



***Department of Teaching & Learning***  
***Parent/Student Course Information***

***Advanced Placement Chemistry***  
***(SC 4440)***  
***One credit, One year***  
***Grades 11-12***

*Counselors are available to assist parents and students with course selections and career planning. Parents may arrange to meet with the counselor by calling the school's guidance department.*

**COURSE DESCRIPTION**

Advanced Placement Chemistry is a college-level course that deals with advanced concepts in chemistry. The course is designed in accord with the requirements of the College Board. Students are expected to take the Advanced Placement Chemistry Examination at the end of the course.

**COURSE GOALS**

- Develop an in-depth understanding of the fundamentals of general chemistry
- Develop reasonable competence in dealing with chemical problems
- Develop the ability to think clearly and to express ideas orally and in writing with clarity and logic

**PREREQUISITE**

Chemistry

**OPTIONS FOR NEXT COURSE**

Advanced Placement Environmental Science (Biology and Chemistry prerequisite)

Advanced Placement Biology (Biology and Chemistry prerequisite)

Advanced Placement Physics 1 (Algebra II/Trigonometry prerequisite)

Advanced Placement Physics C: Mechanics (Algebra II/Trigonometry and Calculus prerequisite)

Earth Science

Biology

Oceanography (Earth Science prerequisite)

Astronomy (Earth Science prerequisite)

Physics (Algebra II prerequisite or co-requisite)

**REQUIRED TEXTBOOK**

*Chemistry, 9<sup>th</sup> Edition, Cengage (2014)*

**MINIMUM REQUIREMENTS**

- Demonstrate knowledge and understanding of all core objectives through laboratory investigations, projects, oral and/or written tests, quizzes and reports
- Participate in the laboratory activities, prepare written laboratory reports and adhere to all safety procedures
- Read science journals, magazines and books to expand the ideas and topics presented in class

**The Knowledge, Skills and Attitudes that Comprise the Advanced Placement Chemistry Course are Summarized as Follows From the Prescribed Curriculum:**

## **BIG IDEAS AND KNOWLEDGE**

### **Big Idea 1: Chemical Elements**

- Atomic Structure
- Periodicity
- Coulomb's Law

### **Big Idea 2: Chemical and Physical Properties**

- Chemical bonding
- Intermolecular forces
- Dipole forces
- London dispersion

### **Big Idea 3: Changes in Matter**

- Reaction types
- Stoichiometry
- Products of Chemical reactions

### **Big Idea 4: Rate of Chemical Reactions**

- Reaction rates
- Elementary reactions
- Catalysis Classes

### **Big Idea 5: Laws of Thermodynamics**

- Thermodynamics
- Kinetics
- Electrostatic forces
- Net energy change

### **Big Idea 6: Chemical Bonding and Intermolecular Attraction**

- Chemical equilibrium
- Le Châtelier's principle
- Gibbs free energy

## **CORE AREAS FOR LABORATORY SKILLS AND EXPERIENCES**

Laboratory investigations emphasize experimental procedures and the collection and analysis of quantitative data.

Dr. Aaron C. Spence, Superintendent  
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For further information please call (757) 263-1070.

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