HS Earth Science - Space Systems	Links
Standard:	Link for NGSS HS Space Systems
HS-ESS1-1. Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.	
HS-ESS1-2. Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.	
HS-ESS1-3. Communicate scientific ideas about the way stars, over their life cycle, produce elements.	
HS-ESS1-4. Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.	
21st Century Learning Expectations: • Hinsdale students will communicate through various means • Hinsdale students will be able to solve problems	Link for 21st Century Learning Expectations
Enduring Understandings (cross cutting concepts): • The significance of a phenomenon is dependent on the scale, proportion, and quantity at which it occurs. HS-ESS1-1 • Algebraic thinking is used to examine scientific data and predict the effect of a change in one variable on another (e.g., linear growth vs. exponential growth). HS-ESS1-4 • Energy cannot be created or destroyed–only moved between one place and another place, between objects and/or fields, or between systems. HS-ESS1-2 • In nuclear processes, atoms are not conserved, but the total number of protons plus neutrons is conserved. HS-ESS1-3 • Science and engineering complement each other in the cycle known as research and development (R&D). Many R&D projects may involve scientists, engineers, and others with wide ranges of expertise. HS-ESS1-4 • Scientific knowledge is based on the assumption that natural laws operate today as they did in the past and they will continue to do so in the future. (HS-ESS1-2) • Science assumes the universe is a vast single system in which basic laws are consistent. (HS-ESS1-2)	

Learning Competencies (engineering practices)	**Essential Questions (core ideas)**
Students will be able to: (NGSS Science and Engineering practices) • Develop a model based on evidence to illustrate the relationships between systems or between components of a system. HS-ESS1-1 • Use mathematical or computational representations of phenomena to describe explanations. HS-ESS1-4 • Constructing Explanations and Designing Solutions • Construct an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, theories, simulations, peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. HS-ESS1-2 • Communicate scientific ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (including orally, graphically, textually, and mathematically). HS-ESS1-3 • A scientific theory is a substantiated explanation of some aspect of the natural world, based on a body of facts that have been repeatedly confirmed through observation and experiment and the science community validates each theory before it is accepted. If new evidence is discovered that the theory does not accommodate, the theory is generally modified in light of this new evidence. (HS-ESS1-2)	• How do you explain space systems? • What are space systems?
Performance Task Sample: NSTA Compositionof the Solar Wind: SOHO Solar and Heliospheric Observatory	