



Neurophysiology

Spring 2013

Course Number/Section: NSC 4356-001

Course Title: *Neurophysiology*

Classroom: FN 2.102

Term: *Spring 2013*

Dates: Jan 15th – May 7th

Days & Times: Tuesday & Thursday 8:30- 9:45

Professor Contact Information:

Professor: Dr. Robert L Rennaker II

Email Address renn@utdallas.edu

Office Location JO 4.206

Office Hours: 1 hour following class, or email for appointment

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Prerequisites: NSC 3361 Behavioral Neuroscience and NSC 4353 Lab Methods

Course Description

The central nervous system is a complex array of neuronal cells connected in a highly ordered array. Its functional properties are determined to a great extent by the membrane properties of neurons, and by the manner in which they communicate and connect with each other. The Neurophysiology course is a survey of the biophysical properties of membrane conductances in neuronal and sensory cells, aimed to supply the basic information to understand how single neurons respond to electrical and chemical stimuli.

Student Learning Objectives/Outcomes

After completing the course, students should be able to:

- 1.1 Describe the historical development of neuroscience as a cross-disciplinary science.
- 1.2 Describe and analyze the contributions of anatomical, physiological, behavioral, pharmacological, developmental, and cell and molecular biological studies to the bases of neuroscience
- 1.3 Use proper terminology for neurotransmitters, receptors, and receptor/effector signalling systems, network properties and functional organization
- 1.4 Identify major structural and functional areas of the nervous system
- 1.4 Work with models describing electrical activity of neurons, particularly the role of ion channels in transmitting information within a cell and to other cells.
- 1.5 Describe assumptions and limitations of current methods
- 1.6 Describe why multiple research techniques and multiple levels of analysis are necessary to understand neural function



Required Textbooks and Materials

- 1) Bertil Hille: Ion Channels of Excitable Membranes, Third or later edition, Sinauer, 2001
- 2) Kandel, Schwartz, Jessel: Principles of Neural Science, McGraw-Hill, 4th or later edition
- 3) A clicker will be required every day.

Course Policies & Requirements

This course requires a *significant* amount of reading to complete the course successfully. The pace of the course and material covered will, in part, be based upon results from random assessments. You are required to attend every class.

Grade Changes:

There will be no grade changes on quiz scores. On tests you will have one week, after which no changes will be made to any grade.

Exams:

There will be 2 comprehensive exams. These exams cannot be dropped. These will be short answer and will not use the clicker.

Attendance: All students are expected to attend each class. Quizzes during class are used to evaluate your progress and help me pace the course. Material from the quizzes will be on tests in one form or another. Only official UT Dallas events or documented medical emergencies will be excused. You are expected to complete all the reading prior to class. Class will be spent reviewing and discussing the readings. Forgetting a clicker is not an excuse to miss a quiz. You cannot make up quiz grades.

Grading Policy and Final Grade Scale

(NOTE: There is NO extra credit possible in this class)

Quizzes:	(50% of your grade)
Midterm:	(15% of your grade)
Final: May 7 @ 8am	(25% of your grade)
Discretion of Instructor:	(10% of your grade)

As the instructor of this course, I reserve the right to make subjective judgments about a student's understanding of the material that may not be accurately reflected in quiz or exam scores. These adjustments will be based on my personal interaction with students in the course. **As a result 10% of your grade will be at my discretion.**

GRADING SCALE:

Percent Grade Point Range Totals

96.0-100%	A+
93.0-95.99	A
90.0-92.99	A-
86.0-89.99%	B+
83.0-85.99%	B
80.0-82.99%	B-
76.0-79.99%	C+
73.0-75.99%	C
70.0-79.99%	C-



60.0-69.99% D
59.99% and less F

Graduate Students (EEGR5V80): Graduate students will be required to write a literature review on a topic related to the course. This paper must be original to this class and all supporting material must come from peer reviewed journals, Not the INTERNET!!! **The grade on the paper will be in lieu of the quiz grades.**

Student Conduct & Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, *A to Z Guide*, which is provided to all registered students each academic year. The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3*, and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972-883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrates a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Withdrawals from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures



Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*. In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grade Policy

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been COMPLETED SUCCESSFULLY. You must get the permission of the instructor and make arrangements for incomplete work prior to this grade being assigned. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m. The contact information for the Office of Disability Services is:

The University of Texas at Dallas, SU 22
PO Box 830688
Richardson, Texas 75083-0688
(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance. It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated. The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding a religious absence and in



advance of the assignment. All religious holidays that will be observed should be submitted in writing to the instructor at the beginning of the semester. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment. If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.