

Research in Chemistry
CHE 492
Spring 2009

Instructor: Dr. Heather Bullen
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Office Hours: I have an open door policy. My formal office hours are: M, W: 10:00-11:00 am

Prerequisite: Consent of instructor

Lab Times: By arrangement with instructor (6 to 8 hours per week per enrolled credit hour spent on research). Research may take place outside the time span of the term with the consent of both the instructor and department chair.

Learning Outcomes: This courses student learning outcomes fulfill the programmatic goals of the Department of Chemistry

1. Explain the major concepts and experimental findings in the chemical sciences.
2. Demonstrate the ability to carry out experimental protocols using modern instrumentation and methods.
3. Utilize critical thinking skills to apply concept knowledge and adapt experimental techniques to:
a) form and test hypotheses and b) solve scientific problems
4. Compile, critically evaluate, and interpret scientific information and data.
5. Effectively communicate scientific information through written and oral means.
6. Apply effective group strategies to solve scientific problems.
7. Evaluate the relationships between chemistry and mathematics, physics, biology, and other disciplines and between chemistry and society.
8. Apply computer technology and other technologies in the comprehension, interpretation, and presentation of the chemical sciences.

Objectives: The overall goal of your undergraduate research experience is for you to develop the skills necessary to become a professional research scientist, whether that be in graduate school or in an industrial setting.

In order to achieve that goal, the NKU chemistry department faculty have agreed that you will need to meet the following objectives:

1. Have a mastery of your research project, including understanding what you are doing, why you are doing it, and the "bigger picture".
2. Search the literature for publications related to your research as needed, and critically review (read) those papers.
3. Keep accurate and detailed records of your experiments and results in a laboratory notebook.
4. Be a good laboratory citizen, which means working with and watching out for others, following safety guidelines, taking care of lab responsibilities and keeping your lab space and common areas clean.
5. Learn to work and think independently.
6. Present your work at the end of the term as determined by the instructor.

For more information regarding these objectives, refer to the research policies document supplied by your instructor.

In my research group you will perform and develop skills in analytical research, investigating the formation of bacterial biofilms on metal oxide substrates and customizable polymers for drug delivery across the blood brain barrier. You will gain useful experience in different analytical instrumentation techniques, research methodology, and materials synthesis and characterization.

You will present your work this semester as follows:

- 1) Celebration Poster Presentation
- 2) Report summary at the end of the semester

Grading Policy: Your grade in CHE 492 will be based on how well you achieve the objectives stated above (in addition to any requirements outlined in your instructor's research policies).

Safety Contract: You are required to sign the departmental research safety contract and abide by its policies. Failure to do so will result in dismissal from the lab.

This syllabus is subject to change. If you do not understand anything in this syllabus, you must bring it to your instructor's attention immediately.