

Chemistry 375: Chemistry Research FALL 2008 Kenyon College

Professor Mo Hunsen

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OFFICE HOURS: M 10 AM – 12 noon; R 9 – 11 AM; F 10 – 11 AM

COURSE REQUIREMENTS:

The chemistry department strives to maintain high quality teaching and scholarship for the benefit of our students. The department has adopted the philosophy that students must not only be exposed to the most current happenings in at least one chemical research field, but they must also immerse themselves in the field by participation. Thus, our department feels research is an important component of undergraduate education. Through this experience, students not only participate in research, they also learn to search the literature on-line, to write scientifically with a special emphasis on creative thought, and to prepare and deliver effective oral presentations. As effective research requires a certain skill level, we highly recommend that students begin early, preferably in their first or second year and take advantage of as many summer research opportunities as possible.

It must be understood that research, as well as being a valuable learning experience for the undergraduate student, must also be carried out in the spirit that the work being done will contribute to the advancement of knowledge in the field, ideally leading to a publication. Therefore, the Chemistry Department encourages students to engage in research with a Faculty Principal Investigator (PI)¹ and to become an active member of their research group. As a member of a research team, each student has certain required responsibilities. Each must:

- _ Work a minimum number of hours in the lab (see below)
- _ Spend time in lab productively (performing experiments, analyzing data, documenting lab work in notebook, literature searching and reading the literature).
- _ Give oral presentations to the department and for Senior Honors students, at least one public presentation at a scientific conference.
- _ Work collaboratively with each other (more experienced students are expected to help train younger members of the lab in techniques, lab etiquette, and ethics).
- _ Attend a specified number of departmental seminars.

There are different levels of participation in chemistry research and we encourage all students to participate at the level with which they feel most comfortable.

¹Please realize that all labs have a limited capacity. If you are interested in research, we recommend that you interview with several faculty PIs.

Requirements for Chemical Research (CHEM 375 and 376)

Chemical Research should be taken by any student not doing Senior Honors who is interested in research. Permission by a PI is required. The expectations depend on the year of the student and therefore, Chemical Research course is categorized within this document as level 1 and level 2.

Chemical Research level 1 (0.25 units)

1st and 2nd year students only

- _ One afternoon (3 hr.) laboratory work per week
- _ Participation in weekly group meetings or meeting with faculty mentor
- _ Notebook handed in at the end of the semester. (consult your mentor)
- _ A 2-3 page write-up on research completed including at least one literature article and/or a 10 min presentation (TBA).
- _ Attendance at Chemistry Department seminars is encouraged (two seminars)
- _ Complete and submit a weekly progress report form (optional)

Chemical Research level 2 (0.5 units)

3rd and 4th year students only – Permission from a PI is required. [Note for 3rd year students, this provides the opportunity to be invited into the Senior Honors program.]

- _ 6-8 hr. minimum laboratory work per week
- _ Participation in weekly group meetings or meeting with faculty mentor
- _ Copies of notebook pages handed in weekly and reviewed monthly by faculty. (consult your mentor)
- _ Regular reading of the primary chemistry literature related to your research project.
- _ A research paper (8-10 pages) summarizing your research results, written in journal article format with appropriate literature references and/or a 10 min presentation (TBA).
- _ Attendance at Chemistry Department seminars (at least three is required.)
- _ Complete and submit a weekly progress report form (optional)

Failure to complete anyone of the above requirements will result in automatic letter grade deductions.

SUCCESS IN THIS COURSE DEPENDS ON:

A. Time Commitment. There is a specific weekly time requirement for your experimental work, which the faculty mentor will clearly establish at the beginning of the course. Time spent in the laboratory must be documented in your lab notebook, and notebook pages submitted to the faculty mentor. At the beginning of the semester, a schedule of specific and regular lab times should be agreed to by the student and faculty mentor. Students are also expected to attend and participate in a weekly meetings with faculty mentors and other group members. The faculty member is expected to provide time weekly for mentoring student progress and for running group meetings.

B. Safety. All research students must take a safety training workshop from Emily Bain, Director of Environmental Health and Safety (baine@kenyon.edu), if they have not already done so. Also, the faculty mentor will train the student to conduct research safely. Students are expected to learn and follow safety guidelines, even at times when the faculty mentor is not present. This

includes using eye protection and gloves. These guidelines are not negotiable. If there are any questions regarding safety, the student must ask before beginning an experiment.

C. Data. Data collected during research must be properly recorded and saved. Laboratory notebooks must be maintained correctly, with dates and sufficient detail to be reproducible. All instrumental data files must be properly named with student initials and saved on a storage disk. File names should be included in the lab notebook. All data must be submitted to the faculty mentor before the student will receive a grade for the course. The faculty mentor will describe good laboratory notebook practices.

D. Learning about your project. Students should strive to learn about the project they are working on by reading background material (textbooks or treatises) and primary literature articles regularly. Discuss and analyze what you read with your faculty mentor and lab mates. By keeping notes on this reading, you can assemble a review of your research project topic that could serve as an introduction to a report, thesis or presentation.

A Note About Public Presentations: Students are encouraged to present their research results at conferences and meetings. However, collaborative research represents not only the student, but also the faculty mentor, the Chemistry Department and Kenyon College. The faculty mentor reserves the right to allow only presentations of acceptable quality to be presented to the public at any time.

GRADING:

The grade will be based on your weekly progress summaries, your oral presentations, your written report and the evaluation of your faculty mentor.

COLLEGE POLICIES:

A. ACADEMIC HONESTY:

Your attention is called to the College Policy on Academic Honesty, in the Kenyon College Course of Study. When writing research reports, please be aware of issues of plagiarism.

B. STUDENTS WITH DISABILITIES:

If you have a hidden or visible disability which may require classroom or test accommodations please see me as soon as possible during a scheduled office hour. If you have not already done so, you must register with the Coordinator of Disability Services (Erin Salva, salvae@kenyon.edu, x5145), who is the individual responsible for coordinating accommodations and services for students with disabilities. All information and documentation of disability is strictly confidential. No accommodations will be granted in this course without notification from the Office of Disability Services.