

NEW COURSE PROPOSAL

Courses must be submitted by October 15, 2012, and finalized by the end of that fall semester for the next catalog production.

Use YELLOWED areas to enter data.

DATE (Change if modified and redate file with current date)) 4/4/2012; REV 4.26.12

PROGRAM AREA(S) CHEMISTRY

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

Prefix(es) (Add additional prefixes if cross-listed) and **Course No.** CHEM 374

Title: PHYSICAL CHEMISTRY PROBLEM SOLVING **Units:** 1

Prerequisites

X Corequisites CHEM 371

Consent of Instructor Required for Enrollment

Catalog Description (Do not use any symbols): An instructor supervised interactive problem solving session for students in CHEM 371 where students work in small groups on problems related to the content of CHEM 371.

Grading Scheme:

A-F Grades

X 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	15	X	
Lab/ratory		3			
Activity		2			
Field Studies					
Indep Study					
Other		1			
Discussion					

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

1 hours seminar per week

hours r week

Is this course always delivered online? Yes_____ No_x____

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 unit for the students enrolled in Physical Chemistry. Students and instructors have been requesting this. Physical chemistry is a required course for all majors, and is quite intensive. This will give the students who need it an extra hour with the instructor and each other to work on problems.

B. Degree Requirement: ☐ Requirement for the Major/Minor
x Elective for the Major/Minor
x Free Elective

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

4. 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:

Same as Physical Chemistry I.

Students who successfully complete this course will be able to:

- Analyze, both qualitatively and quantitatively, how molecular shape, electronic structure, thermodynamics, kinetics, and intermolecular interactions are interrelated in Physical Chemistry.
- Apply the laws of thermodynamics to solve problems
- Explain phase change diagrams for pure substances and simple mixtures.
- Determine rate laws for simple and complex chemical reactions, including surface reactions.

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

Thermodynamics

Perfect and real gasses

Work and Heat

Conservation of Energy

Entropy

Gibbs Free Energy

Changes of State

Phase diagrams for pure substances and simple mixtures

Thermodynamics of mixtures

The Phase Rule

Chemical Reactions

Spontaneity

Le Chatlier's Principle

Electrochemical reactions

Kinetics

Collisions of gases

Ion transport and molecular diffusion

Rate Laws

Complex Reactions

Reaction dynamics

Kinetics at a surface

Does this course content overlap with a course offered in your academic program? **Yes** x **No** ☐

If YES, what course(s) and provide a justification of the overlap. **This is the nature of the PS course.**

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]

Atkins, P.W. *Physical Chemistry*, Oxford University Press, 7th Ed. 2001

Levine, I.N. *Physical Chemistry*, Mc-Graw-Hill, 5th Ed. 2001

McQuarrie, D.A.; Simon, J.D. *Physical Chemistry*, University Science Books, 1st Ed. 1997

8. Tenure Track Faculty Qualified to Teach This Course.

Simone Aloisio, Blake Gillespie

9. Requested Effective Date:

First semester offered: Fall 2012

10. New Resources Requested. **Yes** ☐ **No** x

If YES, list the resources needed.

6.2.10 km2

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

☒

If, YES attach a program update or program modification form for all programs affected.

Priority deadline for New Minors and Programs: October 1, 2012 of preceding year.

Priority deadline for Course Proposals and Modifications: October 15, 2012, of preceding year.

Last day to submit forms to be considered during the current academic year: April 15th.

Simone Aloisio

4/4/2012

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

Date

Approval Sheet

Program/Course: CHEM 374

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 Simone Aloisio		
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
AVP		
Signature		Date