**CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS**

# COURSE MODIFICATION PROPOSAL

**Courses must be submitted by November 2, 2009, to make the next catalog (2010--2011) production**

DATE (CHANGE DATE EACH TIME REVISED): 10-15-09

PROGRAM AREA(S) : BIOLOGY

**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 i f cross-listed)***

**OLD**

Prefix BIOL Course# 504 Title MOLECULAR CELL BIOLOGY Units (3)
3 hours lecture per week
hours blank per week

x Prerequisites: BIOL 300
x Consent of Instructor Required for Enrollment
Corequisites:

**Catalog Description** (Do not use any symbols): This course will examine molecular and mechanistic aspects of cell biology. Topics include: cell biochemistry and biosynthesis, cell signaling, regulation of the cell cycle and membrane trafficking.

General Education Categories
Lab Fee Requested

Course Level:
Undergraduate
Post-bac/Credential
x Graduate

Graded
CR/NC
x A - F

Optional (Student's choice)

Repeatable for up to units
Total Completions
Multiple Enrollment in same semester

**NEW**

Prefix BIOL Course# 504 Title MOLECULAR CELL BIOLOGY Units (3)
3 hours lecture per week
hours blank per week

x Prerequisites: BIOL 300 and BIOL 400, or BIOL 501
x Consent of Instructor Required for Enrollment
Corequisites:

**Catalog Description** (Do not use any symbols)**:** Examines molecular and mechanistic aspects of cell biology. Topics include: cell biochemistry and biosynthesis, cell signaling, regulation of the cell cycle and membrane trafficking. Original research articles will be studied and student presentations are required.

General Education Categories
Lab Fee Requested

Course Level:
Undergraduate
Post-bac/Credential
x Graduate

Graded
CR/NC
x A - F

Optional (Student's choice)

Repeatable for up to units
Total Completions
Multiple Enrollment in same semester

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

**Hegis Code(s)**_____
(Provided by the Dean)

**Existing**

| | Units | Hours Per Unit | Benchmark Enrollment | Graded |
|---|---|---|---|---|
| Lecture | 3 | 1 | 15 | |
| Seminar | | 1 | | |
| Lab | | 3 | | |
| Activity | | 2 | | |
| Field Studies | | | | |
| Indep Study | | | | |
| Other blank | | | | |

**Proposed**

| | Units | Hours Per Unit | Benchmark Enrollment | Graded | CS No. (filled out by Dean) |
|---|---|---|---|---|---|
| Lecture | 3 | 1 | 30 | X | |
| Seminar | | 1 | | | |
| Lab | | 3 | | | |
| Activity | | 2 | | | |
| Field Studies | | | | | |
| Indep Study | | | | | |
| Other blank | | | | | |

## 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. 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

**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** | **NEW** |
|---|---|
| Molecular Cell Biology is a required course for graduate students in the Professional Master of Science Degree Program in Biotechnology and Bioinformatics. | Molecular Cell Biology is a required course for graduate students in the Professional Master of Science Degree Program in Biotechnology and Bioinformatics. |
| x Requirement for the Major/Minor | x Requirement for the Major/Minor |
| Elective for the Major/Minor | Elective for the Major/Minor |
| Free Elective | Free Elective |

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

**5. Learning Objectives.** (List in numerical order. You may wish to visit resource information at the following website: http://senate.csuci.edu/comm/curriculum/resources.htm)

| Upon completion of the course, the student will be able to: | Upon completion of the course, the student will be able to: |
|---|---|
| **OLD** | **NEW** |
| • Explain how extracellular signals are transduced into intracellular signals | • Synthesize the complex processes of signal transduction pathways into a big picture |
| • Describe mechanisms involved in regulation of the eucaryotic cell cycle | • Analyze mechanisms involved in regulation of the eucaryotic cell cycle |
| • Define the chemical components of cells and explain biosynthetic pathways | • Summarize the chemical components of cells and compare biosynthetic pathways |
| • Explain how proteins and lipids are transported into organelles, membranes and to the extracellular surface | • Explain how proteins and lipids are transported into organelles, membranes and to the extracellular surface |
| | Analyze and critique original research articles |
| | Present scientific knowledge in professional setting |

**6. Course Content in Outline Form.** (Be as brief as possible, but use as much space as necessary)

| **OLD** | **NEW** |
|---|---|

I. Chemical and molecular foundations
Cell structure/function
Cell chemistry and biosynthesis
Protein structure/function
Basis molecular genetic mechnanisms

II. Cell Signaling
Signaling at the cell surface
Signaling pathways that control gene activity
Integrating signals and gene control

III. Membrane trafficking
Moving proteins into membranes and organelles
Vesicular traffic, secretion and endocytosis
Metabolism and movement of lipids

IV. Cell cycle and cell growth control
Regulating the eucaryotic cell cycle
Cell birth, lineage and death
Cancer

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**Does this course content overlap with a course offered in your academic program? Yes  No x**
**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 x**
**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:**
- **C. Program responsible for staffing:**

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

**OLD Lodish, Berk, Matsudaira, Kaiser, Krieger, Scott, Zipursky and Darnell. (2003). Molecular Cell Biology, 5th edition. WH Freeman.**
**Alberts, Johnson, Lewis, Raff, Roberts and Walter. (2002). Molecular Biology of the Cell, 4th edition. Garland Science.**
**Helmreich. (2001). The Biochemistry of Cell Signalling. Oxford University Press.**
**Gomperts. (2002). Signal Transduction. Academic Press.**

**NEW Lodish, Berk, Matsudaira, Kaiser, Krieger, Scott, Zipursky and Darnell. (2003). Molecular Cell Biology, 5th edition. WH Freeman.**
**Alberts, Johnson, Lewis, Raff, Roberts and Walter. (2002). Molecular Biology of the Cell, 4th edition. Garland Science.**
**Helmreich. (2001). The Biochemistry of Cell Signalling. Oxford University Press.**
**Gomperts. (2002). Signal Transduction. Academic Press.**

**9. Tenure Track Faculty qualified to teach this course.**
**Biology faculty**

**10. Requested Effective Date or First Semester offered: F2010**

**11. New Resource Requested: Yes  No x**
**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 | Course Content |
| Prefix/suffix | Course Learning Objectives |
| Course number | References |
| Units | GE |
| x Staffing formula and enrollment limits | Other |
| x Prerequisites/Corequisites | Reactivate Course |
| x Catalog description | |
| Mode of Instruction | |

**Justification:** BIOL 504 is a required course for the MS Biotechnology and Bioinformatics Program. Previously, we included BIOL 300, Cell Biology, as the prerequisite for this course. In the last few years of offering the program, we have recognized that in order for students to succeed in this course, they need both Cell Biology and Molecular Biology as prerequisites. Hence, there is a need to add BIOL 400 as a prerequisite for BIOL 504. However, many students have come to our program with various academic background and preparation. Some times, they need to make up difficiencies in either Cell Biology (BIOL 300), or Molecular Biology (BIOL 400), or in both areas. To help the students who have had neither BIOL 300 or 400 or equivalent courses to make up their difficiencies and better prepare them for the program, we have developed BIOL 501 that combines the essential knowledge and skills from both BIOL 300 and 400. Due to this newly created course, we also need to include BIOL 501 as an option for the prerequisite courses for BIOL 504. This modification will allow those students who have not done BIOL 300 or BIOL 400 but have completed BIOL 501 to enroll in BIOL 504. Since the number of students enrolled in the program has increased significantly in the last few years, we have actually enrolled nearly 40 students in the class. Raising the enrollment cap from 15 to 30 is reasonable as this is a required and lecture only course. It will help the students in their timely gradaution from the program.

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

If, YES attach a program update or program modification form for all programs affected.
Priority deadline for New Minors and Programs: October 5, 2009 of preceding year.
Priority deadline for Course Proposals and Modifications: November 2, 2009.
Last day to submit forms to be considered during the current academic year: April 15th.

Ching-Hua Wang — 10-15-09

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.

| | | |
|---|---|---|
| Program Chair | | |
| | Signature | Date |
| Program Chair | | |
| | Signature | Date |
| Program Chair | | |
| | Signature | Date |
| General Education Chair | | |
| | Signature | Date |
| Center for Intl Affairs Director | | |
| | Signature | Date |
| Center for Integrative Studies Director | | |
| | Signature | Date |
| Center for Multicultural Engagement Director | | |
| | Signature | Date |
| Center for Civic Engagement and Service Learning Director | | |
| | Signature | Date |
| Curriculum Chair | | |
| | Signature | Date |
| Dean of Faculty | | |
| | Signature | Date |