California Sate University Channel Islands

NEW COURSE PROPOSAL

Courses must be submitted by November 3, 2008, for priority catalog review.

DATE (*Change if modified and redate file with current date)*) 10.3.08 REV 10.20.08
PROGRAM AREA(S) CHEMISTRY

1. Course Information. *[Follow accepted catalog format.]*

Prefix(es) CHEM **and Course No. 111**
Title: CHEMISTRY OF LIFE – PROBLEM SOLVING Units: 1
[ ] Prerequisites
[x] Corequisites **CHEM 110 – concurrent enrollment required**
[ ] Consent of Instructor Required for Enrollment
Catalog Description (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.

Grading Scheme:
[x] A-F Grades
[ ] Credit/No Credit
[ ] Optional (Student Choice)

Repeatability:
[ ] Repeatable for a maximum of ____ units
Total Completions Allowed ____
[ ] Multiple Enrollment in Same Semester

Course Level Information:
[x] Undergraduate
[ ] Post-Baccalaureate/Credential
[ ] Graduate

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

	Units	Hours per Unit	Benchmark Enrollment	Graded Component	CS & HEGIS # (Filled in by the Dean)
Lecture		1			
Seminar	1	1	24	x	
Laboratory		3			
Activity		2			
Field Studies					
Indep Study					
Other Blank					

Leave the following hours per week areas blank. The hours per week will be filled out for you.
1 hours seminar per week
hours blank per week

2. 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).

3. Justification and Requirements for the Course. (Make a brief statement to justify the need for the course)

A. Justification: 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.

B. Degree Requirement: Requirement for the Major/Minor
Elective for the Major/Minor

Note: Submit Program Modification if this course changes your program.

4. Learning Objectives. (*List in numerical order*)

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

5. Course Content in Outline Form. *[Be as brief as possible, but use as much space as necessary]*

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%

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.

6. 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).
List each cross-listed prefix for the course:

B. Program responsible for staffing:

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

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

8. Tenure Track Faculty Qualified to Teach This Course.

Simone Aloisio, Blake Gillespie, Phil Hampton

9. Requested Effective Date:
First semester offered: Fall 2009

10. New Resources 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 (please refer to Dean's Office for additional processing) **Yes** **No**

E. Other

11. Will this new course 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 6, 2008 of preceding year.
Priority deadline for Course Proposals and Modifications: November 3, 2008, of preceding year.
Last day to submit forms to be considered during the current academic year: April 15th.

9/29/2008

Simone Aloisio

Proposer of Course (Type in name. Signatures will be collected after Curriculum approval) Date

Approval Sheet

Program/Course: CHEMISTRY/CHEM 111

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 International Affairs Director		
	Signature	Date
Center for Integrative Studies Director		
	Signature	Date
Center for Multicultural Engagement Director		
	Signature	Date
Center for Civic Engagement Director		
	Signature	Date
Curriculum Chair		
	Signature	Date
Dean of Faculty		
	Signature	Date