

Department:

Chemistry

Course Description:

This course provides a college-level introduction to chemistry and is intended for students going into technological, scientific, or medical fields. The course will focus on chemical compounds, their properties and reactions, and the scientific laws that determine their behavior. Course topics will include basic chemical concepts, calculations with chemical formulas and equations, chemical reactions, thermochemistry, modern theories of the atom and electronic structure, chemical periodicity, and chemical bonds.

Course Competencies:

The learning outcomes and competencies detailed in this syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups for this course as approved by the Kansas Board of Regents. (Kansas Regents Shared Number Course and Title: **KRSN Course CHM 1010 Chemistry I for Majors & Lab.**)

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

1. Identify and differentiate between atoms, pure elements, compounds, and ions, and correlate chemical formulas with chemical names.
2. Construct balanced chemical equations given a set of reactants and/or products, use a balanced chemical equation to solve stoichiometry problems, and analyze chemical reactions with regards to stoichiometry and thermochemistry.
3. Identify predominant species present in an aqueous solution and identify the reactants and/or products of common aqueous reactions: acid/base, redox, precipitation, etc.
4. Relate the periodic properties of the elements to their electronic structure using the quantum mechanical model.
5. Apply VSEPR and/or Valance Bond Theory to predict the three-dimensional structure of molecules and relate macroscopic physical and chemical properties of matter to its atomic scale chemical bonding, intermolecular forces, and three-dimensional structure.
6. Apply the Kinetic Molecular Theory to describe an ideal gas and use the ideal gas law to calculate a state variable for a given set of conditions.
7. Describe the relationships between heat, work, internal energy, and energy changes for chemical reactions and perform calculations involving these concepts.
8. Apply dimensional analysis and mathematical techniques to solve chemical problems, including significant figures throughout calculations in all content learning outcomes.
9. Execute laboratory skills in accordance with proper laboratory and chemical safety practices.
10. Collect, evaluate, and interpret qualitative and quantitative data from laboratory procedures in a productive and meaningful manner.

Learning Assessments:

Course competencies will be assessed by exams, quizzes, homework assignments, lab work and reports, and final exam.

Instructional Materials:

Textbook: Davies, G., Foster, N., Gilbert, T. R., & Kirss, R. V. (2015). *Chemistry: The Science in Context* (4th ed.). New York, NY: W.W. Norton. ISBN: 978-0-393-91937-0

Lab manual: PS 111 College Chemistry I HCC Custom Lab Manual, Pearson. ISBN: 978-1-323-72841-3

Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students **must** complete the "Disabilities Self-Identification Form" on our [Disability Services website](#).

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.

A Note on Harassment, Discrimination and Sexual Misconduct

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an [online report](#) about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our [Equity Grievance Policy](#).