The University Of Toledo

Existing Graduate Course Modification Form

* denotes required fields

Contact Person*: Xiche Hu Phone: 530-1513 (xxx-xxxx) Email: xhu@utoledo.edu

Present
Supply all information asked for in this column. (Supply core, research intensive and transfer module info if applicable)

College*: Coll Nat Sci and Mathematics
Dept/Academic Unit*: Chemistry
Course Alpha/Numeric*: CHEM 8940

Proposed
Fill in appropriate blanks only where entry differs from first column.

College: Coll Nat Sci and Mathematics
Dept/Academic Unit: Chemistry
Course Alpha/Numeric: CHEM 8940

Course Title*: Graduate Readings in Chemistry

Credit hours*: Fixed: 2 or Variable: 1 to 2

CrossListings:
CHEM 6940

Course Title: Scientific Communication

Credit Hours: Fixed: 2 or Variable: to

CrossListings:
CHEM 6940

To add a course, type in course ID and click the Insert button.

To remove a course, select the course on left and click the Remove button.

Prerequisite(s)(if longer than 50 characters, please place it in Catalog Description):
Corequisite(s) (if longer than 50 characters, please place it in Catalog Description):

Catalog Description (only if changed) 75 words max:
Instruction on the content and organization of the scientific literature of chemistry, and its utilization in the preparation of a concise review.

Corequisite(s) (if longer than 50 characters, please place it in Catalog Description):

Catalog Description (only if changed) 75 words max:
Instructions on different modes of scientific communication: written communication, oral presentation, and research proposal, to enable students to think and converse competently in the language of science.

Has course content changed?  
☐ Yes  
☐ No

If course content is changed, give a brief topical outline of the revised course below (less than 1500 words)

scientific philosophy/method, ethics in science, chemistry literature, chemistry databases, organization and composition of chemical information, essentials in writing, writing research article, proposal writing, effective oral presentation.

Proposed effective term*: 201340  
(e.g. 201140 for 2011 Fall)

<table>
<thead>
<tr>
<th>File Type</th>
<th>View File</th>
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<tr>
<td>Syllabus</td>
<td>View</td>
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</table>

List any course or courses to be deleted.  
None

Effective Date:

Effective Date:

Approval:

Department Curriculum Authority:  
Xiche Hu  
Date 2013/04/08

Department Chairperson:  
Ronald E. Viola  
Date 2013/10/03
College Curriculum Authority or Chair: Johan Gottgens  
Date 2014/02/14

College Dean:  
Brian Ashburner  
Date 2014/02/17

Graduate Council:  
Date 4-1-2014

Dean of Graduate Studies:  
Date

Office of the Provost:  
Date

Administrative Use Only

Effective Date:  
Date (YYYY/MM/DD)

CIP Code:  
Subsidy Taxonomy:  
Program Code:  
Instructional Level:  

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CHEM 8940 Scientific Communication

Credit: 2 hr

Proposed course description: Instructions on different modes of scientific communication: written communication, oral presentation, and research proposal. Effective scientific communication skills will be developed, with a particular emphasis on scientific philosophy such that students can think and converse competently in the language of science.

Modes of instructions: Course objectives will be met through practice in scientific writing, oral presentations, as well as critical evaluation of existing literature and students’ own work. Class meetings will comprise of lectures, facilitated discussions arising from the readings and exercises.

Proposed course outline:

1. Scientific philosophy/method
   - Scientific inquiry (induction, deduction, abduction)
   - Critical thinking
   - Hypothesis
   - Facts and Data
   - Experimental design/Hypothesis driven observation

2. Ethics in Science
   - Ethical conduct of research
   - Authorship
   - Ownership of data
   - Plagiarism
   - Scientific citations

3. Accessing the literature of chemistry
   - Chemical Abstracts / SciFinder Scholar
   - Patent Literature
   - Dissertation Abstracts
   - ISI Citation Index
   - Medline

4. Accessing the chemistry databases
   - Cambridge Structural Database
   - Protein Database
   - National Center for Biotechnology Information
   - Databases maintained by individuals and organizations

5. Variety, organization and composition of chemical information
   - Topical series
   - Reviews
• The primary literature (communications, articles, etc.)
• Managing citations and bibliographical information

6. Essentials in writing (with assignments)
   • Main idea
   • Sentences
   • Paragraphs
   • Structural organization

7. Draft and revision of a research article (with assignments)
   • Abstract
   • Introduction
   • Methods and experiments
   • Results
   • Discussion
   • References

8. Critical analysis of specific articles (with assignment)
   • Precedence
   • Fact checking
   • Ethical obligations of author/presenter
   • Observation and interpretation
   • Opinion/speculation

9. Development, peer review and revision of a proposal (with assignment)
   • NSF/NIH guide to proposal preparation
   • Strategies for conducting a thorough literature review
   • Organization of information
   • Strategies for proposal writing
   • Resources for writing improvement

10. Preparation and delivery of an effective oral presentation (with assignment)
    • Awareness of the targeted audience
    • Flow
    • Logical structure
    • Be interactive with audience (eye contact, answer questions)
    • Time control

Grading: Normal

Fit: This course will be offered in the Fall semester annually. It is mandatory for all graduate students pursuing a Ph.D degree in the department of chemistry.