

LSC Use Only Proposal No: _____ UWUCC Use Only Proposal No: 12-24d
 LSC Action-Date: _____ UWUCC Action-Date: AP 9/4/12 Senate Action Date: App-10/9/12

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

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Proposing Department/Unit Chemistry	Phone 74489

Check all appropriate lines and complete all information. Use a separate cover sheet for each course proposal and/or 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

Current course prefix, number and full title: CHEM 290, Chemistry Seminar I
Proposed course prefix, number and full title, if changing:

2. Liberal Studies Course Designations, as appropriate

This course is also proposed as a Liberal Studies Course (please mark the appropriate categories below)

Learning Skills Knowledge Area Global and Multicultural Awareness Writing Intensive (include W cover sheet)

Liberal Studies Elective (please mark the designation(s) that applies – must meet at least one)

Global Citizenship Information Literacy Oral Communication
 Quantitative Reasoning Scientific Literacy Technological Literacy


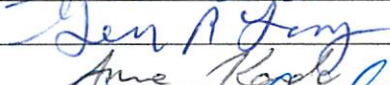
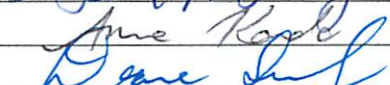
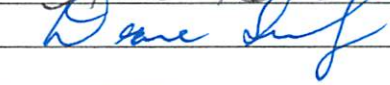

3. Other Designations, as appropriate


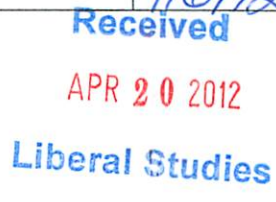
Honors College Course Other: (e.g. Women's Studies, Pan African)

4. Program Proposals

Catalog Description Change Program Revision Program Title Change New Track
 New Degree Program New Minor Program Liberal Studies Requirement Changes Other

Current program name:
Proposed program name, if changing:

5. Approvals	Signature	Date
Department Curriculum Committee Chair(s)		<u>4/13/12</u>
Department Chairperson(s)		<u>4/15/12</u>
College Curriculum Committee Chair		<u>4/20/12</u>
College Dean		<u>4/20/12</u>
Director of Liberal Studies (as needed)		
Director of Honors College (as needed)		
Provost (as needed)		
Additional signature (with title) as appropriate		
UWUCC Co-Chairs		<u>9/6/12</u>

I. Catalog Description

CHEM 290 Chemistry Seminar I 1 class hour, 0 lab hours, 1 credit (1c-0l-1cr)

Prerequisite: CHEM 111 or 113

Provides knowledge to students concerning undergraduate research and career possibilities based on a degree in chemistry or biochemistry. Much of this class will consist of presentations to students by research faculty in chemistry, biochemistry and other departments across the university.

II. Course Objectives

Students will...

Objective 1: be exposed to the wide range of undergraduate research experiences that are available in chemistry, biochemistry, and across related fields throughout IUP, in anticipation of choosing an undergraduate research mentor.

Objective 2: learn about the essentials of undergraduate research, including the problems of ethics in scientific research, both at IUP and summer research experiences at other institutions.

Objective 3: discover the career paths available with a degree in chemistry or biochemistry, and will learn some of the advantages and disadvantages of these various career possibilities.

Objective 4: demonstrate their ability to communicate scientific information in both written and oral formats.

III. Detailed Course Outline: (1 hour = 1 academic hour (50 minutes))

- | | |
|--|---------------|
| 1) Undergraduate Research: What's it all about? | 1 hour |
| a) How research works in the sciences. | |
| b) What is expected of the student in an undergraduate research setting. | |
| c) How to choose a research mentor. | |
| 2) Applying for grants and fellowships | 1 hour |
| a) internal and external grants for undergraduate research and travel | |
| b) summer research fellowships | |
| c) national fellowships | |
| 3) Career paths in chemistry and biochemistry | 1 hour |
| a) industrial | |
| b) academic | |
| c) government | |
| d) other | |
| 4) Graduate school in the sciences | 1 hour |
| a) applying | |

- b) choosing
- c) what to expect once you are there
- 5) Ethics in scientific research **1 hour**
 - a) a classroom discussion based on issues from *The Responsible Researcher: Paths and Pitfalls*.
- 6) Presentations by faculty in chemistry, biochemistry and related areas **9 hours**
 - a) instructor coordinates with faculty to develop schedule
 - b) length of presentations based on available time
- 7) Culminating activity – student oral presentations (final exam period) **2 hours**

IV. Evaluation Methods:

Writing assignment	= 100pts
Presentation Summaries (9)	= 90pts
<u>Oral Presentation</u>	= 50pts
Total Points	= 240pts

The writing assignment will require students to analyze and explain the information presented over the first four weeks of the course. For the faculty presentations, students will write short summaries of the talks presented each week. The oral presentation, given during the final exam period, will require students to examine more closely the research presentation that they found the most interesting.

V. Example Grading Scale

A: $\geq 90\%$ B: 80-89% C: 70-79% D: 60-69% F: $< 60\%$

VI. Attendance Policy:

The attendance policy for this course will be consistent with the policy stated in the current IUP undergraduate catalog.

VII. Required Textbook(s), Supplemental Books and Readings: *The Responsible Researcher: Paths and Pitfalls*, Sigma Xi, The Scientific Research Society – this is available as a free pdf file on the Sigma Xi website. Materials for the first four weeks have been developed in the department.

VIII. Resources: (none)

IX. Bibliography:

1. American Chemical Society, *The Chemist's Code of Conduct*, Washington, DC (1994).
2. American Chemical Society *Undergraduate Professional Education in Chemistry: ACS Guidelines and Evaluation Procedures for Bachelor's Degree Programs*, Washington, DC (2008).
3. Dodd, J.S. (editor) *The ACS Style Guide: A Manual for Authors and Editors, Third Edition*, American Chemical Society: Washington, DC, (2006)
4. Doyle, Michael P. editor, *Academic Excellence*, Research Corporation, Tuscon, AZ (2000).

5. Gornick, Vivian, *Women in Science: Then and Now*, The Feminist Press at CUNY, New York (2009).
6. Laursen, Sandra, Barrie-Hunter, Anne, Seymour, Elaine, Thiry, Heather, and Melton, Ginger, *Undergraduate Research in the Sciences: Engaging Students in Real Science*, Wiley, San Francisco (2010).
7. McCray, Richard A., DeHaan, Robert L., Schuck, Julie, (Editors), *Improving Undergraduate Instruction in Science, Technology, Engineering, and Mathematics: Report of a Workshop*, National Academies Press, Washington, DC (2003).
8. Sigma Xi, The Scientific Research Society, *The Responsible Researcher: Paths and Pitfalls*, Research Triangle Park, NC (1999).

Course Analysis Questionnaire

Section A: Details of the Course

A1 How does this course fit into the programs of the department? For what students is the course designed? (majors, students in other majors, liberal studies). Explain why this content cannot be incorporated into an existing course.

CHEM 290 is designed to provide chemistry majors with information that is important in both short- and long-term decisions regarding the direction of their careers. Majors are expected to take this course during their freshman or sophomore years. No existing course would be able to accommodate presentations by a large number of professors interested in undergraduate research.

A2 Does this course require changes in the content of existing courses or requirements for a program? If catalog descriptions of other courses or department programs must be changed as a result of the adoption of this course, please submit as separate proposals all other changes in courses and/or program requirements.

This course proposal does not affect the content of any existing course. CHEM 290 will be a requirement in two tracks of the revised Chemistry B.S. degree program, and the revised B.A. degree program. The revisions of these programs are included in this package.

A3 Has this course ever been offered at IUP on a trial basis (e.g. as a special topic) If so, explain the details of the offering (semester/year and number of students).

No

A4 Is this course to be a dual-level course? If so, please note that the graduate approval occurs after the undergraduate.

No

A5 If this course may be taken for variable credit, what criteria will be used to relate the credits to the learning experience of each student? Who will make this determination and by what procedures?

No variable credit

A6 Do other higher education institutions currently offer this course? If so, please list examples (institution, course title).

Millersville University – Freshman Seminar in Chemistry (CHEM 188)

A7 Is the content, or are the skills, of the proposed course recommended or required by a professional society, accrediting authority, law or other external agency? If so, please provide documentation.

No

Section B: Interdisciplinary Implications

B1 Will this course be taught by instructors from more than one department? If so, explain the teaching plan, its rationale, and how the team will adhere to the syllabus of record.

There will be only one instructor for this course, although many faculty members are expected to make voluntary presentations.

B2 What is the relationship between the content of this course and the content of courses offered by other departments? Summarize your discussions (with other departments) concerning the proposed changes and indicate how any conflicts have been resolved. Please attach relevant memoranda from these departments that clarify their attitudes toward the proposed change(s).

CHEM 290 will have no effect on the curriculum of other departments.

B3 Will this course be cross-listed with other departments? If so, please summarize the department representatives' discussions concerning the course and indicate how consistency will be maintained across departments.

No

Section C: Implementation

C1 Are faculty resources adequate? If you are not requesting or have not been authorized to hire additional faculty, demonstrate how this course will fit into the schedule(s) of current faculty. What will be taught less frequently or in fewer sections to make this possible? Please specify how preparation and equated workload will be assigned for this course.

This course proposal is part of a Chemistry Department program revision. The sum of all the changes included in this proposal will be a reduction of 8-9 workload hours, and three preps, for the department's faculty.

C2 What other resources will be needed to teach this course and how adequate are the current resources? If not adequate, what plans exist for achieving adequacy? Reply in terms of the following:

All resources needed to offer this course are already in place.

C3 Are any of the resources for this course funded by a grant? If so, what provisions have been made to continue support for this course once the grant has expired? (Attach letters of support from Dean, Provost, etc.)

No

C4 How frequently do you expect this course to be offered? Is this course particularly designed for or restricted to certain seasonal semesters?

CHEM 290 is envisioned to be offered every spring semester.

C5 How many sections of this course do you anticipate offering in any single semester?

One

C6 How many students do you plan to accommodate in a section of this course? What is the justification for this planned number of students?

Based on enrollment trends, ~25 students are expected in this course.

C7 Does any professional society recommend enrollment limits or parameters for a course of this nature? If they do, please quote from the appropriate documents.

No

C8 If this course is a distance education course, see the Implementation of Distance Education Agreement and the Undergraduate Distance Education Review Form in Appendix D and respond to the questions listed.

Not a distance education course.

Section D: Miscellaneous

Include any additional information valuable to those reviewing this new course proposal.