

# **Physics Syllabus 2019-2020**

## **JUNIOR ACCELERATED CLASS**

Textbook: CK-12 Flexbook

### **TRIMESTER 1**

- 1 Introduction to Physics
- 2 Natural Philosophy and the Scientific method
- 3 Metric Units
- 4 Vectors
- 5 Forces
- 6 Motion in a Straight Line
- 7 Momentum
- 8 Motion in Two Dimensions
- 9 Rotational Motion
- 10 Energy
- 11 Work, Power, and Simple Machines
- 12 Universal Gravitation

### **TRIMESTER 2**

- 13 Static Electricity
- 14 Electric Fields
- 15 Current Electricity
- 16 Electrical Circuits
- 17 Magnetic Fields
- 18 Electromagnetic Induction
- 19 Fluids
- 20 The Fluid States
- 21 Thermal Energy
- 22 Thermodynamics and Heat Engines

### **TRIMESTER 3**

- 23 Waves and Energy Transfer
- 24 Wave Motion and Sound
- 25 Simple Harmonic Motion
- 26 Light
- 27 Diffraction and Interference of Light

Additional Topic(s) to be covered after the Seniors leave to be decided by the Teacher based on the interests, strengths and weaknesses of the Advanced Class. Options include but are not limited to: Optics and Special Relativity.

**JUNIOR ADVANCED CLASS:**

Material should be covered in depth and simple mathematical examples should be used in class and included on tests where the use of math will enhance the student's understanding of the CONCEPT.

This class should be on par with the Senior Honors Classes and should be prepared to take the Honors First Semester Exam. An Honors Level Second Trimester Exam and Comprehensive Exam will be prepared for this class.

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**SENIOR CLASSES**

Textbook: CK-12 Flexbook

**SEMESTER 1**

- 1 Introduction to Physics
- 2 Natural Philosophy and the Scientific method
- 3 Metric Units
- 4 Vectors
- 5 Forces
- 6 Motion in a Straight Line
- 7 Momentum
- 8 Motion in Two Dimensions
- 9 Rotational Motion
- 10 Energy
- 11 Work, Power, and Simple Machines
- 12 Universal Gravitation

**SEMESTER 2**

- 13 Static Electricity
- 14 Electric Fields
- 15 Current Electricity

- 16 Electrical Circuits
- 17 Magnetic Fields
- 18 Electromagnetic Induction
- 19 Fluids
- 20 The Fluid States
- 21 Thermal Energy
- 22 Thermodynamics and Heat Engines
- 23 Waves and Energy Transfer
- 24 Wave Motion and Sound
- 25 Simple Harmonic Motion
- 26 Light
- 27 Diffraction and Interference of Light .

**HONORS:**

Material should be covered in depth and simple mathematical examples should be used in class and included on tests where the use of math will enhance the student's understanding of the CONCEPT.

**ACADEMIC I:**

Material should be covered in depth and students should be exposed to mathematical examples where appropriate. Testing should focus on concepts not mathematical problems.

**ACADEMIC II:**

Material should be covered in a manner that allows the student to gain a complete understanding of the concepts covered in each section.

Revised: June 2019

The following is a list of Labs that were completed in 2018-2019. Some will be used as-is for 2019-2020, some will be revised or replaced at the discretion of the Physics Teachers and the Lab Coordinator.

\*\*\*Lab schedule may be revised **for this year only** to maximize the student's Laboratory Experience before the end of the Second Trimester when the lab renovation will begin.\*\*\*

1. Metric Measurement
2. Introduction to Vernier
3. Balloon Rockets
4. Measuring Speed with a Photogate
5. Determining  $g$  on an Incline
6. Newton's Second Law
7. Momentum
8. Cart and Brick-- Interactive (Virtual Lab in Library Classroom)
9. Balanced and Unbalanced Forces
10. First Class Levers
11. Investigating Static Electricity
12. Measuring Voltage and Current
13. Series Circuits
14. Parallel Circuits
14. Power and Resistance
15. Ohm's Law
16. Magnetic Fields
17. DC Motor
18. Magnetic Field Explorations (Vernier)
19. Bernoulli's Principle
20. Slinky Waves
21. Newton's Law of Cooling
22. Light and Color
23. Testing Senior Project