Synaptic transmission (chapter 5)
3 Synaptic transmission (chapter 5, continued)
8 Neurotransmitter systems (chapter 6)
10 The structure of the nervous system (chapter 7 + Appendix)
15 Exam 1: material covered in chapters 1 – 6 (introduction, neurons and glia; the neuronal membrane at rest; the action potential; synaptic transmission; neurotransmitter systems).
17 The structure of the nervous system (chapter 7 + Appendix, continued)
22 The structure of the nervous system (chapter 7 + Appendix, continued)
24 The chemical senses (chapter 8)

March
1 The eye (chapter 9)
3 The central visual system (chapter 10)
8 Exam 2: material covered in chapters 7 – 10 (the structure of the nervous system; the chemical senses; the eye; the central visual system).
10 The auditory and vestibular systems (chapter 11)
15 No class, Spring break
17 No class, Spring break
22 The auditory and vestibular systems (chapter 11, continued)
24 The somatic sensory system (chapter 12)
29   Spinal control of movements (chapter 13)
31   Bran control of movements (chapter 14)

April

5   Exam 3: material covered in chapters 11 – 14 (the auditory and vestibular systems; the somatic sensory system; spinal control of movements; bran control of movements).
7   Chemical control of the brain and behavior (chapter 15)
12  Brain mechanisms of emotion (chapter 18)
14  Memory systems (chapter 24)
19  Molecular mechanisms of learning and memory (chapter 25)
21  Brain rhythms and sleep (chapter 19)
26  Exam 4: material covered in chapters 15, 18, 24 and 25 (chemical control of the brain and behavior; brain mechanisms of emotion; memory systems; molecular mechanisms of learning and memory).
28  Mental illness (chapter 22)

May

3   General review of the course material and questions in preparation for the final exam
12  Final Exam: 7:15 – 9:45 p.m. Final Exam will be comprehensive and will also include questions on chapters 19 and 22 (brain rhythms and sleep; mental illness).