

Course Name: AP Chemistry

Duration: 1 Semester Full Year

Grade Level: 9th 10th 11th 12th (check all that apply)

Are there any prerequisites for the course?

Science Prerequisite Options: Chemistry, Honors Chemistry, Honors Physics, AP Sciences.
Math Prerequisite: Algebra 2 (strongly encouraged)

WHAT this course is about:

AP Chemistry is a college level introductory inorganic chemistry course in the supportive environment of the high school setting. The purpose of this class is to deepen chemistry foundations, problem solving, technical writing, and laboratory skills in a collaborative environment. Being open to exploring ideas, asking questions, and trying new things is a must.

WHY take this course:

Chemistry is known as the Central Science because we use the foundations of chemistry in all other science disciplines. AP Chemistry is the perfect addition for any college bound student. For those pursuing non-science majors in college, there is the option to take the AP chemistry exam and possibly not need to take chemistry as a general education requirement in college, leaving more time to focus on your passions and courses in your major. For those who plan to pursue a career in a science related field, general inorganic chemistry is known as the weed-out class in college and separates many intended science majors from their dreams. AP chemistry at LC will give you the confidence and foundations to find greater success in college chemistry and science courses.

WHAT you'll learn:

- Determine strategies of what helps you learn and develop conceptual understanding
- Conceptual understanding at the college level with various topics in chemistry
- 21st century digital skills essential for college and career, including Microsoft EXCEL
- Technical "scientific" writing techniques
- Critical thinking and problems solving skills
- Hands-on approaches to learning, including science and engineering practices
- Applications of cross-cutting concepts, including modeling, cause and effect, proportions/quantities, energy and matter, structure and function
- Wide variety of chemistry laboratory skills
- Data collection and analysis skills

WHAT you'll do:

- Hands-on science and engineering investigations, from guided activities to open inquiry
- Evaluate particle diagrams and modeling of particle level interactions
- Engage in an I do, we do, you do approach to learning
- Have options for deepening practice and understanding chemistry concepts
- Work collaboratively with others in a variety of thinking, processing, and hands-on activities
- Project Based Learning through human centered design for a final project following the AP exam

WHERE this could take you:

AP Chemistry can bring about many opportunities for students. For students who opt to take the AP Chemistry Exam in May, there is a possibility of credit and/or course advancement for students achieving a 3 or above on the exam. This is dependent on the university/college of attendance and major of study. Additionally, students who keep detailed work and evidence of college level lab have been awarded lab credit in college. Regardless of AP Chemistry Exam outcomes, students have strong foundations in college chemistry that will help them in their future college requirements.

OPTIONAL Course Outline (“scope and sequence”, sequence chart, etc.)

Year at a Glance for AP Chemistry

- U1 Atomic Structure and Properties: Moles, Composition, Atomic Structure, Periodic Trends
- U2 Chemical Bonding: Types & Structures of Bonds, Bond Energy, Molecular Bond Theory
- U3 Intermolecular Forces & Properties: Interparticle Forces, States of Matter, Gas Laws, Solutions, Light
- U4 Chemical Reactions: Reaction Types, Representing Reactions, Stoichiometry, Titration
- U5 Kinetics: Reaction Rates, Rate Law, Collision Model, Reaction Mechanisms, Catalysis
- U6 Thermodynamics: Endothermic/Exothermic Processes, Energy Diagrams, Calorimetry, Enthalpy, Hess's Law
- U7 Equilibrium: Reversible reactions, Equilibrium Expressions & Constant, Reaction Quotient, Le Chatelier's Principle, Solubility Equilibrium
- U8 Acid Base Equilibrium: logarithmic scales to represent acid/base ion concentrations, weak/strong, acid/base, titration, buffers
- U9 Applications of Thermodynamics: Entropy, Free Energy, Electrochemistry
- AP CHEMISTRY EXAM
- Design Thinking Project