

PHYSICS 20

Mr. Schuler
Matthew Halton High School

Physics 20 consists of four units of study:

- A. Kinematics
- B. Dynamics
- C. Circular Motion, Work and Energy
- D. Oscillatory Motion and Mechanical Waves

Unit A: Kinematics (15%)

Themes: Change and Systems

Overview: In this unit, students investigate changes in the position and velocity of objects and systems in a study of kinematics.

Key Concepts:

- scalar quantities
- vector quantities
- uniformly accelerated motion
- two-dimensional motion

Unit B: Dynamics (25%)

Themes: Change and Systems

Overview: In this unit, students investigate causes of change in the position and velocity of objects and systems in a study of dynamics and gravitation. The concept of fields is introduced in the explanation of gravitational effects.

Key Concepts:

- Newton's laws of motion
- inertia
- vector addition
- static and kinetic friction
- gravitational force
- Newton's law of universal gravitation
- fields

Unit C: Circular Motion, Work and Energy (30%)

Themes: Energy and Equilibrium

Overview: In this unit, students extend their study of kinematics and dynamics to uniform circular motion and to mechanical energy, work and power.

Key Concepts:

- uniform circular motion
- conservation of mechanical energy
- planetary and satellite motion
- work-energy theorem
- Kepler's laws
- isolated systems
- mechanical energy
- power

Unit D: Oscillatory Motion and Mechanical Waves (30%)

Themes: Energy and Matter

Overview: In this unit, students investigate simple harmonic motion and mechanical waves.

Key Concepts:

- oscillatory motion
- simple harmonic motion
- restoring force
- oscillating springs, pendulums
- mechanical resonance
- mechanical waves-longitudinal and transverse
- universal wave equation
- reflection
- interference
- acoustic resonance
- Doppler effect

Resources

Primary textbook: Pearson Physics 2009
Secondary Resource: Physics 20 Workbook

Evaluation

Unit exams will be worth 50% of a unit
Daily work, quizzes, and assignments will be worth 50%

Final exam will be worth 30%