CHELMSFORD HIGH SCHOOL

CP CHEMISTRY SYLLABUS
2023-2024

COURSE DESCRIPTION

The major focus of chemistry is on matter and its interactions. Quantitative and qualitative methods can be used to explain how matter interacts. Fundamental basics of matter are determined by the structure of atoms and the compounds they compose. Reactivity and properties of compounds are explored through a variety of inquiry-based laboratory activities. Topics covered include: atomic theory, stoichiometry, gas laws, bonding, solutions, and thermodynamics. Honors Chemistry is a full year course created for students who have demonstrated a sincere interest in the sciences with students independently using algebra skills in the context of the chemistry curriculum. Honors students should expect to have 1-2 hours of independent work per night. Chemistry CP provides a foundational understanding of chemistry and may be taken as a Dual Enrollment course with Middlesex Community College as a general science credit (CHE 121).

REQUIRED TEXTS

Wilbraham *et al* (2016). Pearson Chemistry, 978-0-13-252582-4

COURSE GOALS and STUDENT LEARNING OUTCOMES:

By the end of the course, students will be able to…

- Draw conclusions based on analysis of graphic and numeric data gathered from chemistry experiments
- Solve chemical equations
- Gather, record and organize data and compose lab reports in a scientifically acceptable format
- Demonstrate safe and proper use of the standard tools of the chemistry lab
- Take measurements correctly using appropriate devices and perform error analysis on calculations
- Classify and compare types of matter
- Describe matter by a variety of extensive, intensive, chemical, and physical properties
- Describe electron location and behavior using the quantum mechanical model and wave calculations
- Identify and compare properties of elements using periodic law, groups, and trends
- Name and classify ionic compounds, molecular compounds, and acids
- Determine molecular geometry, electron sharing, and molecule polarity
- Determine and compare types of intermolecular forces present and the effects on behavior
- Apply the mole concept to quantify, convert, and analyze the amount of a substance
- Analyze reactions by type, stoichiometric ratio, amount of reagent required, and yield produced
- Calculate concentration and determine solubility of compounds in solution
- Determine the properties and ion concentration of solutions based
- Apply the laws of thermodynamics to reactivity, solubility, and kinetic molecular behavior
- Describe the behavior and properties of gasses under a variety of conditions using gas laws

COURSE STANDARDS

2016 Science and Technology Engineering Framework
(https://www.doe.mass.edu/frameworks/scitech/2016-04.pdf)

PERSONS WITH DISABILITIES

Chelmsford High School is committed to supporting the success and well-being of all students, regardless of varying abilities and levels of adaptive skills. The Special Education office provides services and resources to empower each student to attain their highest level of academic success and learning independence.

ACADEMIC INTEGRITY

At Chelmsford High School, students are expected to maintain high moral and ethical standards, as exemplified by the final sentence of our mission statement: "*A spirit of respect is fostered, as members take responsibility for their actions and acknowledge the rights and differences of others.*" (CHS Mission Statement)

Students should respect themselves, other students, staff members and the school. The acts of cheating and plagiarism violate expectations that students will exhibit respectful, ethical behavior.

The Academic Honor Code exists to address the issues of cheating and plagiarism.

GRADING POLICIES

Please connect with individual teachers for specific information regarding grading. Students will be able to monitor academic progress biweekly through X2/ASPEN.

Students are strongly encouraged to take advantage of the academic support programs and services (such as PRIDE Block, after-school help, etc.) available to them to help ensure and support success. Information about these services can be provided by your teacher, guidance counselor, or administration.

COURSE SKILLS

The following skills are addressed in this course:

- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using math and computational thinking
- Constructing an explanation (for science) and designing a solution (for engineering)
- Engaging in an argument stemming from evidence
- Obtaining, evaluating, and communicating information

COURSE OUTLINE

Chemistry CP is divided into 9 units:
Unit 1: Scientific Measurements
Unit 2: Matter
Unit 3: Nuclear Chemistry
Unit 4: Electrons and Periodicity
Unit 5: Bonding and Naming
Unit 6: Chemical Reactions and Stoichiometry
Unit 7: Gas Laws

Unit 8: Solutions
Unit 9: Acids and Bases

This syllabus and course outline are subject to change as Chelmsford High School seeks to continually improve the learning experiences for all students.

"We foster PRIDE* in our pursuit of excellence."

PRIDE refers to our five core values – Perseverance, Respect, Integrity, Dedication, and Empathy. These five pillars represent our points of emphasis in supporting the development of quality students and quality citizens.