Unit Title:	**Time Frame:**	**21st Century Theme**
Unit 1.1 and 1.2 - Variables, Levers and Pulleys	1st Marking period – 45 Days	**9.1-** Critical Thinking and Problem Solving Creativity and Innovation Collaboration, Teamwork, and Leadership Communication and Media Fluency
Standard:		
● **5.2 Physical Science:** All students will understand that physical science principles, including fundamental ideas about matter, energy, and motion, are powerful conceptual tools for making sense of phenomena in physical, living, and Earth systems science.		
Strand:		**Cumulative Progress Indicator Number(s):**
● ***Properties of Matter:*** *All objects and substances in the natural world are composed of matter. Matter has two fundamental properties: matter takes up space, and matter has inertia.* ● ***Changes in Matter****: Substances can undergo physical or chemical changes to form new substances. Each change involves energy.*		**5.2.8.E.1** Calculate the speed of an object when given distance and time. **5.2.8.E.2** Compare the motion of an object acted on by balanced forces with the motion of an object acted on by unbalanced forces in a given specific scenari
Essential Questions:		**Enduring Understanding:**
● Why is safety important in the science lab? ● How is scientific method used in science inquiry? ● How can scientific quantities be expressed mathematically using appropriate units? ● How are lab instruments used to measure properties of matter? ● What forces Affect Objects on Earth Every Day? ● How forces can Affect Motion? ● How can simple machines make work easier? ● What classes of levers can we find in the real world? ●		● Scientists gather and share information. ● Motion is controlled by external forces. ● Energy can transfer from one location to another.

Unit Learning Targets: ***The student will be able to….***	**Suggested Activities:** ***Including Differentiated Strategies (DI)***	**Vocabulary**
• Identify questions and make predictions that can be addressed by conducting investigations. • Design & conduct an investigation incorporating the use of a control. • Collect, organize, and interpret the data that result from experiments. • Evaluate the strengths and weaknesses of data, claims, & arguments. • Communicate experimental findings to others. • Identify safe science practices & implement them in a lab situation. • Identify lab instruments and use accurately to measure length, mass, & volume. • Express quantities using appropriate number formats. • Investigate the principle that force applied to an object changes the motion of that object. • Compare and identify the concept of stored energy. • Infer the effects of friction and resistance. • Analyze lever as a simple machine that people use to gain advantage. • Identify and Classify levers into different classes.	CT: FOSS Module, *Variables* (Investigation1- Pendulums), refer FOSSWEB, Variables. LC: *Measure Up! Experiments, Puzzles, and Games Exploring Measurement.* Sandra Markle IR: http://www.ntuaft.com/njcccs/Webpage/contents/Science%20Activities/ SR: Songs/CD's, *Scientific Method* from *Lyrical Life Science* *Foss Module:Variables (Investigation 2 – Life Boats)* CT: Motion and Design (refer Teachers Resource Guide); FOSS Kit, (*Levers and pulleys*), Investigations 1-4	Variable, Control, Experimental group, Prediction, Hypothesis, observation, Inference, Beaker, Graduated cylinder, Balance, Meter stick. force, friction, gravity, gravitational force, magnetic force, position, speed, potential energy, velocity, acceleration, inertia, advantage, Effort, fulcrum, Lever, Lever arm, Load, Newton, inclined plane, Wedge, pulleys

● Analyze common tools and pictures in terms of levers. ● Investigate pulley systems with one, two pulley systems. ● Record and compare the distance moved by the load and the effort in four different pulley systems.		

Resource Materials	**Assessments**
CT: FOSS Module, *Variables* (Investigation1), refer FOSSWEB, Variables. LC: *Measure Up! Experiments, Puzzles, and Games Exploring Measurement.* Sandra Markle IR: http://www.ntuaft.com/njcccs/Webpage/contents/Science%20Activities/ SR: Songs/CD's, *Scientific Method* from *Lyrical Life Science*	● Journals and Portfolios ● Open-ended Questions with Scoring Rubrics ● Assessment Labs ● Quizzes and Tests ● Presentations ● Posters ● Projects ● Benchmark
Technology Integration	**Related Literature**
US: Discovering Simple Machines IR: http://www.edheads.org/activities/simple-machines/ SR: http://www.cosi.org/files/Flash/simpMach/sm1.html	LC: Science Stories, *Dear Boss*, *Wedge*