PETERS TOWNSHIP HIGH SCHOOL course syllabus: **AP CHEMISTRY**

Course Overview and Essential Skills

The goal of this course is twofold: 1) to enhance/challenge your understanding of matter and the changes it undergoes with advanced concepts, laboratory activities, and problems; and 2) to enable students to pass the AP Chemistry Exam. The pace of the course is demanding as it comprises the content and lab covered in General Chemistry I and General Chemistry II at the university setting (for chemistry and biology majors). Most universities reward 4-8 course credits for earning a passing score on the AP Chemistry Exam. AP Chemistry informs students about foundational concepts of Inorganic Chemistry while challenging them to become strong critical thinkers and problem solvers.

Course Textbook and Required Materials

- Chemistry, 8th Edition, Zumdahl ISBN#: 978-0-547-16817-3
- Student Solution Guide for Zumdahl's Chemistry, 8th Edition, Hummel & Zumdahl ISBN# 978-0-547-16856-2
- Solving Equilibrium Problems with Applications to Qualitative Analysis, Zumdahl ISBN # 0-669-16718-5
- Experimental Chemistry, Hall ISBN#: 0-618-52848-2
- Binder, lab notebook (composition book), calculator

Unit or Topic	Concepts/Skills/Assessments	Approximate Timeframe
Chemical Foundations, Lab Safety	Mass Determination Lab, Density Lab, Introductory Quiz, Unit 1 Exam, Lab Quizzes	1 week
Atoms, Molecules, and Ions	Determination of Melting Point Lab, Analysis of Metal Sulfate, Unit 2 Exam	1 week
Stoichiometry	Stoichiometric Determination Lab, Unit 3 Exam, Lab Quiz	1.5 weeks
Chemical Reactions & Solution Stoichiometry	Acid-Base Titration, Redox Titration, Lab Quiz, Unit 4 Exam	2 weeks
Gases	Molar Mass of Volatile Liquid Lab, Unit 5 Exam	2 weeks
Thermochemistry	Heat of Metal/Acid Reaction Lab, Unit 6 Exam	1.5 weeks
Atomic Structure and Periodicity	Spectroscopy Investigations, Unit 7 Exam	2 weeks
Chemical Bonding and Molecular Structure	Unit 8/9 Exam	2 weeks
Liquids and Solids	Identifying Solid Unknowns, Unit 10 Exam	2 weeks
Solutions	Unit 11 Exam	1 week
Chemical Kinetics	Determination of Reaction Order, Unit 12 Exam	2.5 weeks
Chemical Equilibrium; Gas Equilibrium, Acids and Bases, Solubility Equilibrium	Spectrophotometric Determination of Equilibrium Constant, Finding K _a of Weak Acid, Le Chatlier's Principle Investigation, Equilibrium Unit 1 Exam, Equilibrium Unit 2 Exam, Equilibrium Unit 3 Exam, Equilibrium Unit 4/5 Exam	6 weeks
Thermodynamics	Entropy, Enthalpy, and Gibb's Free Energy Investigation, Unit 17 Exam	1.5 weeks
Electrochemistry	Electrolysis of Water, Unit 18 Exam	1.5 weeks

Course Outline of Material Covered:

AP Exam Preparation	Practice Exams, Sample Multiple Choice and	2 weeks	
	Free Response, Topic Review		
Advanced Lab Investigations	Qualitative Analysis, Synthesis and Analysis of	4 weeks	
	Aspirin, Synthesis and Analysis of Green		
	Crystals, Nuclear Chemistry, Column		
	Chromatography, Voltaic Cells		

*Depending on the needs of the class or changes in the school year, the course outline is subject to change.