

## CHEM 449: Chemistry Research Methods Syllabus for Spring 2008

**Instructor:** Jeremy D. Ramsey  
**Office:** 232 Heim  
**Phone:** 321-4103  
**E-Mail:** [ramsey@lycoming.edu](mailto:ramsey@lycoming.edu)

**Course Description:** This course focuses on the nature and practice of chemistry research. Students will conduct research into a particular chemical problem with a faculty research advisor. A report on the research will be written.

**Text:** *The ACS Style Guide: A Manual for Authors and Editors*, 3<sup>rd</sup> ed.; Coghill, A.; Garson, L., Eds.; American Chemical Society: Washington, DC, 2006.

### Grading Criteria:

Poster	10%
Colloquium	15%
Final Paper	25%
Resume, Cover Letter and Research Summary	5%
Paper drafts and practice talks	5%
Effort in Lab and Library Research	25%
Notebook and Spectra	5%
Laboratory Technique	<u>10%</u>
	100%

\* Grades assigned in consultation with the research advisor.

**Attendance:** The student will pursue a research project under the direction of a faculty member in the Department of Chemistry. The student is expected to commit an average of 12 hours per week to the research project. This time will be divided between laboratory work, reading of pertinent literature, and planning of laboratory work. Attendance at weekly colloquium is mandatory and each unexcused absence will result in a 5% reduction of the final grade. A maximum of one excused absence (must be documented by a note from physician, Provost, etc.) will be allowed.

**Literature Search and Literature Review:** We will explore methods for searching the chemical literature. The student will search the primary chemical literature for articles pertinent to his or her research topic. These articles will form the basis of a literature review that will be written and included in the final research paper.

**Research Presentations:** The student will present an overview of the project at the first presentation of the semester. At subsequent meetings, the student will report on the progress made on the project since the previous meeting. Although these presentations will be somewhat informal, the student is expected to present the research in an appropriate manner (the student should be well-prepared, knowledgeable about

the project, able to describe the work in a professional manner, and able to answer student and faculty questions regarding the project). Presentations will be peer –reviewed.

**Laboratory Technique:** The student will be evaluated on her mastery of techniques relevant to her project. Included in this category are the skills necessary for the maintenance of laboratory equipment, laboratory hygiene, and safety.

**Effort in laboratory and library research:** This takes the form of the student's commitment to the research project with regard to both the time and thought dedicated to the research. This includes evaluation of the student's comprehension of the project and intellectual input as determined by discussions with the research advisor regarding the status of the project.

**Laboratory Notebook:** The student will maintain an accurate and detailed laboratory notebook (hard-bound, all entries made in ink) and an organized file of instrumental data. The notebook and other relevant data will be turned-in to the research advisor at the end of the semester.

**Colloquium:** The student will present the research results in the form of a chemistry colloquium near the end of the Spring 2008 semester. This talk will utilize Power Point.

**Final Paper:** The student will prepare a written report on the research project. The report will be written in standard ACS style (refer to papers published in the Journal of the American Chemical Society) and will include a brief abstract, an introduction, background material (literature review), results, discussion of the results, conclusions, an experimental section, and references. We will address the particulars of each section in class. Drafts of most sections will be due throughout the semester. Two drafts of the final paper are required and will be due during the last two weeks of class. We have found that at least three drafts of the final paper are necessary to produce a document that is of quality required for this course. The third and final draft of the paper and a near-final draft of the poster will be due no later than the Thursday of finals week (4/24).

**Academic Dishonesty:** Be aware that in accordance with the College's policy on academic honesty, any work you submit must be your own. Any instances of plagiarism will be severely penalized.