Danville Area School District
Course Overview and Scope and Sequence

Course Title: Honors Physics
Content Area: Science
Grade Level: 11th and/or 12th
Date Developed: June 2023

COURSE OVERVIEW: Honors Physics will explore topics such as mechanics, thermodynamics, electromagnetism, waves, and fluid mechanics, and learn how they are interconnected. This course is designed to delve into the fundamental principles and concepts of physics through hands-on experiments, interactive activities, and mathematical modeling. Honors Physics utilizes Trigonometry and Geometry extensively. This course is designed for students desiring a challenging curriculum, but who choose not to enroll in AP Physics. By the end of this course, you will have a solid foundation in the basic concepts and principles of physics and be able to apply them to solve complex problems. You will also have gained valuable skills in critical thinking, problem-solving, and teamwork.

ANCHOR STANDARDS:

1. Forces and Motion
2. Types of Interactions
3. Definitions of Energy
4. Relationship Between Energy and Forces

KEY COURSE TEXT AND MATERIALS: Physics: Giancoli 6th edition 2005
ISBN: 0-13-184661-2

KEY ASSESSMENTS:
Diagnostic: None

Formative: Labs, activities, bell ringers/exit tickets, class discussions, gizmo
Summative: quiz and test

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
1. Measurement	2.1.HS Mathematics Core Standards	2.5.6-8.O	Classroom discussions and measurement activities.	Content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	5 days
2. One dimensional motion - constant velocity	3.2.9-12I	3.2.3.A 2.2.HS Mathematics Core Standards	Velocity lab, graphing practice, lab practicum, quiz and unit test	Content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	10 days
2x. One dimensional motion - constant acceleration	3.2.9-12I 3.2.9-12K	3.2.3.A 2.2.HS Mathematics Core Standards	Acceleration lab, lab extensions, ball toss lab, lab practicum, quiz and test	Content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	15 days
3. Two dimensional motion	3.2.9-12I	3.2.3.A 2.3.HS Mathematics Core Statndards	Vector Addition activity, vector investigations, projectile lab, Pirate lab, quiz and test	Content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	15 days

4. Forces	3.2.9-12I 3.2.9-12K	3.2.6-8.H	Force diagram, Newton's law labs, Atwood's lab, Friction lab, inclined plane lab, quiz and test	Content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	20 days
5. Energy	3.2.9-12L	3.2.6-8.L 3.2.6-8.O 3.2.6-8.P	Gizmo, ball toss lab, model friction and energy lab, quiz and test	Content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	20 days
6. Momentum	3.2.9-12J 3.2.9-12K 3.2.9-12P 3.2.9-12Q	3.2.6-8.G	Momentum and collision lab, gizmo, quiz and test	Content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	20 days
7. Rotational Motion	3.2.9-12L 3.2.9-12M 3.2.9-12S	3.2.6-8.C	Gizmos, Constant acceleration modeling, diagram rotational lab, quiz	Content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	15 days
8. Waves and Sound	3.2.9-12T	3.2.6-8.Q 3.2.6-8.R	Gizmo, Wave Lab, Modelling Wave Behavior, quiz	Content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	15 days
9. Electricity and	3.2.9-12M	3.2.6-8.I	Gizmo, series and	Content is teacher	15 days

Magnetism	3.2.9-12S	3.2.6-8.K	parallel lab, home energy use investigation, modeling circuits, quiz	created. In addition to lab/project supplies, materials are posted in Google Classroom.	
10. Light and Optics	3.2.9-12V 3.2.9-12W	3.2.6-8.R	Optics Lab, Gizmo, Diffraction and Light Spectra Lab, quiz	Content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	12 days
11. Fluid Mechanics	3.2.9-12Q	3.2.6-8.P	Gizmo, Density lab, modeling buoyancy, quiz	Content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	10 days
12. Thermodynamics	3.2.9-12Q 3.2.9-12R	3.2.6-8.M 3.2.6-8.N 3.2.6-8.B	Heat Transfer Lab, Gizmo, quiz	Content is teacher created. In addition to lab/project supplies, materials are posted in Google Classroom.	5 days