



MERCER
COUNTY COMMUNITY COLLEGE

COURSE OUTLINE

Course Number	Course Title	Credits
CHE 294	Honors Research in Chemistry I	2
Hours: Lecture/Lab/Other	Co- or Pre-requisite	Implementation Semester & Year
0 lecture/5 laboratory	CHE 293	Summer 2022

A continuation of CHE293, Honors Research I

Catalog description: Under the guidance of an area sponsor in an industrial or academic environment, students participate in a chemistry research project. This course requires a written and oral presentation to students and faculty. It may be applied to fulfill a Technical Elective requirement in the Chemistry program or other programs upon the program coordinator's approval.

General Education Category:
Not GenEd

Course coordinator:
Helen V. Tanzini, Professor of Chemistry
609-570-3364, tanzinih@mccc.edu

Required texts & Other materials:

Student lab notebook and other materials required by the research institute.

Course Student Learning Outcomes (SLO):

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

1. Construct, execute then evaluate a research plan in a research laboratory related to chemistry. [Supports ILGs #1, 2, 3, 4, 9, 10, 11; PLOs# 1-5]
2. Develop skills in observation, organizing and analyzing data, synthesizing information, and communicating conclusions orally and in writing. [Supports ILGs #1, 2, 3, 4, 9, 10, 11; PLOs# 1-5]
3. Demonstrate a working knowledge of basic chemical concepts and methods. [Supports ILGs #1, 2, 3, 4, 11; PLOs# 1-5]
4. Conduct literature searches and communicate findings orally and in writing. [Supports ILGs #1, 2, 3, 4, 10, 11; PLOs# 1-5]
5. Perform experimentation using proper scientific and laboratory safety procedures and maintaining an accurate and complete laboratory notebook. [Supports ILGs #1, 2, 3, 4, 11; PLOs# 1-5]
6. Construct slides and present the research project to faculty and students. [Supports ILGs #1, 4, 9, 10; PLOs# 1, 2, 3]

Course-specific Institutional Learning Goals (ILG):

Institutional Learning Goal 1. Written and Oral Communication in English. Students will communicate effectively in both speech and writing.

Institutional Learning Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

Institutional Learning Goal 3. Science. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.

Institutional Learning Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

Institutional Learning Goal 9. Ethical Reasoning and Action. Students will understand ethical frameworks, issues, and situations.

Institutional Learning Goal 10. Information Literacy: Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.

Institutional Learning Goal 11. Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Program Learning Outcomes for Chemistry A.S. Program (PLO):

1. Demonstrate an understanding of the fundamental principles, concepts and terminology of chemistry
2. Develop a working knowledge of chemical principles and methods including problem solving, analytical reasoning and laboratory skills.
3. Utilize critical thinking, qualitative and quantitative reasoning skills to organize, evaluate and interpret data expressing the results in a clearly written laboratory report or in an oral presentation.
4. Conduct literature searches and communicate findings orally and in writing
5. Plan, execute, and interpret an experiment according to the Scientific Method using proper scientific and laboratory safety procedures and maintaining an accurate and complete laboratory notebook

Units of study in detail – Unit Student Learning Outcomes:

Under the guidance of an area sponsor in an industrial or academic environment, students participate in a chemistry research project at the research facility. [Supports SLOs # 1-6]

The student will be able to:

- Construct, execute then evaluate a research plan in a research laboratory related to chemistry
- Develop skills in observation, organizing and analyzing data, synthesizing information, and communicating conclusions orally and in writing
- Demonstrate a working knowledge of basic chemical concepts and methods
- Conduct literature searches and communicate findings orally and in writing
- Perform experimentation using proper scientific and laboratory safety procedures and maintaining an accurate and complete laboratory notebook
- Construct slides and present the research project to faculty and student

Evaluation of student learning:

Research Advisor Evaluation:	33%
*Mid-semester Project Review:	33%
**Final Presentation:	33%

*Determination by MCCC Advisor

**Determined by both the MCCC Advisor & Research Advisor