

CHE 392
Introduction to Research in Chemistry/Biochemistry
Fall 2007

Office Hours

By appointment. Please schedule appointments *via* email.

Drop Date

The drop date for undergraduate research is the same as any other course.

Prerequisites

Permission of the instructor. Before beginning this course, the student must read the undergraduate research guidelines on the department website:
(<http://www.usm.edu/chem/undergradresguidelines.htm>).

Credit Hours

CHE 392 may be taken for 1-3 hours credit and may be repeated once. **This course does not count toward the capstone requirement for graduation.** CHE 392 will count towards the minor in chemistry.

Course Overview

CHE 392 is an introduction to laboratory research. This course is designed to familiarize students with the research lab environment which is different from a teaching laboratory environment. The course aims to give students an experience in performing research tasks in an environment which depends on the students own motivation. This course requires the keeping of an up to date laboratory notebook and the writing of a final report to your research mentor at the end of the semester which summarizes your research accomplishments.

Course Objectives

At the end of the course you will be able to

- Perform basic research techniques specific to your project
- Use current scientific literature to design experiments
- Perform research in a safe manner
- Keep a complete and understandable laboratory notebook
- Reproduce known procedures
- Draw scientific conclusions from experimental data
- Standard English grammar, punctuation, spelling, and usage

Required Text (s) and Readings

- Your research advisor will assign specific background reading and journal articles.
- Undergraduate research guidelines at <http://www.usm.edu/chem/undergradresguidelines.htm>

Class Procedures and Requirements

- **Laboratory research**

- **Safety awareness-** *Students should familiarize themselves with the safety features of the laboratory and wear appropriate clothing and safety equipment, particularly eye protection, when in the laboratory. Students should also be aware of the toxicity of any chemicals they work with.*
- **Work ethic-** *Students should plan to work at least 10 hrs/week in the laboratory and to make efficient use of their time.*
- **Laboratory skills-** *Students will learn to plan and carry out their own experiments, and interpret the data acquired.*
- **Notebook-** *Students will keep a dated record in a bound notebook of all laboratory experiments including protocols, calculations, results, and conclusions.*

- **Final Report**

The report should detail the research conducted by the student and will be judged by the soundness of the research procedure followed, and the thoroughness and clarity of thought evident in analyzing and critically evaluating the project results. The report will typically be a minimum of 5 pages and should include a brief introduction, the hypothesis to be tested, discussion of results, experimental procedures, and conclusions.

Professionalism

Students taking CHE 392 are expected to maintain a professional attitude, and contribute to a safe and collegial research environment. The chemistry and biochemistry research laboratories have numerous potential dangers, and the research student needs to recognize possible hazards and be familiar with safety equipment and procedures. Likewise, research is naturally about the discovery of new things, some of which will have potential commercial applications. It is critically important, therefore, that research students properly design and carry out their experiments, document their findings carefully, and report them clearly.

Evaluation Criteria

Grades will be assessed based on the following categories. It is the responsibility of the student to discuss with their research advisor the weightings that he/she will apply to each of the categories. The student must discuss what is expected in each category with their research advisor.

- Laboratory Skills
- Work Ethic
- Safety Awareness
- Group Participation
- Notebook
- Final Report
- Data Interpretation

Academic Honesty (from the USM Undergraduate Bulletin):

“When cheating is discovered, the faculty member may give the student an F on the work involved or in the course. If further disciplinary action is deemed appropriate, the student should be reported to the Dean of Students. In addition to being a violation of academic honesty, cheating violates the Code of Student Conduct and may be grounds for probation, suspension, and/or expulsion. Students on disciplinary suspension may not enroll in any courses offered by The University of Southern Mississippi.”

A research course offers a different dimension of academic honesty. Students must avoid misconduct such as plagiarism of research articles and reports by other students, falsification or fabrication of research results, etc. A good sampling of research ethics materials is available at the website of Dr. Samuel Bruton at <http://ocean.otr.usm.edu/~w305717/RE&S/home.html>.

ADA Syllabus Statement

If a student has a disability that qualifies under the American with Disabilities Act (ADA) and requires accommodations, he/she should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by ADA may include learning, psychiatric, physical disabilities, or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition/disability qualifies.

Address:

The University of Southern Mississippi
Office for Disability Accommodations
118 College Drive # 8586
Hattiesburg, MS 39406-0001

Voice Telephone: (601) 266-5024 or (228) 214-3232 Fax: (601) 266-6035

Individuals with hearing impairments can contact ODA using the *Mississippi Relay Service* at 1-800-582-2233 (TTY) or email Suzy Hebert at Suzanne.Hebert@usm.edu.

Departmental Statement on Pregnancy and Safety in the Chemistry Laboratory

“The safety of all experiments is carefully considered, but all effects of all reagents used are not currently known. Therefore, if you are pregnant or considering becoming pregnant during this semester, we suggest you consider consulting your physician regarding remaining in this lab. If your doctor recommends in writing that you not be enrolled in this lab, you will be allowed to complete the laboratory requirement at a later semester.”