

CH 223 : GENERAL CHEMISTRY III

Transcript title

General Chemistry III

Credits

5

Grade mode

Standard letter grades

Contact hours total

70

Lecture hours

40

Lab hours

30

Prerequisites

CH 222.

Description

This course builds on concepts from CH 222 by exploring experimental and theoretical principles of chemistry including solubility equilibria, acid-base equilibria, electrochemistry, nuclear chemistry, metals and organic compounds. The course is algebra-based and includes supporting laboratory work. This course is appropriate for science and engineering majors.

Learning outcomes

1. Interpret, evaluate and communicate experimental results in scientific terms with an emphasis on the precision, accuracy, and shorthand notations generally accepted by the discipline of chemistry.
2. Use chemical principles and measurements from the primary literature to analyze and present the chemical aspects of an environmental issue in depth. Report concisely on that issue. Communicate knowledge, understanding, and interest of science to the general public and/or someone outside of the course.
3. Show, in writing, their reasoning and methods for successfully performing the following linear conversions: time, length, area, volume, density, mass, energy, solution concentration. These conversions may be from English or metric units and may be related by moles via a chemical equation. Interpret these same efforts of another student or scientist.
4. Predict general tendencies and/or Quantify amounts of matter and various energies (heat, electricity, nuclear) involved in nuclear or chemical changes. Describe the concept of chemical equilibrium to various chemical and physical changes. Predict quantities of materials involved in an equilibrium.
5. Identify and describe acids and bases and quantify their behavior in both static solutions and during a titration. Predict the behavior of buffers and describe how they are prepared. Measure, Interpret and Predict the pH of a given aqueous solution using appropriate equipment and or applicable constants.

6. Rationalize the properties and behaviors of organic and inorganic compounds.
7. Interpret and follow oral and/or written instructions to reach a successful outcome. This may involve periodic self- assessment of progress toward the goal, or external checks of effectiveness and a change of approach appropriate to that information to ensure success.
8. Interpret and generate correct, interpretable figures and graphs, equations and descriptions of each of the above phenomena.
9. Predict and/or interpret the results of an experiment based on a given model. By taking into account the precision limitations of the experimental set up, make appropriate suggestions for improving the accuracy of the results.
10. Perform laboratory work accurately, and cooperatively, in a timely fashion with a partner. Operate traditional laboratory equipment responsibly and reliably to generate experimental results. Prepare and submit reports of laboratory experiments that reflect the accuracy, precision, methodology, and interpretation of those results using language, voice and notation appropriate for the discipline.
11. Demonstrate cooperative and collaborative skills essential for working in groups on scientific problems. Qualities indicative of a good team member are promptness, reliability, thoroughness, topical focus, personal responsibility, a collegial treatment of differing views, and the ability to resolve personal differences in constructive respectful ways.

General education/Related instruction lists

- Science Lab