

COURSE OUTLINE
CHEM-290H
Chemistry Research - Honors
3 Credits

HOWARD COMMUNITY COLLEGE

Description

Chemistry Research is an honors course which provides students with an opportunity to engage in chemical research. The goal of this course is to develop chemical research skills. The instructor will be working closely with students as they choose, develop, and carry out a research project. Students will learn how to use state-of-the-art research equipment that can be applied to their own research project. The instructor will provide assistance with the learning of laboratory techniques, statistical methods, library research, computer-assisted data analysis, and research paper writing. Prerequisite: A or B in CHEM-101 and consent of instructor. (3 hours weekly)

Overall Course Objectives

Upon completion of this course, the student will be able to:

1. Formulate a scientific problem and appropriate hypotheses.
2. Use specific laboratory equipment to identify chemical compounds and to separate mixtures for identification.
3. Apply the scientific method to the development of an independent research project.
4. Review scientific literature to show the relevance of his/her research project to current or classical research.
5. Design and implement a scientific research project and write a formal research proposal.
6. Record data and observations during the course of the research.
7. Write a formal research paper in which the problem, background information, and research procedures, results and conclusions are presented.
8. Deliver a formal oral presentation of his or her research project which effectively and clearly communicates to the listeners the student's research problem, procedures and results.
9. Evaluate the research projects presented by other class members.
10. Evaluate the oral presentations delivered by other class members.

Major Topics

- I. Introduction to Research
- II. Library Research Techniques
- III. Gas Chromatography
- IV. Infrared Spectroscopy
- V. Independent Research Project
- VI. Oral Presentations

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member but will be calculated on the basis of a written research proposal, research paper, and oral presentation.

Oral Communication: Oral communication is an aspect of this course and includes a formal oral presentation.

Other Course Information

This course is a Science elective and an Arts and Sciences elective. Honors designation is awarded if the student earns a grade of A or B.