



Class Title: Red Advanced Chemistry

Teacher Name: Rebecca Healy

Class Day: Friday

Class Size: 10

Overall Class Cost: \$117

Individual Student Supply Fee: \$115

Class Fee: \$96

Ages or color group served: Red

What level is this class: Level 3

Prerequisites: Familiar with basic chemistry concepts such as atomic structure, periodic table, states of matter, behavior of acids and bases, basic chemical equations, etc.

Graduation Requirements: Students must complete all assignments and pass with a 60 or higher final grade

Homework Requirements: Since this is a college prep course, independent work will be set up in such a way. Students will have labs and will complete multiple lessons independently with access to support from the instructor.

Class Description:

Advanced Chemistry builds on your student's foundational knowledge of chemistry, introducing them to concepts like organic chemistry, organic nomenclature, and polymer chemistry and focusing on the major functional groups.

Topics covered include:

Stoichiometry (with limiting reactants)

Thermodynamics

Kinetics

Acids and bases

Redox reactions

Solutions

Atomic structure

Orbital hybridization

Molecular orbitals

Molecular geometry

Chemical equilibrium

Nuclear chemistry

The Exploring Creation with Advanced Chemistry student textbook is written in a conversational format, with the author talking directly to your student. Your student is guided through key learning strategies such as thinking critically about what they are learning, identifying important parts of the information presented, taking meaningful notes, and completing experiments.

Throughout this course, your student will connect textbook instruction with hands-on experiments to maximize learning. They will enjoy experimenting with the rate of an iodine clock reaction, distillation, chromatography, the common ion effect, measuring pH changes in a buffer, the electrolysis of copper sulfate, polymerization experiments, and the hydrolysis of sucrose.

****It is suggested that students DO NOT take another science during the 12 weeks of this class.****

Week 1:

- Introduction / Expectations
- Safety / Equipment
- Module 1 - Units, Chemical Equations, and Stoichiometry

Week 2:

Module 2 - The Atom Revisited

Week 3:

Module 3 - The Electronic Structure of Molecules

Week 4:

Module 4 - Intermolecular Forces and Phases of Matter

Week 5:

Module 5 - Solutions and Colloids

Week 6:

Module 6 - Acid/Base Equilibria

Week 7:

Module 7 - Electrochemistry

Week 8:

Module 8 - Chemical Kinetics

Week 9:

Module 9 - Introduction to Organic Chemistry

Week 10:

Module 10 - Functional Groups in Organic Chemistry

Week 11:

Module 11 - Nuclear Chemistry

Week 12:

Final Exam