

CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS

COURSE MODIFICATION PROPOSAL

Courses must be submitted by October 15, 2013, and finalized by the end of the fall semester to make the next catalog (2014-15) production

DATE (CHANGE DATE EACH TIME REVISED): 10/14/2013; REV 11.25.13; REV 12.10.13; REV 1.23.14

PROGRAM AREA(S): CHEM

Directions: All of sections of this form must be completed for course modifications. Use **YELLOWED** areas to enter data. All documents are stand alone sources of course information.

1. Indicate Changes and Justification for Each. [Mark an X by all change areas that apply then please follow-up your X's with justification(s) for each marked item. Be as brief as possible but, use as much space as necessary.]

<input type="checkbox"/> Course title	<input type="checkbox"/> Course Content
<input type="checkbox"/> Prefix/suffix	<input type="checkbox"/> Course Learning Outcomes
<input type="checkbox"/> Course number	<input type="checkbox"/> References
<input type="checkbox"/> x Units	<input type="checkbox"/> GE
<input type="checkbox"/> Staffing formula and enrollment limits	<input checked="" type="checkbox"/> X Other Removal of Lab Fee
<input type="checkbox"/> Prerequisites/Corequisites	<input type="checkbox"/> Reactivate Course
<input type="checkbox"/> x Catalog description	
<input type="checkbox"/> Mode of Instruction	

Justification: Modified CHEM 460 will separate the lecture and lab components of current course into lecture (CHEM 460) and lab (CHEM 461), allowing greater flexibility on the part of the students. Both CHEM 460 and CHEM 461 will be required courses for the major. The content of both classes, and the total number of units, will be the same as the current course. CHEM 460 will now be a 3 unit class, while the new lab class (CHEM 461) will be a 1 unit class. Catalog description altered to remove reference to lab fee.

2. Course Information.

[Follow accepted catalog format.] (Add additional prefixes i f cross-listed)

OLD

Prefix CHEM Course# 460
Title Biochemistry I Units (4)
3 hours lecture per week
3 hours lab per week

x Prerequisites: 314 with a grade of C or better

☐ Consent of Instructor Required for Enrollment
Corequisites: ☐

Catalog Description (Do not use any symbols):

This course will examine the physical and chemical properties of biological molecules. Topics include: the structure and function of nucleic acids, proteins, lipids, and carbohydrates. Lab fee required.

General Education Categories: ☐

Grading Scheme (Select one below):

X A – F

☐ Credit/No Credit

☐ Optional (Student's Choice)

Repeatable for up to ☐ units

Total Completions ☐

Multiple Enrollment in Same Semester Y/N ☐

Course Level:

x Undergraduate

☐ Post-Baccalaureate

☐ Graduate

NEW

Prefix CHEM Course# 460
Title Biochemistry I Units **(3)**
3 hours lecture per week
☐ hours blank per week

x Prerequisites: 314 with a grade of C or better

☐ Consent of Instructor Required for Enrollment
Corequisites: ☐

Catalog Description (Do not use any symbols):

Examines the physical and chemical properties of biological molecules. Topics include: the structure and function of nucleic acids, proteins, lipids, and carbohydrates.

General Education Categories: ☐

Grading Scheme (Select one below):

X A – F

☐ Credit/No Credit

☐ Optional (Student's Choice)

Repeatable for up to ☐ units

Total Completions ☐

Multiple Enrollment in Same Semester Y/N ☐

Course Level:

x Undergraduate

☐ Post-Baccalaureate

☐ Graduate

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

Hegis Code(s) _____
(Provided by the Provost Office)

Existing

Proposed

	Units	Hours Per Unit	Default Section Size	Graded		Units	Hours Per Unit	Default Section Size	Graded	CS No. (filled out by Provost Office)
Lecture	<u>3</u>	<u>1</u>	<u>36</u>	x	Lecture	<u>3</u>	<u>1</u>	<u>36</u>	x	
Seminar		<u>1</u>			Seminar		<u>1</u>			
Lab	<u>1</u>	<u>3</u>	<u>12</u>	x	Lab		<u>3</u>			
Activity		<u>2</u>			Activity		<u>2</u>			
Field Studies					Field Studies					
Indep Study					Indep Study					
Other blank					Other blank					
Online					Online					

4. 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 (Graduation Writing Assessment Requirement)

Meets University Language Requirement

American Institutions, Title V Section 40404: Government US Constitution US History
Regarding 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).

Online Course (Answer YES if the course is ALWAYS delivered online).

5. Justification and Requirements for the Course. *[Make a brief statement to justify the need for the course]*

OLD

Introduction to the physical and chemical properties of proteins and enzymes, enzymatic catalysis and inhibition, the biosynthesis of proteins and nucleic acids, and biosynthetic and metabolic pathways. Lab fee required.

x Requirement for the Major/Minor
☐ Elective for the Major/Minor
☐ Free Elective

NEW

Intro Introduction to the physical and chemical properties of proteins and enzymes, enzymatic catalysis and inhibition, the biosynthesis of proteins and nucleic acids

****CHEM 460 separates the classroom component from the lab component, retaining all classroom content.****

x Requirement for the Major/Minor
☐ Elective for the Major/Minor
☐ Free Elective

Submit Program Modification if this course changes your program.

6. Student Learning Outcomes. (List in numerical order. Please refer to the Curriculum Committee's "Learning Outcomes" guideline for measurable outcomes that reflect elements of Bloom's Taxonomy:

<http://senate.csuci.edu/comm/curriculum/resources.htm>. The committee recommends 4 to 8 student learning outcomes, unless governed by an external agency (e.g., Nursing).

Upon completion of the course, the student will be able to:

OLD

NONE

Upon completion of the course, the student will be able to:

NEW

1. Outline the historical development of the field of biochemistry.
2. Name, describe, and categorize the structures and chemical characteristics of biological molecules, including DNA, RNA, protein, carbohydrates, and lipids.
3. Explain how these characteristics are affected by solution conditions, and how these characteristics may be used to predict and interpret the behavior of biological molecules, including the evolution of biomolecules.
4. Know the physical, chemical, and structural forces and rules that define the organization and interactions of proteins, including enzyme mechanisms and enzyme regulation.
5. Interpret proteins' reaction equilibria and kinetics in terms of their general knowledge the physical, chemical, and structural forces and rules governing biological molecules.
6. Apply their understanding of the physical, chemical, and structural forces and rules governing biological molecules to the interpretation of primary biochemistry research articles.
7. Devise hypotheses and experimental plans for the extension and application of primary biochemistry research literature, using their knowledge of physical, chemical, and structural forces and rules governing biological molecules.

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

OLD

Introduction to Biochemistry
Chemical evolution
Evolution of cells
Architecture of cells
Thermodynamics
Kinetics
Structure and properties of water
Nucleotides and Nucleic Acids
Nucleic acid structure and function
Sequencing of nucleic acids
Amino Acids and Proteins

NEW

Introduction to Biochemistry
Chemical evolution
Evolution of cells
Architecture of cells
Thermodynamics
Kinetics
Structure and properties of water
Nucleotides and Nucleic Acids
Nucleic acid structure and function
Sequencing of nucleic acids
Amino Acids and Proteins

Amino acid structure and properties
 Protein purification
 Protein sequencing
 Protein evolution
 Structure of proteins
 Protein folding and stability
 Protein Function
 Hemoglobin and myoglobin
 Myosin and actin
 Antibodies
 Carbohydrates
 Monosaccharides and polysaccharides
 Glycoproteins
 Lipids
 Classification of lipids
 Organization of lipids
 Biological Membranes
 Membrane structure and assembly
 Membrane proteins and their function
 Transport across membranes
 Enzymatic Catalysis
 Properties and classification of enzymes
 Mechanisms of enzymatic catalysis
 Enzymes kinetics
 Inhibition of enzymes
 Regulation of enzymes

Amino acid structure and properties
 Protein purification
 Protein sequencing
 Protein evolution
 Structure of proteins
 Protein folding and stability
 Protein Function
 Hemoglobin and myoglobin
 Myosin and actin
 Antibodies
 Carbohydrates
 Monosaccharides and polysaccharides
 Glycoproteins
 Lipids
 Classification of lipids
 Organization of lipids
 Biological Membranes
 Membrane structure and assembly
 Membrane proteins and their function
 Transport across membranes
 Enzymatic Catalysis
 Properties and classification of enzymes
 Mechanisms of enzymatic catalysis
 Enzymes kinetics
 Inhibition of enzymes
 Regulation of enzymes

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.

8. Cross-listed Courses (Please note each prefix in item No. 1) *Beyond three disciplines consult with the Curriculum Committee.*

- 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:

9. References. [Provide 3-5 references]

OLD

Abeles, R. H.; Frey, P. A.; Jencks, W. P. *Biochemistry*, 1992.
 Gilbert, H. F. *Basic Concepts in Biochemistry- A Student's Survival Guide*, 2nd Ed., 2000
 Nelson, D. L.; Cox, M. M. *Lehninger, Principles of Biochemistry*, 3rd Ed., 2000
 Stryer, L. *Biochemistry*, 4th Ed., 1995
 Voet, D.; Voet, J. G.; Pratt, C. W. *Fundamentals of Biochemistry*, 1st Ed., 2002

NEW

Abeles, R. H.; Frey, P. A.; Jencks, W. P. *Biochemistry*, 1992.
 Gilbert, H. F. *Basic Concepts in Biochemistry- A Student's Survival Guide*, 2nd Ed., 2000
 Nelson, D. L.; Cox, M. M. *Lehninger, Principles of Biochemistry*, 3rd Ed., 2000
 Stryer, L. *Biochemistry*, 4th Ed., 1995
 Voet, D.; Voet, J. G.; Pratt, C. W. *Fundamentals of Biochemistry*, 1st Ed., 2002

10. Tenure Track Faculty qualified to teach this course.
Blake Gillespie

11. Requested Effective Date or First Semester offered: Fall 2014

12. 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 ☒ (Lab fee requests should be directed to the Student Fee Committee)

E. Other.

☐

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 1, 2013** of preceding year.

Priority deadline for Course Proposals and Modifications: **October 15, 2013**.

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

Blake Gillespie

11/25/13

Proposer(s) of Course Modification

Date

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

Approval Sheet

Course: [REDACTED]

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.

The CI program review process includes a report from the respective department/program on its progress toward accessibility requirement compliance. By signing below, I acknowledge the importance of incorporating accessibility in course design.

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
AVP		
Signature		Date