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| **WCSD High School Astronomy Unit Overview**This course model arranges the Performance Expectations for High School Astronomy into different units with guiding questions. \*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea. |
| **Semester 1: Planetary System** |
| **Guiding Questions** | **Performance Expectations** |
| **Unit Title: Ancient Astronomy** |
| **Guiding Question:**How did observations of the celestial bodies influence the ancients’ understandings of their place in the universe?  | **HS – ESS1-4\* (Introduced in this unit, to be completed in Unit 2)**Use mathematical or computational representations to predict the motion of orbiting objects in the solar system. |
| **Unit title: Classical Astronomy** |
| **Guiding Questions**:How did classical astronomers use mathematics and observations to explain motions of objects in our solar system?How did classical astronomers use technology and mathematics to investigate and predict the motion of objects in the solar system? | **HS – ESS1-4**Use mathematical or computational representations to predict the motion of orbiting objects in the solar system. |
| **Unit title: Scientific Revolution and the Solar System**  |
| **Guiding Question:**How did astronomers use developing mathematics and physics to explain the motion of objects in our solarsystem?What are the physical characteristics of the objects orbiting our sun? | **HS – ESS1-4**Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.**HS - PS 2-1** Analyze data to support the claim that Newton’s second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration. |
| **Semester 2: Stellar Astronomy** |
| **Unit title: Sun & Stars** |
| **Guiding Question:**How can we predict stellar evolution based on the initial mass of a star? | **ESS 1-1**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.**ESS 1-2\* (Introduced in Sun & Stars, Completed in Galaxies, Clusters and Nebulae)**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. **ESS 1-3**Communicate scientific ideas about the way stars, over their life cycle, produce elements. |
| **Unit title: Galaxies, Clusters & Nebulae** |
| **Guiding Question:**How does gravity provide structure to the universe? | **ESS 1-2\* (Introduced in Sun & Stars, Completed in Galaxies, Clusters and Nebulae)**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.  |
| **Unit title: Evolution of the Universe** |
| **Guiding Question:**How does the Red Shift affect our understanding of the evolution of the Universe? | **ESS 1-2\* (Introduced in Sun & Stars, Completed in Galaxies, Clusters and Nebulae)**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.  |
| **Unit title: Exploration** |
| **Guiding Questions:**How does our evolving understanding of the universe drive our exploration of it? How does our exploration of the Universe drive our understanding of it? | **HS-PS 4-5**Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy. |