

Scope and Sequence: **SCIENCE**  
**PHYSICS (Grade 10-12)**  
Physics Curriculum Overview ,

	QuarterOne		QuarterTwo		Quarter Three		Quarter Four
Unit Titles	MOTION ANALYSIS	DIMENSIONAL MOTION	FORCES	MOMENTUM AND ENERGY	FLUID AND HEAT	ENERGY AND ELECTRICITY	WAVES, SOUND, AND LIGHT
<b>INQUIRY STANDARDS ACROSS ALL UNITS</b> <b>•1</b> Identify questions that can be answered through scientific investigation. <b>•2</b> Read, interpret and examine the credibility and validity of scientific claims in different sources of information. <b>•3</b> Formulate a testable hypothesis and demonstrate logical connections between the scientific concepts guiding the hypothesis and the design of the experiment. <b>•4</b> Design and conduct appropriate types of scientific investigations to answer different questions. <b>•5</b> Identify independent and dependent variables, including those that are kept constant and those used as controls.	<p>Use measuring devices and senses to observe and record physical properties of matter</p> <p>Develop an understanding of the measurements and units used in physics</p> <p>Design and conduct a good physics experiment.</p> <p>Use distance time and velocity time graphs to analyze moving objects</p> <p>Be able to explain speed (velocity), time, and acceleration.</p> <p>Analyze moving objects.</p>	<p>Use the concepts of relative motion.</p> <p>Explain the consequences of special relativity for moving objects.</p> <p>Use vectors to analyze 2 dimensional motion.</p> <p>Determine the results of projectile motion using x and y sets of kinematic equations</p>	<p>Continue using math, measurement, observation and experimentation skills to analyze moving objects.</p> <p>Explain the fundamental forces in the universe.</p> <p>Use Newton’s Laws to explain the relationship between force, mass and acceleration.</p> <p>Be able to predict the results of air resistance (terminal velocity)</p> <p>Find out what factors affect friction</p>	<p>Determine all the forces and properties, including momentum, on a moving object.</p> <p>Use the principle of conservation of momentum in elastic and inelastic collisions. analyze the transformations of mechanical energy (kinetic, gravitational and elastic) in moving objects.</p> <p>Determine all the factors involved in common collisions, and use physics to evaluate.</p>	<p>Explain the concepts of heat transfer</p> <p>Relate the laws of thermodynamics and work</p> <p>Explain the units and measurements of pressure and density.</p> <p>Describe how Bernoulli’s Principle is a restatement of the conservation of energy.</p> <p>Use fluid pressure principles to analyze flight</p>	<p>Describe energy transformations among heat, light, electricity and motion.</p> <p>Explain the relationship among voltage, current and resistance in a simple series circuit.</p> <p>Explain how electricity is used to produce heat and light in incandescent bulbs and heating elements.</p> <p>Describe the relationship between current and magnetism.</p>	<p>Describe and analyze the behavior of simple harmonic oscillator systems, such as pendulums and springs.</p> <p>Describe the property of waves.</p> <p>Explain the cause of different sounds.</p> <p>Describe and predict the physics of music</p> <p>Explain how light is produced and perceived</p>

<ul style="list-style-type: none"> <li>•6 Use appropriate tools and techniques to make observations and gather data.</li> <li>•7 Assess the reliability of the data that was generated in the investigation.</li> <li>•8 Use mathematical operations to analyze and interpret data, and present relationships between variables in appropriate forms.</li> <li>•9 Articulate conclusions and explanations based on research data, and assess results based on the design of the investigation.</li> <li>•10 Communicate about science in different formats, using relevant science vocabulary, supporting evidence and clear logic.</li> </ul>	<p>-develop the relationships between the variables involved in moving objects.</p> <p>Solve simple one dimensional motion word problems.</p> <p>Use physics to make predictions about accelerated objects.</p> <p>Apply knowledge of accelerated motion to a real life situation.</p> <p>Determine what factors affect the acceleration due to gravity.</p>			Analyze circular motion			<p>Describe applications of color addition and subtraction</p> <p>Use the principles of reflection and refraction to analyze light.</p>
<b>Significant Task</b>	Traffic Light: Speed Up or Slow Down?	Dart Gun Lab	Terminal Velocity or Friction Lab	Traffic Accident	Coffe Cup Cooling, Flight Project	Circuit Challenge	Amusement Park Physics, Physics of the Musical
<b>Content Supporting Materials</b>	Textbooks, Labs, NHPS Web Materials	Textbooks, Labs, NHPS Web Materials	Textbooks, Labs, NHPS Web Materials,	Textbooks, Labs, NHPS Web Materials			