CHEM 511

California State University San Marcos • NEW COURSE • FORM C

ORIGINATOR'S SECTION:

1. College:

☐ CHABSS ☐ CoBA
☐ CoEHHS ☒ CSM

Desired Term and Year of Implementation (e.g., Fall 2008):

Fall 2017

2.Course is to be considered for G.E.? (If yes, also fill out appropriate GE form*) ☐ Yes ☒ No

3. Course will be a variable-topics (generic) course? ☐ Yes ☒ No
("generic" is a placeholder for topics)

4. Course abbreviation and Number:* CHEM 511

5. Title: ***(Titles using jargon, slang, copyrighted names, trade names, or any non-essential punctuation may not be used.)***
High Performance Liquid Chromatography Methods

6. Abbreviated Title for PeopleSoft:
(no more than 25 characters, including spaces)
HPLC Methods

7. Number of Units: 2

8. Catalog Description: ***(Not to exceed 80 words; language should conform to catalog copy. Please consult the catalog for models of style and format; include all necessary information regarding consent for enrollment, pre- and/or corequisites, repeated enrollment, crosslisting, as detailed below. Such information does not count toward the 80-word limit.)***

Introduces the theories for different separations and detection modes of High Performance Liquid Chromatography (HPLC). Topics covered will include HPLC method development, parameter optimization and the applications of HPLC techniques for the separation of pharmaceuticals and biological samples. *Prerequisite: A minimum grade of C (2.0) in CHEM 416 or classified graduate standing.*

9. Why is this course being proposed?

This course is being proposed as part of the new Masters in Chemistry program. CHEM 511 will serve as an elective course.

10. Mode of Instruction*

For definitions of the Course Classification Numbers:
http://www.csusm.edu/academic_programs/curriculumscheduling/catalogcurricula/DOCUMENTS/Curricular_Forms_Tab/Instructional%20Mode%20Conventions.pdf

Type of Instruction	Number of Credit Units	Instructional Mode (Course Classification Number)
Lecture	2	C-02
Activity		
Lab		

11. Grading Method:*
☒ Normal (N) *(Allows Letter Grade +/-, and Credit/No Credit)*
☐ Normal Plus Report-in-Progress (NP) *(Allows Letter Grade +/-, Credit/No Credit, and Report-in-Progress)*
☐ Credit/No Credit Only (C)
☐ Credit/No Credit or Report-in-Progress Only (CP)

12. If the (NP) or (CP) grading system was selected, please explain the need for this grade option.

13. Course Requires Consent for Enrollment? ☐ Yes ☒ No

☐ Faculty ☐ Credential Analyst ☐ Dean ☐ Program/Department - Director/Chair

14. Course Can be Taken for Credit More than Once? ☐ Yes ☒ No
If yes, how many times? (including first offering)

15. Is Course Crosslisted: ☐ Yes ☒ No

If yes, indicate which course and check "yes" in item #22 below.

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16. Prerequisite(s): ☒ Yes ☐ No CHEM 416 or classified graduate standing.

17. Corequisite(s): ☐ Yes ☒ No

* If Originator is uncertain of this entry, please consult with Program/Department Director/Chair.

18. Documentation attached:
☐ Syllabus ☒ Detailed Course Outline

19. If this course has been offered as a topic, please enter topic abbreviation, number, and suffix:*

20. How often will this course be offered once established?* In a 2.5 to 3-year rotation of elective courses

PROGRAM DIRECTOR/CHAIR - COLLEGE CURRICULUM COMMITTEE SECTION:
(Mandatory information – all items in this section must be completed.)

21. Does this course fulfill a requirement for any major (i.e., core course or elective for a major, majors in other departments, minors in other departments)? ☒ Yes ☐ No

If yes, please specify:
Elective course in the Masters of Science in Chemistry.

22. Does this course impact other discipline(s)? (*If there is any uncertainty as to whether a particular discipline is affected, check "yes" and obtain signature.*) ☐ Yes ☒ No

If yes, obtain signature(s). Any objections should be stated in writing and attached to this form.

Discipline _____ _____ _____Support _____Oppose
Signature Date

Discipline _____ _____ _____Support _____Oppose
Signature Date

SIGNATURES : (COLLEGE LEVEL) :

K. Ng 8/4/2016
1. Originator (please print or type name) Date

8/9/16
2. Program Director/Chair Date

12/14/16
3. College Curriculum Committee Date

12/14/16
4. College Dean (or Designee) Date

(UNIVERSITY LEVEL)

5. UCC Committee Chair Date

6. Vice President for Academic Affairs (or Designee) Date

7. President (or Designee) Date

Office of Academic Programs PS ~~Banner:~~ Catalog Revised 3/28/2007

* If Originator is uncertain of this entry, please consult with Program/Department Director/Chair.

RP___ Tracked ✓

Chemistry 511–HPLC Methods
PROSPECTIVE COURSE OUTLINE

Dr. Karno Ng
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SCI1-113
760-750-8037

Course Description: Introduces the theories for different separations and detection modes of High Performance Liquid Chromatography (HPLC). Topics covered will include HPLC method development, parameter optimization and the applications of HPLC techniques for the separation of pharmaceuticals and biological samples. Prerequisite: CHEM 416.

Student Learning Outcomes:

Students will

- Develop both the analytical toolsets and mindset for quantitative research.
- Achieve a clear understanding of statistically rigorous analyses that yield quantitative and statistically defendable data.
- Analyze sample data from pharmaceutical and environmental samples and apply HPLC techniques to answer medically and environmentally significant questions

Textbooks: Michael W. Dong; *Modern HPLC for the Practicing Scientist.* Wiley, 2006.

Course Activities: Students will do graded homework every 2 weeks.

There will be a written take-home midterm exam and a take-home final exam.

A research paper reviewing the application of a specific technique to an interesting problem will be used to fulfill the All-University Writing Requirement. The paper will be presented to the class as well.

Grading Scheme:

	# of Items	Pts. Per Item	Total Points
Homework	7	25	175
Research Paper	1	50	50
Midterm Exam	1	100	100
Final Exam	1	100	100
			425

Anticipated schedule: (subject to change)

Lectures	**Topics**
Week 1	Introduction to chromatography, principles of chromatography
Week 2-3	Efficiency descriptors and general methods for optimization
Week 4	Stationary phases used in HPLC: Normal Phase & Reversed Phase
Week 5	Ion exchange. GPC, Supercritical Fluid Chromatography
Week 6	Detectors: RI, UV, Laser polarimetry
Week 7	Detectors: Mass spectrometry
Week 8	Quantitative methods for Medicinal Chemistry
Week 9	Quantitative methods for Environmental Chemistry
Week 10	UHPLC
Week 11-15	Applications of HPLC