



## **Pre-Built Course: Conceptual Physics, 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.

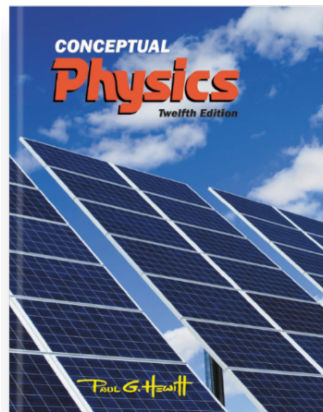
Once a pre-built course is uploaded to your instructor's account, you can modify it as you see fit to "make it your own". This includes updating the FYI pages and setting dates for each lesson so that students know what to study by when. You can also remove select chapter sections you are not wanting 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 Physics, 12e**

**Syllabus: Full Textbook**  
**8 Units; 41 Lessons**  
**363 Videos**

**Unit : A : Mechanics Part 1**  
**Unit : B : Mechanics Part 2**  
**Unit : C : Matter**  
**Unit : D : Heat**  
**Unit : E : Sound**  
**Unit : F : Electromagnetism**  
**Unit : G : Light**  
**Unit : H : Modern Physics**



#### **Unit : A : Mechanics Part 1** Lesson 1 (your date)

FYI page  
1.1 Scientific Measurements  
1.2 Scientific Methods  
1.3 Science, Art, and Religion  
1.4 Science and Technology  
1.5 Physics - The Basic Science  
1.6 In Perspective  
Lesson Reading Quiz

## Homework Practice Session

### Lesson 2 (your date)

FYI page

- 2.1 Aristotle on Motion
- 2.2 Galileo's Experiments
- 2.3 Newton's First Law of Motion
- 2.4 Net Force and Vectors
- 2.5 The Equilibrium Rule
- 2.6 Support Force
- 2.7 Equilibrium of Moving Things
- 2.8 The Moving Earth

Lesson Reading Quiz

Homework Practice Session

### Lesson 3 (your date)

FYI page

- 3.1 Motion is Relative
- 3.2 Speed
- 3.3 Velocity
- 3.4 Acceleration
- 3.5 Free Fall
- 3.6 Velocity Vectors

Lesson Reading Quiz

Homework Practice Session

### Lesson 4 (your date)

FYI page

- 4.1 Force Causes Acceleration
- 4.2 Friction
- 4.3 Mass and Weight

Lesson Reading Quiz

Homework Practice Session

### Lesson 5 (your date)

FYI page

- 4.5 When Acceleration Is  $g$ --Free Fall
- 4.6 When Acceleration Is Less Than  $g$ --Nonfree Fall
- 4.4 Newton's Second Law of Motion

Lesson Reading Quiz

Homework Practice Session

### Lesson 6 (your date)

FYI page

- 5.1 Forces and Interactions
- 5.2 Newton's Third Law of Motion
- 5.5 Summary of Newton's Three Laws
- 5.4 Vectors and the Third Law



Lesson Reading Quiz  
Homework Practice Session

**Unit : B : Mechanics Part 2**

Lesson 1 (your date)

FYI page  
6.1 Momentum  
6.2 Impulse  
6.3 Impulse changes Momentum  
6.4 Bouncing  
6.5 Conservation of Momentum  
6.6 Collisions  
6.7 More Complicated Collisions  
Lesson Reading Quiz  
Homework Practice Session

Lesson 2 (your date)

FYI page  
7.1 Work  
7.2 Potential Energy  
7.3 Kinetic Energy  
7.5 Conservation of Energy  
7.6 Machines  
7.7 Efficiency  
7.8 Sources of Energy  
7.4 Work-Energy Theorem  
Lesson Reading Quiz  
Homework Practice Session

Lesson 3 (your date)

FYI page  
8.1 Circular Motion  
8.2 Rotational Inertia  
8.3 Torque  
8.4 Center of Mass and Center of Gravity  
Lesson Reading Quiz  
Homework Practice Session

Lesson 4 (your date)

FYI page  
8.5 Centripetal Force  
8.6 Centrifugal Force  
8.7 Angular Momentum  
8.8 Conservation of Angular Momentum  
Lesson Reading Quiz  
Homework Practice Session

Lesson 5 (your date)



FYI page  
9.1 The Universal Law of Gravity  
9.2 The Universal Gravitational Constant, G  
9.3 Gravity and Distance: The Inverse-Square Law  
9.4 Weight and Weightlessness  
9.5 Ocean Tides  
9.6 Gravitational Fields  
9.8 Universal Gravitation  
9.7 Black Holes  
Lesson Reading Quiz  
Homework Practice Session

#### Lesson 6 (your date)

FYI page  
10.1 Projectile Motion  
10.2 Fast-Moving Projectiles--Satellites  
10.3 Circular Satellite Orbits  
10.4 Elliptical Orbits  
10.5 Kepler's Laws of Planetary Motion  
10.6 Energy Conservation and Satellite Motion  
10.7 Escape Speed  
Lesson Reading Quiz  
Homework Practice Session

### **Unit : C : Matter**

#### Lesson 1 (your date)

FYI page  
11.1 The Atomic Hypothesis  
11.2 Characteristics of Atoms  
11.3 Atomic Imagery  
11.4 Atomic Structure  
11.5 The Periodic Table of the Elements  
11.7 Compounds and Mixtures  
11.6 Isotopes  
11.8 Molecules  
Lesson Reading Quiz  
Homework Practice Session

#### Lesson 2 (your date)

FYI page  
12.2 Density  
12.4 Tension and Compression  
12.5 Arches  
13.1 Pressure  
Lesson Reading Quiz  
Homework Practice Session

#### Lesson 3 (your date)

FYI page



13.2 Pressure in a Liquid  
13.3 Buoyancy  
13.4 Archimedes' Principle  
13.5 What Makes an Object Sink or Float?  
13.6 Flotation  
13.7 Pascal's Principle  
Lesson Reading Quiz  
Homework Practice Session

Lesson 4 (your date)

FYI page  
14.1 The Atmosphere  
14.2 Atmospheric Pressure  
14.3 Boyle's Law  
14.4 Buoyancy of Air  
14.5 Bernoulli's Principle  
14.6 Plasma  
Lesson Reading Quiz  
Homework Practice Session

**Unit : D : Heat**

Lesson 1 (your date)

FYI page  
15.1 Temperature  
15.2 Heat  
15.3 Specific Heat Capacity  
15.4 The High Specific Heat Capacity of Water  
15.5 Thermal Expansion  
Lesson Reading Quiz  
Homework Practice Session

Lesson 2 (your date)

FYI page  
16.1 Conduction  
16.2 Convection  
16.3 Radiation  
16.4 Newton's Law of Cooling  
Lesson Reading Quiz  
Homework Practice Session

Lesson 3 (your date)

FYI page  
16.5 The Greenhouse Effect  
16.6 Climate Change  
16.7 Solar Power  
16.8 Controlling Heat Transfer  
Lesson Reading Quiz  
Homework Practice Session



Lesson 4 (your date)

FYI page

17.1 Phases of Matter

17.2 Evaporation

17.3 Condensation

17.4 Boiling

17.5 Melting and Freezing

17.6 Energy and Changes of Phase

Lesson Reading Quiz

Homework Practice Session

Lesson 5 (your date)

FYI page

18.1 Thermodynamics

18.2 Absolute Zero

18.3 First Law of Thermodynamics

18.4 Adiabatic Processes

18.5 Meteorology and the First Law

Lesson Reading Quiz

Homework Practice Session

Lesson 6 (your date)

FYI page

18.6 Second Law of Thermodynamics

18.7 Energy Tends to Disperse

18.8 Entropy

Lesson Reading Quiz

Homework Practice Session

**Unit : E : Sound**

Lesson 1 (your date)

FYI page

19.1 Good Vibrations

19.2 Wave Description

19.3 Wave Motion

19.4 Wave Speed

Lesson Reading Quiz

Homework Practice Session

Lesson 2 (your date)

FYI page

19.5 Wave Interference

19.6 Doppler Effect

19.7 Bow Waves

19.8 Shock Waves

Lesson Reading Quiz

Homework Practice Session



Lesson 3 (your date)

FYI page

20.1 Nature of Sound

20.2 Sound in Air

20.3 Reflection of Sound

20.4 Refraction of Sound

Lesson Reading Quiz

Homework Practice Session

Lesson 4 (your date)

FYI page

20.5 Forced Vibrations

20.6 Resonance

20.7 Interference

20.8 Beats

Lesson Reading Quiz

Homework Practice Session

Lesson 5 (your date)

FYI page

21.1 Noise and Music

21.2 Pitch

21.3 Sound Intensity and Loudness

21.4 Quality

21.5 Musical Instruments

Lesson Reading Quiz

Homework Practice Session

**Unit : F : Electromagnetism**

Lesson 1 (your date)

FYI page

22.1 Electricity

22.2 Electric Charges

22.3 Conservation of Charge

22.4 Coulomb's Law

22.5 Conductors and Insulators

22.6 Charging

22.7 Charge Polarization

22.8 Electric Field

22.9 Electric Potential

Lesson Reading Quiz

Homework Practice Session

Lesson 2 (your date)

FYI page

23.1 Flow of Charge and Electric Current

23.2 Voltage Sources

23.3 Electrical Resistance



23.4 Ohm's Law  
Lesson Reading Quiz  
Homework Practice Session

Lesson 3 (your date)

FYI page  
23.5 Direct Current and Alternating Current  
23.6 Speed and Source of Electrons in a Circuit  
23.7 Electric Power  
23.8 Lamps  
23.9 Electric Circuits  
Lesson Reading Quiz  
Homework Practice Session

Lesson 4 (your date)

FYI page  
24.1 Magnetism  
24.9 Biomagnetism  
24.2 Magnetic Poles  
24.3 Magnetic Fields  
24.4 Magnetic Domains  
24.5 Electric Currents and Magnetic Fields  
24.6 Electromagnets  
24.7 Magnetic Forces  
24.8 Earth's Magnetic Field  
Lesson Reading Quiz  
Homework Practice Session

Lesson 5 (your date)

FYI page  
25.1 Electromagnetic Induction  
25.2 Faraday's Law  
25.3 Generators and Alternating Current  
25.4 Power Production  
25.6 Self-Induction  
25.7 Power Transmission  
25.8 Field Induction  
25.5 Transformers  
Lesson Reading Quiz  
Homework Practice Session

**Unit : G : Light**

Lesson 1 (your date)

FYI page  
26.1 Electromagnetic Waves  
26.3 The Electromagnetic Spectrum  
26.4 Transparent Materials  
26.5 Opaque Materials  
26.6 Seeing Light - The Eye





26.2 Electromagnetic Wave Velocity  
Lesson Reading Quiz  
Homework Practice Session

Lesson 2 (your date)

FYI page  
27.1 Color in Our World  
27.2 Selective Reflection  
27.3 Selective Transmission  
27.4 Mixing Colored Lights  
27.5 Mixing Colored Pigments  
27.6 Why the Sky Is Blue  
27.7 Why Sunsets Are Red  
27.8 Why Clouds Are White  
27.9 Why Water Is Greenish Blue  
Lesson Reading Quiz  
Homework Practice Session

Lesson 3 (your date)

FYI page  
28.1 Reflection  
28.2 Law of Reflection  
28.8 Lens Defects  
28.3 Refraction  
28.4 Cause of Refraction  
28.5 Dispersion and Rainbows  
28.6 Total Internal Reflection  
28.7 Lenses  
Lesson Reading Quiz  
Homework Practice Session

Lesson 4 (your date)

FYI page  
29.5 Polarization  
30.1 Light Emission  
30.2 Excitation  
30.4 Incandescence  
30.8 Lamps  
30.6 Fluorescence  
Lesson Reading Quiz  
Homework Practice Session

**Unit : H : Modern Physics**

Lesson 1 (your date)

FYI page  
32.1 Discovery of the Atomic Nucleus  
32.2 Discovery of the Electron  
32.3 Atomic Spectra: Clues to Atomic Structure  
32.4 Bohr Model of the Atom



32.5 Explanation of Quantized Energy Levels: Electron Waves  
32.6 Quantum Mechanics  
32.7 Correspondence Principle  
Lesson Reading Quiz  
Homework Practice Session

Lesson 2 (your date)

FYI page  
33.1 X-Rays and Radioactivity  
33.2 Alpha, Beta, and Gamma Rays  
33.3 Environmental Radiation  
33.4 The Atomic Nucleus and the Strong Force  
33.5 Radioactive Half-Life  
33.6 Radiation Detectors  
33.7 Transmutation of Elements  
33.8 Radiometric Dating  
Lesson Reading Quiz  
Homework Practice Session

Lesson 3 (your date)

FYI page  
34.1 Nuclear Fission  
34.2 Nuclear Fission Reactors  
34.3 The Breeder Reactor  
34.4 Fission Power  
34.5 Mass–Energy Equivalence  
34.6 Nuclear Fusion  
34.7 Controlling Fusion  
Lesson Reading Quiz  
Homework Practice Session

Lesson 4 (your date)

FYI page  
36.1 Principle of Equivalence  
36.2 Bending of Light by Gravity  
36.3 Gravity and Time: Gravitational Red Shift  
36.4 Gravity and Space: Motion of Mercury  
36.5 Gravity, Space, and a New Geometry  
36.6 Gravitational Waves  
36.7 Newtonian and Einsteinian Gravitation  
Lesson Reading Quiz  
Homework Practice Session

Lesson 5 (your date)

FYI page  
35.1 Motion Is Relative  
35.2 Postulates of the Special Theory of Relativity  
35.3 Simultaneity  
35.4 Spacetime and Time Dilation



35.5 Addition of Velocities  
35.8 Mass, Energy, and  $E = mc^2$   
35.6 Length Contraction  
35.7 Relativistic Momentum  
35.9 The Correspondence Principle  
Lesson Reading Quiz  
Homework Practice Session

