

Chemistry (CHEM)

Chemistry (CHEM) Classes

CHEM 151 : Elementary Survey of Chemistry

Credits: 3

Class Hours: 3 lecture

Prerequisites: Qualified for ENG 100. "C" or higher in MATH 75X or MATH 82X.

Corequisite Courses:

CHEM 151L

Description: This survey of general principles and descriptive chemistry is intended for students with no previous background in chemistry. Topics include atoms and molecules; moles and formulas; properties of solids, liquids, and gases; enthalpy and entropy; acids and bases; chemical composition; stoichiometry; and equilibria.

Semester Offered: Fall, Spring

Designation:

Diversification: Physical Sciences – DP

Course Student Learning Outcomes (CSLOs):

1. Apply various quantitative and mathematical methods used in chemistry such as dimensional analysis, graphic analysis, statistical analysis and molar stoichiometry.
2. Utilize qualitative and quantitative chemical symbolism, nomenclature, chemical classification scheme, atomic and molecular modeling and bonding theories.
3. Explain the properties of pure substances, their states, and homogeneous and heterogeneous mixtures, thermal chemistry, chemical thermodynamics, chemical equilibrium and electrochemistry.
4. Use critical thinking skills and processes such as observation, classification, prediction, inference, measurement, making operational definitions, hypothesizing, experimentation, modeling, theorizing and evaluation.
5. Describe the benefits and hazards of scientific literacy and ethics, chemical literacy and chemical applications to the environment.

CHEM 151L : Elementary Survey of Chemistry Lab

Credits: 1

Class Hours: 3 lab

Prerequisites: "C" or higher in MATH 75X or MATH 82X.

Corequisite Courses:

CHEM 151

Description: In this course, students are introduced to the illustration and practice of laboratory techniques as well as application of the chemical principles presented in CHEM 151.

Semester Offered: Fall, Spring

Designation:

Diversification: Lab (Science) – DY

Course Student Learning Outcomes (CSLOs):

1. Demonstrate various quantitative and mathematical methods used in chemistry such as dimensional analysis, graphic analysis, statistical analysis and molar stoichiometry.
2. Demonstrate basic chemical laboratory practices.
3. Demonstrate critical thinking skills and processes such as observation, classification, prediction, inference, measurement, making operational definitions, hypothesizing, experimentation, modeling, theorizing and evaluation.
4. Demonstrate scientific writing and computational skills.
5. Demonstrate laboratory safety practices and access to MSDS.

CHEM 161 : General Chemistry I

Credits: 3

Class Hours: 3 lecture

Prerequisites: Qualified for MATH 103.

Corequisite Courses:

CHEM 161L

Description: This course is an introduction to the basics of college chemistry. Topics include chemical kinetics, chemical equilibrium, acid-bases, acid-base equilibrium, solubility equilibrium, entropy, electrochemistry, coordination, and nuclear chemistry.

Semester Offered: Fall, Spring

Designation:

Diversification: Physical Sciences – DP

Course Student Learning Outcomes (CSLOs):

1. Use various quantitative and algebraically-based mathematical methods to solve problems related to dimensional analysis, graphic analysis, statistical analysis and molar stoichiometry.
2. Use appropriate qualitative and quantitative chemical symbolism, nomenclature, chemical classification scheme, atomic and molecular modeling and bonding theories.
3. Classify properties of substances and their states as being pure or mixtures.
4. Apply observation, classification, prediction, inference, measurement, making operational definitions, hypothesizing, experimentation, modeling, theorizing and evaluation as a means to solve chemical-related problems.
5. Integrate a knowledge of chemistry in addressing environmental problems, examining the benefits and hazards of chemical applications and discussing questions of scientific ethics.

CHEM 161L : General Chemistry Lab I

Credits: 1

Class Hours: 3 lab

Corequisite Courses:

CHEM 161

Description: This course is an introduction to chemical principles and procedures in the laboratory.

Semester Offered: Fall, Spring

Designation:

Diversification: Lab (Science) – DY

Course Student Learning Outcomes (CSLOs):

1. Demonstrate various quantitative and mathematical methods used in chemistry such as dimensional analysis, graphic analysis, statistical analysis and molar stoichiometry.
2. Demonstrate basic chemical laboratory practices followed in experiments involving precipitation, acid-based, and redox reactions.
3. Apply critical thinking skills and processes such as observation, classification, prediction, inference, measurement, making operational definitions, hypothesizing, experimentation, modeling, theorization and evaluation to perform labs using micro-computers.
4. Demonstrate scientific writing and computational skills.
5. Demonstrate laboratory safety practices and how to access to Material Safety Data Sheets (MSDS).

CHEM 162 : General Chemistry II

Credits: 3

Class Hours: 3 lecture

Prerequisites: "C" or higher in CHEM 161.

Corequisite Courses:

CHEM 162L

Description: CHEM 162 is a continuation of CHEM 161. This course introduces additional basic principles of chemistry including kinetics, equilibrium, pH, redox reactions, electrochemistry, acid-base chemistry, gas laws, electrolytes, thermodynamics, matter and changes of state, and nuclear chemistry.

Semester Offered: Fall, Spring

Designation:

Diversification: Physical Sciences – DP

Course Student Learning Outcomes (CSLOs):

1. Students will demonstrate a working knowledge of thermodynamics, chemical equilibrium, electrochemistry, nuclear chemistry, coordination chemistry and bio-organic chemistry.
2. Students will demonstrate, in their appropriate context, critical thinking skills and processes such as observation, classification, prediction, inference, measurement, making operational definitions, hypothesizing, experimentation, modeling, and theorization.
3. Students will demonstrate a working knowledge of qualitative and quantitative chemical symbolism, nomenclature, chemical classification scheme, atomic and molecular modeling and bonding theories.
4. Students will be exposed to, and address the benefits and hazards of scientific and chemical literacy, questions of scientific ethics, and chemical applications to the environment.
5. Students will demonstrate a working knowledge of various quantitative and mathematical methods used in chemistry such as dimensional analysis, graphic analysis, statistical analysis and molar stoichiometry.

CHEM 162L : General Chemistry II Laboratory

Credits: 1

Class Hours: 3 lab

Prerequisites: "C" or higher in CHEM 161.

Corequisite Courses:

CHEM 162

Description: This course is an introduction to chemical principles and procedures in the laboratory that complement CHEM 162. It is intended to provide laboratory experiences that focus on general Chemistry principles related to analysis, stasis, laws, and reactions.

Semester Offered: Fall, Spring

Designation:

Diversification: Lab (Science) – DY

Course Student Learning Outcomes (CSLOs):

1. Students will demonstrate, under laboratory conditions, a working knowledge of various quantitative and mathematical methods used in chemistry such as dimensional analysis, graphic analysis, statistical analysis, and molar stoichiometry as applicable to the topics covered in CHEM 162.
2. Students will demonstrate a working knowledge of basic chemical laboratory practices.
3. Students will demonstrate, under laboratory conditions, and in their appropriate context, critical thinking skills and processes such as observation, classification, prediction, inference, measurement, making operational definitions, hypothesizing, experimentation, modeling, and theorization applicable to the topics covered in CHEM 162.
4. Students will demonstrate a working knowledge of laboratory safety and access to Material Safety Data Sheets (MSDS).
5. Students will demonstrate a working knowledge of scientific writing and computational skills as applied to the topics covered in CHEM 162.