

Course Proposals for Chemistry Program Revisions

LSC Use Only No:	LSC Action-Date:	UWUCC USE Only No.	UWUCC Action-Date:
		Senate Action Date:	App 3/25/03
		02-60J	App 4/29/03

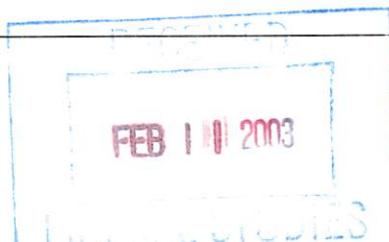
Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

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Proposing Department/Unit: Chemistry	Phone: 7-4489

Check all appropriate lines and complete information as requested. Use a separate cover sheet for each course proposal and for each program proposal.

1. Course Proposals (check all that apply) ☐ New Course ☐ Course Prefix Change ☐ Course Deletion ☒ Course Revision ☐ Course Number and/or Title Change ☒ Catalog Description Change	
CHEM 498 – Problems in Chemistry	
<u>Current</u> Course prefix, number and full title	<u>Proposed</u> course prefix, number and full title, if changing
2. Additional Course Designations: check if appropriate ☐ This course is also proposed as a Liberal Studies Course. ☐ Other: (e.g., Women's Studies, Pan-African) ☐ This course is also proposed as an Honors College Course.	
3. Program Proposals ☐ New Degree Program ☐ Program Title Change ☐ Program Revision ☐ New Minor Program ☐ New Track ☐ Other	
<u>Current</u> program name	<u>Proposed</u> program name, if changing
4. Approvals	
Dept Curriculum Committee Chair	Date
Department Chair	2/5/03
Coll. Curriculum Committee Chair	02/10/03
College Dean	2/11/03
Director of Liberal Studies *	
Director of Honors College *	
Provost *	
Additional signatures as appropriate: (include title)	
UWUCC Co-Chairs	4/29/03

* where applicable



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Part II. 1. New Syllabus of Record

I. Catalog Description

Course Title: Problems in Chemistry

Prefix: CHEM

Number: 498

Hours: var - 1-2sh

Prerequisites: CHEM 112 or 114, CHEM 231 and permission of the chairperson.

Description: A course of supervised undergraduate research, in conjunction with a faculty member in the chemistry department.

II. Objectives: Upon the successful completion of the course, the student will:

- 1) gain understanding of the process of scientific research.
- 2) learn the laboratory techniques required to successfully carry out their chosen research.
- 3) gain experience in writing in the style accepted in scientific literature.
- 4) produce original research results.
- 5) gain experience in presenting their research results to a scientific audience.

III. Detailed Course Outline:

Since the nature of the research is dependent on the research advisor chosen by the student, there is no general topic outline for this course.

IV. Evaluation Methods:

Since the objective of this course is to carry out original research in chemistry, traditional exams are not appropriate. The student is expected to work in their chosen research lab for a minimum of four hours per week per semester hour, and to actively participate in the design and analysis of the research project. The research director will assess the quality of the student work in the research lab. This assessment is based on: a) intellectual commitment to undergraduate research; b) quality of work in the research lab; c) quality of the contribution to the design of the research project. In addition to active research participation, there are several other requirements in this course:

- 1) Research proposal following departmental guidelines. An initial draft of this research proposal is required in CHEM 301, which will normally be taken the semester before students start CHEM 498. For students who take CHEM 498 as suggested (over two semesters), the final research proposal is expected at the end of the first semester. If the student takes CHEM 498 in only one semester, then the research proposal is required by mid-semester.
- 2) Student presentation of research results. Each CHEM 498 student will make a 20-minute presentation, including some results of their work, to the chemistry department faculty and the other students enrolled in CHEM 498.
- 3) Report of research results in ACS-approved format. This format is outlined in *The ACS Style Guide*, and this report will be produced with the supervision of the student's research director. A draft of this report is due one month before the end of classes, and the final copy is due the last day of class.
- 4) Completion of departmental student survey of their chemistry degree program (a copy of this survey is included as an Appendix in this proposal package).

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V. Example Grading Scale

- A = completion of appropriate requirements, outstanding work in research lab
- B = completion of appropriate requirements, good work in research lab
- C = completion of appropriate requirements, fair work in research lab
- D = completion of appropriate requirements, poor work in research lab
- F = non-completion of appropriate requirements

Appropriate requirements are: a) research proposal; b) research report; c) 20-minute presentation; d) student survey. The deadlines for these requirements are detailed above.

VI. Attendance Policy:

Students are expected to engage in undergraduate research for a minimum of four hours per week per semester hour. The schedule and activities to take place during this time are to be mutually agreed upon by the student and research director.

VII. Required Textbook(s), Supplemental Books and Readings:

The ACS Style Guide: A Manual for Authors and Editors, Second Edition, Dodd, J.S., Ed.; American Chemical Society: Washington, DC, 1997.

VIII. Special Resource Requirements:

- 1) Safety goggles
- 2) Laboratory notebook

IX. Bibliography:

The research-specific bibliography for this course is completely dependent on the research advisor. However, some general interest resources on undergraduate research are:

- 1) Sheila Tobias, *Revitalizing Undergraduate Science*, Research Corporation, Tucson, AZ, 1992.
- 2) Istvan Hargittai, *Candid Science: Conversations with Famous Chemists*, Imperial College Press, London, 2000.
- 3) *Academic Excellence*, Michael P. Doyle, Ed., Research Corporation, Tucson, AZ, 2000.
- 4) Kandel, M. *Presenting Scientific Ethics to Undergraduates*, J. Chem. Educ. **1994**, 71, 405.
- 5) Kovac, J. *The Ethical Chemist: Case Studies in Scientific Ethics*, University of Tennessee: Knoxville, TN, 1995.
- 6) K.J. Laidler, *To Light Such a Candle*, Oxford University Press, New York, 1998.
- 7) *The ACS Style Guide: A Manual for Authors and Editors, Second Edition*, Dodd, J.S., Ed.; American Chemical Society: Washington, DC, 1997.

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Part II. 2. Summary of the proposed revisions.

Old catalogue description: CHEM 498 Problems in Chemistry (var-1-2sh)

Prerequisite: Permission of chairperson. A course of independent study on selected problems, including lab work, library reading, and conferences with staff member. A minimum of 4 hours per week required per credit.

New catalogue description: CHEM 498 Problems in Chemistry (var-1-2sh)

Prerequisites: CHEM 112 or CHEM 114, CHEM 231 and permission of chairperson. A course of independent study as undergraduate research in conjunction with a faculty member in the chemistry department. It is suggested that the student take one semester hour of CHEM 498 in the spring semester of their junior year, and a second semester hour in the fall semester of their senior year.

The revision of the research proposal and a 20-minute oral presentation have been added as requirements in this course.

Part II. 3. Justification/rationale for the revision.

The prerequisites are changed from "Permission of Chairperson" to also include CHEM 112 or CHEM 114 and CHEM 231 so that the students have the appropriate background knowledge to conduct the level of chemical research expected in this course.

The additional requirements will give the students more experience in expressing themselves scientifically, both in writing and in an oral presentation. Skills in scientific presentation are important in both graduate school and the chemical industry.

Part II. 4. Old syllabus of record.

There is no current syllabus of record for CHEM 498 on file in the Chemistry Department.