



Pre-Built Course: Conceptual Physical Science Explorations, Full Textbook

We offer pre-built courses for all of our titles. A pre-built course works well when using Conceptual Academy much like the video version of a traditional textbook. Your students will have access to all the content listed within this pre-built course (see below). This provides flexibility from one semester to the next. For each semester you might direct students to be responsible for only select lessons or chapter sections.

Once a pre-built course is uploaded to your instructor's account, you can modify it as you see fit to "make it your own". This includes updating the FYI pages and setting dates for each lesson so that students know what to study by when. You can also remove select chapter sections you are not wanting students to see.

For a Conceptual Academy course aligned more precisely to a particular class schedule, we recommend you contact us to request a customized course. To learn more about customizing your course, please look to the help documents within your instructor profile page.

Conceptual Physical Science Explorations, 2e

Syllabus: Full Textbook
5 Units; 34 Lessons
372 Videos

Unit : A: Mechanics
Unit : B: Forms of Energy
Unit : C: Chemistry
Unit : D: Earth Science
Unit : E: Astronomy

Unit : A: Mechanics

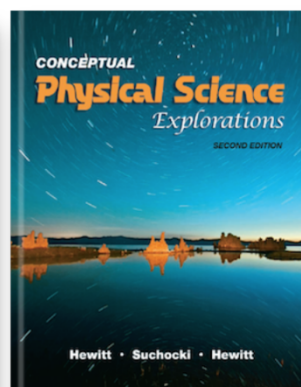
Lesson 1 (your date)

FYI page

- 1.1 A Brief History of Advances in Science
- 1.2 Mathematics and Conceptual Physical Science
- 1.3 Scientific Methods—Classic Tools
- 1.4 Scientific Hypotheses Must Be Testable
- 1.5 A Scientific Attitude Underlies Good Science
- 1.6 The Search for Order—Science, Art, and Religion
- 1.7 Technology—Practical Use of the Findings of Science
- 1.8 The Physical Sciences: Physics, Chemistry, Earth Science, and Astronomy
- 1.9 In Perspective

Lesson Reading Quiz

Homework Practice Session



Lesson 2 (your date)

FYI page

2.1 Aristotle's Classification of Motion

2.10 Earth Moves Around the Sun

2.2 Galileo's Concept of Inertia

2.3 Galileo's Concepts of Speed and Velocity

2.4 Motion is Relative

2.5 Newton's First Law of Motion—The Law of Inertia

2.6 Net Force—The Combination of All Forces That Act on an Object

2.7 Equilibrium for Objects at Rest

2.8 The Support Force—Why We Don't Fall Through the Floor

2.9 Equilibrium for Moving Objects

Lesson Reading Quiz

Homework Practice Session

Lesson 3 (your date)

FYI page

3.1 Galileo Developed the Concept of Acceleration

3.2 Force Causes Acceleration

3.3 Mass Is a Measure of Inertia

3.4 Mass Resists Acceleration

3.5 Newton's Second Law Links Force, Acceleration, and Mass

3.6 Friction Is a Force That Affects Motion

3.7 Objects in Free Fall Have Equal Acceleration

3.8 Newton's Second Law Explains Why Objects in Free Fall Have Equal

Acceleration

3.9 Acceleration of Fall Is Less When Air Drag Acts

Lesson Reading Quiz

Homework Practice Session

Lesson 4 (your date)

FYI page

4.1 A Force Is Part of an Interaction

4.2 Newton's Third Law—Action and Reaction

4.3 A Simple Rule Helps Identify Action and Reaction

4.4 Action and Reaction on Objects of Different Masses

4.5 Action and Reaction Forces Act on Different Objects

4.6 The Classic Horse-Cart Problem—A Mind Stumper

4.7 Action Equals Reaction

4.8 Summary of Newton's Three Laws

Lesson Reading Quiz

Homework Practice Session

Lesson 5 (your date)

FYI page

5.1 Momentum is Inertia in Motion

5.2 Impulse Changes Momentum

5.3 Momentum Change is Greater When Bouncing Occurs



5.4 When No External Force Acts, Momentum Doesn't Change—It is Conserved
5.5 Momentum is Conserved in Collisions
Lesson Reading Quiz
Homework Practice Session

Lesson 6 (your date)

FYI page
6.1 Work—Force x Distance
6.10. Sources of Energy
6.11 Energy for Life
6.2 Power—How Quickly Work Gets Done
6.3 Mechanical Energy
6.4 Potential Energy Is Stored Energy
6.5 Kinetic Energy Is Energy of Motion
6.6 Work-Energy Theorem
6.7 Conservation of Energy
6.8 Machines—Devices to Multiply Forces
6.9 Efficiency—A Measure of Work Done for Energy Spent
Lesson Reading Quiz
Homework Practice Session

Lesson 7 (your date)

FYI page
7.1 The Legend of the Falling Apple
7.10 Satellites in Elliptical Orbits
7.11 Escape Speed—Getting “Out There”
7.12 Gravitation Is Universal
7.2 The Fact of the Falling Moon
7.3 Newton's Grandest Discovery—The Law of Universal Gravitation
7.4 Gravity and Distance: The Inverse-Square Law
7.5 The Universal Gravitational Constant, G
7.6 The Mass of the Earth Is Measured
7.7 Projectile Motion
7.8 Fast-Moving Projectiles—Satellites
7.9 Earth Satellites in Circular Orbits
Lesson Reading Quiz
Homework Practice Session

Lesson 8 (your date)

FYI page
8.1 Density—A Measure of Compactness
8.2 Pressure—Force per Area
8.3 Buoyancy in a Liquid
8.4 Archimedes' Principle—Sink or Swim
8.5 Pressure in a Gas
8.6 Atmospheric Pressure Is Due to the Weight of the Atmosphere
8.7 Pascal's Principle—The Transmission of Pressure in a Fluid
8.8 Buoyancy in a Gas—More Archimedes' Principle
8.9 Bernoulli's Principle—Flying With Physics
Lesson Reading Quiz



Homework Practice Session

Unit : B: Forms of Energy

Lesson 1 (your date)

FYI page

- 9.1 Thermal Energy—The Total Energy in a Substance
- 9.2 Temperature—Average Kinetic Energy Per Molecule in a Substance
- 9.3 Absolute Zero—Nature’s Lowest Possible Temperature
- 9.4 Heat Is the Movement of Thermal Energy
- 9.5 Specific Heat Capacity— A Measure of Thermal Inertia
- 9.6 Thermal Expansion
- 9.7 Conduction—Heat Transfer via Particle Collision
- 9.8 Convection—Heat Transfer via Movements of Fluid
- 9.9 Radiation—Heat Transfer via Radiant Energy
- 9.10 Energy Changes With Changes of Phase

Lesson Reading Quiz

Homework Practice Session

Lesson 2 (your date)

FYI page

- 10.1 Electric Charge Is a Basic Characteristic of Matter
- 10.2 Coulomb’s Law—The Force Between Charged Particles
- 10.3 Charge Polarization
- 10.4 Electric Current—The Flow of Electric Charge
- 10.5 An Electric Current Is Produced by Electrical Pressure—Voltage
- 10.6 Electrical Resistance
- 10.7 Ohm’s Law—The Relationship Among Current, Voltage, and Resistance
- 10.8 Electric Shock
- 10.9 Direct Current and Alternating Current
- 10.10 Electric Power—The Rate of Doing Work
- 10.11 Electric Circuits—Series and Parallel

Lesson Reading Quiz

Homework Practice Session

Lesson 3 (your date)

FYI page

- 11.1 Magnetic Poles—Attraction and Repulsion
- 11.2 Magnetic Fields—Regions of Magnetic Influence
- 11.3 Magnetic Domains—Clusters of Aligned Atoms
- 11.4 The Interaction Between Electric Currents and Magnetic Fields
- 11.5 Magnetic Forces Are Exerted on Moving Charges
- 11.6 Electromagnetic Induction—How Voltage Is Created
- 11.7 Generators and Alternating Current
- 11.8 Power Production—A Technological Extension of Electromagnetic Induction
- 11.9 The Induction of Fields—Both Electric and Magnetic

Lesson Reading Quiz

Homework Practice Session

Lesson 4 (your date)



FYI page

- 12.1 Special Wiggles—Vibrations and Waves
- 12.2 Wave Motion—Transporting Energy
- 12.3 Two Types of Waves—Transverse and Longitudinal
- 12.4 Sound Travels in Longitudinal Waves
- 12.5 Sound Can Be Reflected
- 12.6 Sound Can Be Refracted
- 12.7 Forced Vibrations and Natural Frequency
- 12.8 Resonance and Sympathetic Vibrations
- 12.9 Interference—The Addition and Subtraction of Waves
- 12.10 The Doppler Effect—Changes in Frequency Due to Motion
- 12.11 Wave Barriers and Bow Waves
- 12.12 Shock Waves and the Sonic Boom

Lesson Reading Quiz

Homework Practice Session

Lesson 5 (your date)

FYI page

- 13.1 The Electromagnetic Spectrum
- 13.2 Why Materials Are Either Transparent or Opaque
- 13.3 Reflection of Light
- 13.4 Refraction—The Bending of Light Due to Changing Speed
- 13.5 Illusions and Mirages Are Caused by Atmospheric Refraction
- 13.6 Color Science
- 13.7 Mixing Colored Lights
- 13.8 Mixing Colored Pigments
- 13.9 Why the Sky Is Blue
- 13.10 Why Sunsets Are Red
- 13.11 Why Clouds Are White

Lesson Reading Quiz

Homework Practice Session

Lesson 6 (your date)

FYI page

- 14.1 Light Dispersion and Rainbows
- 14.2 Lenses
- 14.3 Image Formation by a Lens
- 14.4 Diffraction—The Spreading of Light
- 14.5 Interference—Constructive and Destructive
- 14.6 Interference Colors by Reflection from Thin Films
- 14.7 Polarization—Evidence for the Transverse Wave Nature of Light
- 14.8 Wave-Particle Duality—Two Sides of the Same Coin

Lesson Reading Quiz

Homework Practice Session

Lesson 7 (your date)

FYI page

- 15.1 Discovering the Invisible Atom
- 15.2 Elements and the Periodic Table
- 15.3 The Atomic Nucleus Consists of Protons and Neutrons



15.4 Isotopes and Atomic Mass
15.5 Electron Shells—Regions About the Nucleus Where Electrons Are Located
Lesson Reading Quiz
Homework Practice Session

Lesson 8 (your date)

FYI page
16.1 Radioactivity—The Disintegration of the Atomic Nucleus
16.2 Alpha, Beta, and Gamma Rays
16.3 Environmental Radiation
16.4 Transmutation of Elements—Changing Identities
16.5 Half-Life Is a Measure of Radioactive Decay Rate
16.6 Isotopic Dating Measures the Ages of Materials
16.7 Nuclear Fission—The Breaking Apart of Atomic Nuclei
16.8 The Mass-Energy Relationship: $E = mc^2$
16.9 Nuclear Fusion—The Combining of Atomic Nuclei
Lesson Reading Quiz
Homework Practice Session

Unit : C: Chemistry

Lesson 1 (your date)

FYI page
17.1 Chemistry is Known as the Central Science
17.2 The Submicroscopic World is Super-Small
17.3 The Phase of Matter Can Change
17.4 Matter Has Physical and Chemical Properties
17.5 Determining Physical and Chemical Changes Can Be Difficult
17.6 The Periodic Table Helps Us to Understand the Elements
17.7 Elements Can Combine to Form Compounds
17.8 There Is a System for Naming Compounds
Lesson Reading Quiz
Homework Practice Session

Lesson 2 (your date)

FYI page
18.1 Electron-Dot Structures Help Us to Understand Bonding
18.2 Atoms Can Lose or Gain Electrons to Become Ions
18.3 Ionic Bonds Result from a Transfer of Electrons
18.4 Metal Atoms Bond by Losing Their Electrons
18.5 Covalent Bonds Result from a Sharing of Electrons
18.6 Electrons May Be Shared Unevenly in a Covalent Bond
18.7 Electrons Are Shared Unevenly in a Polar Molecule
18.8 Molecules Are Attractive
Lesson Reading Quiz
Homework Practice Session

Lesson 3 (your date)

FYI page
19.1 Most Materials Are Mixtures



19.2 The Chemist's Classification of Matter
19.3 A Solution Is a Single-Phase Homogenous Mixture
19.4 Concentration Is Given as Moles per Liter
19.5 Solubility Measures How Well a Solute Dissolves
19.6 Soap Works by Being Both Polar and Nonpolar
19.7 Purifying the Water We Drink
Lesson Reading Quiz
Homework Practice Session

Lesson 4 (your date)

FYI page
20.1 Chemical Reactions Are Represented by Chemical Equations
20.2 Reaction Rates Can Be Slow or Fast
20.3 Catalysts Speed Up Chemical Reactions
20.4 Chemical Reactions Can Be Either Exothermic or Endothermic
20.5 Chemical Reactions Are Driven By Entropy
Lesson Reading Quiz
Homework Practice Session

Lesson 5 (your date)

FYI page
21.1 Acids Donate and Bases Accept
21.2 Some Acids and Bases Are Stronger than Others
21.3 Solutions Can Be Acidic, Basic, or Neutrals
21.4 Rainwater Is Acidic and Ocean Water Is Basic
21.5 Oxidation Is the Loss of Electrons and Reduction Is the Gain of Electrons
21.6 The Energy of Flowing Electrons Can Be Harnessed
21.7 Oxygen Is Responsible for Corrosion and Combustion
21.8 Hydrogen Sulfide Can Induce Suspended Animation
Lesson Reading Quiz
Homework Practice Session

Lesson 6 (your date)

FYI page
22.1 Hydrocarbons
22.2 Unsaturated Hydrocarbons
22.3 Functional Groups
22.4 Alcohols and Ethers
22.5 Amines and Alkaloids
22.6 Carbonyl Compounds
22.7 Polymers
Lesson Reading Quiz
Homework Practice Session

Lesson 7 (your date)

FYI page
23.1 Biomolecules Are Molecules Produced and Used by Organisms
23.2 Carbohydrates Give Structure and Energy
23.3 Lipids Are Insoluble in Water



23.4 Proteins Are Polymers of Amino Acids
23.5 Nucleic Acids Code for Proteins
23.6 Vitamins Are Organic, Minerals Are Inorganic
23.7 Metabolism Is the Cycling of Biomolecules Through the Body
23.8 The Food Pyramid Summarizes a Healthful Diet
Lesson Reading Quiz
Homework Practice Session

Lesson 8 (your date)

FYI page
24.1 Medicines Are Drugs That Benefit the Body
24.2 The Lock-and-Key Model Guides Chemists in Creating New Medicines
24.3 Chemotherapy Cures the Host by Killing the Disease
24.4 The Nervous System Is a Network of Neurons
24.5 Psychoactive Drugs Alter the Mind or Behavior
24.6 Pain Relievers Inhibit the Transmission or Perception of Pain
Lesson Reading Quiz
Homework Practice Session

Unit : D: Earth Science

Lesson 1 (your date)

FYI page
25.1 Our Rocky Planet
25.10 The Rock Cycle
25.2 What is a Mineral?
25.3 Mineral Properties
25.4 Classification of Rock-Forming Minerals
25.5 The Formation of Minerals and Rock
25.6 Rocks Are Divided Into Three Main Groups
25.7 Igneous Rocks Form When Magma Cools
25.8 Sedimentary Rocks Blanket Most of Earth's Surface
25.9 Metamorphic Rocks Are Changed Rocks
Lesson Reading Quiz
Homework Practice Session

Lesson 2 (your date)

FYI page
26.1 Earthquakes Make Seismic Waves
26.2 Seismic Waves Reveal Earth's Internal Layers
26.3 Internal Motion Deforms Earth's Surface
Lesson Reading Quiz
Homework Practice Session

Lesson 3 (your date)

FYI page
27.1 Continental Drift—An Idea Before its Time
27.2 Search For the Mechanism to Support Continental Drift
27.3 The Theory of Plate Tectonics
27.4 Three Types of Plate Boundaries



27.5 The Theory That Explains Much
Lesson Reading Quiz
Homework Practice Session

Lesson 4 (your date)

FYI page
28.1 The Hydrologic Cycle
28.2 Groundwater—Water Below the Surface
28.3 The Work of Groundwater
28.4 Streams and Rivers—Water at Earth’s Surface
28.5 The Work of Surface Water
28.6 Glaciers and Glaciation—Earth’s Frozen Water
28.7 The Work of Glaciers
28.8 The Work of Air
Lesson Reading Quiz
Homework Practice Session

Lesson 5 (your date)

FYI page
29.1 Relative Dating—The Placement of Rocks in Order
29.2 Radiometric Dating Reveals the Actual Time of Rock Formation
29.3 Geologic Time
29.4 Precambrian Time—A Time of Hidden Life
29.5 Paleozoic Era—A Time of Life Diversification
29.6 The Mesozoic Era—The Age of Reptiles
29.7 The Cenozoic Era—The Age of Mammals
29.8 Earth History in a Capsule
Lesson Reading Quiz
Homework Practice Session

Lesson 6 (your date)

FYI page
30.1 Earth’s Atmosphere and Oceans
30.2 Components of Earth’s Atmosphere
30.3 Solar Energy
30.4 Driving Forces of Air Motion
30.5 Global Atmospheric Circulation Patterns
30.6 Components of Earth’s Oceans
30.7 Oceanic Circulation
Lesson Reading Quiz
Homework Practice Session

Lesson 7 (your date)

FYI page
31.1 Water in the Atmosphere
31.2 Weather Variables
31.3 There Are Many Different Clouds
31.4 Air Masses, Fronts, and Storms
31.5 Weather Can Be Violent



31.6 The Weather—Number One Topic of Conversation
Lesson Reading Quiz
Homework Practice Session

Unit : E: Astronomy

Lesson 1 (your date)

FYI page
32.1 The Solar System Is Mostly Empty Space
32.2 Solar Systems Form from Nebula
32.3 The Sun Is Our Prime Source of Energy
32.4 The Inner Planets Are Rocky
32.5 The Outer Planets Are Gaseous
32.6 Earth's Moon
32.7 Failed Planet Formation
Lesson Reading Quiz
Homework Practice Session

Lesson 2 (your date)

FYI page
33.1 Observing the Night Sky
33.2 Stars have Different Brightness and Color
33.3 The Hertzsprung-Russell Diagram Describes Stars
33.4 The Life Cycle of Stars
33.5 Novae and Supernovae Are Stellar Explosions
33.6 Supergiant Stars Collapse into Black Holes
Lesson Reading Quiz
Homework Practice Session

Lesson 3 (your date)

FYI page
34.1 A Galaxy Is an Island of Stars
34.2 Elliptical, Spiral, and Irregular Galaxies
34.3 Active Galaxies Emit Huge Amounts of Energy
34.4 Galaxies Form Clusters and Superclusters
34.5 Galaxies Are Moving Away from One Another
34.6 Further Evidence for the Big Bang
34.7 Dark Matter is Invisible
34.8 Dark Energy Opposes Gravity
Lesson Reading Quiz
Homework Practice Session

