FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—NEW COURSE PROPOSAL[1]

UGPC APPROVAL _____
UFS APPROVAL _____
SCNS SUBMITTAL _____
CONFIRMED _____
BANNER POSTED _____
CATALOG _____

DEPARTMENT: BIOLOGICAL SCIENCES | **COLLEGE: CHARLES E. SCHMIDT COLLEGE OF SCIENCE**

RECOMMENDED COURSE IDENTIFICATION:

PREFIX BSC **COURSE NUMBER** 5417 **LAB CODE** (L or C) C

(TO OBTAIN A COURSE NUMBER, CONTACT MJENNING@FAU.EDU)

COMPLETE COURSE TITLE: PRACTICAL CELL NEUROSCIENCE

EFFECTIVE DATE
(first term course will be offered)
SPRING 2015

CREDITS[2]: 3

TEXTBOOK INFORMATION:

Required Text Books:

1) From Neuron to Brain: A Cellular and Molecular Approach to the Function of the Nervous System, 2001, Fourth Edition by A. Robert Martin, Bruce G. Wallace, Paul A. Fuchs, and John G. Nicholls (Sinauer Associates ISBN-10:0878934391 ISBN-13: 978-0878934393)
2) Neurons in Action V2. Tutorials and Simulations Using NEURON, 2007 by John W. Moore and Anne E. Stuart (Sinauer Associates ISBN-978-0-87893-548-2)

GRADING *(SELECT ONLY ONE GRADING OPTION)*: **REGULAR** X **SATISFACTORY/UNSATISFACTORY** _____

COURSE DESCRIPTION, NO MORE THAN THREE LINES:

The overarching objective of this laboratory course is to provide students with hands-on experience in some of the basic, but essential laboratory skills required in molecular biology and biotechnology. Emphasis will be placed on understanding the concepts behind designing and implementing controlled experiments. These techniques involve manipulation of DNA, RNA and protein. These skills are directly transferable to the workplace.

PREREQUISITES *:	**COREQUISITES*:**	**REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)*:**
		Must be enrolled in one of the five following levels: Graduate

* *PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.*

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE: SPECIALIZATION IN THE PERTINENT FIELDS, CONTINGENT UPON DEPARTMENTAL APPROVAL

Faculty contact, email and complete phone number:	Please consult and list departments that might be affected by the new course and attach comments.[3]
Rodney K. Murphey, Ph.D. rmurphey@fau.edu (561) 297-0384 Ken Dawson-Scully, Ph.D. Ken.Dawson-Scully@fau.edu Kdawsons@fau.edu Dawsonscully@gmail.com (561) 297-0337 Robert (Bob) W. Stackman, Ph.D. rstackma@fau.edu Jupiter: (561) 799-8052 Boca: (561) 297-2270	Department of Biological Sciences: This course was previously a Special Topics class and needs a new course number.

Approved by:	***Date:***
Department Chair:	4/2/14
College Curriculum Chair:	
College Dean:	
UGPC Chair:	
Graduate College Dean:	
UFS President:	
Provost:	

1. **Syllabus** must be attached; see guidelines for requirements: *www.fau.edu/provost/files/course syllabus.2011.pdf*
2. Review **Provost Memorandum: Definition of a Credit Hour** *www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf*
3. **Consent** from affected departments (attach if necessary)

Email this form and syllabus to *UGPC@fau.edu* **one week before** the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.

Syllabus

Course Title: Practical Cell Neuroscience Spring Semester 2015

Course Number: BSC 5417-018 Credits: 3

Course Time and Room: Monday 9am-10:30am SC 180

Pre-requisites: Must be enrolled as a Graduate-level student

Instructor: Ken Dawson-Scully

Office Number: SC 214 Telephone: 561-297-0337

E-mail: ken.dawson-scully@fau.edu

Office hours: Monday-Friday 8:30am-9:30am, SC 214

Required Text Books:

1) From Neuron to Brain: A Cellular and Molecular Approach to the Function of the Nervous System, 2001, Fourth Edition by A. Robert Martin, Bruce G. Wallace, Paul A. Fuchs, and John G. Nicholls (Sinauer Associates ISBN-10:0878934391 ISBN-13: 978-0878934393)
2) Neurons in Action V2. Tutorials and Simulations Using NEURON, 2007 by John W. Moore and Anne E. Stuart (Sinauer Associates ISBN-978-0-87893-548-2)

Course description, purpose, and objectives: This course will bring the students closer to understanding neurophysiological signaling at the cellular level, where only a few cells communicate in close proximity. We will look at signaling from the perspective of single ion channels to cellular synaptic transmission. The electrical properties of neurons and their signaling is the basis for all neuronal function. The students will learn through both theory and practical laboratory these principles and apply them in an experimental proposal which they will present and then execute resulting in a final report.

Method of Instruction: Lectures, classroom exercises, lab exercises, proposal writing, and formal manuscript writing.

Topics:

1) The cell membrane
2) Equilibrium potentials
3) The Na Action Potential
4) Threshold
5) Voltage Clamp and Current Clamp
6) Ion Channels
7) The Ca Action Potential
8) The Neuromuscular Junction

9) Postsynaptic Inhibition
10) Interaction of Synaptic Potentials
11) Myelination
12) Axon Diameter
13) Temperature and Cell Signaling

Practical Cell Neuroscience Lab Syllabus Spring 2015

1. Jan 5th, 2015 **NO CLASS**
2. Jan 13th, 2015 A#1: Introduction/Membrane/Equilibrium
3. Jan 19th, 2015 **HOLIDAY – NO CLASS**
4. Jan 26th, 2015 A#2: The Na AP/Threshold/Ca Sensitivity of Na Channel
5. Feb 2nd, 2015 A#3: Non-Uniform Density/Voltage Clamping/Chattering Channels
6. Feb 9th, 2015 A#4: The Ca AP/The NMJ/Postsynaptic Inhibition
7. Feb 16th, 2015 **Sample Presentation/Proposal Write Up** & A#5: Interactions of Synaptic Potentials/Passive Axon/Axon Diameter
8. Feb 23rd, 2015 A#6: Unmyelinated Axon/Myelinated Axon/Partial Demyelination

Mar 2nd, 2015 SPRING BREAK – NO CLASS

9. Mar 9th, 2015 **PRESENTATIONS** & A#7: Impulse Initiation/Synaptic Integration/Impulse Invasion
10. Mar 16th, 2015 **PRESENTATIONS** & WORK ON PROJECT/Grad Assignment: Na & K Channel Kinetics/Voltage Clamping Intact Cells
11. Mar 23rd, 2015 **PRESENTATIONS** & WORK ON PROJECT
12. Mar 30th, 2015 WORK ON PROJECT – data graphs
13. Apr 6th, 2015 WORK ON PROJECT – data graphs
14. Apr 13th, 2015WORK ON PROJECT – data graphs DUE
15. Apr 20th, 2015 **PROJECT DUE by 4pm (BOTH:hand in & email confirmation)**
16. Apr 27th, 2015 **FINAL EXAM at 10am in SC180**

Assessment Procedures, Grading Criteria, Class Policies:

10% Quizzes (Quiz every class to show you read the lab before hand)
10% Participation
20% Assignment Sheets (These will be done during lab)
20% Proposal of Formal Lab Report (a one page report and presentation on your proposed experiment for your Formal Lab Report)
20% Formal Lab Report
20% Exam (Comprehensive Exam)

A	94-100%
A-	90-94%
B+	86-90%
B	82-86%
B-	78-82%
C+	74-78%

C	70-74%
C-	66-70%
D+	62-66%
D	58-62%
D-	54-58%
F	<54%

It is the responsibility of the student to withdraw from this class, should that status be desired - the instructor cannot withdraw students from the course. The instructor will not give the grade of "I" in lieu of a grade of "D" or "F". The grade of "I" will be considered only in exceptional cases (such as serious illness) for students who are presently performing at a "C" or higher level in the course.

Attendance. Students are expected to attend all scheduled classes. If you miss a class you are responsible for ALL the material covered during that class, including lecture material and rules and regulations about the course (such as penalties for late assignments, etc.). Reasonable accommodation will also be made for students participating in a religious observance.

Homework assignments and papers. The papers and homework are due on the dates assigned. These will be accepted up to 1 week late, but they will be penalized. None will be accepted over 1 week late.

Final Exam. The final exam will be a comprehensive exam on all material covered in this course.

Accommodations for students with disabilities. In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca Raton - SU 133 (561-297-3880), in Davie - MOD I (954-236-1222), in Jupiter - SR 117 (561-799-8585), or at the Treasure Coast - CO 128 (772-873-3305), and follow all OSD procedures.

Honor Code. Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, 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 http://www.fau.edu/regulations/chapter4/4.001_Honor_Code.pdf.

FAU
FLORIDA ATLANTIC UNIVERSITY

Charles E. Schmidt College of Science
Department of Biological Sciences
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fax: 561.297-2749

TO: University Graduate Programs Committee (UGPC)

FROM: Rodney Murphey, Ph.D.
Professor and Chair
Department of Biological Sciences

DATE: February 19, 2014

RE: New Course Proposal Consent

To Whom It May Concern:

This note constitutes acknowledgement and consent of the Department of Biological Sciences for the creation of a new course within the department: **BSC 5417 – Practical Cell Neuroscience.**

Best Regards,

Rodney Murphey, Ph.D.
Chairman, Department of Biological Sciences
Director, Life Science Initiative on the MacArthur Campus