

CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS

COURSE MODIFICATION PROPOSAL

Courses must be submitted by October 15, 2014, and finalized by the end of the fall semester to make the next catalog (2015-16) production

DATE (CHANGE DATE EACH TIME REVISED): 10/6/2014

PROGRAM AREA(S): **CHEM** COURSE NO: **123**

Directions: All sections of this form must be completed. 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.]

☐ Course title	☐ Course Content
☐ Prefix/suffix	☐ Course Learning Outcomes
☐ Course number	☐ References
☐ Units	☐ GE
☐ Staffing formula and enrollment limits	☒ Other Repeatability
☐ Prerequisites/Corequisites	☐ Reactivate Course
☐ Catalog description	
☐ Mode of Instruction	

Justification:

(Please provide justification(s) for each marked item above). Be as brief as possible but use as much space as necessary.]:

The department decided to allow this course to be repeatable even if a student passes the course. Its meant to help students in general chemistry succeed, so if a student needs to re-take general chemistry, they can also now re-enroll in the problem solving.

2. Course Information.

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

OLD

Prefix **CHEM** Course# **123**

Title

General Chemistry I Problem-Solving Units (1)

1 hours discussion per week

1 hours per week

☐ Prerequisites:

☐ Consent of Instructor Required for Enrollment

x Corequisites: CHEM 121

Catalog Description (Do not use any symbols):

An instructor/peer-supervised interactive problem-solving session for students in CHEM 121 where students work in small groups on problems related to the content in CHEM 121.

General Education Categories: ☐

Grading Scheme (Select one below):

A – F

x Credit/No Credit

☐ Optional (Student's Choice)

Repeatable for up to ☐ units

Total Completions ☐

Multiple Enrollment in Same Semester Y/N ☐

Course Level:

☒ Undergraduate

☐ Post-Baccalaureate

☐ Graduate

NEW

Prefix **CHEM** Course# **123**

Title General Chemistry I Problem-Solving Units (1)

1 hours discussion per week

1 hours ☐ per week

☐ Prerequisites:

☐ Consent of Instructor Required for Enrollment

x Corequisites: CHEM 121

Catalog Description (Do not use any symbols):

An instructor/peer-supervised interactive problem-solving session for students in CHEM 121 where students work in small groups on problems related to the content in CHEM 121.

General Education Categories: ☐

Grading Scheme (Select one below):

☐ A – F

x Credit/No Credit

☐ Optional (Student's Choice)

Repeatable for up to 3 units

Total Completions 3

Multiple Enrollment in Same Semester Y/N n

Course Level:

x Undergraduate

☐ Post-Baccalaureate

☐ Graduate

3. Mode of Instruction (Hours per Unit are determined by CSU Policy)

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>1</u>			Lecture		<u>1</u>			
Seminar		<u>1</u>			Seminar		<u>1</u>			
Lab		<u>3</u>			Lab		<u>3</u>			
Activity		<u>2</u>			Activity		<u>2</u>			
Field Studies					Field Studies					
Indep Study					Indep Study					
Other discussion	<u>1</u>		<u>30</u>	x	Other discussion	<u>1</u>		<u>30</u>	x	
Online					Online					

4. Course Attributes:

General Education Categories: All courses with GE category notations or changes (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.

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

This course is an optional problem-solving session for the first semester general chemistry course (CHEM 121) and provides students with an interactive, problem-solving session where students work in small teams to solve problems in chemistry.

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

NEW

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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

Students who successfully complete this course will be able to:

- Evaluate a scientific measurement and distinguish between scientific data
- Describe matter and energy in terms of the units and terminology that is used by modern scientists
- Identify stoichiometric relationships and balance chemical equations
- Explain the structure of an atom in terms of its basic parts and properties
- Explain the interaction between electrons and light quantitatively
- Describe the properties of electrons and how they relate to chemical reactivity
- Identify the chemical properties of elements based on their periodic trends
- Explain the nature of the different types of chemical bonds in molecules
- Evaluate the properties of a gas phase species
- Rationalize chemical reactivity in terms of the thermodynamic properties of reactants and products

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

OLD

Scientific Measurement
The scientific method
SI units and the metric system
Significant Figures
Unit Conversion
Mass and Energy Units
Matter and Energy
States of Matter
Pure substances and mixtures
Atoms and Molecules
Temperature
Physical and chemical properties
Stoichiometry
The mole and Avagadro's Number
The chemical equation
Balancing chemical equations
Mole-to-Mass conversion
Solutions and Dilutions
Atoms and Elements
Names and Symbols
The nuclei of atoms
Radioactivity
Electrons and Photons
Particle-Wave duality
Electron arrangement in atoms
Intro to quantum theory
The photoelectron effect
Atomic spectra
The uncertainty principle
Atomic Orbitals
The Periodic Table
History of the periodic table
Metals and non-metals
Periodic trends
Main group elements and Transition metals
Electron affinity
Ionization
The Chemical Bond
Ionic and Covalent bonds
Electronegativity
Lewis structures
Oxidation number of atoms
The shape of molecules
Polarity
Hydrogen bonding
Gases
Pressure and temperature
Partial pressure
Ideal gas equation
Chemical Thermodynamics
Heat and work
Heat capacity
Entropy
State Functions
Reversible and irreversible changes
Enthalpy of reaction and of formation
Bond-dissociation and formation

NEW

Scientific Measurement
The scientific method
SI units and the metric system
Significant Figures
Unit Conversion
Mass and Energy Units
Matter and Energy
States of Matter
Pure substances and mixtures
Atoms and Molecules
Temperature
Physical and chemical properties
Stoichiometry
The mole and Avagadro's Number
The chemical equation
Balancing chemical equations
Mole-to-Mass conversion
Solutions and Dilutions
Atoms and Elements
Names and Symbols
The nuclei of atoms
Radioactivity
Electrons and Photons
Particle-Wave duality
Electron arrangement in atoms
Intro to quantum theory
The photoelectron effect
Atomic spectra
The uncertainty principle
Atomic Orbitals
The Periodic Table
History of the periodic table
Metals and non-metals
Periodic trends
Main group elements and Transition metals
Electron affinity
Ionization
The Chemical Bond
Ionic and Covalent bonds
Electronegativity
Lewis structures
Oxidation number of atoms
The shape of molecules
Polarity
Hydrogen bonding
Gases
Pressure and temperature
Partial pressure
Ideal gas equation
Chemical Thermodynamics
Heat and work
Heat capacity
Entropy
State Functions
Reversible and irreversible changes
Enthalpy of reaction and of formation
Bond-dissociation and formation

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. For references more than 10 years old, provide a one-sentence explanation of relevance.]*

OLD

Pauling, L. General Chemistry, 3rd Ed., 1970
Chang, R. Chemistry, 7th Ed., 2001
Pertucci, R.H.; Harwood, W.S.; Herring, G. General Chemistry, 8th Ed., 2001
Silberberg, M.S. Chemistry, 3rd Ed., 2003
Zumdahl, S.S.; Zumdahl, S. Chemistry, 2000

NEW

Pauling, L. General Chemistry, 3rd Ed., Dover, 1970 This is a landmark general chemistry text that is still important.
Chang, R. Chemistry, 11th Ed., McGraw Hill, 2012
Pertucci, R.H.; Harwood, W.S.; Herring, G. General Chemistry, 10th Ed., Prentice Hall, 2010
Zumdahl, S.S.; Zumdahl, S. Chemistry, 9th Ed, Cengage Learning, 2013

10. Tenure Track Faculty qualified to teach this course.

Aloisio, Awad, Gillespie, Hampton

11. Requested Effective Date or First Semester to be offered: Fall 2015

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.

Deadline for New Minors and Programs: **October 1, 2014.**

Deadline for Course Proposals and Modifications, and for Program Modifications: **October 15, 2014.**

Last day to submit forms to be considered during the current academic year: **April 1, 2015.**

Simone Aloisio

Sep 29, 2014

Proposer(s) of Course Modification

Date

Type in name(s). Signatures will be collected after Curriculum approval.

Approval Sheet

Course Prefix and number: CHEM 123

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