

**CHEM 4080/4083/4093**  
**UNDERGRADUATE RESEARCH**  
**Fall 2009**

Day and time of weekly meetings and seminars: **Thursday 12:15 - 1:05 PM, NCF 105**

**Research hours:** By arrangement with research advisor (see below)

**Course credit:** CHEM 4080 – 0 h; CHEM 4083/4093 – 3 h

**Course Director:** Dr. T. Birdwhistell; Office: 341 NCF; Phone: 520-7370; [tbirdwhi@xula.edu](mailto:tbirdwhi@xula.edu)

**Office hours:** M 1:30-3:30, W 9:00-11:00, R 9:30-11:30

**COURSE DESCRIPTION AND OBJECTIVES:**

CHEM 4080. Introduction to Research – Students are paired with research mentors who prepare them for their research projects through literature searches and studies, as well as research training. Students are required to attend lectures on lab safety, research ethics, and the weekly-scheduled chemistry department seminars. All 4080 students are also required to submit a research prospectus before the end of the semester. Prerequisites: CHEM2220/2220D/2240L.

CHEM 4083/4093. Undergraduate Research – Students participate in an independent and original laboratory research project under the close supervision of a faculty advisor. This entails familiarization with relevant chemical literature, laboratory work, preparation of an abstract and a written report, and presentation of a departmental seminar. Students who complete the course learn to search and critically review the literature, develop specialized laboratory skills, evaluate experimental data, prepare a formal and detailed written research report, and present a seminar for constructive review by their peers and the faculty. Students desiring credit for research performed off-campus must obtain approval of their project from the course coordinator, register for this course, and present the required written and oral reports and a letter of evaluation from their off-campus research mentor. Prerequisites: CHEM 2220/2220DR/2240LB, and CHEM4080 or permission of the course coordinator.

**TEXTS:**

No text is assigned. References and journals will be used as required by the individual research mentors. Each student in the course must keep a laboratory notebook.

**COURSE REQUIREMENTS FOR ON-CAMPUS RESEARCH:**

- Students are required to attend all chemistry department lectures and seminars scheduled on Thursdays from 12:15 to 1:05 PM. Sign in the attendance records each time, and check Blackboard, e-mails, and announcements on the third floor of the science building regularly for the seminar dates and topics.
- 4083/4093 students must perform at least **9 hours of research per week**, according to a schedule arranged with their research mentors. 4080 students must meet with their mentors regularly and prepare for their research projects as directed.

- Students are required to **keep an updated and complete laboratory notebook** according to the guidelines provided by their mentor; the notebook must be turned in to the mentor at the end of the semester.
- 4080 students are required to prepare a research prospectus (due on or before the last class meeting of the semester).
- 4083/4093 students are **required to write a final report** (due on or before the last class meeting of the semester), and to make a **fifteen-minute oral presentation** on their work at a session of the Chemistry Departmental Seminar series. An **abstract** of the presentation **must be presented** to the mentor at least two weeks before the scheduled seminar date for reviewing and corrections and then **turned in to the course coordinator a week before the seminar is scheduled**.
- Guidelines to writing abstracts and final reports can be found on:  
<http://www.xula.edu/chemistry/now/Courseweb.html>

#### **COURSE REQUIREMENTS FOR OFF-CAMPUS RESEARCH WITH AN OUTSIDE MENTOR:**

- Students must have worked at least the same number of total hours as a student within the department. The project must have a strong chemical component, and must be approved by the course coordinator.
- Students may register for CHEM 4080 concurrently with their research course. They are required to attend the regular sessions of the Chemistry Departmental Seminar series, which meets on Thursdays from 12:15 to 1:05 pm.
- Students are required to turn in a letter of evaluation from the off-campus supervisor of their research project.
- Students are required to make a **fifteen-minute oral presentation** on their work at a session of the Chemistry Department Seminar series. An **abstract** must be turned in to the course coordinator for review well in advance of the seminar presentation; a final version must be turned in **one week before the seminar is scheduled**.
- Students are required to write a **final report**. The final version of this report **must be turned in on or before the last day of class**.

**COURSE EVALUATION:** The final grade is based on completed laboratory work, attendance at seminars, quality of the seminar presentation, and the quality of the final report submitted. No written examinations are given.

#### **THE FOLLOWING STATEMENT IS TAKEN FROM THE XAVIER FACULTY HANDBOOK:**

*"If a student's test, examination paper, laboratory report, term paper, or other written assignment gives evidence of not being completely his/her own work, he/she may be given an F for the course. A student who communicates with anyone during the course of an examination or test, unless with the permission of the instructor, may be immediately dismissed from the room and given an F. Such communication includes attempts to read from another's paper. If a student is found to have brought study materials into the examination room without the instructor's permission, it may be assumed that he/she intends to use such material unlawfully, and he/she may be penalized accordingly."*

**IN THE EVENT OF AN EVACUATION:** All students enrolled in 4080/4083/4093 should discuss with their mentors procedures for continuing with their research project in the event of an evacuation. This may include literature research, which can often be carried out from a remote site via the internet. Each student is responsible for staying in touch with his or her mentor during the evacuation. Each student is also responsible for checking the CHEM 4080/4083/4093 site on Blackboard regularly for communication with the course instructor.