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 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)*

   **OLD**
   - Prefix CHEM
   - Course# 313
   - Title ORGANIC CHEMISTRY I LEARNING COMMUNITY
   - Units (1)
   - Prerequisites:  
     - Consent of Instructor Required for Enrollment
   - Corequisites: CHEM 311
   - **Catalog Description** (Do not use any symbols):
     Interactive problem-solving session for students in CHEM 311 where students work in small groups on problems related to the content in CHEM 311.
   - General Education Categories
   - Lab Fee Requested
   - Course Level: Undergraduate
   - Graded
   - Repeatable for up to ___ units
   - Lab Fee Requested
   - Multiple
   - Course Level:
   - Undergraduate
   - Optional
   - Enrollment in same semester
   - Graded
   - Repeatable for up to ___ units
   - Lab Fee Requested
   - Multiple
   - Course Level:
   - Undergraduate
   - Optional
   - Enrollment in same semester

   **NEW**
   - Prefix CHEM
   - Course# 313
   - Title ORGANIC CHEMISTRY I PROBLEM SOLVING
   - Units (1)
   - Prerequisites:  
     - Consent of Instructor Required for Enrollment
   - Corequisites: CHEM 311
   - **Catalog Description** (Do not use any symbols):
     Interactive problem-solving session for students in CHEM 311 where students work in small groups on problems related to the content in CHEM 311.
   - General Education Categories
   - Lab Fee Requested
   - Course Level: XX
   - Optional
   - Enrollment in same semester
   - Graded
   - Repeatable for up to ___ units
   - Lab Fee Requested
   - Multiple
   - Course Level:
   - Undergraduate
   - Optional
   - Enrollment in same semester

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

   **Existing**

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<th>Hours Per Unit</th>
<th>Benchmark Enrollment</th>
<th>Graded</th>
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   **Proposed**

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3. **Course Attributes:**
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 accompanies the first semester organic chemistry course (CHEM 311) and provides students with an interactive, problem-solving session where students work in small teams to solve problems in organic chemistry.

NEW
This course accompanies the first semester organic chemistry course (CHEM 311) and provides students with an interactive, problem-solving session where students work in small teams to solve problems in organic chemistry.

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
Students who successfully complete this course will be able to:

- Recognize the development of the field of organic chemistry from a historical perspective and how organic chemistry has impacted society
- Describe the scientific method and how it is used to approach the study of organic molecules
- Recognize functional groups and how they serve as building blocks of more complex organic molecules
- Evaluate the relationship between the geometric structures of

NEW
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- Recognize the development of the field of organic chemistry from a historical perspective and how organic chemistry has impacted society
- Describe the scientific method and how it is used to approach the study of organic molecules
- Recognize functional groups and how they serve as building blocks of more complex organic molecules
- Evaluate the relationship between the geometric structures of
various molecules

• Explain the behavior of organic reactions using their knowledge of thermodynamics and kinetics and the geometric and electronic structures of organic molecules

• Explain the basic scientific principles that form the basis for organic chemistry analysis including chromatography, infrared and ultraviolet spectrophotometry, mass spectrometry, and nuclear magnetic resonance spectrometry, and the limitations of these techniques

• Identify the reactions and synthesis of alkyl halides, alkenes, alkynes, and dienes

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

OLD

Structure and Bonding
Historical context of the development of organic chemistry
A review of atomic and molecular structure
Valence bond description of bonds
Resonance and electron-pushing
Molecular orbital description of bonds
Properties of bonds
Acid-Base Chemistry
Bronsted and Lewis Definitions of Acids and Bases
Acid-base equilibria
Electron-pushing in acid-base reactions
Structures and Naming of Organic Molecules
Functional groups
Constitutional isomerism
Representations of organic molecules
IUPAC naming of alkanes and alkyl halides
Conformational isomerism
Chirality, optical activity, and representations of chiral molecules
Conformational analysis
Spectroscopic Determination of Molecular Structure
Degree of unsaturation
Mass Spectrometry (MS and GC/MS)
Infrared spectroscopy (IR)
Nuclear Magnetic Resonance spectroscopy (NMR)
Ultraviolet-visible spectroscopy (UV-vis)
Overview of Organic Reactions
Classifications of organic reactions and reaction mechanisms
Overview of organic reaction mechanisms
Electron pushing in polar and radical mechanisms
Kinetics and thermodynamics of organic reactions
Reaction energy diagrams
Alkyl Halides and their Synthesis
Radical halogenation of alkane
Radical structure and stability
Conversion of alcohols to alkyl halides
Nucleophilic Substitution and Elimination
Substitution vs. elimination and nucleophile structure
Substitution mechanisms
Carbocation structure and stability

NEW

Structure and Bonding
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A review of atomic and molecular structure
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Resonance and electron-pushing
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Properties of bonds
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Conformational isomerism
Chirality, optical activity, and representations of chiral molecules
Conformational analysis
Spectroscopic Determination of Molecular Structure
Degree of unsaturation
Mass Spectrometry (MS and GC/MS)
Infrared spectroscopy (IR)
Nuclear Magnetic Resonance spectroscopy (NMR)
Ultraviolet-visible spectroscopy (UV-vis)
Overview of Organic Reactions
Classifications of organic reactions and reaction mechanisms
Overview of organic reaction mechanisms
Electron pushing in polar and radical mechanisms
Kinetics and thermodynamics of organic reactions
Reaction energy diagrams
Alkyl Halides and their Synthesis
Radical halogenation of alkane
Radical structure and stability
Conversion of alcohols to alkyl halides
Nucleophilic Substitution and Elimination
Substitution vs. elimination and nucleophile structure
Substitution mechanisms
Carbocation structure and stability
Elimination mechanisms
Alkenes and their Synthesis
Naming of alkenes and E/Z notation
Addition reactions of alkenes
Oxidation/ reduction of alkenes
Synthesis Reactions
Organometallics and coupling reactions
Dienes and their reactions
Diels-Alder Reaction

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

   NEW


9. Tenure Track Faculty qualified to teach this course.
   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.]

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**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. Also, the mode of instruction was incorrectly listed in the original course proposal. We have also taught it as a one-hour discussion course.

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 9/29/2009

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.

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