Neurophysiology Syllabus

Spring 2023
Room #: FN 2.102
M-W 8:30 -9:45 am

Professor Contact Information

Dr. Robert L. Rennaker II Office hour: Immediately following class
E-mail address: renn@utdallas.edu, office phone 972-883-3562

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

his course focuses on the elements of neural functions ranging from the kinetics of channels in excitable membranes to the collective behavior of real neural networks. Prerequisites: NSC 3361 and NSC 4352 and CHEM 1311 and CHEM 1312 and BIOL 2311 and (MATH 2413 or MATH 2414 or MATH 2417). (3-0) Y

Course Description

This course will review the basic neurophysiology and its application to real world problems and applications. You will learn how an action potential is generated and propagates down an axon. How neurons communicate and are modified during learning. You are expected to attend each class. The course grade will be dependent upon your interaction during the class period.

Student Learning Objectives/Outcomes

On completion of this course, students should be able to:

- Pick up a primary research article related to neurophysiology based medical devices and understand their mechanism of action and critical design features.
- Lead a coherent discussion of primary research articles.

Required Textbooks and Materials

Principles of Neural Science by Kandel, Schwartz, and Jessell

https://www.amazon.com/Principles-Science-Schwartz-published-McGraw-Hill/dp/B00E28K9UC/ref=sr_1_1?crid=30Z7LCCL2N6U7&keywords=Principles+of+Neural+Science+by+Kandel%2C+Schwartz%2C+and+Jessell&qid=1642467183&s=books&sprefix=principles+of+neural+science+by+kandel%2C+schwartz%2C+and+jessell%2Cstripbooks%2C156&sr=1-1

Suggested Course Materials

Ion channels of excitable Membranes 3rd Edition

https://www.amazon.com/Channels-Excitable-Membranes-Bertil-Hille/dp/0878933212/ref=asc_df_0878933212/?tag=hyprod-20&linkCode=df0&hvadid=312130957577&hvpos=&hvnetw=g&hvrand=5750891226230499506&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9026841&hvtargid=pla-514652687757&psc=1

Class Assignments

Readings will be assigned weekly. You are expected to read all material for the week in advance. It will be covered on quizzes during the week.

You are expected to attend class. Quizzes will be given each class using the Turning Point Response software.

https://ets.utdallas.edu/elearning/resources/turning-point-students

Grading Policy

All assigned readings must be completed before each class. Email me **before** class if you are sick and cannot attend.

Individual class participation – 60% of final grade

- Raise questions about unfamiliar or interesting terms and concepts.
- Actively discuss readings, critiques, and scientific issues, in class.
- Real-time responses using TurningPoint software will be used in each class.

Midterm– 15% of final grade.

In class exam all content covered since first day of this course.

Final Exam: Comprehensive exam on last day of class – 25% of final grade.

Course & Instructor Policies

You must attend each class and respond to all questions using TurningPoint.

Answering questions for another student is academic misconduct.

Comet Creed - "As a Comet, I pledge honesty, integrity, and service in all that I do."

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