Alabama

High School

Grades 9-12

Earth and Space Science Elective Core

	Starry Night Lesson Plans *In order of relevance*
Describe sources of energy, including solar, gravitational, geothermal, and nuclear.	F1-F3
Describe the production and transfer of stellar energies by:	F1, G2, F2
Describing the relationship between life cycles and nuclear reactions of stars	G2, F1, G3
Discuss various theories for the origin, formation, and changing nature of the universe and our solar system by:	F3, B1, H1-H3 C4
Explaining the nebular hypothesis for formation of planets, the big bang theory, and the steady state theory	F3, H3, H2, H1, C4
Relating Hubble's law to the concept of an ever-expanding universe	H3, H2
Describing the impact of meteor, asteroid, and comet bombardment on planetary and lunar development	D1-D3, C4
Explain the length of a day and of a year in terms of the motion of Earth by:	A1, A2
Explaining the relationship of the seasons to the tilt of Earth's axis and its revolution about the sun	A1, A2
Explain techniques for determining the age and composition of Earth and the universe by:	I3, I2
Using expanding universe measurements to determine the age of the universe	I3
Identifying techniques for evaluating the composition of objects in space	I3, I2
Explain the terms astronomical unit and light year.	B2, G1
Relate the life cycle of stars to the H-R diagram by:	G2
Explaining indicators of motion by the stars and sun in terms of the Doppler effect and red and blue shifts	I3
Describing the relationship of star color, brightness, and evolution to the balance between gravitational collapse and nuclear fusion	G2, G3
Identify scientists and their findings relative to Earth and space, including Copernicus, Galileo, Kepler, Newton, and Einstein.	C2, I1-I3, H1-H3
Identifying classical instruments used to extend the senses and increase knowledge of the universe, including optical telescopes, radio telescopes, spectroscopes, and cameras	C2, I1-I3, H1-H3
Describe pulsars, quasars, black holes, and galaxies.	G3, H1-H3
Describe challenges and required technologies for space exploration by:	I1-I2
Identifying long-term human space travel needs, including life support	I1-I2
Identifying applications of propulsion technologies for space travel	I2
Identifying new instrumentation and communication technologies needed for space information gathering (Examples: Mars Exploration Rover, Cassini spacecraft and Huygens probe, Gravity Probe B)	I1-I3, H1 SkyGuide
Identifying benefits to the quality of life that have been achieved through space advances (Examples: cellular telephone, GPS)	F2, I1
Identifying new technology used to gather information, including spacecraft, observatories, space-based telescopes, and probes	I1-I3 SkyGuide, H1 SkyGuide