

Content: Physical Science	Grade or Course: Foundations of Chemistry	Date Developed: 08/12/2018 <i>updated 5/22/19</i>
Overview: Foundations of Chemistry is a one-semester introductory course in which students will learn the “foundations” of Chemistry. Students will spend time in class working individually and collaboratively on a mix of experiments, discussions, problem-solving, and practicing skills. This 0.5 credit course does not meet the requirements of a “lab science credit” as defined by colleges and universities. Topics covered in this course include chemical bonding, radioactive decay, chemical composition, chemical reactions, and chemical energy.		
Essential Questions: <ul style="list-style-type: none"> •How do scientists describe the structure, properties, and interaction of matter? •How do scientists explain that matter and energy are conserved? •How do scientists work to collect, evaluate, communicate, and justify data, and then use that data to form and change models? 		
EO’s addressed to proficiency level: Students will understand, demonstrate, and be evaluated on the following Scientific Practices: <ul style="list-style-type: none"> • Developing and Using Models • Planning and Carrying Out Investigations • Analyzing and Interpreting Data • Constructing Explanations and Designing Solutions • Engaging in Argument from Evidence 		

Standards:

Students will understand and use the following additional Scientific Practices:

- Asking Questions and Defining Problems
- Using Math and Computational Thinking

Students will understand and use the following Cross-Cutting Concepts:

- Patterns
- Energy and Matter
- Systems and System Models

Students will understand, use, and be evaluated on the following Disciplinary Core Ideas:

- Students will “use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.” (HS-PS1-1)
- Students will “use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.” (HS-PS1-7)
- Students will “develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.” (HS-PS1-8)
- Students will “plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).” (HS-PS3-4)

Units:

- Unit 1 Structure and Properties of Matter
- Unit 2 Atomics and Nuclear Chemistry
- Unit 3 Equations and The Mole
- Unit 4 Heat and Energy

EO Assessments:

- Chalk Lab
- Chemical Bonding Lab
- Radiation Lab
- Essay on Nuclear Power
- Essay on Conservation of Matter