



Astronomy 103 & 104

Standards & Student Learning Targets

*The highlighted standards and student learning targets are assessed for mastery within the course. All other standards are introduced to students within the course.

HS-ESS1 Earth's Place in the Universe

Grade:	Standard:	Student Learning Targets:
Students who demonstrate understanding can:		
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.	<ul style="list-style-type: none"> I can model the lifespan of the sun and the role of nuclear fusion on the lifespan of the span. I can model the sun's release of energy that eventually reaches the 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.	<ul style="list-style-type: none"> I can use multiple forms evidence to support the Big Bang theory (S, B). I can use my knowledge about laws of physics of the universe to develop initial ideas about the big bang theory (P)
HS-ESS1-3	Communicate scientific ideas about the way stars, over their life cycle, produce elements.	<ul style="list-style-type: none"> I can communicate ideas scientifically about how stars produce elements throughout their lifecycle. I can make predictions about the amount of energy released via a nuclear reaction (APP2)(A)(Astro) I can find approximately how much work can be done from this energy released (APP 2)
HS-ESS1-4	Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.	<ul style="list-style-type: none"> I can predict the orbiting objects in our solar system using mathematical/computation explanations. I can use graphical interpretations to derive Kepler's 3 laws, and from these three laws I can derive Newton's law of gravity (P) (astro)
HS-ESS1-6	Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation	

HS-ESS3 Earth and Human Activity

HS-ESS3-1	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.	<ul style="list-style-type: none"> I can explain and differentiate various fuel sources and their influence on climate(S, B).
HS-ESS3-4	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.	<ul style="list-style-type: none"> I can evaluate/refine a technological solution that reduce the human impacts on natural systems.
HS-ESS3-6	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.	<ul style="list-style-type: none"> I can explain and differentiate various fuel sources and their influence on climate (S)
HS-PS4 Waves and Their Applications in Technologies for Information Transfer		
HS-PS4-1	Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.	<ul style="list-style-type: none"> I can observe how the frequency of a wave doesn't change through constant mediums, but what can change is the speed and the wavelength (AP1)
HS-PS4-2	Evaluate questions about the advantages of using a digital transmission and storage of information.	<ul style="list-style-type: none"> I can use google docs to share information. (B, S, C, P) I can only access my files using a password. (B, S, C, P)
HS-PS4-3	Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.	<ul style="list-style-type: none"> I can use the idea of the photoelectric effect and the double slit experiment to describe the nature of life (AP2)
HS-PS1-8	Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.	<ul style="list-style-type: none"> I can use radioactive decay to explain fossil age (B). I can explain how nuclear energy relies on fission and radioactive decay (S)