

FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—NEW COURSE PROPOSAL¹

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 _____

CREDITS²: 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*:

GRADUATE LEVEL

COREQUISITES*:

REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)*:

Graduate Level

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

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE: MEMBER OF THE GRADUATE FACULTY OF FAU AND HAS A TERMINAL DEGREE IN THE SUBJECT AREA (OR A CLOSELY RELATED FIELD).

Faculty contact, email and complete phone number:

Ken Dawson-Scully, Ph.D.
Ken.Dawson-Scully@fau.edu
Kdawsons@fau.edu
Dawsonscully@gmail.com
 (561) 297-0337

Please consult and list departments that might be affected by the new course and attach comments.³

Please see attached for the following:
 College of Medicine
 Psychology
 Center for Complex Systems & Brain Sciences:

Approved by:		Date:		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)
Department Chair:	<i>[Signature]</i>		10/30/14	
College Curriculum Chair:	<i>[Signature]</i>		10/30/14	
College Dean:	<i>[Signature]</i>		10/30/14	
UGPC Chair:	<i>[Signature]</i>		11/5/14 11/2/14	
Graduate College Dean:	<i>[Signature]</i>		11/15/14	
UFS President:				
Provost:				

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.



Charles E. Schmidt College of Science
Department of Biological Sciences
777 Glades Road
Boca Raton, FL 33431
tel: 561.297-3320
fax: 561.297-2749

TO: University Graduate Programs Committee (UGPC)
FROM: Rodney Murphey, Ph.D.
Professor and Chair
Department of Biological Sciences
DATE: September 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 5417C-Practical Cell Neuroscience.

Best Regards,

A handwritten signature in blue ink, appearing to read 'R.K. Murphey', is written over the typed name and title.

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

Syllabus

Course Title: Practical Cell Neuroscience Spring Semester 2015

Course Number: BSC 5417C Credits: 3

Course Date and Time: Monday Lecture 10-11:30a; Monday and Tuesday Lab 1pm-3:10pm.

Pre-requisites: Genetics PCB 3063 or equivalent

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, RE 103

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:

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.

Course Objectives:

To teach students through lecture and practical experience the following concepts in cellular neurophysiology:

- 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 Summer 2014

Session #(week). Class/Lab Activity

1. Introduction
2. ASSIGNMENT1: Introduction/Membrane/Equilibrium
3. ASSIGNMENT2: The Na AP/Threshold/Ca Sensitivity of Na Channel
4. ASSIGNMENT3: Non-Uniform Density/Voltage Clamping/Chattering Channels
5. ASSIGNMENT4: The Ca AP/The NMJ/Postsynaptic Inhibition
6. **Sample Presentation/Proposal Write Up & ASSIGNMENT5: Interactions of Synaptic Potentials/Passive Axon/Axon Diameter**
7. ASSIGNMENT6: Unmyelinated Axon/Myelinated Axon/Partial Demyelination
8. **PRESENTATIONS & ASSIGNMENT7: Impulse Initiation/Synaptic Integration/Impulse Invasion**
9. **PRESENTATIONS & WORK ON PROJECT/Grad Assignment: Na & K Channel Kinetics/Voltage Clamping Intact Cells**
10. **PRESENTATIONS & WORK ON PROJECT**
11. WORK ON PROJECT – data graphs
12. WORK ON PROJECT – data graphs
13. WORK ON PROJECT – data graphs DUE
14. **PROJECT DUE by 4pm- (BOTH:hand in & email confirmation)**
15. **FINAL EXAM.**

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/ctl/4.001> Code of Academic Integrity.pdf

From: [Diane Baronas-Lowell](#)
To: [David Wolgin](#)
Cc: [Rodney Murphey](#); [Michelle Cavallo](#); [ken.dawson-scully@fau.edu](#)
Subject: RE: Practical Cell Neuroscience (BSC 6936), Human Neuroanatomy (BSC 6936), Neurophysiology (BSC 6936)
Date: Wednesday, September 10, 2014 11:41:46 AM

Thank you very much for your prompt reply Dave. I really appreciate your valuable time.

Have a wonderful semester!

Regards, Diane

Diane Baronas-Lowell, Ph.D.
Research Associate Professor
FAU-Neuroscience
Charles E. Schmidt College of Science
John D. MacArthur Campus
5353 Parkside Dr.
MC-19, RE Bldg., Room 107
Jupiter, FL 33458
561 799-8073 (work)
561 374-0469 (cell)

From: David Wolgin
Sent: Wednesday, September 10, 2014 11:37 AM
To: Diane Baronas-Lowell
Subject: Re: Practical Cell Neuroscience (BSC 6936), Human Neuroanatomy (BSC 6936), Neurophysiology (BSC 6936)

Diane,
The Department of Psychology has no objections to these courses.
Best,
Dave

David L. Wolgin, Ph.D.
Professor and Chair
Department of Psychology
Florida Atlantic University
Boca Raton, FL 33431
E-mail: WOLGINDL@FAU.EDU
Phone: 561/297-3366
Fax: 561/297-2160

From: Diane Baronas-Lowell <dlowell@fau.edu>
Date: Tuesday, September 9, 2014 1:42 PM
To: David Wolgin <wolgindl@fau.edu>
Cc: Rodney Murphey <RMURPHEY@fau.edu>
Subject: Practical Cell Neuroscience (BSC 6936), Human Neuroanatomy (BSC 6936), Neurophysiology (BSC 6936)

Dear Dr. Wolgin:

I hope this email finds you well.

I would like to have the following three courses formally recorded as new graduate courses:

1. BSC 6936 Practical Cell Neuroscience has been offered each spring beginning in 2010 (by Ken Dawson-Scully).
2. BSC 6936 Human Neuroanatomy was offered in Summer 2014 and will be held again in Spring 2015 (by Brenda Claiborne).
3. Ken has also recently developed an additional course titled Neurophysiology (BSC 6936) which is running during the current fall 2014 term.

In order to do so, I am filling out new graduate course proposal forms for each course and under the "Please consult and list departments that might be affected by the new course and attach comments" box, Rod Murphey suggested I list Psychology. Charles Roberts instructed me to ask for an email from you stating that your department has no objections to these courses.

Please be so kind to send me an email with your comments. Thank you very much for your time!

Regards, Diane

Diane Baronas-Lowell, Ph.D.
Research Associate Professor
FAU-Neuroscience
Charles E. Schmidt College of Science
John D. MacArthur Campus
5353 Parkside Dr.
MC-19, RE Bldg., Room 107
Jupiter, FL 33458
561 799-8073 (work)
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From: Diane Baronas-Lowell
To: Michelle Cavallo; ken.dawson-scully@fau.edu
Subject: FW: Advanced Neurophysiology Lab (BSC6930), Practical Cell Neuroscience (BSC 6936), Human Neuroanatomy (BSC 6936), Neurophysiology (BSC 6936)
Date: Monday, September 15, 2014 8:56:44 AM

Diane Baronas-Lowell, Ph.D.
Research Associate Professor
FAU-Neuroscience
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From: Janet Blanks
Sent: Monday, September 15, 2014 8:37 AM
To: Diane Baronas-Lowell
Cc: Rodney Murphey; Brenda Claiborne; Robert Stackman
Subject: RE: Advanced Neurophysiology Lab (BSC6930), Practical Cell Neuroscience (BSC 6936), Human Neuroanatomy (BSC 6936), Neurophysiology (BSC 6936)

Hi Diane,

The Center faculty confirmed their approval of the new Neuroscience courses proposed by the Biology Department. In fact, we will encourage our new students to take one or more of these courses as electives for our doctoral program.

I welcome the new courses, especially those that offer the students "hands on" experience in the lab where they can learn "state-of-the-art" techniques in Neurophysiology. Of course, I'm always happy to see students learn more Neuroanatomy!

My best,

Janet

From: Diane Baronas-Lowell
Sent: Friday, September 12, 2014 4:02 PM
To: Janet Blanks
Cc: Michelle Cavallo
Subject: FW: Advanced Neurophysiology Lab (BSC6930), Practical Cell Neuroscience (BSC 6936), Human Neuroanatomy (BSC 6936), Neurophysiology (BSC 6936)

Hi Janet:

Have you received any word from your faculty member about his thoughts on these courses? Does your center have any objections to these courses?

Thanks very much for your time. See you at the football game??

Best, Diane

Diane Baronas-Lowell, Ph.D.
Research Associate Professor
FAU-Neuroscience
Charles E. Schmidt College of Science
John D. MacArthur Campus
5353 Parkside Dr.
MC-19, RE Bldg., Room 107
Jupiter, FL 33458
561 799-8073 (work)
561 374-0469 (cell)

From: Janet Blanks
Sent: Thursday, September 11, 2014 8:41 AM
To: Diane Baronas-Lowell
Cc: Rodney Murphey
Subject: RE: Advanced Neurophysiology Lab (BSC6930), Practical Cell Neuroscience (BSC 6936), Human Neuroanatomy (BSC 6936), Neurophysiology (BSC 6936)

Hi Diane,

At the request of one of the Center faculty, would you please send me the syllabi for items #3 and #4 below. He wants to compare the topics in these two courses with Neuroscience 1 and 2 offered by the Center. I feel the "more Neuroscience the merrier"!

Saw Herb last night, he said he's almost ready to submit Arun's paper to PNAS - Yippee!

Jan

From: Diane Baronas-Lowell
Sent: Tuesday, September 09, 2014 4:48 PM
To: Janet Blanks
Cc: Rodney Murphey
Subject: Advanced Neurophysiology Lab (BSC6930), Practical Cell Neuroscience (BSC 6936), Human Neuroanatomy (BSC 6936), Neurophysiology (BSC 6936)

Dear Janet:

Hope all is well!

The Biology Department would like to have the following four courses formally recorded as new graduate courses:

1. BSC 6930 Advanced Neurophysiology Lab which has been offered twice (Spring 2012 and Spring 2013, by Ken Dawson-Scully and Bob Stackman).
2. BSC 6936 Practical Cell Neuroscience which has been offered each spring beginning in 2010 (by Ken Dawson-Scully).
3. BSC 6936 Human Neuroanatomy was offered in Summer 2014 and will be held

again in Spring 2015 (by Brenda Claiborne).

4. Ken has also recently developed an additional course titled Neurophysiology (BSC 6936) which is running during the current fall 2014 term.

In order to do so, I am filling out new graduate course proposal forms for each course and under the "Please consult and list departments that might be affected by the new course and attach comments" box, Rod Murphey suggested I include Center for Complex Systems. Charles Roberts instructed me to ask for an email from you stating that your center has no objections to these courses.

Please be so kind to send me an email with your comments. Thank you very much for your time!

Regards, Diane

Diane Baronas-Lowell, Ph.D.
Research Associate Professor
FAU-Neuroscience
Charles E. Schmidt College of Science
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Michelle Cavallo

From: Carolina Clark
Sent: Monday, September 29, 2014 10:43 AM
To: William Brooks; Rodney Murphey
Cc: Keith Brew; Carolina Clark; Marc Kantorow; John Newcomer; David Bjorkman; Michelle Cavallo
Subject: Re: New Biology Course Proposals
Attachments: Spring 15 new course- Adv. Mol. Bio.pdf; Spring 15- New course- Hum. Gen..pdf; Spring 15- New course- Imm. Sem..pdf; Spring 15- New course- Neu.Add..pdf; Biology New Course Proposals.docx

Importance: High

Dear Dr. Brooks and Dr. Murphy,

We have reviewed your new biology course proposals and have no objections to the proposed courses (see attached letter). In turn, we are awaiting your approval/consent letters for our Biomedical Science Graduate Courses, as promised to us last Friday by Dr. Ivy. Could you please provide us the information no later than Wednesday, as we must submit all agenda items to UGPC by October 1st? For your convenience, I have attached the course proposals to this email.

Thanking you in advance for your assistance and understanding in this time-sensitive matter.

Sincerely,

Carolina Clark
Graduate Programs Coordinator
Charles E. Schmidt College of Medicine
777 Glades Road, Rm. 206-A
Boca Raton, FL, 33431-0991
[561-297-4549](tel:561-297-4549)
clarkc@fau.edu
www.med.fau.edu

From: Michelle Cavallo <MCAVALLO@fau.edu>
Date: Tuesday, September 23, 2014 at 12:52 PM
To: Keith Brew <KBREW@fau.edu>
Cc: William Brooks <wbrooks@fau.edu>, Carolina Clark <clarkc@fau.edu>
Subject: New Biology Course Proposals

Dear Dr. Brew,

The Biology Department is attempting to formalize a number of graduate and undergraduate level courses which have previously been offered under the special topics course code. Each course has been offered at least once and half of the courses on the list have run in excess of four times (the range being 1 to 8 semesters offered). Because these courses have been successful with our students (enrollment has been consistently high), we would like to have them formally recorded in the university catalog.

In order to do so, I am filling out new course proposal forms and under the "Please consult and list departments that might be affected by the new course and attach comments" box, Dr. Randy Brooks, as Chair of our Departmental Graduate Program Committee, suggested I list the Biomedical Science Department. He instructed me to contact you and request email confirmation that your department has no objections to the proposed courses.

The new course proposals and associated syllabi are attached for your review and listed below. Courses marked with an asterisk below are courses which we are proposing to dual list at both the graduate and undergraduate levels. All other courses on the list are proposed only at either the graduate (G) or the undergraduate (UG) level at this time and all courses are labeled by level.

1. (G) Computer Graphics for Biologists (BSC 6466)
2. (G) Methods in Biotechnology (BSC 6468L)
3. *(G) Advanced Plant Biotechnology and Lab (BSC 5467C)
4. *(UG) Genetics Lab (BSC 4007L)
5. *(G) Advanced Genetics Lab (BSC 5038L)
6. *(UG) Molecular Genetics of Aging (BSC 4022)
7. *(G) Advanced Molecular Genetics of Aging (BSC 5029)
8. (UG) Life of a Scientist
9. (UG) Introduction to Honors I
10. (UG) Introduction to Honors II
11. (G) Practical Cell Neuroscience
12. (G) Human Neuroanatomy
13. (G) Neurophysiology
14. (G) Advanced Neurophysiology

The Advanced Plant Biotechnology and Lab, Methods in Biotechnology, and Practical Cell Neuroscience courses listed above already exist as undergraduate level courses in the catalog and, in these two cases, we are simply adding a graduate version of each of the existing courses. (Methods in Biotechnology is the graduate level equivalent to undergraduate level Biotechnology I and II Laboratory courses combined).

In perusing the university catalog, we were not able to identify any apparent direct course conflicts within your department but we would appreciate it if you would respond an email with your comments and the comments of any faculty within your department who teach related courses. Thank you very much for your time.

Regards, Michelle

Michelle Cavallo
Administrative Assistant & Graduate Coordinator
Department of Biological Sciences
Florida Atlantic University
777 Glades Road
Boca Raton, FL 33431
PH: 561-297-0384



Charles E. Schmidt College of Medicine
777 Glades Road
Boca Raton, FL 33431
(561) 297-0706
Fax: (561) 297-2519

Monday, September 29th, 2014

To: Charles E. Schmidt College of Science
Biology Department

To Whom It May Concern,

The Biomedical Science Graduate Program in the Charles E. Schmidt College of Medicine has reviewed the new Biology course proposals, and does not have any objections to the proposed courses. The courses do not contain any material that could constitute a conflict with our program curriculum.

Sincerely,

A handwritten signature in black ink that reads 'Marc Kantorow'.

Marc Kantorow, Ph.D.
Professor and Director of Graduate Programs
Charles E. Schmidt College of Medicine
Florida Atlantic University
777 Glades Rd.
Boca Raton, FL 33431
561-297-2910