

OSC008 – GENERAL CHEMISTRY I (WITH LAB)

<i>Credit Hour Recommendation:</i> 4-5 Semester Hours
<i>Prerequisite:</i> Proficiency with algebra
<i>Suggested Textbook Topics:</i> Lecture to include a standard modern general chemistry text designed for a full-year sequence of general chemistry for science majors
<i>Related TAGs:</i> Biology, Bioengineering, Chemical Engineering, Chemistry, Geology, Physics
<i>General Course Description:</i> An introduction to the fundamental principles of chemistry, including measurement and calculation; chemical stoichiometry; the properties of gases; atomic and molecular structure; bonding; thermochemistry; and periodic properties.
Note: These core competencies were aligned with the American Chemical Society (ACS) recommendations in mind. All experimental chemistry lab work must be performed in a traditional hands-on lab setting, ¹ and will build on topics covered in the corresponding lecture course.
Students must be proficient in all of the following core competencies:
<ol style="list-style-type: none">1. Significant figures2. Fundamental structures of atoms and molecules3. Nomenclature4. Principles of ionic, covalent and metallic bonding, including Lewis structure, hybridization, and valence bond and molecular orbital theories5. Stoichiometry6. Chemical reactions (acids and bases, oxidation-reduction, precipitation, etc.)7. Solutions and concentrations8. Thermochemistry9. Electronic configuration and atomic orbitals10. Elemental classification and periodicity11. Behavior of gases12. Societal applications of chemistry13. Chemical problem solving using algebraic methods

¹ An American Chemical Society Public Policy Statement on the Importance of Hands-on Laboratory Science can be found at: <https://www.acs.org/content/acs/en/policy/publicpolicies/education/computersimulations.html>

Lab Course:

Students must be proficient in all of the following core competencies:

14. Analytical and preparative skills
15. The ability to effectively collect, analyze and report data
16. Safe laboratory practice

**GENERAL CHEMISTRY TAG: GENERAL CHEMISTRY I
FACULTY PARTICIPANTS
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Name	Institution
Brian Leskiw (Lead)	Youngstown State University
John Blaha	Columbus State Community College
Hanbin Mao	Kent State University
Mark Cybulski	Miami University
Paul Custer	Stark State College
C. Michele Turner	The University of Akron
Janice Denton	University of Cincinnati