Neurophysiology
Spring 2017

Course Number/Section: **NSC 4356-001**
Course Title: Neurophysiology
Classroom: FN 2.102
***Term: Spring* 2017**
Dates: Jan 10th – May 4th
Days & Times: **Tuesday & Thursday 8:30- 9:45**

Professor Contact Information:
***Professor*:** Greg Dussor, PhD
Email Address gregory.dussor1@utdallas.edu
Office Location: BSB 14.502
Office Hours: One hour after each Tuesday lecture, or email for appointment.

Teaching Assistants:
Aarron Phensy (Graduate) ajp059000@utdallas.edu

Teaching Assistant Office Hours: email for appointment.
Review sessions: to be determined.

Final Exam: 5/4/2016 8:00-10:45 pm

Course Pre-requisites
Prerequisites: NSC 4352 Cellular Neuroscience

Course Description
The proper function of the nervous system is based on bioelectricity. Electrical activity and conduction in neurons is determined to a great extent by neuronal membrane properties. This Neurophysiology course is a survey of the active and passive biophysical properties that contribute to membrane potentials and conductances in neurons. It is aimed to supply the necessary information to understand how single neurons respond to electrical and chemical stimuli and how they conduct electrical signals.

Student Learning Objectives/Outcomes
After completing the course, students should be able to:

1.1 Describe the properties of ions in solution and lipid membranes that contribute to the establishment of ion separation and gradients across neuronal membranes.
1.2 Describe the properties of neurons in terms of components of electrical circuits
1.3 List the passive properties of membranes that contribute to electrical conduction.
1.4 Explain the origin of the resting membrane potential.
1.5 List the ionic conductances that contribute to the action potential including how the kinetics of these conductances are ideally suited to generate the action potential
1.6 Describe the major features of voltage-gated and ligand-gated ion channels including differences between the two families
1.7 Explain how electrical activity in neurons can be studied using currently available research methods.

1.8 Demonstrate mastery of how neurons function and signal, be able to critically evaluate data presented and draw conclusions from those data, and understand how basic properties of neurons can be manipulated for research and how understanding these properties can lead to development of new therapeutics.

Required Textbooks and Materials

1) Bertil Hille: Ion Channels of Excitable Membranes, Third edition, Sinauer, 2001

2) Lecture PPT files will be posted on eLearning before each lecture. There is no guaranteed posting date or time but files will be posted at least 1 hour before lecture. Slides are for your own use to aid your learning in this course. Reposting of these slides online or reuse of these slides for other purposes is prohibited.

Course Policies & Requirements

The concepts covered in this course can be technically challenging. Reading the textbook prior to lecture is highly recommended to understand the concepts and to complete the course successfully. You are required to attend every class.

Photography and videography is prohibited. Audio recording is allowed (but prior permission is required).

Grade Changes:

Following exams you will have one week, after which no changes will be made to any grade. There is no opportunity for extra credit in this course.

Exams:

There will be 4 comprehensive exams. These exams cannot be dropped. These will be multiple choice. Excused absences for exams require both appropriate documentation and **advance notice** (by email, phone, or in person).

Weekly questions: Each week, there will be 1 question posted on the eLearning website. You will be responsible for answering that question within the assigned time. Questions will be graded by the instructor or the graduate teaching assistant. Grading will be 1 point for a correct answer and 0 points for either an incorrect answer or for no answer. There will be approximately 10-12 questions total throughout the semester, thus a total of 10-12 points will be the maximum. Assignment of your overall grade in this section of the course is left to the discretion of the course director (see below for grading scale).

Attendance: All students are expected to attend each class. Only official UT Dallas events or documented medical emergencies will be excused.

Grading Policy and Final Grade Scale
(NOTE: There is NO extra credit possible in this class)

Exam 1:	(22.5% of your grade)
Exam 2:	(22.5% of your grade)
Exam 3:	(22.5% of your grade)
Final: May 4 @ 8:00am	(22.5% of your grade)
Weekly questions:	(10% of your grade)

10% of your grade will be based on weekly questions that are answered through the eLearning website. Assignment of your grade in this section will be based on the following breakdown:

Correct Answer %	Grade
80-100	100
50-80	80
25-50	50
1-25	25
0	0

GRADING SCALE:

Percent Grade Point Range Totals
90.0-100% A
78.0-89.99% B
65.0-77.99% C
55.0-64.99% D
54.99% and less F

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UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.