

CH/CHE/CHEM 221Z General Chemistry I

For more detailed information, see CCN Reports & Memos on the [Educator Resources—Common Course Numbering](#) webpage.

CCN Course/Course Information

Chemistry

Course Number and Prefix: CH/CHE/CHEM 221Z

Course Title: General Chemistry I

Course Credits: 5 for lecture and lab. (Institutions will divide these credits between lecture and lab so that the total credits for both courses equals 5 credits.)

Course Description: Explores and applies principles and applications of chemistry. Emphasis on measurement, components of matter, atomic and molecular structure, quantitative relationships including foundational stoichiometry, and major classes of chemical reactions. CH/CHE/CHEM 221Z is a lecture course; CH/CHE/CHEM 227Z is the laboratory component.

Course Learning Outcomes:

Students will be able to

1. Describe the phases and classifications of matter and differentiate between physical and chemical properties.
2. Represent physical measurements using SI and derived units and demonstrate systematic problem-solving including unit conversion.
3. Use the periodic table to solve problems in chemistry.
4. Describe the principles of electromagnetic energy, the Bohr model and quantum theory, and use electron configurations to identify periodic variations in chemical properties.
5. Interpret and apply ionic and covalent bonding theories including Lewis structures, formal charges, resonance, molecular structure, and polarity.
6. Quantify the composition of substances and solutions.
7. Identify and name a variety of elements, ions, ionic compounds, and covalent compounds.
8. Write, balance, and classify chemical reactions and solve foundational stoichiometry calculations.

Teachout Recommendation:

The committee recommends that the 2025-2026 academic year be designated as a teachout year for students that began the general chemistry series prior to Fall 2025. As the topics in the newly aligned CH/CHE/CHEM 221Z/227Z, 222Z/228Z, 223Z/229Z differ from those taught in the unaligned courses, students could miss topics by switching mid series. Several institutions currently offer delayed “trailer” sections of each course. This proposed teachout would facilitate completion of the sequence by students already on that schedule.

All schools should be allowed to offer the pre-Z CH 222 and CH 223 alongside the CCN aligned courses for the **first** academic year of offering the newly aligned courses. This minimizes the negative impact on students who need to finish the series if they completed CH 221 before Fall 2025. CH 221 (pre-Z) does not need to be included in the teachout plan as students entering the series would begin in CH/CHE/CHEM 221Z and CH/CHE/CHEM 227Z in the Fall of 2025.

