

Physics – Course Syllabus

This course is considered an honors class and is inherently rigorous. The body of knowledge we know as “Physics” is actually nothing more than man’s attempt to explain in detail the events that can and do occur in nature, his world and his universe. Some of the explanations are simple and some are complex; they all have mathematical formulae (yes, it’s a real word... look it up!). As a result, this course will likely be challenging. The key to keeping your stress level in check is to stay caught up with the class.

We will be using Edmodo as a course management tool. Students will be able to keep up with all course activities either on the web or through an app available for smart phones.

We will use Remind 101 to receive notices and class announcements. Parents can use this service also.

Grading: See my Grading Policy in a separate document.

It is important to note that absences from tutorials are the same as classroom absences with equal consequences.

Classroom Rules:

- 1) Allow the teacher to teach and the students to learn.
- 2) Respect yourself, others, and the school.

Headphone/earbuds policy:

Students will not be allowed to use earbuds or headphones other than as instructed by the teacher.

Required Supplies:

- 1) A “Composition Book” (to be used as a science journal);
- 2) A ring binder w/ loose-leaf paper and pocket dividers OR
a multi-subject (5 subject will usually do) w/ pockets
(for class notes and handouts);
- 3) One package of copy paper
- 4) Pencils;
- 5) RED pens.

Suggested Additional Supplies:

- 1) A Scientific OR Graphing Calculator;
- 2) A Multicolored pen for “color-coding” your notes.

----- Beginning of 1st Six-weeks -----

Module 01: Laboratory Management

3 Days

Introduction to Physics

Safety in the Physics lab
Organization Activities

Module 02: Graphing Motion 10 Days

Graphing Motion
Measurement and Units
Graphs and Graphing

Module 03: Kinematics in 1D and 2D motion 13 Days

Kinematics in 1D and 2D motion
Significant Figures
Equations and Units
Mechanics
 Linear Motion
 Displacement and Velocity
 Acceleration
 Free-fall
 Two-Dimensional Motion
 Vectors
 Projectile Motion
 Relative Motion

----- Beginning of 2nd Six-weeks -----

Module 04: Newton's Laws of Motion 15 Days

Newton's Laws of Motion
Forces
 Effects on Motion
 Newton's Laws
 Friction

Module 05: Universal Gravitation, Speed of Light, & Special Relativity 10 Days

Universal Gravitation and General Relativity
Classical and Special Relativity

----- Beginning of 3rd Six-weeks -----

Module 06: Conservation of Energy and Momentum 17 days

Conservation Laws and the Work-Energy Theorem
Work & Energy
 Work Energy Theorem
 Power
Momentum and Energy in Collisions
 Momentum & Impulse
 Conservation of Momentum

Collisions	
Module 07: Thermodynamics	8 Days
Thermodynamics and Heat Transfer	
Thermal Energy	
States of Matter	
Heat and Work	
Thermodynamic Processes	
Heat Engines	
Entropy	
----- Beginning of 4 th Six-weeks -----	
Module 08: Electrostatics – Forces, Fields, and Energy	10 Days
Electrostatic Forces, Fields, Energy, and Interaction with Matter	
Static Electricity	
Electric Force	
Electric Fields	
Module 09: Current Electricity & Magnetic Fields	12 Days
Current Electricity and Circuits	
Electric Currents	
Basic Circuits	
Magnetic Fields: Sources, Characteristics, and Interactions	
Magnetic Fields	
----- Beginning of 5 th Six-weeks -----	
Module 10: Electromagnetism & Induction	8 Days
Electromagnetic Induction: Theory, History, & Applications	
Electromagnetic Induction	
Module 11: Waves: Properties and Applications	12 Days
Creation and Properties of Waves	
Simple Harmonic Motion	
Properties of Waves	
Wave Interactions	
Medical and Industrial Application of Waves	
Module 12: Waves: Sound & Light	5 Days
Production and Perception of Sound	
Sound	
----- Beginning of 6 th Six-weeks -----	

Module 12: Waves: Sound & Light (continued)

5 Days

Light and Optics

Fundamentals

Reflection and Mirrors

Mirrors and Lenses

Interference and Diffraction

Module 13: Atomic, Nuclear, and Quantum Physics

5 Days

Atomic, Nuclear, and Quantum Physics

Quantum Theory

Atomic Theory

The Nucleus