**Physics – Kahn Academy Videos on Physics Topics**

Projectile motion, mechanics and electricity and magnetism. Solid understanding of algebra and a basic understanding of trigonometry necessary.

1. [Introduction to Vectors and Scalars](http://www.khanacademy.org/video/introduction-to-vectors-and-scalars?playlist=Physics)
2. [Calculating Average Velocity or Speed](http://www.khanacademy.org/video/calculating-average-velocity-or-speed?playlist=Physics)
3. [Solving for Time](http://www.khanacademy.org/video/solving-for-time?playlist=Physics)
4. [Displacement from Time and Velocity Example](http://www.khanacademy.org/video/displacement-from-time-and-velocity-example?playlist=Physics)
5. [Acceleration](http://www.khanacademy.org/video/acceleration?playlist=Physics)
6. [Newton's First Law of Motion](http://www.khanacademy.org/video/newton-s-first-law-of-motion?playlist=Physics)
7. [Newton's Second Law of Motion](http://www.khanacademy.org/video/newton-s-second-law-of-motion?playlist=Physics)
8. [Newton's Third Law of Motion](http://www.khanacademy.org/video/newton-s-third-law-of-motion?playlist=Physics)
9. [Airbus A380 Take-off Time](http://www.khanacademy.org/video/airbus-a380-take-off-time?playlist=Physics)
10. [Airbus A380 Take-off Distance](http://www.khanacademy.org/video/airbus-a380-take-off-distance?playlist=Physics)
11. [Why Distance is Area under Velocity-Time Line](http://www.khanacademy.org/video/why-distance-is-area-under-velocity-time-line?playlist=Physics)
12. [Average Velocity for Constant Acceleration](http://www.khanacademy.org/video/average-velocity-for-constant-acceleration?playlist=Physics)
13. [Acceleration of Aircraft Carrier Takeoff](http://www.khanacademy.org/video/acceleration-of-aircraft-carrier-takeoff?playlist=Physics)
14. [Race Cars with Constant Speed Around Curve](http://www.khanacademy.org/video/race-cars-with-constant-speed-around-curve?playlist=Physics)
15. [Introduction to Gravity](http://www.khanacademy.org/video/introduction-to-gravity?playlist=Physics)
16. [Mass and Weight Clarification](http://www.khanacademy.org/video/mass-and-weight-clarification?playlist=Physics)
17. [Gravity for Astronauts in Orbit](http://www.khanacademy.org/video/gravity-for-astronauts-in-orbit?playlist=Physics)
18. [Would a Brick or Feather Fall Faster](http://www.khanacademy.org/video/would-a-brick-or-feather-fall-faster?playlist=Physics)
19. [Deriving Displacement as a Function of Time, Acceleration and Initial Velocity](http://www.khanacademy.org/video/deriving-displacement-as-a-function-of-time--acceleration-and-initial-velocity?playlist=Physics)
20. [Plotting Projectile Displacement, Acceleration, and Velocity](http://www.khanacademy.org/video/plotting-projectile-displacement--acceleration--and-velocity?playlist=Physics)
21. [Projectile Height Given Time](http://www.khanacademy.org/video/projectile-height-given-time?playlist=Physics)
22. [Deriving Max Projectile Displacement Given Time](http://www.khanacademy.org/video/deriving-max-projectile-displacement-given-time?playlist=Physics)
23. [Impact Velocity From Given Height](http://www.khanacademy.org/video/impact-velocity-from-given-height?playlist=Physics)
24. [Visualizing Vectors in 2 Dimensions](http://www.khanacademy.org/video/visualizing-vectors-in-2-dimensions?playlist=Physics)
25. [Projectile at an Angle](http://www.khanacademy.org/video/projectile-at-an-angle?playlist=Physics)
26. [Different Way to Determine Time in Air](http://www.khanacademy.org/video/different-way-to-determine-time-in-air?playlist=Physics)
27. [Launching and Landing on Different Elevations](http://www.khanacademy.org/video/launching-and-landing-on-different-elevations?playlist=Physics)
28. [Total Displacement for Projectile](http://www.khanacademy.org/video/total-displacement-for-projectile?playlist=Physics)
29. [Total Final Velocity for Projectile](http://www.khanacademy.org/video/total-final-velocity-for-projectile?playlist=Physics)
30. [Correction to Total Final Velocity for Projectile](http://www.khanacademy.org/video/correction-to-total-final-velocity-for-projectile?playlist=Physics)
31. [Projectile on an Incline](http://www.khanacademy.org/video/projectile-on-an-incline?playlist=Physics)
32. [Unit Vectors and Engineering Notation](http://www.khanacademy.org/video/unit-vectors-and-engineering-notation?playlist=Physics)
33. [Clearing the Green Monster at Fenway](http://www.khanacademy.org/video/clearing-the-green-monster-at-fenway?playlist=Physics)
34. [Green Monster at Fenway Part 2](http://www.khanacademy.org/video/green-monster-at-fenway-part-2?playlist=Physics)
35. [Optimal angle for a projectile part 1](http://www.khanacademy.org/video/optimal-angle-for-a-projectile-part-1?playlist=Physics)
36. [Optimal angle for a projectile part 2 - Hangtime](http://www.khanacademy.org/video/optimal-angle-for-a-projectile-part-2---hangtime?playlist=Physics)
37. [Optimal angle for a projectile part 3 - Horizontal distance as a function of angle (and speed)](http://www.khanacademy.org/video/optimal-angle-for-a-projectile-part-3---horizontal-distance-as-a-function-of-angle--and-speed?playlist=Physics)
38. [Optimal angle for a projectile part 4 Finding the optimal angle and distance with a bit of calculus](http://www.khanacademy.org/video/optimal-angle-for-a-projectile-part-4---finding-the-optimal-angle-and-distance-with-a-bit-of-calculus?playlist=Physics)
39. [Normal Force and Contact Force](http://www.khanacademy.org/video/normal-force-and-contact-force?playlist=Physics)
40. [Normal Force in an Elevator](http://www.khanacademy.org/video/normal-force-in-an-elevator?playlist=Physics)
41. [Inclined Plane Force Components](http://www.khanacademy.org/video/inclined-plane-force-components?playlist=Physics)
42. [Ice Accelerating Down an Incline](http://www.khanacademy.org/video/ice-accelerating-down-an-incline?playlist=Physics)
43. [Force of Friction Keeping the Block Stationary](http://www.khanacademy.org/video/force-of-friction-keeping-the-block-stationary?playlist=Physics)
44. [Correction to Force of Friction Keeping the Block Stationary](http://www.khanacademy.org/video/correction-to-force-of-friction-keeping-the-block-stationary?playlist=Physics)
45. [Force of Friction Keeping Velocity Constant](http://www.khanacademy.org/video/force-of-friction-keeping-velocity-constant?playlist=Physics)
46. [Intuition on Static and Kinetic Friction Comparisons](http://www.khanacademy.org/video/intuition-on-static-and-kinetic-friction-comparisons?playlist=Physics)
47. [Static and Kinetic Friction Example](http://www.khanacademy.org/video/static-and-kinetic-friction-example?playlist=Physics)
48. [Introduction to Tension](http://www.khanacademy.org/video/introduction-to-tension?playlist=Physics)
49. [Tension (part 2)](http://www.khanacademy.org/video/tension--part-2?playlist=Physics)
50. [Tension in an accelerating system and pie in the face](http://www.khanacademy.org/video/tension-in-an-accelerating-system-and-pie-in-the-face?playlist=Physics)
51. [Moving pulley problem (part 1)](http://www.khanacademy.org/video/moving-pulley-problem--part-1?playlist=Physics)
52. [Moving pulley problem (part 2)](http://www.khanacademy.org/video/moving-pulley-problem--part-2?playlist=Physics)
53. [Introduction to Momentum](http://www.khanacademy.org/video/introduction-to-momentum?playlist=Physics)
54. [Momentum: Ice skater throws a ball](http://www.khanacademy.org/video/momentum--ice-skater-throws-a-ball?playlist=Physics)
55. [2-dimensional momentum problem](http://www.khanacademy.org/video/2-dimensional-momentum-problem?playlist=Physics)
56. [2-dimensional momentum problem (part 2)](http://www.khanacademy.org/video/2-dimensional-momentum-problem--part-2?playlist=Physics)
57. [Introduction to work and energy](http://www.khanacademy.org/video/introduction-to-work-and-energy?playlist=Physics)
58. [Work and Energy (part 2)](http://www.khanacademy.org/video/work-and-energy--part-2?playlist=Physics)
59. [Conservation of Energy](http://www.khanacademy.org/video/conservation-of-energy?playlist=Physics)
60. [Work/Energy problem with Friction](http://www.khanacademy.org/video/work-energy-problem-with-friction?playlist=Physics)
61. [Introduction to mechanical advantage](http://www.khanacademy.org/video/introduction-to-mechanical-advantage?playlist=Physics)
62. [Mechanical Advantage (part 2)](http://www.khanacademy.org/video/mechanical-advantage--part-2?playlist=Physics)
63. [Mechanical Advantage (part 3)](http://www.khanacademy.org/video/mechanical-advantage--part-3?playlist=Physics)
64. [Center of Mass](http://www.khanacademy.org/video/center-of-mass?playlist=Physics)
65. [Introduction to Torque](http://www.khanacademy.org/video/introduction-to-torque?playlist=Physics)
66. [Moments](http://www.khanacademy.org/video/moments?playlist=Physics)
67. [Moments (part 2)](http://www.khanacademy.org/video/moments--part-2?playlist=Physics)
68. [Unit Vector Notation](http://www.khanacademy.org/video/unit-vector-notation?playlist=Physics)
69. [Unit Vector Notation (part 2)](http://www.khanacademy.org/video/unit-vector-notation--part-2?playlist=Physics)
70. [Projectile Motion with Unit Vectors](http://www.khanacademy.org/video/projectile-motion-with-unit-vectors?playlist=Physics)
71. [Projectile Motion with Unit Vectors (part 2)](http://www.khanacademy.org/video/projectile-motion-with-unit-vectors--part-2?playlist=Physics)
72. [Projectile Motion with Ordered Set Notation](http://www.khanacademy.org/video/projectile-motion-with-ordered-set-notation?playlist=Physics)
73. [Introduction to centripetal acceleration (part 1)](http://www.khanacademy.org/video/introduction-to-centripetal-acceleration--part-1?playlist=Physics)
74. [Centripetal Acceleration (part 2)](http://www.khanacademy.org/video/centripetal-acceleration--part-2?playlist=Physics)
75. [Centripetal Acceleration (part 3)](http://www.khanacademy.org/video/centripetal-acceleration--part-3?playlist=Physics)
76. [Visual Proof: a= v^2/r](http://www.khanacademy.org/video/visual-proof--a--v-2-r?playlist=Physics)
77. [Calculus Proof that a=v^2/r](http://www.khanacademy.org/video/calculus-proof-that-a-v-2-r?playlist=Physics)
78. [Introduction to angular velocity](http://www.khanacademy.org/video/introduction-to-angular-velocity?playlist=Physics)
79. [Conservation of angular momemtum](http://www.khanacademy.org/video/conservation-of-angular-momemtum?playlist=Physics)
80. [Introduction to Newton's Law of Gravitation](http://www.khanacademy.org/video/introduction-to-newton-s-law-of-gravitation?playlist=Physics)
81. [Gravitation (part 2)](http://www.khanacademy.org/video/gravitation--part-2?playlist=Physics)
82. [Intro to springs and Hooke's Law](http://www.khanacademy.org/video/intro-to-springs-and-hooke-s-law?playlist=Physics)
83. [Potential energy stored in a spring](http://www.khanacademy.org/video/potential-energy-stored-in-a-spring?playlist=Physics)
84. [Spring potential energy example (mistake in math)](http://www.khanacademy.org/video/spring-potential-energy-example--mistake-in-math?playlist=Physics)
85. [Introduction to Harmonic Motion](http://www.khanacademy.org/video/introduction-to-harmonic-motion?playlist=Physics)
86. [Harmonic Motion Part 2 (calculus)](http://www.khanacademy.org/video/harmonic-motion-part-2--calculus?playlist=Physics)
87. [Harmonic Motion Part 3 (no calculus)](http://www.khanacademy.org/video/harmonic-motion-part-3--no-calculus?playlist=Physics)
88. [Fluids (part 1)](http://www.khanacademy.org/video/fluids--part-1?playlist=Physics)
89. [Fluids (part 2)](http://www.khanacademy.org/video/fluids--part-2?playlist=Physics)
90. [Fluids (part 3)](http://www.khanacademy.org/video/fluids--part-3?playlist=Physics)
91. [Fluids (part 4)](http://www.khanacademy.org/video/fluids--part-4?playlist=Physics)
92. [Fluids (part 5)](http://www.khanacademy.org/video/fluids--part-5?playlist=Physics)
93. [Fluids (part 6)](http://www.khanacademy.org/video/fluids--part-6?playlist=Physics)
94. [Fluids (part 7)](http://www.khanacademy.org/video/fluids--part-7?playlist=Physics)
95. [Fluids (part 8)](http://www.khanacademy.org/video/fluids--part-8?playlist=Physics)
96. [Fluids (part 9)](http://www.khanacademy.org/video/fluids--part-9?playlist=Physics)
97. [Fluids (part 10)](http://www.khanacademy.org/video/fluids--part-10?playlist=Physics)
98. [Fluids (part 11)](http://www.khanacademy.org/video/fluids--part-11?playlist=Physics)
99. [Fluids (part 12)](http://www.khanacademy.org/video/fluids--part-12?playlist=Physics)
100. [Thermodynamics (part 1)](http://www.khanacademy.org/video/thermodynamics--part-1?playlist=Physics)
101. [Thermodynamics (part 2)](http://www.khanacademy.org/video/thermodynamics--part-2?playlist=Physics)
102. [Thermodynamics (part 3)](http://www.khanacademy.org/video/thermodynamics--part-3?playlist=Physics)
103. [Thermodynamics (part 4)](http://www.khanacademy.org/video/thermodynamics--part-4?playlist=Physics)
104. [Thermodynamics (part 5)](http://www.khanacademy.org/video/thermodynamics--part-5?playlist=Physics)
105. [Electrostatics (part 1): Introduction to Charge and Coulomb's Law](http://www.khanacademy.org/video/electrostatics--part-1---introduction-to-charge-and-coulomb-s-law?playlist=Physics)
106. [Electrostatics (part 2)](http://www.khanacademy.org/video/electrostatics--part-2?playlist=Physics)
107. [Proof (Advanced): Field from infinite plate (part 1)](http://www.khanacademy.org/video/proof--advanced---field-from-infinite-plate--part-1?playlist=Physics)
108. [Proof (Advanced): Field from infinite plate (part 2)](http://www.khanacademy.org/video/proof--advanced---field-from-infinite-plate--part-2?playlist=Physics)
109. [Electric Potential Energy](http://www.khanacademy.org/video/electric-potential-energy?playlist=Physics)
110. [Electric Potential Energy (part 2-- involves calculus)](http://www.khanacademy.org/video/electric-potential-energy--part-2---involves-calculus?playlist=Physics)
111. [Voltage](http://www.khanacademy.org/video/voltage?playlist=Physics)
112. [Capacitance](http://www.khanacademy.org/video/capacitance?playlist=Physics)
113. [Circuits (part 1)](http://www.khanacademy.org/video/circuits--part-1?playlist=Physics)
114. [Circuits (part 2)](http://www.khanacademy.org/video/circuits--part-2?playlist=Physics)
115. [Circuits (part 3)](http://www.khanacademy.org/video/circuits--part-3?playlist=Physics)
116. [Circuits (part 4)](http://www.khanacademy.org/video/circuits--part-4?playlist=Physics)
117. [Cross product 1](http://www.khanacademy.org/video/cross-product-1?playlist=Physics)
118. [Cross Product 2](http://www.khanacademy.org/video/cross-product-2?playlist=Physics)
119. [Cross Product and Torque](http://www.khanacademy.org/video/cross-product-and-torque?playlist=Physics)
120. [Introduction to Magnetism](http://www.khanacademy.org/video/introduction-to-magnetism?playlist=Physics)
121. [Magnetism 2](http://www.khanacademy.org/video/magnetism-2?playlist=Physics)
122. [Magnetism 3](http://www.khanacademy.org/video/magnetism-3?playlist=Physics)
123. [Magnetism 4](http://www.khanacademy.org/video/magnetism-4?playlist=Physics)
124. [Magnetism 5](http://www.khanacademy.org/video/magnetism-5?playlist=Physics)
125. [Magnetism 6: Magnetic field due to current](http://www.khanacademy.org/video/magnetism-6--magnetic-field-due-to-current?playlist=Physics)
126. [Magnetism 7](http://www.khanacademy.org/video/magnetism-7?playlist=Physics)
127. [Magnetism 8](http://www.khanacademy.org/video/magnetism-8?playlist=Physics)
128. [Magnetism 9: Electric Motors](http://www.khanacademy.org/video/magnetism-9--electric-motors?playlist=Physics)
129. [Magnetism 10: Electric Motors](http://www.khanacademy.org/video/magnetism-10--electric-motors?playlist=Physics)
130. [Magnetism 11: Electric Motors](http://www.khanacademy.org/video/magnetism-11--electric-motors?playlist=Physics)
131. [Magnetism 12: Induced Current in a Wire](http://www.khanacademy.org/video/magnetism-12--induced-current-in-a-wire?playlist=Physics)
132. [The dot product](http://www.khanacademy.org/video/the-dot-product?playlist=Physics)
133. [Dot vs. Cross Product](http://www.khanacademy.org/video/dot-vs--cross-product?playlist=Physics)
134. [Calculating dot and cross products with unit vector notation](http://www.khanacademy.org/video/calculating-dot-and-cross-products-with-unit-vector-notation?playlist=Physics)
135. [Introduction to Waves](http://www.khanacademy.org/video/introduction-to-waves?playlist=Physics)
136. [Amplitude, Period, Frequency and Wavelength of Periodic Waves](http://www.khanacademy.org/video/amplitude--period--frequency-and-wavelength-of-periodic-waves?playlist=Physics)
137. [Introduction to the Doppler Effect](http://www.khanacademy.org/video/introduction-to-the-doppler-effect?playlist=Physics)
138. [Doppler effect formula for observed frequency](http://www.khanacademy.org/video/doppler-effect-formula-for-observed-frequency?playlist=Physics)
139. [Doppler effect formula when source is moving away](http://www.khanacademy.org/video/doppler-effect-formula-when-source-is-moving-away?playlist=Physics)
140. [When the source and the wave move at the same velocity](http://www.khanacademy.org/video/when-the-source-and-the-wave-move-at-the-same-velocity?playlist=Physics)
141. [Mach Numbers](http://www.khanacademy.org/video/mach-numbers?playlist=Physics)
142. [Specular and Diffuse Reflection](http://www.khanacademy.org/video/specular-and-diffuse-reflection?playlist=Physics)
143. [Specular and Diffuse Reflection 2](http://www.khanacademy.org/video/specular-and-diffuse-reflection-2?playlist=Physics)
144. [Refraction and Snell's Law](http://www.khanacademy.org/video/refraction-and-snell-s-law?playlist=Physics)
145. [Refraction in Water](http://www.khanacademy.org/video/refraction-in-water?playlist=Physics)
146. [Snell's Law Examples 1](http://www.khanacademy.org/video/snell-s-law-examples-1?playlist=Physics)
147. [Snell's Law Example 2](http://www.khanacademy.org/video/snell-s-law-example-2?playlist=Physics)
148. [Total Internal Reflection](http://www.khanacademy.org/video/total-internal-reflection?playlist=Physics)
149. [Virtual Image](http://www.khanacademy.org/video/virtual-image?playlist=Physics)
150. [Parabolic Mirrors and Real Images](http://www.khanacademy.org/video/parabolic-mirrors-and-real-images?playlist=Physics)
151. [Parabolic Mirrors 2](http://www.khanacademy.org/video/parabolic-mirrors-2?playlist=Physics)
152. [Convex Parabolic Mirrors](http://www.khanacademy.org/video/convex-parabolic-mirrors?playlist=Physics)
153. [Convex Lenses](http://www.khanacademy.org/video/convex-lenses?playlist=Physics)
154. [Convex Lens Examples](http://www.khanacademy.org/video/convex-lens-examples?playlist=Physics)
155. [Concave Lenses](http://www.khanacademy.org/video/concave-lenses?playlist=Physics)
156. [Object Image and Focal Distance Relationship (Proof of Formula)](http://www.khanacademy.org/video/object-image-and-focal-distance-relationship--proof-of-formula?playlist=Physics)
157. [Object Image Height and Distance Relationship](http://www.khanacademy.org/video/object-image-height-and-distance-relationship?playlist=Physics)