CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS
COURSE MODIFICATION PROPOSAL
Courses must be submitted by November 3, 2008, to make the next catalog (2009-2010) production

DATE (CHANGE DATE EACH TIME REVISED): 10/13/2008 REV 11.3.08

PROGRAM AREA(S): BIOLOGY/PHYSICS

Directions: All of sections of this form must be completed for course modifications. All documents are stand alone sources of course information.

1. Course Information.
[Follow accepted catalog format.] (Add additional prefixes if cross-listed)

 prefix BIOL/PHYS  course # 416  title Radiobiology and Radionuclides
3 hours lecture per week 3 hours blank per week

x Prerequisites: BIOL 300, PHYS 201

Consent of Instructor Required for Enrollment
Corequisites:

Catalog Description (Do not use any symbols): Topics include: nature and effects of ionizing radiation on biomolecular structures and living cells; applied radiobiology and radionuclides; genetic effects of ionizing radiation and methods of protection and dosimetry.

OLD

prefix BIOL/PHYS  course # 416  title Radiobiology and Radionuclides
3 hours lecture per week 3 hours blank per week

x Prerequisites: BIOL 300, PHYS 201, BIOL/PHYS/HLTH 434

Consent of Instructor Required for Enrollment
Corequisites:

Catalog Description (Do not use any symbols): Topics include: nature and effects of ionizing radiation on biomolecular structures and living cells; applied radiobiology and radionuclides; genetic effects of ionizing radiation and methods of protection and dosimetry.

NEW

General Education Categories CR/NC
Lab Fee Requested x A - F

Course Level: 

Undergraduate  
Post-bac/Credential  
Graduate

Graded  Repeatable for up to units Total Completions

Repeatable

General Education Categories CR/NC
Lab Fee Requested x A - F

Course Level: 

Undergraduate  
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Graded  Repeatable for up to units Total Completions

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2. Mode of Instruction (Hours per Unit are defaulted)

Existing

<table>
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<tr>
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<th>Hours Per Unit</th>
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Proposed

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Hegis Code(s) (Provided by the Dean)

CS No. (filled out by Dean)
3. Course Attributes:

- **General Education Categories**: All courses with GE category notations (including deletions) must be submitted to the GE website: [http://summit.csuci.edu/geapproval](http://summit.csuci.edu/geapproval). Upon completion, the GE Committee will forward your documents to the Curriculum Committee for further processing.

  A (English Language, Communication, Critical Thinking)
  - A-1 Oral Communication
  - A-2 English Writing
  - A-3 Critical Thinking

  B (Mathematics, Sciences & Technology)
  - B-1 Physical Sciences
  - B-2 Life Sciences – Biology
  - B-3 Mathematics – Mathematics and Applications
  - B-4 Computers and Information Technology

  C (Fine Arts, Literature, Languages & Cultures)
  - C-1 Art
  - C-2 Literature Courses
  - C-3a Language
  - C-3b Multicultural

  D (Social Perspectives)

  E (Human Psychological and Physiological Perspectives)

  UDIGE/INTD Interdisciplinary
  - Meets University Writing Requirement
  - Meets University Language Requirement

- **American Institutions, Title V Section 40404**:
  - Government
  - US Constitution
  - US History

  Refer to website, Exec Order 405, for more information: [http://senate.csuci.edu/comm/curriculum/resources.htm](http://senate.csuci.edu/comm/curriculum/resources.htm)

- **Service Learning Course** (Approval from the Center for Community Engagement must be received before you can request this course attribute).

4. Justification and Requirements for the Course. *(Make a brief statement to justify the need for the course)*

- **OLD**
  The course would be part of a proposed Medical Imaging emphasis within the Biology major, preparing students for graduate or professional studies in the medical sciences.

- **NEW**
  The course is part of the Medical Imaging emphasis within the Biology major, preparing students for graduate or professional studies in the medical sciences.

- **Submit Program Modification if this course changes your program.**

5. Learning Objectives. *(List in numerical order)*

- **OLD**
  - Through this course, students will be able to:
  - • explain the basic concepts and principles of radiation physics
  - • explain the genetic effects of ionizing radiation
  - • calculate radiation doses and estimate risk
  - • use a variety of simulation programs, featuring data analysis and display, to derive conclusions about radiation exposure and dose
  - • explain the principles of radiation protection
  - • explain the principles of operation of various radiation detectors
  - • critically evaluate scientific and medical literature
  - • organize and express ideas clearly and convincingly in oral and written forms.

- **NEW**
  - Through this course, students will be able to:
  - (i) explain the basic concepts and principles of radiation physics
  - (ii) explain the genetic effects of ionizing radiation
  - (iii) calculate radiation doses and estimate risk
  - (iv) use a variety of simulation programs, featuring data analysis and display, to derive conclusions about radiation exposure and dose
  - (v) explain the principles of radiation protection
  - (vi) explain the principles of operation of various radiation detectors
  - (vii) critically evaluate scientific and medical literature
  - (viii) organize and express ideas clearly and convincingly in oral and written forms.
6. **Course Content in Outline Form.** (Be as brief as possible, but use as much space as necessary)

**OLD**
- Radiation dosimetry: exposure-dose relationship, kerma, half-life, Medical Internal Radiation Dose (MIRD) method.
- Relative Biological Effectiveness (RBE) and Quality Factor (QF). Dose equivalent. Risk estimates.
- Radiation protection guides, ALARA principle, exposure limits.
- Radiation detectors.

**NEW**
- Radiation dosimetry: exposure-dose relationship, kerma, half-life, Medical Internal Radiation Dose (MIRD) method.
- Relative Biological Effectiveness (RBE) and Quality Factor (QF). Dose equivalent. Risk estimates.
- Radiation protection guides, ALARA principle, exposure limits.
- Radiation detectors.

Does this course content overlap with a course offered in your academic program? **Yes**  **No**  
If YES, what course(s) and provide a justification of the overlap.

Does this course content overlap a course offered in another academic area? **Yes**  **No**  
If YES, what course(s) and provide a justification of the overlap.

Overlapping courses require Chairs' signatures.

7. **Cross-listed Courses (Please note each prefix in item No. 1)**
   - A. List cross-listed courses (Signature of Academic Chair(s) of the other academic area(s) is required).
   - B. List each cross-listed prefix for the course: **BIOL, PHYS**
   - C. Program responsible for staffing: **Math and Applied Physics**

8. **References.** [Provide 3-5 references]

**OLD**

**NEW**

9. **Tenure Track Faculty qualified to teach this course.**  
   - Geoff Dougherty

10. **Requested Effective Date or First Semester offered:** **Spring 2010**

11. **New Resource Requested:**  **Yes**  **No**  
    If YES, list the resources needed.
A. Computer Needs (data processing, audio visual, broadcasting, other equipment, etc.)

B. Library Needs (streaming media, video hosting, databases, exhibit space, etc.)

C. Facility/Space/Transportation Needs:

D. Lab Fee Requested: Yes ☐ No ☐ (Refer to the Dean’s Office for additional processing)

E. Other: ☐

12. Indicate Changes and Justification for Each. [Check all that apply and follow with justification. Be as brief as possible but, use as much space as necessary.]

- Course title
- Prefix/suffix
- Course number
- Units
- Staffing formula and enrollment limits
- x Prerequisites/Corequisites
- Catalog description
- Mode of Instruction

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<thead>
<tr>
<th>Course title</th>
<th>Course Content</th>
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<table>
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Justification: The course covers material for nuclear medicine imaging. It is more useful for students to do it after completing Biol/Phys 434 Introduction to Biomedical Imaging, and we have always counselled them to do the courses in this order. We wish to include 434 as a prerequisite for 416 to ensure that students take the courses in this (logical) order. We have also reduced the number of references to the mandated 3-5, and updated the justification (para. 4) to the present.

13. Will this course modification alter any degree, credential, certificate, or minor in your program? Yes ☐ No ☐

If, YES attach a program update or program modification form for all programs affected.

Priority deadline for New Minors and Programs: October 6, 2008 of preceding year.

Priority deadline for Course Proposals and Modifications: November 3, 2008.

Last day to submit forms to be considered during the current academic year: April 15th.

Dr. Geoff Dougherty, Dr. Ching-Hua Wang 10/13/2008

Proposer(s) of Course Modification Date

Type in name. Signatures will be collected after Curriculum approval.
Approval Sheet

Course:  
If your course has a General Education Component or involves Center affiliation, the Center will also sign off during the approval process.

Multiple Chair fields are available for cross-listed courses.

<table>
<thead>
<tr>
<th>Chair Name</th>
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