**Pequea Valley School District**

**STEM Department**

**Unit: Deck Modeling Course: STEM 9 Conceptual Physics Grade: 9**

|  |
| --- |
| **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 do engineers determine the safety of a deck structure? |
| **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.  **3.1.12.D** Analyze scale as a way of relating concepts and ideas to one another by some measure. |
| **Pacing: Approximate number of class sessions per unit**  12 |
| **Tier 3 Vocabulary (Content specific vocabulary)**  force, pressure, area, Pascal, p.s.i., live load, dead load, data analysis, scale model, proportions, Newtons |
| **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”.***   * How to calculate Area * How to calculate Pressure * Units for Force, Pressure, and Area * How to set up a proportion * How to communicate with others |
| **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 to use a proportion to create a scale model * How to evaluate the safety of a deck using live load and dead load calculations * How Force, Pressure, and Area relate to each other |
| **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 calculate Pressure, given Force and Area.  Learners will be able to calculate Area, given Pressure and Force.  Learners will be able to calculate Force, given Pressure and Area.  Learners will be able to evaluate the safety of a deck structure.  Learners will be able to communicate the evidence of the safety of their deck through a presentation. |
| **Assessments:**   * Word Problems * Play-Doh Lab * Personal Deck Load Calculations * Deck Sales Presentation |
| **Software/Resources:**   * Schoology * Google Drive * EdPuzzle * Lowe’s Deck Designer |