

CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS

COURSE MODIFICATION PROPOSAL

PROGRAM AREA MULTIPLE PROGRAMS

1. **Catalog Description of the Course.** *[Include the course prefix, number, full title, and units. Provide a course narrative using underline for deletions and CAPITALS for additions including prerequisites/corequisites. If any of the following apply, include in the description: Repeatability (May be repeated to a maximum of \_\_\_ units); time distribution (Lecture \_\_\_ hours, laboratory \_\_\_ hours); non-traditional grading system (Graded CR/NC, ABC/NC). Follow accepted catalog format.]*

**EXISTING:**

**CHEM 400. Biochemistry (4)**

Three hours lecture and three hours lab per week.

Prerequisite: CHEM 314 with a grade of C or better

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.

**PROPOSED:**

**CHEM 460. Biochemistry I (4)**

Three hours lecture and three hours laboratory per week.

Prerequisite: CHEM 314 with a grade of C or better

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.

2. **Mode of instruction**

	<u>Existing</u>				<u>Proposed</u>		
	<u>Units</u>	<u>Hours Per Unit</u>	<u>Benchmark Enrollment</u>		<u>Units</u>	<u>Hours per Unit</u>	<u>Benchmark Enrollment</u>
Lecture	<u>3</u>	<u>        </u>	<u>50</u>	Lecture	<u>3</u>	<u>        </u>	<u>36</u>
Seminar	<u>        </u>	<u>        </u>	<u>        </u>	Seminar	<u>        </u>	<u>        </u>	<u>        </u>
Laboratory	<u>1</u>	<u>        </u>	<u>18</u>	Laboratory	<u>1</u>	<u>        </u>	<u>18</u>
Activity	<u>        </u>	<u>        </u>	<u>        </u>	Activity	<u>        </u>	<u>        </u>	<u>        </u>

3. **Course Content in Outline Form if Being Changed.** *[Be as brief as possible, but use as much space as necessary]*

*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

**4. References.** [Provide 3-5 references on which this course is based and/or support it.]

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

**5. 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
- Prerequisites/corequisites
- Catalog description
- Course content
- References
- GE
- Other

The Chemistry Program has established a numbering system for subdisciplines in Chemistry. The 460-469 numbering range corresponds to the Biochemistry subdiscipline area; whereas, the 400-409 numbering range corresponds to general chemistry courses spanning more than one subdiscipline area. Previously CHEM 400 was a one semester course, and we are now expanding this course into a two semester sequence.

**6. If this modification results in a GE-related change indicate GE category affected:**

<b>A (English Language, Communication, Critical Thinking)</b>	
<b>B (Life Sciences)</b>	
<b>C (Fine Arts, Literature, Languages &amp; Cultures)</b>	
<b>D (Social Perspectives)</b>	
<b>E (Human Psychological and Physiological Perspectives)</b>	

**7. Consultation**

Attach consultation sheets from all program areas, Library, and others (if necessary)

8. If this course modification will alter any degree, credential, certificate, or minor program in your program attach a program modification.

\_\_\_\_ Phil Hampton and Simone Aloisio \_\_\_\_\_ 10/31/03 \_\_\_\_\_  
Proposer of Course Modification Date

**Approvals**

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Program Chair Date

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Curriculum Committee Chair Date

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Dean Date

**California State University Channel Islands  
Course Modification Consultation Sheet**

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1. Course Title: \_\_CHEM 460. Biochemistry I\_\_\_\_\_

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2. Program Area: \_\_Multiple Programs\_\_\_\_\_

**Recommend Approval**

<b>Program Area/Unit</b>	<b>Program/Unit Chair</b>	<b>YES</b>	<b>NO</b> (attach objections)	<b>Date</b>
Art				
Biology				
Business & Economics				
Education				
English				
History				
Liberal Studies				
Mathematics & CS				
Multiple Programs				
Psychology				
Library				
Information Technology				