

Guidelines for Students taking CHEM 490 - Independent Research in Chemistry

1. Prior to registering for research, the student must have met with the prospective research supervisor to discuss this document, mutually agreeable research times, and other specific requirements for the intended group and project, and to outline a research plan.* Individual advisors may require a written proposal or other preliminary work before research can begin.

2. Research for credit will entail a minimum of 5-6 hours of research work per week for a full 14 week semester for each credit registered. Individual research supervisors may add additional requirements in terms of number of contiguous hours or other scheduling details. In unique situations, the total hours required may be met over more or less than one semester or by work done outside the normal semester, but only by prior arrangement with the research supervisor.

3. Students doing research for credit typically register for one credit of research in a semester, though more credits are possible if student and mentor agree that there is sufficient research time available. *However at most 84 lab hours (6 hrs/wk x 14 wks) toward the ACS Certified degree requirements may be met by any combination of CHEM 490 and summer research (see also item 6 below).*

4. Active participation in the life of the department is expected of all research students. Specifics should be discussed with the research supervisor, but should typically entail at least some of the following - attendance at seminars, lunches with seminar speakers, attendance at department social and professional development events, national student affiliate membership in the appropriate disciplinary professional organization (e.g., ACS, ASBMB), participation in ChemClub or other relevant disciplinary / pre-professional organizations, working as a TA in the department, etc.

5. Students engaged in research should, whenever possible, present the results of their work at an appropriate scientific forum such as the Hope College Celebration of Undergraduate Research & Creative Performance, the Midstates Consortium in Math and Science symposia, CUR, NCUR, summer research seminars and end-of-summer symposium, and regional and national meetings of relevant professional societies.

6. At the end of the project, the student must submit a word processed report to the research supervisor *and* a copy to the Chair of the Chemistry Department. The report should be as negotiated with the supervisor, but should typically include an introduction with literature survey, a detailed experimental, a summary of results, and some discussion of those results and whatever conclusions may be justified. When possible, it is encouraged that the report be written in the format and following the guidelines for a specific scientific journal. Generally a report will be required before a grade for CHEM 490 is submitted by the supervisor, but this may be waived or modified for ongoing projects at the supervisors discretion. However for research done to satisfy ACS lab hours requirements, a report is absolutely required. A research paper submitted to a journal may meet this requirement if it is significantly composed by the student, but a poster or oral presentation or abstract is not sufficient to meet this requirement.

7. The grade for CHEM 490 will take into account the number of hours worked, productivity in the quality and quantity of the data obtained, upkeep of a sufficient scientific record in the form of both a notebook and relevant data files, evidence of scientific growth and maturation and personal ownership of the project, participation in the life of the department, and the quality of the final report.

**Student and faculty signatures below indicate that this discussion has taken place and terms agreed to, though a drop/add or permission to register form are still required.* Term _____ Credits _____

Research Student (print & sign & date) _____

Research Supervisor (print & sign & date) _____