

College of Arts & Sciences

Chemistry, BS

Broad Learning Goals

- A. Students graduating from this program will understand major chemical concepts, theoretical principles and experimental findings in the field of chemistry.
- B. Students graduating from this program will be able to employ critical thinking and hypothesis-driven methods of scientific inquiry
- C. Students graduating from this program will demonstrate the ability to construct and test hypotheses using modern laboratory equipment and appropriate quantitative methods
- D. Students graduating from this program will be able to convincingly present scientific data and arguments in an oral and written format.
- E. Students graduating from this program will be prepared for entry into graduate school or professional school (e.g. medical, dental, pharmacy, etc) or the chemical industry or government service.

Student Learning Outcomes

- A1. Students will be able to apply their understanding of atomic theory, molecular structure and bonding, thermodynamics, kinetics, chemical reactions, spectroscopy and synthesis on examinations and laboratory exercises.
- B1. Students will be able to solve problems using multiple layers of data analysis.
- B2. Students will be able to use statistics to evaluate quantitative hypotheses.
- B3. Students will be able critically evaluate experimental data.
- B4. Students will be able to extract chemical information from available resources.
- C1. Students will be able to construct and test hypotheses.

- C2. Students will be able to design experiments.
- C3. Students will be able to use instrumentation to collect data.
- C4. Students will be able to process data using a computer and use statistics to evaluate data.
- C5. Students will be able to recognize, generate and analyze alternative explanations and models for experimental data.
- C6. Students will be able to interpret experimental results and draw conclusions.
- D1. Students will be able organize and represent experimental data using appropriate methods (spreadsheets, etc).
- D2. Students will be able to write coherent scientific reports.
- D3. Students will present scientific ideas and arguments in a professional setting.
- E1. Students will be able to apply general knowledge of chemical concepts to solve novel problems.
- E2. Students will be able to list and explain some of the opportunities and applications of chemical knowledge to the world
- E3. Students will be able to have a working knowledge of basic chemical concepts, laboratory skills and safety.
- E4. Students will be able to demonstrate scientific literacy and be familiar with the status of current research in the field of chemistry.
- E5. Students will have general skills to work in small groups to accomplish scientific projects.