



FIND YOUR VOICE. SPEAK YOUR MIND.

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Chemistry

1. A. Chemistry is the study of matter in our universe and how it changes over time. In this class, students gain an understanding of the scientific process through an inquiry-based approach to laboratory science. From subatomic nuclear physics to organic chemistry, this course explores the power and implications of a scientific understanding of matter and change.
- B. Overarching goals of Chemistry
 1. Familiarize students with the scientific method through direct inquiry and experimentation
 2. Convey introductory-level information regarding the overarching concepts of matter, chemical and physical changes, and atomic theory
 3. Relate concepts and skills to real-world current events and phenomena such as climate change, pollution, etc.
- C. Methods of inquiry and placed-based learning
 1. Individualized inquiry
 - a) Students are expected to design and complete laboratory procedures that encourage them to follow their own curiosity and engage them creatively
 - b) Students will receive routine 1-on-1 guidance in achieving success in laboratory skills
 2. Place-based approach
 - a) Students are encouraged to seek out and make use of household, academic, and natural resources in their direct vicinity for inspiration and inquiry
 - b) Measurements in chemistry are demystified and made as precisely and accurately as possible in the home environment.
 3. Critical thinking through experience
 - a) Students develop an understanding of science by first examining their

own biases and then building science skills around this understanding b)
Labs include an experimental component with student-driven,
collaborative design

c) Replication and refinement of procedures is encouraged, with attention to
eliminating or controlling for sources of bias or error

D. Scope and Sequence of Semester 1 Topics and Events

September

Introduction to science and scientific methods and
limitations Examining personal biases

Introduction to chemistry topics: What is matter,
and what types of changes does matter undergo?

Inquiry laboratory: intro to methods of inquiry in chemistry (gas density lab)

October

Scientific Measurements

Dimensional Analysis

Atomic Structure

Current events: climate change

November

Electrons in Atoms

Quantum Mechanical Model

Periodic Table of Elements

December

Ionic and Metallic Bonding

Covalent Bonding in Molecular Compounds