**Pequea Valley School District**

**STEM Department**

**Unit: Nature of Science Course: STEM 9 Conceptual Physics Grade: 9**

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| **Planning the Focus Based on the Desired Result**  **What do you want all students to know, understand and do by the end of the unit?** |
| **Unit Essential Question(s)**  How and why does the scientific method contribute to society? |
| **Keystone Eligible Content/PA Core Standard**  **3.1.12.A** Apply concepts of systems, subsystems, feedback and control to solve complex technological problems.  **3.1.12.B** Apply concepts of models as a method to predict and understand science and technology.  **3.1.12.C** Assess and apply patterns in science and technology. |
| **Pacing: Approximate number of class sessions per unit**  16 days |
| **Tier 3 Vocabulary (Content specific vocabulary)**  Theory, Law, Hypothesis, Fact, Belief, Physics, Science, Technology, Math, Model, Control, Variable, Independent Variable, Dependent Variable, Constant, Derived Unit, SI, Units |
| **Know -** What do students need to **know** in order to be able to do and understand? ***List concepts, such as facts, formulas, key vocabulary and knowledge “nuggets”.***   * The parts of the scientific method * The differences between theories, laws, hypotheses, facts * The purposes of variables and controls in an experiment * The SI system units |
| **Understand -** What do students need to **understand**? What is the **big idea**? ***List broad concepts or “big ideas” in a statement of enduring understanding.***   * How science and technology are related * How science and math are related * How to construct a valid experiment * Why scientists use the SI system of units * Why scientists use units * How to construct and analyze a graph |
| **Learning Outcome -** What do students need to be able to **accomplish** by the unit’s end? ***List skills and competencies.***  Learners will be able to identify the independent and dependent variables in an experiment.  Learners will be able to identify the constants and controls in an experiment.  Learners will be able to describe the similarities and differences between theories, hypotheses, laws, and facts.  Learners will be able to describe the differences between the common usage and scientific usage of theories, hypotheses, laws, and facts.  Learners will develop a valid experiment to test a characteristic of the CNC routing machine.  Learners will be able to analyze and create graphs in respect to their experiments. |
| **Assessments:**   * Nature of Science Formative Assessment * CNC Lab Report * Quiz * Test |
| **Software/Resources:**   * Schoology * CNC Router * Google Drive * EdPuzzle |