

# CH 222 : GENERAL CHEMISTRY II

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## Transcript title

General Chemistry II

## Credits

5

## Grading mode

Standard letter grades

## Total contact hours

70

## Lecture hours

40

## Lab hours

30

## Prerequisites

CH 221.

## Course Description

This course builds on concepts from CH 221, by exploring experimental and theoretical principles of chemistry including gases, liquids, solids, solutions, kinetics, equilibrium, acids and bases. The course is algebra-based and includes supporting laboratory work. This course is appropriate for science and engineering majors.

## Course learning outcomes

1. Interpret and communicate results of chemistry experiments in scientific terms with an emphasis on the precision, accuracy, and shorthand notations generally accepted by the discipline of chemistry.
2. Show, in writing, their reasoning and methods for successfully performing the following linear conversions: time, length, area, volume, density, mass, energy, solution concentration; interpret these same efforts of another student or scientist.
3. Given the names of inorganic reagents, predict the products, write the correct chemical formulas for those reagents and products and balance the resulting chemical equation.
4. Interpret equations to predict the observable properties of the system and quantities of compounds that will be consumed or produced.
5. Calculate the oxidation number of any element in a compound.
6. Using a periodic table, estimate the relative intensity of the following characteristics based on the name or the formula for a given compound or element, and no tabulated data: ionic size, atomic size, ionization potential, electron affinity, electronegativity.
7. Classify a compound as ionic, covalent, acid, base, and predict what it might be soluble in, given either the name or the chemical formula for that compound.
8. Predict whether a compound would be gaseous, liquid or solid under standard conditions.
9. Calculate the enthalpy of a reaction, given sufficient supporting data.
10. Predict and/or interpret the results of an experiment based on a given model; by taking into account the precision limitations of the

experimental setup, make appropriate suggestions for improving the accuracy of the results.

11. Interpret and follow oral and/or written instructions to reach a successful outcome.
12. Perform laboratory work safely, accurately, and cooperatively, in a timely fashion with a partner.
13. Operate traditional laboratory equipment responsibly and reliably to generate reasonable and reproducible experimental results.
14. Clearly communicate a safe attitude while working in a laboratory.
15. Prepare and submit reports of laboratory experiments in a timely manner that reflect the accuracy, precision, methodology, and interpretation of those results using language, voice and notation appropriate for the discipline.
16. Demonstrate cooperative and collaborative skills essential for working for authorities both alone and in groups on scientific problems.

## General education/Related instruction lists

- Science Lab