

Thinkwell's Homeschool Physics

Course Lesson Plan: 35 weeks

Welcome to Thinkwell's Homeschool Physics! We're thrilled that you've decided to make us part of your homeschool curriculum. This lesson plan is meant to be a guide for you and your homeschool student. Each day, you'll tackle a different topic and all the materials associated with that topic, such as video lectures, exercises, and interactivities. If you follow our day-by-day schedule, you'll complete the full curriculum for the course in 35 weeks. Feel free to modify and amend the plan as it best works for you. And, as always, please [let us know](#) what we can do to help get you up and running with Thinkwell's Physics!

Schedule Overview:

Weeks 1 – 2	Chapter 1: Preliminaries
Weeks 3 – 6	Chapter 2: Kinematics
Weeks 7 – 10	Chapter 3: Dynamics
Weeks 10 – 13	Chapter 4: Energy
Weeks 14 – 15	Chapter 5: Momentum
Week 16	Midterm
Weeks 16 – 21	Chapter 6: The Physics of Extended Objects
Weeks 22 – 23	Chapter 7: Force of Gravity
Weeks 23 – 26	Chapter 8: Fluids
Weeks 26 – 28	Chapter 9: Relativity
Weeks 29 – 30	Chapter 10: Oscillatory Motion
Weeks 31 – 34	Chapter 11: Waves
Week 35	Final Exam

Week 1	
Chapter 1: Preliminaries	
Assignments	Notes
Week 1, Day 1 <input type="checkbox"/> 1.1.1 Welcome to Physics	
Week 1, Day 2 <input type="checkbox"/> 1.2.1 Physical Quantities and Units of Measurement	
Week 1, Day 3 <input type="checkbox"/> 1.2.2 Unit Conversion and Dimensional Analysis	
Week 1, Day 4 <input type="checkbox"/> 1.2.3 Uncertainty in Measurement and Significant Digits	
Week 1, Day 5 <input type="checkbox"/> 1.3.1 The Basics of Vectors	

Week 2	
Chapter 1: Preliminaries	
Chapter 1 Test	
Assignments	Notes
Week 2, Day 1 <input type="checkbox"/> 1.3.2 Vector Components and Unit Vectors	
Week 2, Day 2 <input type="checkbox"/> 1.4.1 The Scalar Product	
Week 2, Day 3 <input type="checkbox"/> 1.5.1 The Vector Product	
Week 2, Day 4 <input type="checkbox"/> Chapter 1 Practice Test	
Week 2, Day 5 <input type="checkbox"/> Chapter 1 Test	Chapter 1 Test Score: _____

Week 3	
Chapter 2: Kinematics	
Assignments	Notes
Week 3, Day 1 <input type="checkbox"/> 2.1.1 Describing Motion	
Week 3, Day 2 <input type="checkbox"/> 2.1.2 Displacement and Average Velocity	
Week 3, Day 3 <input type="checkbox"/> 2.1.3 Understanding Instantaneous Velocity	
Week 3, Day 4 <input type="checkbox"/> 2.1.4 Instantaneous Velocity and the Derivative	
Week 3, Day 5 <input type="checkbox"/> 2.1.5 Acceleration	

Week 4 Chapter 2: Kinematics	
Assignments	Notes
Week 4, Day 1 <input type="checkbox"/> 2.1.6 Another Look at Position, Velocity, and Acceleration	
Week 4, Day 2 <input type="checkbox"/> 2.2.1 Describing Motion Under Constant Acceleration	
Week 4, Day 3 <input type="checkbox"/> 2.2.2 Solving Problems Involving Motion Under Constant Acceleration	
Week 4, Day 4 <input type="checkbox"/> 2.2.3 Free-Falling Objects	
Week 4, Day 5 <input type="checkbox"/> 2.3.1 The Position and Velocity Vectors	

Week 5 Chapter 2: Kinematics	
Assignments	Notes
Week 5, Day 1 <input type="checkbox"/> 2.3.2 The Acceleration Vector	
Week 5, Day 2 <input type="checkbox"/> 2.3.3 Relating Position, Velocity, and Acceleration Vectors in Two Dimensions	
Week 5, Day 3 <input type="checkbox"/> 2.4.1 A First Look at Projectile Motion	
Week 5, Day 4 <input type="checkbox"/> 2.4.2 Understanding Projectile Motion	
Week 5, Day 5 <input type="checkbox"/> 2.4.3 Physics in Action: The Hunter and the Monkey	

Week 6 Chapter 2: Kinematics Chapter 2 Test	
Assignments	Notes
Week 6, Day 1 <input type="checkbox"/> 2.5.1 Describing Uniform Circular Motion	
Week 6, Day 2 <input type="checkbox"/> 2.6.1 Understanding Relative Motion	
Week 6, Day 3 <input type="checkbox"/> 2.6.2 Physics in Action: Toss-and-Catch from Two Points of View	
Week 6, Day 4 <input type="checkbox"/> Chapter 2 Practice Test	
Week 6, Day 5 <input type="checkbox"/> Chapter 2 Test	Chapter 2 Test Score: _____

Week 7	
Chapter 3: Dynamics	
Assignments	Notes
<u>Week 7, Day 1</u>	
<input type="checkbox"/> 3.1.1 Newton's First Law	
<u>Week 7, Day 2</u>	
<input type="checkbox"/> 3.1.2 Physics in Action: The Three Balls Demo	
<u>Week 7, Day 3</u>	
<input type="checkbox"/> 3.1.3 Introduction to Newton's Second Law	
<u>Week 7, Day 4</u>	
<input type="checkbox"/> 3.1.4 The Vector Nature of Force and Newton's Second Law	
<u>Week 7, Day 5</u>	
<input type="checkbox"/> 3.1.5 Weight	

Week 8	
Chapter 3: Dynamics	
Assignments	Notes
<u>Week 8, Day 1</u>	
<input type="checkbox"/> 3.1.6 Actions, Reactions, and Newton's Third Law	
<u>Week 8, Day 2</u>	
<input type="checkbox"/> 3.1.7 Physics in Action: A Tug-of-War	
<u>Week 8, Day 3</u>	
<input type="checkbox"/> 3.2.1 Free-Body Diagrams	
<u>Week 8, Day 4</u>	
<input type="checkbox"/> 3.2.2 Solving Problems Using Newton's Laws: Ropes and Tension	
<u>Week 8, Day 5</u>	
<input type="checkbox"/> 3.2.3 Solving Problems Using Newton's Laws: Inclines and the Normal Force	

Week 9	
Chapter 3: Dynamics	
Assignments	Notes
<u>Week 9, Day 1</u>	
<input type="checkbox"/> 3.3.1 Understanding the Frictional Force Between Two Surfaces	
<u>Week 9, Day 2</u>	
<input type="checkbox"/> 3.3.2 Problems on Friction and Inclines	
<u>Week 9, Day 3</u>	
<input type="checkbox"/> 3.3.3 Motion Through a Fluid: Drag Force and Terminal Speed	
<u>Week 9, Day 4</u>	
<input type="checkbox"/> 3.4.1 Forces and Uniform Circular Motion	
<u>Week 9, Day 5</u>	
<input type="checkbox"/> 3.4.2 Solving Circular Motion Problems	

Week 10 Chapter 3 Test Chapter 4: Energy	
Assignments	Notes
Week 10, Day 1 <input type="checkbox"/> Chapter 3 Practice Test	
Week 10, Day 2 <input type="checkbox"/> Chapter 3 Test	Chapter 3 Test Score: _____
Week 10, Day 3 <input type="checkbox"/> 4.1.1 The Work Done by a Constant Force in One Dimension	
Week 10, Day 4 <input type="checkbox"/> 4.1.2 The Work Done by a Constant Force in Two Dimensions	
Week 10, Day 5 <input type="checkbox"/> 4.1.3 The Work Done by a Variable Force	

Week 11 Chapter 4: Energy	
Assignments	Notes
Week 11, Day 1 <input type="checkbox"/> 4.1.4 The Work Done by a Spring	
Week 11, Day 2 <input type="checkbox"/> 4.2.1 The Work-Kinetic Energy Theorem	
Week 11, Day 3 <input type="checkbox"/> 4.2.2 Solving Problems Involving Work and Kinetic Energy	
Week 11, Day 4 <input type="checkbox"/> 4.2.3 Power	
Week 11, Day 5 <input type="checkbox"/> 4.3.1 Work and Gravitational Potential Energy	

Week 12 Chapter 4: Energy	
Assignments	Notes
Week 12, Day 1 <input type="checkbox"/> 4.3.2 Conservative and Nonconservative Forces	
Week 12, Day 2 <input type="checkbox"/> 4.3.3 Calculating Potential Energy	
Week 12, Day 3 <input type="checkbox"/> 4.4.1 Understanding Conservation of Mechanical Energy	
Week 12, Day 4 <input type="checkbox"/> 4.4.2 Physics in Action: The Triple Chute	
Week 12, Day 5 <input type="checkbox"/> 4.4.3 Solving Problems Using Conservation of Mechanical Energy	

Week 13 Chapter 4: Energy Chapter 4 Test	
Assignments	Notes
Week 13, Day 1 <input type="checkbox"/> 4.4.4 Potential Energy Functions and Energy Diagrams	
Week 13, Day 2 <input type="checkbox"/> 4.4.5 Work and Nonconservative Forces	
Week 13, Day 3 <input type="checkbox"/> 4.4.6 Physics in Action: The Giant Nose-Basher <input type="checkbox"/> 4.4.7 Conservation of Energy in General	
Week 13, Day 4 <input type="checkbox"/> Chapter 4 Practice Test	
Week 13, Day 5 <input type="checkbox"/> Chapter 4 Test	Chapter 4 Test Score: _____

Week 14 Chapter 5: Momentum	
Assignments	Notes
Week 14, Day 1 <input type="checkbox"/> 5.1.1 Linear Momentum and Impulse	
Week 14, Day 2 <input type="checkbox"/> 5.1.2 Solving Problems Using Linear Momentum and Impulse	
Week 14, Day 3 <input type="checkbox"/> 5.1.3 Conservation of Momentum	
Week 14, Day 4 <input type="checkbox"/> 5.1.4 Solving Problems Using Conservation of Momentum	
Week 14, Day 5 <input type="checkbox"/> 5.1.5 Rocket Propulsion	

Week 15 Chapter 5: Momentum Chapter 5 Test	
Assignments	Notes
Week 15, Day 1 <input type="checkbox"/> 5.2.1 Elastic Collisions in One Dimension	
Week 15, Day 2 <input type="checkbox"/> 5.2.2 Inelastic Collisions in One Dimension	
Week 15, Day 3 <input type="checkbox"/> 5.2.3 Collisions in Two Dimensions	
Week 15, Day 4 <input type="checkbox"/> Chapter 5 Practice Test	
Week 15, Day 5 <input type="checkbox"/> Chapter 5 Test	Chapter 5 Test Score: _____

Week 16	
Midterm Exam	
Chapter 6: The Physics of Extended Objects	
Assignments	Notes
Week 16, Day 1	
<input type="checkbox"/> Study for Midterm Exam	
Week 16, Day 2	
<input type="checkbox"/> Study for Midterm Exam	
Week 16, Day 3	Midterm Exam
<input type="checkbox"/> Midterm Exam	Score: _____
Week 16, Day 4	
<input type="checkbox"/> 6.1.1 The Center of Mass of a System of Particles	
Week 16, Day 5	
<input type="checkbox"/> 6.1.2 The Center of Mass of a Rigid Body	

Week 17	
Chapter 6: The Physics of Extended Objects	
Assignments	Notes
Week 17, Day 1	
<input type="checkbox"/> 6.1.3 The Center of Mass and the Motion of a System of Particles	
Week 17, Day 2	
<input type="checkbox"/> 6.1.4 Physics in Action: Motion and the Center of Mass	
Week 17, Day 3	
<input type="checkbox"/> 6.2.1 Angular Displacement, Velocity, and Acceleration	
Week 17, Day 4	
<input type="checkbox"/> 6.2.2 Rotation with Constant Angular Acceleration	
Week 17, Day 5	
<input type="checkbox"/> 6.2.3 Relating Angular and Linear Quantities	

Week 18	
Chapter 6: The Physics of Extended Objects	
Assignments	Notes
Week 18, Day 1	
<input type="checkbox"/> 6.3.1 The Kinetic Energy of Rotation	
Week 18, Day 2	
<input type="checkbox"/> 6.3.2 Calculating the Rotational Inertia of Solid Bodies	
Week 18, Day 3	
<input type="checkbox"/> 6.4.1 Torque	
Week 18, Day 4	
<input type="checkbox"/> 6.4.2 Newton's Second Law for Rotational Motion	
Week 18, Day 5	
<input type="checkbox"/> 6.4.3 Solving Problems Using Newton's Second Law for Rotational Motion	

Week 19 Chapter 6: The Physics of Extended Objects	
Assignments	Notes
Week 19, Day 1 <input type="checkbox"/> 6.4.4 Work and Power in Rotational Motion	
Week 19, Day 2 <input type="checkbox"/> 6.5.1 Understanding Rolling Motion	
Week 19, Day 3 <input type="checkbox"/> 6.5.2 Solving Problems Involving Rolling Motion	
Week 19, Day 4 <input type="checkbox"/> 6.5.3 Physics in Action: A Downhill Race	
Week 19, Day 5 <input type="checkbox"/> 6.6.1 The Definition of Angular Momentum	

Week 20 Chapter 6: The Physics of Extended Objects	
Assignments	Notes
Week 20, Day 1 <input type="checkbox"/> 6.6.2 Torque and Angular Momentum	
Week 20, Day 2 <input type="checkbox"/> 6.7.1 Understanding Conservation of Angular Momentum	
Week 20, Day 3 <input type="checkbox"/> 6.7.2 Physics in Action: Conservation of Angular Momentum	
Week 20, Day 4 <input type="checkbox"/> 6.7.3 Solving Problems Using Conservation of Angular Momentum	
Week 20, Day 5 <input type="checkbox"/> 6.8.1 Understanding Precession	

Week 21 Chapter 6: The Physics of Extended Objects Chapter 6 Test	
Assignments	Notes
Week 21, Day 1 <input type="checkbox"/> 6.9.1 The Conditions for Static Equilibrium	
Week 21, Day 2 <input type="checkbox"/> 6.9.2 Understanding Stable Equilibrium and the Center of Gravity	
Week 21, Day 3 <input type="checkbox"/> 6.9.3 Solving Static Equilibrium Problems	
Week 21, Day 4 <input type="checkbox"/> Chapter 6 Practice Test	
Week 21, Day 5 <input type="checkbox"/> Chapter 6 Test	Chapter 6 Test Score: _____

Week 22 Chapter 7: Force of Gravity	
Assignments	Notes
Week 22, Day 1 <input type="checkbox"/> 7.1.1 Newton's Law of Gravitation	
Week 22, Day 2 <input type="checkbox"/> 7.1.2 Gravity on Earth	
Week 22, Day 3 <input type="checkbox"/> 7.1.3 Weightlessness	
Week 22, Day 4 <input type="checkbox"/> 7.1.4 Gravitational Potential Energy	
Week 22, Day 5 <input type="checkbox"/> 7.2.1 Understanding Circular Orbital Motion	

Week 23 Chapter 7: Force of Gravity Chapter 7 Test Chapter 8: Fluids	
Assignments	Notes
Week 23, Day 1 <input type="checkbox"/> 7.2.2 Kepler's Three Laws	
Week 23, Day 2 <input type="checkbox"/> 7.2.3 Energy in Orbital Motion	
Week 23, Day 3 <input type="checkbox"/> Chapter 7 Practice Test	
Week 23, Day 4 <input type="checkbox"/> Chapter 7 Test	Chapter 7 Test Score: _____
Week 23, Day 5 <input type="checkbox"/> 8.1.1 Fluids, Density, and Pressure	

Week 24 Chapter 8: Fluids	
Assignments	Notes
Week 24, Day 1 <input type="checkbox"/> 8.1.2 Physics in Action: A Bed of Nails	
Week 24, Day 2 <input type="checkbox"/> 8.1.3 How Pressure Varies with Depth	
Week 24, Day 3 <input type="checkbox"/> 8.1.4 Physics in Action: Pressure in a Graduated Cylinder	
Week 24, Day 4 <input type="checkbox"/> 8.1.5 Physics in Action: Pressure Changes in a Bell Jar	
Week 24, Day 5 <input type="checkbox"/> 8.1.6 Physics in Action: Barrel Crunch	

Week 25 Chapter 8: Fluids	
Assignments	Notes
Week 25, Day 1 <input type="checkbox"/> 8.1.7 Pascal's Principle and Examples of Hydrostatics	
Week 25, Day 2 <input type="checkbox"/> 8.1.8 Buoyancy and Archimedes' Principle	
Week 25, Day 3 <input type="checkbox"/> 8.1.9 Physics in Action: Buoyancy in Air	
Week 25, Day 4 <input type="checkbox"/> Fluids in Motion: Streamlines and Continuity	
Week 25, Day 5 <input type="checkbox"/> 8.2.2 Bernoulli's Equation	

Week 26 Chapter 8: Fluids Chapter 8 Test Chapter 9: Relativity	
Assignments	Notes
Week 26, Day 1 <input type="checkbox"/> 8.2.3 Physics in Action: A Ball Caught in a Stream of Air	
Week 26, Day 2 <input type="checkbox"/> 8.2.4 Fluids in the Real World: Surface Tension, Turbulence, and Viscosity	
Week 26, Day 3 <input type="checkbox"/> Chapter 8 Practice Test	
Week 26, Day 4 <input type="checkbox"/> Chapter 8 Test	Chapter 8 Test Score: _____
Week 26, Day 5 <input type="checkbox"/> 9.1.1 Einstein's Postulates	

Week 27 Chapter 9: Relativity	
Assignments	Notes
Week 27, Day 1 <input type="checkbox"/> 9.1.2 The Relativity of Simultaneity	
Week 27, Day 2 <input type="checkbox"/> 9.1.3 Time Dilation	
Week 27, Day 3 <input type="checkbox"/> 9.1.4 Length Contraction	
Week 27, Day 4 <input type="checkbox"/> 9.2.1 The Lorentz Transformation Equations	
Week 27, Day 5 <input type="checkbox"/> 9.2.2 Solving Problems Using the Lorentz Transformations	

Week 28 Chapter 9: Relativity	
Assignments	Notes
Week 28, Day 1 <input type="checkbox"/> 9.3.1 Relativistic Momentum	
Week 28, Day 2 <input type="checkbox"/> 9.3.2 Relativistic Energy	
Week 28, Day 3 <input type="checkbox"/> 9.3.3 A Clock Story	
Week 28, Day 4 <input type="checkbox"/> Chapter 9 Practice Test	
Week 28, Day 5 <input type="checkbox"/> Chapter 9 Test	Chapter 9 Test Score: _____

Week 29 Chapter 10: Oscillatory Motion	
Assignments	Notes
Week 29, Day 1 <input type="checkbox"/> 10.1.1 A Mass on a Spring: Simple Harmonic Motion	
Week 29, Day 2 <input type="checkbox"/> 10.1.2 The Equations Describing Simple Harmonic Motion	
Week 29, Day 3 <input type="checkbox"/> 10.1.3 Energy in Simple Harmonic Motion	
Week 29, Day 4 <input type="checkbox"/> 10.2.1 The Simple Pendulum	
Week 29, Day 5 <input type="checkbox"/> 10.2.2 Physical Pendulums	

Week 30 Chapter 10: Oscillatory Motion Chapter 10 Test	
Assignments	Notes
Week 30, Day 1 <input type="checkbox"/> 10.3.1 Damped Simple Harmonic Motion	
Week 30, Day 2 <input type="checkbox"/> 10.3.2 Driven Oscillators	
Week 30, Day 3 <input type="checkbox"/> 10.3.3 Physics in Action: Resonance	
Week 30, Day 4 <input type="checkbox"/> Chapter 10 Practice Test	
Week 30, Day 5 <input type="checkbox"/> Chapter 10 Test	Chapter 10 Test Score: _____

Week 31	
Chapter 11: Waves	
Assignments	Notes
Week 31, Day 1	
<input type="checkbox"/> 11.1.1 Introduction to Waves	
Week 31, Day 2	
<input type="checkbox"/> 11.1.2 A Wave on a Rope: Frequency and Wavelength	
Week 31, Day 3	
<input type="checkbox"/> 11.1.3 A Wave on a Rope: Wave Speed	
Week 31, Day 4	
<input type="checkbox"/> 11.1.4 A Wave on a Rope: Energy and Power	
Week 31, Day 5	
<input type="checkbox"/> 11.2.1 Reflection, Transmission, and Superposition	

Week 32	
Chapter 11: Waves	
Assignments	Notes
Week 32, Day 1	
<input type="checkbox"/> 11.2.2 Interference	
Week 32, Day 2	
<input type="checkbox"/> 11.3.1 Standing Waves: Two Waves Traveling in Opposite Directions	
Week 32, Day 3	
<input type="checkbox"/> 11.3.2 Standing Waves on a String	
Week 32, Day 4	
<input type="checkbox"/> 11.3.3 Physics in Action: Standing Waves on a Rope	
Week 32, Day 5	
<input type="checkbox"/> 11.3.4 Longitudinal Standing Waves	

Week 33	
Chapter 11: Waves	
Assignments	Notes
Week 33, Day 1	
<input type="checkbox"/> 11.3.5 Physics in Action: Standing Waves on a Sheet of Metal	
Week 33, Day 2	
<input type="checkbox"/> 11.4.1 Sound Waves	
Week 33, Day 3	
<input type="checkbox"/> 11.4.2 Physics in Action: Sound Waves in a Flaming Pipe	
Week 33, Day 4	
<input type="checkbox"/> 11.4.3 The Character of Sound and Fourier Analysis	
Week 33, Day 5	
<input type="checkbox"/> 11.4.4 Physics in Action: Musical Instruments and Waveforms	
<input type="checkbox"/> 11.4.5 Intensity and Loudness	

Week 34 Chapter 11: Waves Chapter 11 Test	
Assignments	Notes
<u>Week 34, Day 1</u> <input type="checkbox"/> 11.5.1 Sound Waves and Interference	
<u>Week 34, Day 2</u> <input type="checkbox"/> 11.5.2 Beats	
<u>Week 34, Day 3</u> <input type="checkbox"/> 11.5.3 The Doppler Effect	
<u>Week 34, Day 4</u> <input type="checkbox"/> Chapter 11 Practice Test	
<u>Week 34, Day 5</u> <input type="checkbox"/> Chapter 11 Test	Chapter 11 Test Score: _____

Week 35 Final Exam	
Assignments	Notes
<u>Week 35, Day 1</u> <input type="checkbox"/> Study for Final Exam	
<u>Week 35, Day 2</u> <input type="checkbox"/> Study for Final Exam	
<u>Week 35, Day 3</u> <input type="checkbox"/> Study for Final Exam	
<u>Week 35, Day 4</u> <input type="checkbox"/> Study for Final Exam	
<u>Week 35, Day 5</u> <input type="checkbox"/> Final Exam	Final Exam Score: _____