



SACRAMENTO STATE

CHEMB13-14.001

Faculty Senate Meeting
May 1, 2014
Program Proposal
Form B

Attachment: FS 13/14-114

FEB 6 2014

Academic Group (College): NSM	Date of Submission to College Dean:
Academic Organization (Department): Chemistry	Requested Effective: Fall <input checked="" type="checkbox"/> , Spring <input type="checkbox"/> , 2014 <input type="checkbox"/> .
Department Chair: Linda Roberts	Contact if not Department Chair:
Title of the Program (Please be specific; indicate minor, undergraduate or graduate degree, etc.): Master of Science in Chemistry	
Type of Program Proposal: <input checked="" type="checkbox"/> Modification in Existing Program: <input checked="" type="checkbox"/> Substantive Change <input type="checkbox"/> Non-Substantive Change <input type="checkbox"/> Deletion of Existing Program <input type="checkbox"/> New Programs <input type="checkbox"/> Initiation (Projection) of New Program on to Master Plan <input type="checkbox"/> New Degree Programs <input type="checkbox"/> Regular Process <input type="checkbox"/> Fast Track Process <input type="checkbox"/> Pilot Process <input type="checkbox"/> New Minor, Concentration, Option, Specialization, Emphasis <input type="checkbox"/> New Certificate Program	
PLEASE NOTE: Form B is to be used only as a Cover Form. Additional information is requested for each of the above as noted in the corresponding procedure in the Policies and Procedures for Initiation, Modification, Review and Approval of Courses and Academic Programs found at: http://www.csus.edu/acaf/academic/resources/policies_and_procedures/Course_and_Program_Proposals/ApprovalProcesses.html	
Briefly describe the program proposal (new or change) and provide a justification: The Chemistry department is proposing to revise its graduate programs by replacing two graduate laboratory courses with a required graduate research methods course and special topics lecture courses. These changes will address deficiencies in research proposal development and thesis writing among our students, increase the flexibility of graduate course offerings, broaden the accessibility of graduate courses to graduate students in other majors and to our undergraduates (thus increasing the flexibility of undergraduate elective choices), and substantially reduce costs associated with operation of the graduate program.	
Approvals: Department Chair: <u>Linda Roberts</u> Date: <u>2/4/14</u> College Dean: <u>Jim Brown</u> Date: <u>2/12/14</u> University Committee: <u>Kaci Chalmers</u> Date: <u>3/21/14</u> Assoc Dean for Undergraduate Studies or Dean for Graduate Studies: <u>Chungne</u> Date: <u>04/02/14</u>	

PROGRAM CHANGE PROPOSAL FOR THE MS CHEMISTRY DEGREE

I. FORM B - please see attached

II. SUMMARY OF CHANGES

The Chemistry department is revising its graduate program curriculum due to changes in the preparation and career interests of students coming into the program and to an increase in the diversity of faculty expertise and research interests. The proposed changes can be summarized as follows:

1. Remove two required graduate laboratory courses (CHEM 231 and 240)
2. Add a required Research Methods course (CHEM 200)
3. Add as elective choices a series of Special Topics courses reflecting current themes and regional interests in chemistry (CHEM 25X, where X = 1-5, see list below).

III. RATIONALE

The three changes proposed to the MS Chemistry graduate program are stimulated by different considerations. First, we are experiencing a steady increase in applications to our program from students who earned their Bachelor's degrees in Chemistry or related discipline at CSUS or similar primarily undergraduate institutions. Many of these students have well-developed laboratory skills, through undergraduate research experiences and/or upper division laboratory capstone courses. This, together with the laboratory experience obtained through the thesis project, abrogates the need for graduate level laboratory courses. Thus, the first change proposed is to delete two graduate laboratory courses, CHEM 231 and CHEM 240. The second proposed change involves adding a required research methods course. The rationale here is to provide students with better preparation for developing a written research proposal (required for advancement to candidacy) and writing the thesis. The scope of the research proposal and thesis is difficult for students to manage, even if they have decent writing skills, which many of them do not. To help students understand and plan for the complexity and scope of a chemistry thesis, including a thorough grounding in researching the chemical literature, we propose to add a course which guides them through a series of exercises similar to those used in creating a research proposal and thesis. This course, CHEM 200, has been reviewed by College and University Curriculum Committees and has been given conditional approval for Spring 2014. The third proposed change is to add a series of special topics courses that reflect current themes and regional interests in chemistry (see concurrently submitted new course proposals for CHEM 251, 252, 253, 254, 255). This series of courses provides increased flexibility for adapting the graduate curriculum to a vast and rapidly changing discipline.

IV. PROPOSED CURRICULUM

Proposed	Current
<i>Required Core</i> (11 units)	<i>Required Core</i> (14 units)
(3) CHEM 200 - Research Methods in Chemistry	++++ ++++
(3) CHEM 220 - Spectrometric Identification of Compounds	(3) CHEM 220 - Spectrometric Identification of Compounds

<p>(3) CHEM 230 - Separation Methods in Chemistry ++++ ++++ ++++ ++++ (2) CHEM 294 - Seminar in Chemistry (4 semesters required)</p>	<p>(3) CHEM 230 - Separation Methods in Chemistry (3) CHEM 231 - Chemical Separations Laboratory (3) CHEM 240 - Advanced Instrumentation Laboratory (2) CHEM 294 - Seminar in Chemistry (4 semesters required)</p>
<p><i>Electives (9 units)</i> Select 9 units from: ++++ (3) CHEM 245 - Applications of Computational Chemistry (3) CHEM 250 - Selected Topics in Chemistry (3) CHEM 251 - Topics in Interdisciplinary Chemistry (3) CHEM 252 - Topics in Synthetic Chemistry (3) CHEM 253 - Topics in Applied Chemistry (3) CHEM 254 - Topics in Physical Chemistry (3) CHEM 255 - Topics in Chemistry Education (3) CHEM 260 - Protein Biochemistry ++++ ++++ ++++ ++++ ++++ (3) CHEM 261 - Nucleic Acids Chemistry</p> <p>Graduate or upper division courses in appropriate areas (BIOL, GEOL, PHYS, ENVS) may be used upon approval by graduate advisor and department chair. A maximum of 2 units of upper division undergraduate coursework may be used toward fulfilling electives.</p>	<p><i>Electives (6 units)</i> ++++ Select two of: (3) CHEM 245 - Applications of Computational Chemistry (3) CHEM 250 - Selected Topics in Chemistry ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ (3) CHEM 260 - Protein Biochemistry or upper division or graduate course in related field approved by graduate advisor and department chair (e.g., BIO 180, CHEM 110, CHEM 128, CHEM 141). ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ A maximum of 2 units of upper division undergraduate coursework may be used toward fulfilling electives.</p>
<p><i>Completion requirements (10 units)</i></p>	<p><i>Completion requirements (10 units)</i></p>
<p>(6) CHEM 299 - Special Problems (4) CHEM 500 - Culminating Experience</p>	<p>(6) CHEM 299 - Special Problems (4) CHEM 500 - Culminating Experience</p>

V. TWO-YEAR SCHEDULE FOR GRADUATION

YEAR 1		YEAR 2	
Fall	Spring	Fall	Spring

CHEM 230	CHEM 200	CHEM 220	Elective
Elective	Elective	CHEM 294	CHEM 294
CHEM 294	CHEM 294	CHEM 299	CHEM 500
CHEM 299	CHEM 299		

VI. RESOURCES

The changes we are proposing to the MS Chemistry program will actually lower the costs of this program. First, it **eliminates four WTU** associated with teaching the graduate laboratories (reduction from five WTU to three WTU for two courses). Second, it **eliminates the cost of chemicals and supplies** needed to run the two graduate laboratories (~\$500-1000/class; cost doesn't reflect full price of items such as cryogenics and equipment maintenance).

VII. CONSULTATION WITH OTHER PROGRAMS

Chemistry graduate courses may serve as electives to complete a Master's degree (MA, Stem Cell Concentration and MS) in Biological Sciences. Most of the courses currently listed in the catalog for this purpose are lecture courses that will not change in the new program. In addition, the eliminated laboratory courses will not substantially affect this population since only one Biology student has enrolled in Chem 231 and none in Chem 240 since the Fall of 2008. Furthermore, the proposed program change *increases* the number of courses that Biology graduate students could potentially use to complete their degrees. The Department of Biological Sciences has been fully consulted concerning these changes (please see attached).

grad program revision

Lundmark, Jennifer A

Sent: 14 November 2013 10:15

To: Roberts, Linda M

Dear Linda,

The Department of Biological Sciences is supportive of your petition to revise your graduate program. If you have any questions, please let me know.

Thanks,
Jennifer

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