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): 9/29/2009 REV 11.2.09

PROGRAM AREA(S): CHEMISTRY

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

1. Course Information.

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

<table>
<thead>
<tr>
<th>OLD</th>
<th>NEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefix CHEM Course# 111 Title CHEMISTRY OF LIFE – PROBLEM SOLVING Units (1)</td>
<td>Prefix CHEM Course# 111 Title CHEMISTRY OF LIFE – PROBLEM SOLVING Units (1)</td>
</tr>
<tr>
<td>1 hours lecture per week</td>
<td>1 hours lecture per week</td>
</tr>
<tr>
<td>1 hours seminar per week</td>
<td>1 hours discussion per week</td>
</tr>
<tr>
<td><strong>Prerequisites:</strong></td>
<td><strong>Prerequisites:</strong></td>
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<tr>
<td></td>
<td>Consent of Instructor Required for Enrollment</td>
</tr>
<tr>
<td><strong>Corequisites:</strong></td>
<td><strong>Corequisites:</strong> CHEM 110</td>
</tr>
<tr>
<td><strong>Catalog Description</strong> (Do not use any symbols): An instructor/peer-supervised interactive problem-solving session for students in CHEM 110 where students work in small groups on problems related to the content in CHEM 110.</td>
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</tr>
<tr>
<td><strong>General Education Categories</strong></td>
<td><strong>General Education Categories</strong></td>
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<tr>
<td></td>
<td>CR/NC Repeatable for up to units</td>
</tr>
<tr>
<td><strong>Lab Fee Requested</strong></td>
<td><strong>Lab Fee Requested</strong></td>
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<tr>
<td>x A - F</td>
<td></td>
</tr>
<tr>
<td><strong>Course Level:</strong></td>
<td><strong>Course Level:</strong></td>
</tr>
<tr>
<td>Undergraduate</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>Post-bac/Credential</td>
<td>Post-bac/Credential</td>
</tr>
<tr>
<td>Graduate</td>
<td>Graduate</td>
</tr>
<tr>
<td>Optional (Student’s choice)</td>
<td>Optional (Student’s choice)</td>
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<tr>
<td><strong>Multiple Enrollment in same semester</strong></td>
<td><strong>Multiple Enrollment in same semester</strong></td>
</tr>
<tr>
<td><strong>Lab</strong></td>
<td><strong>Lab</strong></td>
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<tr>
<td><strong>Activity</strong></td>
<td><strong>Activity</strong></td>
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<tr>
<td><strong>Field Studies</strong></td>
<td><strong>Field Studies</strong></td>
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<tr>
<td><strong>Indep Study</strong></td>
<td><strong>Indep Study</strong></td>
</tr>
<tr>
<td><strong>Other blank</strong></td>
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</tr>
<tr>
<td><strong>Units</strong></td>
<td><strong>Units</strong></td>
</tr>
<tr>
<td><strong>Hours Per Unit</strong></td>
<td><strong>Hours Per Unit</strong></td>
</tr>
<tr>
<td><strong>Benchmark Enrollment</strong></td>
<td><strong>Benchmark Enrollment</strong></td>
</tr>
<tr>
<td><strong>Graded</strong></td>
<td><strong>Graded</strong></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Existing</th>
<th>Hegis Code(s) (Provided by the Dean)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Units</strong></td>
<td><strong>Hours Per Unit</strong></td>
</tr>
<tr>
<td>Lecture</td>
<td></td>
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<tr>
<td>Seminar</td>
<td>1</td>
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<tr>
<td>Lab</td>
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<tr>
<td>Activity</td>
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<td></td>
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<tr>
<td>Other blank</td>
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</tr>
</tbody>
</table>

3. Course Attributes:

9.15.08 km2
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
This course is an optional problem-solving session for the Chemistry of Life course (CHEM 110) and provides students with an interactive, problem-solving session where students work in small teams to solve problems related to the course. Its function is to increase student success in the chemistry of life course, so that students have a lower likelihood of needing to repeat this course. CHEM 110 a requirement for students in the B.S. Nursing.

NEW
This course is an optional problem-solving session for the Chemistry of Life course (CHEM 110) and provides students with an interactive, problem-solving session where students work in small teams to solve problems related to the course. Its function is to increase student success in the chemistry of life course, so that students have a lower likelihood of needing to repeat this course. CHEM 110 a requirement for students in the B.S. Nursing.

Requirement for the Major/Minor
Elective for the Major/Minor
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:

OLD
These are the same as for CHEM 110.
Upon completion of the course, the student will be able to:
1) Describe the scientific method and how it is used to approach chemical problems
2) Explain the differences between elements, chemical compounds, ions, and mixtures
3) Calculate the concentrations and solubilities of compounds in mass percent and molarity
4) Define acids and bases and pH of solutions
5) Calculate hydrogen-ion concentration and pH

NEW
These are the same as for CHEM 110.
Upon completion of the course, the student will be able to:
1) Describe the scientific method and how it is used to approach chemical problems
2) Explain the differences between elements, chemical compounds, ions, and mixtures
3) Calculate the concentrations and solubilities of compounds in mass percent and molarity
4) Define acids and bases and pH of solutions
5) Calculate hydrogen-ion concentration and pH
6) Discuss how and why acid-base reactions occur
7) Explain how and why oxidation-reduction reactions occur
8) Determine the rate of a reaction and the energy change in a reaction
9) Explain the molecular structure of inorganic, organic, and biological compounds
10) Describe fundamental nuclear chemical processes and their medical applications
11) Explain enzyme catalysis and inhibition
12) Describe energy production in the metabolism of sugars, proteins, and lipids
13) Define chemical hazards of particular classes of chemicals
14) Explain how chemicals interact with the human body

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

OLD
This is the same as CHEM 110
I. Measurements and the Scientific Method
   A. Units and Significant Figures
   B. Unit Conversion
   C. Scientific Method: Hypotheses, Theories, Experiments, and Conjecture
II. Chemical Composition
   A. Subatomic Particles, Atoms, and the Periodic Table
   B. Molecules and the Nature of the Chemical Bonds
   C. Compounds and Mixtures
   D. Ions and Salts
   E. Molecular Structure of Inorganic Compounds
III. Physical Properties of Matter
   A. States of Matter
   B. Mass, Density, and Viscosity
   C. Solubility and Solutions
   D. Chemical Hazards of Gases, Liquids, and Solids
IV. Chemical Reactions
   A. Acid-Base Chemistry
   B. Oxidation-Reduction Reactions
   C. Rates of and Energy Changes in Reactions
   D. Classifications of Chemical Reactions
   E. Nuclear Chemistry and its Applications in Medicine
V. Organic and Biological Molecules
   A. Functional Groups and Interactions Between Molecules
   B. Origin of Molecular Shape
   C. Structures of Amino Acids, Sugars, Proteins, Nucleic Acids, and Lipids
   D. Enzyme Catalysis and Inhibition
   E. Amino Acid Function and Biosynthesis
   F. Protein Function and Biosynthesis
   G. Nucleic Acid Function and Biosynthesis
   I. Energy Production: Metabolism of Sugars, Proteins, and Lipids
J. Biological Membranes: Structure, Function, Active and Passive Transport
K. Oxidative Phosphorylation and Electron-Transport
Note: Approximate coverage for this course is General Chemistry 40%, Organic Chemistry 20%, and Biochemistry 40%

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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:  
   C. Program responsible for staffing:  

8. References. [Provide 3-5 references]

   OLD  
   CHEM 110 Course Proposal  
   General, Organic, and Biological Chemistry by Karen Timberlake (Pearson/Benjamin Cummings)

   NEW  
   CHEM 110 Course Proposal  
   General, Organic, and Biological Chemistry by Karen Timberlake (Pearson/Benjamin Cummings)

9. Tenure Track Faculty qualified to teach this course.

   Simone Aloisio, Blake Gillespie, Phil Hampton

10. Requested Effective Date or First Semester offered: Fall 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 | Prerequisites/Corequisites | Catalog description | Mode of Instruction | Course Content | Course Learning Objectives | References | GE | Other | Reactivate Course | Justification: The department met and decided that credit/no-credit was a more appropriate grading scheme for this type of course. Students typically either did the work required or did not. |  

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 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.

Simone Aloisio

Proposer(s) of Course Modification

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</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Chair</td>
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<tr>
<td>Program Chair</td>
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<tr>
<td>Program Chair</td>
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<td>General Education Chair</td>
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<tr>
<td>Center for Intl Affairs Director</td>
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<tr>
<td>Center for Integrative Studies Director</td>
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<td>Center for Multicultural Engagement Director</td>
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<tr>
<td>Center for Civic Engagement and Service Learning Director</td>
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<tr>
<td>Curriculum Chair</td>
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<td></td>
</tr>
<tr>
<td>Dean of Faculty</td>
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</tbody>
</table>