
Tampa Bay Chinese School

AP Physics 1

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Syllabus: AP Physics 1

The Algebra-Based course covers topics and concepts typically included in the first semester of an algebra-based, introductory college-level physics course.

AP Physics 1

1. Introduction
 2. Vector and Scalars
 3. 1-D Kinematics
 4. 2-d Kinematics
 5. Dynamics I: Newton's Laws of Motion
 6. Dynamics II: Applyin
 7. Circular Motion and Gravitation
 8. Energy
 - A. Work and Energy
 - B. Conservation of Energy Rotation
 9. Momentum
 10. Rotational Motion
 11. Fluids
 12. Basic Electricity Concept
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Chapter 1 Introduction

1.1 Self Introduction

1.2 Class Materials and website access

1.3 Class Rules

1.4 Who are you?

1.5 Class Organization

1.6 What is Physics?

1.7 Measurement in Physicist

Chapter 2 Vectors and Scalars

2.1 Scalar

2.2 Vector

2.3 Polar Notation

2.4 Scalar Multiplication of a vector

2.5 Unit Vector

2.6 Applications of Vectors

2.7 Non-Collinear Vectors

2.8 Sequential and Simultaneous Vectors

2.9 Dot Product

2.10 Cross Product

Chapter 3 Kinematics - 1D

3.1 Distance & Speed: Scalar Quantities

3.2 1D Displacement and Velocity -Vector Quantities

3.3 Acceleration

3.4 Kinematics Equations

3.5 Free Fall

Chapter 4 Kinematics - 2D

4.1 Vectors and 2D Motion

4.2 Projectile Motion

4.3 Relative Velocity



Chapter 5 Dynamics I: Newton's Laws of Motion

- 5.1 Force and Interactions
 - 5.2 Newton's First Law
 - 5.3 Newton's Second Law
 - 5.4 Newton's Third Law
 - 5.5 Common Types of Forces
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Chapter 6 Dynamics II: Applying Newton's Laws

6.1 Friction

6.2 Tension, Strings, and Springs

6.3 Connected Objects

6.4 Gravity and Circular Motion

Chapter 7 Circular Motion and Gravitation

7.1 Angular Measure

7.2 Angular Speed and Velocity

7.3 Uniform Circular Motion and Centripetal
Acceleration

7.4 Angular Acceleration

7.5 Newton's Law of Gravitation

7.6 Kepler's Laws and Earth Satellites

Chapter 8, Part A: Work and Energy

- 8.1 Work Done by a Constant Force
- 8.2 Work Done by a Variable Force
- 8.3 Kinetic Energy
- 8.4 Potential Energy

Chapter 8 Part 2: Conservation of Energy

- 8.5 Conservative Forces
- 8.6 Determining Potential Energy
- 8.7 Conservation of Mechanical Energy
- 8.8 Potential Energy Field
- 8.9 Conservation of Energy
- 8.10 Power

Chapter 9 Momentum

Lecture 1

9.1 Linear Momentum

9.2 Impulse

9.3 The Conservation of Momentum

Lecture 2

9.4 Elastic and Inelastic Collisions

9.5 Collision in 2D

9.6 Center of Mass

9.7 Center of Mass Applications

Chapter 10 Rotational Motion

Lecture 1:

10.1 Review of Rotational Kinematics

10.2 Rotation of Rigid Body

10.3 Moment of Inertia

10.4 Torque

Lecture 2:

10.5 Equilibrium

10.6 Rotational Dynamics

10.7 Rotational Work and Energy

Lecture 3:

10.8 Angular Momentum

Chapter 11 Fluids

Part I. Fluid Statics

1. Phases of Matter
 2. Density and Specific Gravity
 3. Pressure in Fluids
 4. Atmospheric Pressure and Gauge Pressure
 5. Pascal's Principle
 6. Measurement of Pressure; Gauges and the Barometer
 7. Buoyancy and Archimedes' Principle
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