Dover Area School District Curriculum K-U-D
Middle School STEM- Grade 8

Standard	Know	Understand	Do
Standard - 3.4.6.D1: Apply a design process to solve problems beyond the laboratory classroom.	Students will be able to define and explain the steps of the engineering design process. 1 Identify the Problem: Set Criteria and Constraints 2. Explore the Problem: Research 3. Plan your Solution 4. Build / Create your Solution 5. Test your design 6. Make Improvements using Data 7. Repeat Until Problem is Solved 8. Present Findings	Use Engineering Design Process to Solve Problems.	Complete an Engineering Design Process to Solve Complex Problems
Eligible Content - S6.A.1.1.3 Predict the outcome of an experiment based on previously collected data.	Previous Testing or Scale Testing creates useable Data. Scale Testing, Analysis, Observation.	Data can be used to make improvements	Using Data, students will be able to make improvements to their designs
Standard - 3.2.7.B5 Demonstrate that visible light is a mixture of many different colors. Explain the construct of the electromagnetic spectrum. Describe how sound and light energy are transmitted by waves.	Medium, Coating, Wave Behaviors: Reflect, Refract, Absorb, Transmit	Visible light interacts with different mediums.	Develop a prototype of sunglasses Develop a model to show wave behaviors
Standard - 3.2.7.B1 Describe how unbalanced forces acting on an object change its velocity. Analyze how observations of displacement, velocity, and acceleration provide necessary and sufficient evidence for the existence of forces. Standard - 3.2.7.B2 Describe how energy can be changed from one form to another (transformed) as it moves through a system or transferred from one system to another system.	Speed, Acceleration, Energy Types (Thermal, Mechanical, Sound, Electrical, Chemical, Mechanical), Law of Conservation of Energy	How a change in energy forms can lead to the movement of an object	Manually calculate the speed and acceleration of a moving object Build a functional moving object
Standard - 3.4.8.B2 Compare and contrast decisions to develop and use technologies as related to environmental and economic concerns.	Soil Types (Sandy, Silt, Clay, Loam). Aerial Reforestation, Plant Life Cycle / LAWN acronym	Students will understand how technology can be used to address challengles realted to seeding crops / reforesting	Build a functional seedball Track Data on Plant growth.

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Standard - 3.4.8.E4 Describe how the design of the message is influenced by such factors as the intended audience, medium, purpose, and nature of the message. Standard - 3.2.7.B1 Describe how unbalanced forces acting on an object change its velocity. Analyze how observations of displacement, velocity, and acceleration provide necessary and sufficient evidence for the existence of forces.	Sliding Friction, Static Friction, Target Market, Audience, Area and Perimeter	How friction opposes motion Products are designed with a specific target audience in mind	Students will develop a shoe prototype