Dear Faculty Curriculum Committee:

Please find attached our change of course form the Department of Physics and Astronomy for the existing cross-listed course BIOL 396 / PHYS 296 “Biophysical modeling of excitable cells.” The proposed modifications are as follows.

1. **Change BIOL 396 course prerequisites from the current “BIOL 211 and BIOL 305 and PHYS 102/PHYS 112/HONS 158 or the permission of the instructor” to “BIOL 211 and PHYS 102/PHYS 112/HONS 158 or the permission of the instructor”**. This course was developed from the special topics called “Introduction to Computational Neuroscience” and focuses on excitable cells modeling, with special emphasis on neurons. As such, this course was designed for the existing Neuroscience Minor and serves as one of the mandatory Special Electives. We would like to align the Biology prerequisites of this course section (BIOL 396) with all other Neuroscience Minor courses, including core courses such as BIOL 351, BIOL 352, etc. which have prerequisites only up to BIOL 211.

2. **Change PHYS 296 course prerequisites from the current “BIOL 111 and BIOL 112 and PHYS 112/HONS 158 or the permission of the instructor” to “BIOL 111 and PHYS 112/HONS 158 or the permission of the instructor”**. PHYS 296 is offered to Physics and Astronomy majors and has prerequisites both in Biology and Physics & Astronomy Departments. The experience of the last four years since we teach this class showed that BIOL 111 or BIOL 211 provide all necessary background information for cell-level modeling done in PHYS 296.

3. **Change course number from PHYS 296 to PHYS 396**. The breadth of knowledge reflected, for example, by course prerequisites both in Physics (PHYS 112 - Calculus-based general physics) and in Biology is the same or higher with any other PHYS 3xx courses listed in the Catalog. At the same time, the depth the knowledge intrinsic to this interdisciplinary mathematical modeling of excitable cells (neurons, cardiac cells, etc.) places this course at the level of other course in Neuroscience Minor (for which this course is one of the mandatory Specialized Electives), or Biology (which cross lists this course as BIOL 396). This change in the physics section number will also enforce a uniform notation across different sections of the same course, taught in the same classroom, at the same time, by the same instructor.

Sincerely,

[Signature]

Sorinel A. Oprisan
Instructions:
- Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
- Fill out the parts of the form specified in part B. You must do this before your request can move forward!
- Remember that your changes will not be implemented until the next catalog year at the earliest.
- If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Dr. Sorinel Oprisan  Phone: (843) 953-0780  Email: oprisans@cofc.edu

Department or Program: Physics and Astronomy  School: SSM

Subject Acronym and Course Number: PHYS 296

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

☐ Add a New Course (complete parts C, D, F, G, H, I, J, K)
☐ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J, K)
☒ Course Number
☐ Course Name
☐ Course Description
☐ Credit/Contact Hours
☒ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
☐ Deactivate an Existing Course (complete parts C, D, E, G, I, J, K)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J, K)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

Change BIOL 396 course prerequisites from the current “BIOL 211 and BIOL 305 and PHYS 102/PHYS 112/HONS 158 or the permission of the instructor” to “BIOL 211 and PHYS 102/PHYS 112/HONS 158 or the permission of the instructor”. Although the course is open to all Biology majors, it was designed for the Neuroscience Minor where this course serves as one of the mandatory Special Electives. This course was developed from the special topics called “Introduction to Computational Neuroscience” and focuses on excitable cells modeling, with special emphasis on neurons. We would like to align the Biology prerequisites of BIOL 396 with all other Neuroscience Minor courses, including core courses such as BIOL 351, BIOL 352, etc. which have prerequisites only up to BIOL 211.

Change PHYS 296 course prerequisites from the current “BIOL 111 and BIOL 112 and PHYS 112/HONS 158 or the permission of the instructor” to “BIOL 111 and PHYS 112/HONS 158 or the permission of the instructor”. PHYS 296 is offered to Physics and Astronomy majors and has prerequisites both in Biology and Physics & Astronomy Departments. The experience of the last four years since we teach this class showed that BIOL 111 or BIOL 211 provide all necessary background information for cell-level modeling done in PHYS 296.

Change course number from PHYS 296 to PHYS 396. The breadth of knowledge reflected, for example, by course prerequisites both in Physics (PHYS 112 - Calculus-based general physics) and in Biology is the same or higher with other PHYS 3xx courses listed in the Catalog. At the same time, the depth the knowledge intrinsic to this interdisciplinary mathematical modeling of excitable cells (neurons, cardiac cells, etc.) places
this course at the level of other course in Neuroscience Minor (for which this course is one of the mandatory Specialized Electives), or Biology (which cross lists this course as BIOL 396). This change in the course number will also enforce a uniform notation across different sections of the same course, taught in the same classroom, at the same time, by the same instructor.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

This is the only course offered by Physics and Astronomy department with prerequisites both in Biology and Physics and it does not serve as a prerequisite for any other courses inside or outside the department.
EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: Physics and Astronomy School: SSM Subject Acronym: PHYS Course Number: 296

Credit hours: _3_ lecture _ lab _ seminar _ independent study
Contact hours: _3_ lecture _ lab _ seminar _ independent study

Course title: BIOL 396 / PHYS 296 - Biophysical Modeling of Excitable Cells

Course description (maximum 50 words, exactly as it appears in the catalog):

An introduction to the concepts and methods of computer modeling of excitable cells. Topics include basic electrophysiology of excitable cells, biophysics of ion conduction, mathematical modeling of activation/inactivation mechanisms using experimental data, and computer simulations.

Restrictions (pre-requisites, co-requisites, majors only, etc.):
Current Pre-requisites:
For BIOL 396: BIOL 211 and BIOL 305 and PHYS 102/PHYS 112/HONS 158 or the permission of the instructor.
For PHYS 296: BIOL 111 and BIOL 112 and PHYS 112/HONS 158 or the permission of the instructor.

Cross-listing, if any: BIOL 396 & PHYS 296

Is this course repeatable? □ yes ☒ no If yes, how many total credit hours may the student earn? ___

E. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use boldface for the information that is changing.

Department: Physics and Astronomy School: SSM Subject Acronym: PHYS Course Number: 296

Credit hours: _3_ lecture _ lab _ seminar _ independent study
Contact hours: _3_ lecture _ lab _ seminar _ independent study

Course title: Biophysical Modeling of Excitable Cells

Course description (maximum 50 words, exactly as it appears in the catalog):

An introduction to the concepts and methods of computer modeling of excitable cells. Topics include basic electrophysiology of excitable cells, biophysics of ion conduction, mathematical modeling of activation/inactivation mechanisms using experimental data, and computer simulations.

Restrictions (pre-requisites, co-requisites, majors only, etc.):
New Pre-requisites:
BIOL 396 section: BIOL 211 and PHYS 102/PHYS 112/HONS 158 or the permission of the instructor.
PHYS 396 section: BIOL 111 and PHYS 112/HONS 158 or the permission of the instructor.

Cross-listing, if any (submit approval from relevant department):
BIOL 396 / PHYS 396

Is this course repeatable? □ yes ☒ no If yes, how many total credit hours may the student earn? ___
Is there an activity, lab, or other fee associated with this course? □ yes ☒ no What is the fee? $_____

Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

If this is a newly-created course, is it intended to be the equivalent of an existing course? □ yes ☒ no
If so, which course? ______________

Note: You must deactivate that course by submitting an additional Course Form.

F. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

None.

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

<table>
<thead>
<tr>
<th>Student Learning Outcomes</th>
<th>Assessment Method and Performance Expected</th>
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How does this course align with the student learning outcomes articulated for the major, program, or general education? What program-level outcome or outcomes does it support? Is the content or skill introduced, reinforced, or demonstrated in this course?

I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration? If so, please explain briefly and attach a Change Minor and/or Change Major/Program Form as appropriate.

No change to any degree requirement.
J. CHECKLIST.

☒ I have completed all relevant parts of the form.

☒ I have attached a cover letter that describes my request and lists all the documents I am submitting.

☐ (For new courses only) I have attached a syllabus.

☒ (For courses used in any way by other departments, including cross-listing) I have attached an acknowledgement from the relevant department.

☐ (For courses intended to fulfill a Gen Ed requirement) I have submitted the proposal to the Gen Ed committee.

☒ I have submitted one Signature Form that lists all of the different forms I am submitting.
FACULTY CURRICULUM COMMITTEE
SIGNATURE PAGE

• In section A, list ALL of the forms covered by this signature page. If you submit a form that is not listed in A, your proposal will be held back until we receive a new, updated signature page.
• You must obtain the signature of your department chair and dean before submitting your proposal.

A. FORMS COVERED BY THIS SIGNATURE PAGE. List each form you are submitting—for instance, PSYC 383, Course Form; PSYC, Change of Major Form; PSYC, Change of Minor Form.

BIOL 396/PHYS 296, Course Form.

B. APPROVAL AND SIGNATURES.

1. Signature of Department Chair or Program Director:
   Physics and Astronomy
   [Signature]
   Biology [Signature]
   Date: 9/20/2013

2. Signature of Academic Dean:
   [Signature]
   Date: 10/2/13

3. Signature of Provost:
   [Signature]
   Date: 11/1/13

4. Signature of Business Affairs (only for course fees):
   [Signature]
   Date: ____________

☐ fee approved on ____________
☐ BOT approval pending

5. Signature of Curriculum Committee Chair:
   [Signature]
   Date: ____________

6. Signature of Budget Committee Chair (only for new programs):
   [Signature]
   Date: ____________

7. Signature of Academic Planning Committee Chair (only for new programs):
   [Signature]
   Date: ____________

8. Signature of Faculty Senate Secretary:
   [Signature]
   Date: ____________

Date Approved by Faculty Senate: ____________
FACULTY CURRICULUM COMMITTEE
COURSE FORM

Instructions:
• Please fill out one of these forms for each course you are adding, changing, deactivating, or reactivating.
• Fill out the parts of the form specified in part B. You must do this before your request can move forward!
• Remember that your changes will not be implemented until the next catalog year at the earliest.
• If you have questions, start by checking the instructions on the website. Please feel free to contact the committee chairs with any remaining questions you might have.

A. CONTACT/COURSE INFORMATION.

Name: Sorinel Oprisan  Phone: 843.953.0780  Email: oprisans@cofc.edu

Department or Program: Physics and Astronomy  School: School of Science and Mathematics (SSM)

Subject Acronym and Course Number: PHYS 296

Catalog Year in which changes will take effect: Spring 2014

B. TYPE OF REQUEST. Please check all that apply, then fill out the specified parts of the form.

☐ Add a New Course (complete parts C, D, F, G, H, I, J, K)
☐ Change Part of an Existing Course (complete parts C, D, E, F, G, I, J, K)
  ☐ Course Number
  ☐ Course Name
  ☐ Course Description
  ☐ Credit/Contact Hours
  ☐ Restrictions (prerequisites, co-requisites, junior/senior standing, etc.)
☒ Deactivate an Existing Course (complete parts C, D, E, G, I, J, K)
☐ Reactivate a Previously-Deactivated Course (complete parts C, D, E, G, I, J, K)

C. RATIONALE AND EXPLANATION. Please describe your request and explain why you are making it.

This course was replaced by PHYS 396.

D. IMPACT ON EXISTING PROGRAMS AND COURSES. Please briefly describe the impact of your request on your own programs and courses as well other programs and courses. If another program requires the course, you must submit their written acknowledgement with this proposal. Also, the affected program must describe any change in the number of credit hours they require. Include a list of similar courses in other departments and explain any overlap.

There is no change/impact on staffing or resource allocation.
E. EXISTING COURSE INFORMATION. If you are proposing a new course, just leave this blank. Otherwise, please fill out all fields.

Department: Physics and Astronomy School: SSM Subject Acronym: PHYS Course Number: 296

Credit hours: 3 lecture __ lab __ seminar __ independent study
Contact hours: 3 lecture __ lab __ seminar __ independent study

Course title: Biophysical modeling of excitable cells

Course description (maximum 50 words, exactly as it appears in the catalog):

An introduction to the concepts and methods of computer modeling of excitable cells. Topics include basic electrophysiology of excitable cells, biophysics of ion conduction, mathematical modeling of activation/inactivation mechanisms using experimental data, and computer simulations.

Restrictions (pre-requisites, co-requisites, majors only, etc.):

Prerequisites: (BIOL 112 or HONS 152 and PHYS 112 or HONS 158) or (BIOL 211 and BIOL 305 and PHYS 102) or the permission of the instructor.

Cross-listing, if any: BIOL 396

Is this course repeatable? ☐ yes ☑ no If yes, how many total credit hours may the student earn? ___

F. NEW COURSE INFORMATION. If you are deactivating a course, leave this blank. Otherwise, please fill out all fields. For changed courses, use **boldface** for the information that is changing.

Department: School: Subject Acronym: Course Number:

Credit hours: __ lecture __ lab __ seminar __ independent study
Contact hours: __ lecture __ lab __ seminar __ independent study

Course title:

Course description (maximum 50 words, exactly as it appears in the catalog):

Restrictions (pre-requisites, co-requisites, majors only, etc.):

If this is a newly-created course, is it intended to be the equivalent of an existing course and replace it? ☐ yes ☑ no
If so, which course? __________________
Note: You must deactivate that course by submitting an additional Course Form.

Cross-listing, if any (submit approval from relevant department):
Note: Cross-listed courses are equivalent.

Is this course repeatable? ☐ yes ☑ no If yes, how many total credit hours may the student earn? ___

Is there an activity, lab, or other fee associated with this course? ☐ yes ☑ no What is the fee? $_____

This form was last updated on 06/03/13 and replaces all others.
Note: The Senate cannot approve new fees; Business Affairs will submit any such request to the Board of Trustees. The course can still be created, but the fee will not be attached until the Board has approved it.

G. COSTS. List all of the new costs or cost savings (including new faculty/staff requests, library, equipment, etc.) associated with your request.

There is no cost involving with PHYS 296 course deactivation.

H. STUDENT LEARNING OUTCOMES AND ASSESSMENT.

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I. PROGRAM CHANGES. Will this course be added to the existing degree requirements or list of approved electives of a major, minor, or concentration?  ☒ yes  ☐ no

If yes, please attach a Change Minor and/or Change Major/Program Form as appropriate.
J. CHECKLIST.

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