

COURSE PLANNER

Chemistry in the Earth System

The Experience Chemistry program is presented in five instructional segments that follow the sequence that is outlined in the Three-Course Model, as specified in the Science Framework for California Public Schools. Each instructional segment is launched with an Anchoring Phenomenon that is revisited in the Investigations comprising the segment. Experience Chemistry is a blended and integrated approach that optimizes teaching time and student mastery through student-driven digital and hands-on activities. Each learning experience is designed to integrate the three dimensions of science instruction: disciplinary core ideas, science and engineering practices, and crosscutting concepts.

	INSTRUCTIONAL SEGMENT 1	INSTRUCTIONAL SEGMENT 2
OVERVIEW	COMBUSTION, HEAT, AND ENERGY 26 days Students apply definitions of energy to chemical and Earth systems, and reinforce their understanding of the law of conservation of matter.	ATOMS, ELEMENTS, AND MOLECULES 35 days Students identify properties of atoms, elements, and molecules and describe how different types of chemical bonds influence the properties of matter.
ANCHORING PHENOMENON	How does this fire keep burning?	What distinguishes the minerals in this mountain?
INVESTIGATIONS	1 Combustion—Matter, Energy, and Change (9.5 days), SE Vol. 1, pp. 4–33 2 Energy Transfer and Conservation (9.5 days), SE Vol. 1, pp. 34–63 3 Earth's Interior (6.5 days), SE Vol. 1, pp. 64–95	4 Atomic Structure (12 days), SE Vol. 1, pp. 98–129 5 The Periodic Table (9 days), SE Vol. 1, pp. 130–153 6 Chemical Bonding (13.5 days), SE Vol. 1, pp. 154–195
INSTRUCTIONAL SEGMENT EVALUATION	<input checked="" type="checkbox"/> Benchmark 3-D Assessment Instructional Segments 1 and 2	
<input checked="" type="checkbox"/> COURSE-LEVEL ASSESSMENT		
<input checked="" type="checkbox"/> Pre/Post Assessment		

PACING GUIDE

The guide on these pages suggests time allocations for the core activities in each experience, investigation and instructional segment (including labs). These allotments exclude “Got More Time” activities or projects you may choose to add.

SECTION	Days
INSTRUCTIONAL SEGMENT 1 Combustion, Heat, and Energy	26
Encounter Anchoring Phenomenon	0.5
INVESTIGATION 1 Combustion—Matter, Energy, and Change	9.5
Encounter Investigative Phenomenon	0.5
1 Introduction to Energy	2.5
2 Modeling Energy	2.5
3 Conservation of Mass	2.5
Investigation Assessment*	1.5
+ GOT MORE TIME Activities	+4
INVESTIGATION 2 Energy Transfer and Conservation	9.5
Encounter Investigative Phenomenon	0.5
1 Manifestations of Energy	2.5
2 Mechanisms of Heat Flow	2.5
3 Thermal Equilibrium	2.5
Investigation Assessment*	1.5
+ GOT MORE TIME Activities	+3.5
INVESTIGATION 3 Earth’s Interior	6.5
Encounter Investigative Phenomenon	0.5
1 Heat Flow Within Earth	2.5
2 Plate Tectonics	2
Investigation Assessment*	1.5
+ GOT MORE TIME Activities	+3

GOT MORE TIME?

If time allows, personalize and enhance your instructional plan by assigning the activities with the got-more-time icon in the planners.

Activities include: Analyzing Data, Animation, Authentic Reading, Engineering Design Challenge, Interactivity, Problem-Based Learning, and Writing About Science.

SECTION	Days
INSTRUCTIONAL SEGMENT 2 Atoms, Elements, and Molecules	35
Encounter Anchoring Phenomenon	0.5
INVESTIGATION 4 Atomic Structure	12
Encounter Investigative Phenomenon	0.5
1 Modeling Atoms	2.5
2 Atomic Emission Spectra and the Bohr Model	2.5
3 Modern Atomic Theory	2.5
4 Electrons in Atoms	2.5
Investigation Assessment*	1.5
+ GOT MORE TIME Activities	+4.5
INVESTIGATION 5 The Periodic Table	9
Encounter Investigative Phenomenon	0.5
1 The Periodic Table: An Overview	2
2 The Periodic Table and Atomic Structure	2.5
3 Periodic Trends	2.5
Investigation Assessment*	1.5
+ GOT MORE TIME Activities	+4
INVESTIGATION 6 Chemical Bonding	13.5
Encounter Investigative Phenomenon	0.5
1 Ionic Bonds	2.5
2 Metallic Bonds	2
3 Covalent Bonds	2.5
4 Intermolecular Attractions	2
5 Names and Formulas of Compounds	2.5
Investigation Assessment*	1.5
+ GOT MORE TIME Activities	+5.5

SECTION	Days
INSTRUCTIONAL SEGMENT 3 Understanding Chemical Reactions	56
Encounter Anchoring Phenomenon	0.5
INVESTIGATION 7 Physical Properties of Materials	16
Encounter Investigative Phenomenon	0.5
1 States of Matter	2
2 Modeling Phase Changes	2.5
3 Comparing Ionic and Molecular Compounds	2.5
4 Comparing Metals and Nonmetals	2
5 Water and Aqueous Systems	2.5
6 Properties of Solutions	2.5
Investigation Assessment*	1.5
+ GOT MORE TIME Activities	+6
INVESTIGATION 8 Chemical Quantities	11.5
Encounter Investigative Phenomenon	0.5
1 The Mole Concept	2
2 Molar Relationships	2.5
3 Percent Composition and Empirical Formulas	2.5
4 Concentrations of Solutions	2.5
Investigation Assessment*	1.5
+ GOT MORE TIME Activities	+4
INVESTIGATION 9 Chemical Reactions	9
Encounter Investigative Phenomenon	0.5
1 Modeling Chemical Reactions	2
2 Predicting Outcomes of Chemical Reactions	2.5
3 Reactions in Aqueous Solution	2.5
Investigation Assessment*	1.5
+ GOT MORE TIME Activities	+4

SECTION	Days
INSTRUCTIONAL SEGMENT 3 continued	
INVESTIGATION 10 Stoichiometry	9.5
Encounter Investigative Phenomenon	0.5
1 Quantifying Reactants and Products	2.5
2 Chemical Calculations	2.5
3 Limiting Reagent and Percent Yield	2.5
Investigation Assessment*	1.5
+ GOT MORE TIME Activities	+3.5
INVESTIGATION 11 Thermochemistry	9.5
Encounter Investigative Phenomenon	0.5
1 Energy in Chemical Bonds	2.5
2 Enthalpies of Formation and Reaction	2.5
3 Enthalpy in Changes of State	2.5
Investigation Assessment*	1.5
+ GOT MORE TIME Activities	+4

* Investigation Assessment includes Performance-Based Assessment, 3-D Assessment, and Revisit Anchoring Phenomenon.

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