

# Rio Americano High School ■ Physics 1

## FIRST SEMESTER

### 1.01 Preliminaries

Units and Quantities  
Notation and Powers of Ten  
Ratios  
Significant Figures  
Accuracy, Precision and Error

### 1.02 Motion and Inertia

Motion  
Uniform Motion  
Accelerated Motion  
Inertia and The First Law

### 1.03 Motion and Inertia

Acceleration and The Second Law  
Mechanical Forces  
Interaction and The Third Law

### 1.04 Circular Motion & Gravity

Uniform Circular Motion  
Aristotle & Ptolemy  
Copernicus, Brahe, & Kepler  
Newton and Universal Gravity

### 1.05 Momentum

Momentum  
Impulse  
Conservation of Momentum  
Collisions and Explosions

### 1.06 Energy

Work  
Potential Energy  
Kinetic Energy  
Conservation of Energy  
Power

### 1.07 Introduction to Heat

Temperature  
Heat and Internal Energy  
Specific Heat  
Transmission of Heat  
Conduction  
Convection  
Radiation  
Thermodynamics  
Work Done by a Heat Engine  
Entropy

## SECOND SEMESTER

### 1.08 Introduction to Electricity

Electric Charge  
Electrostatic Force: Coulomb's Law  
Direct Current and Batteries  
Simple Circuits and Ohm's Law  
Electric Power and Joule's Law

### 1.09 Circuits

Circuit Basics  
Series and Parallel Circuits  
Open and Short Circuits

### 1.10 Electroagnetism

Magnetism  
Permanent Magnets  
Fields Around Wires  
Geomagnetism  
Induction

### 1.11 Waves

Periodic Motion  
Wave Characteristics  
Moving Sources  
The Doppler Effect  
Shock Waves  
Wave Behavior  
Sound

### 1.12 Light

Electromagnetic Waves  
Reflection  
Refraction  
Total Internal Reflection  
Gradual and Atmospheric Refraction  
Differential Refraction: Dispersion

### 1.13 Wave Optics

Scattering  
Polarization  
Diffraction  
Interference