



## La Costa Canyon High School

### Science Chemistry

Level of Difficulty	Estimated Homework Time	Prerequisites
<input type="checkbox"/> Moderate <input checked="" type="checkbox"/> <b>Difficult</b> <input type="checkbox"/> Very Difficult	<p style="text-align: center;"><b>60 minutes per day*</b></p> <p style="text-align: center;">*This is a general guideline for planning and scheduling purposes.</p>	<p><b><u>District</u></b>            Completion of Int. Math II            Enrollment in Int. Math II</p> <p><b><u>Department</u></b>            C or better in Biology            Completion of Int. Math II or            Enrollment in Int. Math II            To determine whether you are prepared for the mathematics in Chemistry please use assessment on the last page.</p>

### **Course Description**

Chemistry is a rigorous course that involves the study of matter and energy. Many common and current problems of the modern world are related to the course content. The central theme of the course is problem solving within chemistry. The course will include the following topics:

- Matter and Measurement
- Atoms, Molecules, and Ions
- Stoichiometry
- Aqueous Solutions
- Thermochemistry
- Periodic Properties
- Solids, Liquids, and Gases
- Chemical Bonding
- Molecular Geometry
- Properties of Solutions

Chemical Kinetics  
Chemical Equilibrium  
Acid-Base Equilibria  
Thermodynamics  
Electrochemistry  
Nuclear Chemistry

Students will explore these topics through discussions, laboratory investigations, teacher demonstrations, and in-class assignments. This course is aligned with the California State Standards in Chemistry.

### **Student Background**

A student entering College Preparatory Chemistry should be able to:

7th grade Science Investigation and Experimentation Standards:

- Select and use appropriate tools and technology (including calculators, computers, balances) to perform tests, collect data, and display data.
- Use a variety of print and electronic resources (including the internet) to collect information and evidence as a part of a research project.
- Communicate the logical connection among hypotheses, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence.
- Communicate the steps and results from an investigation in written report and oral presentations.

8th grade Science Investigation and Experimentation Standards:

- Plan and construct a scientific investigation to test a hypothesis.
- Construct appropriate graphs from data and develop quantitative statements about the relationships variables.
- Apply simple mathematical relationships to determine a missing quantity in a mathematic expression, given the two remaining terms (including  $\text{speed} = \text{distance}/\text{time}$ ,  $\text{density} = \text{mass}/\text{volume}$ ,  $\text{volume} = \text{area} \times \text{height}$ )

9th-12th Science Investigation and Experimentation Standards:

- Formulate explanations by using logic and evidence.
- Distinguish between hypothesis and theory as scientific terms.
- Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions.
- Analyze situations and solve problems that require combining and applying concepts from more than one area of science.
- Solve scientific problems by using quadratic equations and simple trigonometric, exponential, and logarithmic functions.

Algebra 1 Standards:

- Interpret and use ratios in different contexts to show relative sizes of two quantities, using appropriate notations.
- Graph linear functions, noting that vertical change (change in y-value) per unit of horizontal change (change in x-value) is always the same and know that the ratio is called the slope of a graph.

- Apply algebraic techniques to solve rate problems and percent problems.
- Identify and use the arithmetic properties of subsets of integers and rational, irrational, and real numbers, including closure properties for the four basic arithmetic operations where applicable.
- Understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power.
- Students simplify expressions before solving linear equations and inequalities in one variable, such as  $3(2x-5) + 4(x-2) = 12$ .
- Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.

### **Grading**

The grading system is based on weighted percentages. Each assignment will have a point value and be weighed according to the category it falls under. Individual teachers may make slight modifications on the weighted percentages.

### **Links**

CA State Science Standards <http://www.cde.ca.gov/stadards>

Science Framework for California Public Schools

<http://www.cde.ca.gov/re/pn/fd/sci-frame-dwnld.asp>

Sample STAR Questions

<http://www.cde.ca.gov/ta/tg/sr/css05rtq.asp>

### **Additional Information for Students/Parents**

- 10 credits
- UC subject area “d”
- Fulfills graduation requirement in physical science