

NEUROPHYSIOLOGY (PCB 4832C –Section XXX-CRN XXX-3 credits)

LOGISTICS:

PERIOD/SEMESTER Fall 2020
LOCATION: Boca Raton Campus, SC 118
CLASS HOURS: Monday 9:00AM-3:50PM

CONTACT INFORMATION:

Instructor: Dr. Jennifer Krill

TA: TBD

Office: SC 261

Email: jkrill@fau.edu

Office hours: Wednesday/Friday 10:00-11:00AM TBA

Tues, 10AM -12:00PM

COURSE DESCRIPTION:

Neurophysiology will bring the students closer to understanding neurophysiological signaling at the cellular level and whole animal by using actual wet laboratory experiences supplemented with lectures. We will look at signaling from the perspective of the electrical properties of neurons and their signaling, the basis for all neuronal function. The students will learn through both theory and practical laboratory experiences and then translate their findings into modular reports.

COURSE OBJECTIVES:

To expose students to the concept and principles of neurophysiological techniques:

- [1] Knowledge of Neurophysiological processes and extracellular techniques.
- [2] Use of Neurons in Action V2 simulator.
- [3] Ability to use the cricket as a neurophysiological preparation.
- [4] Ability to use the earthworm as a neurophysiological preparation.
- [5] Demonstrate [1] through [4] through written explanation.

EVALUATION METHOD

Lab Report 1: NIA	58
Lab Report 2: Equipment & Calibration	50
Lab Report 2: Threshold	136
Lab Report 3: Conduction Velocity	139
Lab Report 4: Refractory Period/Freq	143
Lab Report 5: Temperature Q10	134
Lab Report 6: Drugs, Ions	137
Attendance and Participation (10/class)	130
Quizzes 6 @ 5 points each	30
Final Project	118
Total	1075

Grading scale: A=100-93%; A- =92-90%; B+ =89-87%; B = 86-83%; B- =82-80%; C+ =79-77%; C= 76-73%; C- =72-70%; D+ =69-67%; D=66-60% F=<59%

LATE ASSIGNMENTS/MISSED CLASSES:

Attendance: Students are expected to attend all classes and participate in activities and discussions. If a student misses a class, he/she is responsible for all material covered during that class, including lecture material and rules and regulations about the course (such as penalties for late assignments, etc.) and must make up the work on their own time by the due date. If you know in advance that you will be absent, or need accommodations for religious reasons, contact the TA to make necessary arrangements. *Reasonable accommodation will also be made for students participating in a religious observance.* Assignments are due at the beginning of class (both a hard copy and Canvas). Late assignments will be penalized 10% per day and none will be accepted after 5 days.

CLASSROOM ETIQUETTE:

All FAU students are expected to behave according to accepted norms that ensure a professional climate wherein all can exercise their right to learn. Questions from students will be recognized at the discretion of the lecturer in a manner that is minimally disruptive to the lecture. Cell phones should be shut off during lectures. Stations must be cleaned up and shut down at the end of the day for full participation credit. Disruptive behavior is not acceptable in the classroom. Students engaging in such behavior may be asked to leave or may be moved from the class by security personnel. Actions such as violence, shouting, use of cell phones, using profanity, interrupting classes, and any other behavior that the instructor believes creates an unpleasant environment in the classroom will be grounds for withdrawal from the course, disciplinary/judicial proceedings, or failure of the course.

STUDENT ATTENDANCE POLICY:

Students are expected to attend all their scheduled University classes and to satisfy all academic objectives. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations, or participation in University-approved activities. If a student misses a class, he/she is responsible for all material covered during that class, including lecture material and rules and regulations about the course (such as penalties for late assignments, etc.) and must make up the work on their own time by the due date. If you know in advance that you will be absent, or need accommodations for religious reasons, contact the TA to make necessary arrangements.

Reasonable accommodation will also be made for students participating in a religious observance. Assignments are due at the beginning of class (both a hard copy and Canvas). Late assignments will be penalized 10% per day and none will be accepted after 5 days.

DISABILITY STATEMENT:

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie, and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

COUNSELING AND PSYCHOLOGICAL SERVICES (CAPS) CENTER:

Life as a university student can be challenging physically, mentally, and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a

range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>.

CODE OF ACADEMIC INTEGRITY POLICY:

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high-quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001.

https://www.fau.edu/ctl/4.001_Code_of_Academic_Integrity.pdf

ARTICULATION TO UNIVERSITY MISSION: This course addresses both the university mission statement as well as the strategic plan by offering a high quality academic curriculum in a caring environment, stimulating creative initiative utilizing some problem-based learning, critical thinking, and the development of both written and oral competencies. This course fosters motivated, self-directed analytical thinking. Students in this course will develop an awareness of the contributions of scientists and practitioners from diverse domestic and international backgrounds as well as biomedical and health issues that impact those living within and outside of our community. These goals are attained by providing quality instruction, class discussions or debates, attendance at special seminars, exams, and written reports to help students attain their goals.

TEXTBOOKS:

From Neuron to Brain 5th edition — optional
Neurons in Action V2 – optional

COURSE OUTLINE:

Introduction to the theory behind neurophysiological techniques taught in the course. Extracellular recording, waveform analysis, data analysis, and computer simulation.

Instrumentation overview and analysis software training.

The use of animals in research.

Cricket and Earthworm Anatomy and dissection.

Compound action potential identification and mechanistic understanding.

Action potential threshold.

AP conduction velocity, effect of temperature, refractory period, frequency, and pharmacological and ionic manipulation.

METHODS OF TEACHING:

Laboratory exercises both using computer simulation and invertebrates

Lectures and students' discussions

Audio-visuals: power point presentations

Class Schedule	Assigned Reading	In Class	Out of Class
WEEK 1:	Lab: NIA	Lecture Sample Quiz Lab: NIA	Report for Lab: NIA
WEEK 2:	Lab: Equipment, Calibration, and Data Analysis	Quiz #1 Lecture Lab: Equipment, Calibration, and Data Analysis	Due: NIA Report Report for Lab Equipment, Calibration, and Data Analysis
WEEK 3:	No Class (Labor Day)	9-7-2020	
WEEK 4:	Lab: Equipment, Calibration, and Data Analysis	Lecture Lab: Equipment, Calibration, and Data Analysis	Report for Lab: Equipment, Calibration, and Data Analysis
WEEK 5:	Lab: Animal Prep & Threshold How to write a lab report	Quiz #2 Lecture Lab: Threshold	Due: Equip, Cal, and Analysis Report Report for Lab: Threshold
WEEK 6:	Lab: Threshold	Lab: Threshold	Report for Lab: Threshold
WEEK 7:	Lab: Conduction velocity	Quiz #3 Lecture Lab: Conduction velocity	Due: Threshold Report Report for Lab: Conduction velocity
WEEK 8:	Lab: Refractory period/Freq	Quiz #4 Lecture Lab: Refractory period/Freq	Due: CV Report Report for Lab: Refractory period/Freq
WEEK 9:	Lab: Temperature	Quiz #5 Lecture Lab: Temperature	Due: RP/Freq Report Report for Lab: Temperature
WEEK 10:	Lab: Temperature	Lab: Temperature	Report for Lab: Temperature
WEEK 11:	Lab: Drugs/Ions	Quiz #6 Lecture Lab: Drugs/Ion	Due: Temp Report Report for Lab: Drugs/Ion
WEEK 12:	Lab: Drugs/Ions	Lab: Drugs/Ion	Report for Lab: Drugs/Ion
WEEK 13:	No Class (Veteran's Day)	11-11-2020	
WEEK 14:	Design an Experiment	Lab: Design an Experiment	Due: Drugs/Ion Report Report for Lab: Experiment
WEEK	Design an Experiment	Lab: Design an Experiment	Report for Lab: Experiment Due: December 6 th at 8am