

CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS
COURSE MODIFICATION PROPOSAL
Courses must be submitted by November 3, 2008,
to make the next catalog (2009-2010) production

DATE (CHANGE DATE EACH TIME REVISED): 10/1/2008 REV 10.20.08

PROGRAM AREA(S): CHEMISTRY

Directions: All of 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# **250** Title
 QUANTITATIVE ANALYSIS

Units **(2)**
2 hours lecture per week
 hours blank per week

Prerequisites:
 CHEM 122 with a grade of C or better.

Consent of Instructor Required for Enrollment
 Corequisites:
 CHEM 251

Catalog Description (Do not use any symbols):

An examination of the theory and techniques involved in the quantification of inorganic, organic, and biological species from samples with an emphasis on the environmental, biological, and medical applications of the analysis techniques.

General Education Categories	<input type="checkbox"/>	Graded <input type="checkbox"/> CR/NC <input type="checkbox"/> A - F	<input type="checkbox"/> Repeatable for up to <input type="checkbox"/> units Total Completions <input type="checkbox"/>
Lab Fee Requested	<input type="checkbox"/>		<input type="checkbox"/> Multiple Enrollment in same semester
Course Level:	<input type="checkbox"/>	Optional (Student's choice)	
<input type="checkbox"/> Undergraduate			
<input type="checkbox"/> Post-bac/Credential			
<input type="checkbox"/> Graduate			

NEW

Prefix **CHEM** Course# **250** Title
 QUANTITATIVE ANALYSIS

Units **(3)**
3 hours lecture per week
 hours blank per week

Prerequisites:
 CHEM 122 with a grade of C or better.

Consent of Instructor Required for Enrollment
 Corequisites:
 CHEM 251

Catalog Description (Do not use any symbols):

An examination of analytical chemistry theory and techniques involved in the quantification of inorganic, organic, and biological species from samples. Emphasis on gravimetric, volumetric, and separation techniques, as well as data analysis and statistics. Examine environmental, biological, and medical applications of the analysis techniques.

General Education Categories	<input type="checkbox"/>	Graded <input type="checkbox"/> CR/NC <input checked="" type="checkbox"/> A - F	<input type="checkbox"/> Repeatable for up to <input type="checkbox"/> units Total Completions <input type="checkbox"/>
Lab Fee Requested	<input type="checkbox"/>		<input type="checkbox"/> Multiple Enrollment in same semester
Course Level:	<input checked="" type="checkbox"/>	Optional (Student's choice)	
<input checked="" type="checkbox"/> Undergraduate			
<input type="checkbox"/> Post-bac/Credential			
<input type="checkbox"/> Graduate			

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

Hegis Code(s) _____

(Provided by the Dean)

Existing

Proposed

	Units	Hours Per Unit	Benchmark Enrollment	Graded		Units	Hours Per Unit	Benchmark Enrollment	Graded	CS No. (filled out by Dean)
Lecture	2	1	36	<input type="checkbox"/>	Lecture	3	1	36	<input type="checkbox"/>	<input type="checkbox"/>
Seminar	<input type="checkbox"/>	1	<input type="checkbox"/>	<input type="checkbox"/>	Seminar	<input type="checkbox"/>	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lab	<input type="checkbox"/>	3	<input type="checkbox"/>	<input type="checkbox"/>	Lab	<input type="checkbox"/>	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity	<input type="checkbox"/>	2	<input type="checkbox"/>	<input type="checkbox"/>	Activity	<input type="checkbox"/>	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Field Studies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Field Studies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Indep Study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Indep Study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other blank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other blank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. 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).

4. Justification and Requirements for the Course. *[Make a brief statement to justify the need for the course]*

OLD

Quantitative Analysis is the study of the analysis of chemical compounds using commonly used laboratory techniques. This course is the lecture portion that is concurrently taken with the lab (CHEM 251). These two courses are required for the Environmental Science Emphasis in the B.S. in Environmental Science and Resource Management major.

NEW

Quantitative Analysis is the study of the analysis of chemical compounds using commonly used laboratory techniques. This course is the lecture portion that is concurrently taken with the lab (CHEM 251). Both are required for all options within the chemistry major. These two courses are required for the Environmental Science Emphasis in the B.S. in Environmental Science and Resource Management major, and for the Clinical Sciences option in the Biology major.

☐ Requirement for the Major/Minor
☐ Elective for the Major/Minor

☒ Requirement for the Major/Minor
☐ Elective for the Major/Minor

Submit Program Modification if this course changes your program.

5. Learning Objectives. (List in numerical order)

Upon completion of the course, the student will be able to:

OLD

Students who successfully complete this course will be able to:

- Quantitatively determine the statistical relevance and error of data determined in the chemistry laboratory

Upon completion of the course, the student will be able to:

NEW

Students who successfully complete this course will be able to:

- Quantitatively determine the statistical relevance and error of data determined in the chemistry laboratory

- Describe the scientific method and how it is used to approach the study of chemical data obtained from the laboratory
- Analyze chemical samples based on commonly used titration methods based on acid-base, solubility, and oxidation-reduction chemistry
- Explain the elements of basic spectroscopic techniques used in chemical analysis
- Evaluate the limitations of analytical techniques based on information obtained by the technique and error associated with the measurement
- Describe the fundamentals behind separation analysis of chemical species
- Identify the latest technology available which uses the fundamentals of the techniques used in laboratory

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- Evaluate the limitations of analytical techniques based on information obtained by the technique and error associated with the measurement
- Describe the fundamentals behind separation analysis of chemical species
- Identify the latest technology available which uses the fundamentals of the techniques used in laboratory

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

OLD

Introduction to Quantitative Analysis Statistical Analysis and Error in Analytical Data Gravimetric Methods of Analysis Titrimetric Methods of Analysis Acid-Base Titrations Complex Formation Titrations Solubility Equilibria and Precipitation Titrations Oxidation-Reduction Titrations Potentiometric Methods of Analysis Spectroscopic Techniques Spectrophotometry Emission Spectroscopy Separations Solvent Extraction Gas-Liquid Chromatography Liquid Chromatography The Chemistry Lab of the Future

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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)

- 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:
- Program responsible for staffing:

8. References. [Provide 3-5 references]

OLD

Harris, D.C. Quantitative Chemical Analysis, 6th Ed., 2002
 Day, R.A., Jr.; Underwood, A.L., Jr., Quantitative Analysis, 6th Ed., 1991
 De Levie R. Principles of Quantitative Chemical Analysis, 1996
 Skoog, D.A.; West, D.M.; Crouch, S.R.; Holler, F.J. Analytical Chemistry: An Introduction, 7th Ed., 1999

NEW

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De Levie R. Principles of Quantitative Chemical Analysis, 1996
Skoog, D.A.; West, D.M.; Crouch, S.R.; Holler, F.J. Analytical Chemistry: An Introduction, 7th Ed., 1999

9. Tenure Track Faculty qualified to teach this course.

Simone Aloisio, Phil Hampton, Blake Gillespie

10. Requested Effective Date or First Semester offered: Fall 2009

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.]

<input type="checkbox"/> Course title	<input type="checkbox"/> Course Content
<input type="checkbox"/> Prefix/suffix	<input type="checkbox"/> Course Learning Objectives
<input type="checkbox"/> Course number	<input type="checkbox"/> References
<input checked="" type="checkbox"/> Units	<input type="checkbox"/> GE
<input type="checkbox"/> Staffing formula and enrollment limits	<input type="checkbox"/> Other
<input type="checkbox"/> Prerequisites/Corequisites	<input type="checkbox"/> Reactivate Course
<input checked="" type="checkbox"/> Catalog description	
<input checked="" type="checkbox"/> Mode of Instruction	

Justification: We are requesting that the courses (CHEM 250 and CHEM 251) become a 3 unit lecture 1 unit lab course. There are two reasons for this. Currently, CHEM 250 and 251 are a 2 unit lecture and 2 unit lab course. With limited teaching lab space and growing enrollment in the course, this is costing the program two lab periods per week. It seems unsustainable to keep this many lab sections per week, and it may not be necessary or as effective as originally thought. We can streamline the lab portion of the course, and have a more traditional one lab per week course. The lecture portion of the course can use the extra hour per week. Currently, there is not enough time and too much material for the two hour per week format. A three hour per week lecture format would allow instructors to spend more time covering the material, and would allow for student problem solving time, which increases the engagement of students in this course. As a quantitative methods in the chemistry program, one can imagine that student engagement should lead to better student success.

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 6, 2008 of preceding year.

Priority deadline for Course Proposals and Modifications: November 3, 2008.

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

Simone Aloisio

10/1/2008

Proposer(s) of Course Modification

Date

Type in name. Signatures will be collected after Curriculum approval.

Approval Sheet

Course: CHEM 250

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 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
Dean of Faculty		
	Signature	Date