Georgia Science

Astronomy

Adopted 2019

Obtain, evaluate, and communicate information to assess the validity of historical theories of astronomy. SAST1	**a.** Ask questions to investigate the daily/seasonal motions of the sky and communicate the significance of constellations, for navigation and time-keeping. SAST1.A
	b. Obtain, evaluate and communicate information about how ancient structures, instruments, philosophies and civilizations influenced ancient astronomy. SAST1.B
	c. Construct an argument based on evidence to support the scientific claims made by the heliocentric model. SAST1.C
	d. Use mathematics and computational thinking to relate Kepler's Laws to Newton's Law of Gravitation. SAST1.D
	e. Construct an explanation for how technological advances in the design of reflecting and refracting telescopes have improved our ability to study the universe. SAST1.E
Obtain, evaluate, and communicate information to explain astronomical observations made from the point of reference of Earth. SAST2	**a.** Develop and use models to evaluate the relationship between the relative positions of the Earth, Moon and Sun and observable phenomena. SAST2.A
	b. Plan and carry out an investigation using the celestial sphere to explain how latitude and time of year affect visibility of constellations and other celestial objects. SAST2.B
	c. Develop and use models of relative orbital motion of planets within our solar system to explain retrograde motion. SAST2.C
	d. Use mathematics and computational thinking to explain the relationship between the properties of light and the vast distances in the cosmos. SAST2.D
	e. Plan and carry out an investigation to analyze the electromagnetic spectrum and spectroscopic data to obtain information about the inherent properties and motions of objects. SAST2.E
Obtain, evaluate, and communicate information to illustrate the formation of the	**a.** Develop and use models to explain the formation of the solar system. SAST3.A
	b. Develop and use models to explain the chemical composition and characteristics of the Sun and other solar system objects. SAST3.B

solar system and the properties of celestial objects within it. SAST3	**c.** **Ask questions to investigate and communicate major properties of our solar system bodies and the zones they inhabit.** SAST3.C
Obtain, evaluate, and communicate information to describe the scientific view of the origin of the universe, the evolution of matter, and the development of galaxies. SAST4	**a.** **Construct an argument from evidence in support of the Big Bang theory.** SAST4.A **b.** **Use models to describe the conditions of the early universe that led to the formation and evolution of matter as well as the birth of the first stars and galaxies.** SAST4.B **c.** **Construct an explanation using indirect evidence to support the existence of dark matter and dark energy.** SAST4.C **d.** **Develop and use models to relate how galactic evolution occurs through mergers and collisions.** SAST4.D
Obtain, evaluate, and communicate information about the connections between mass, gravity and fusion with respect to the life cycle of stars. SAST5	**a.** **Develop and use models to explain the process of stellar evolution from star birth to star death, including binary systems.** SAST5.A **b.** **Construct an argument based on evidence from the Hertzsprung-Russell diagram to assess the properties of stars, including density, luminosity, temperature, rates of fusion, and spectral class.** SAST5.B **c.** **Ask questions to evaluate evidence that predicts the lifespan and final stage of stellar evolution based on mass.** SAST5.C **d.** **Construct an argument based on evidence that explores the connections among various cosmic phenomena and leading theories.** SAST5.D
Obtain, evaluate, and communicate information to discuss how the past, current, and future explorations of space impact our investigations of the connections between cosmic phenomena and conditions necessary for life. SAST6	**a.** **Construct an argument based on evidence of the significance of historical and future space exploration as they relate to leaps in technology, cultural cooperation, knowledge, and inspiration.** SAST6.A **b.** **Analyze and interpret telescopic data of various electromagnetic spectra in order to evaluate the uses and advantages of the data from each.** SAST6.B **c.** **Construct an explanation for the existence and importance of habitable zones, habitable planetary bodies, and possible signatures of life in our own and in other solar systems.** SAST6.C **d.** **Construct an explanation of how astronomical and planetary hazards and global atmospheric changes have impacted the evolution of life on Earth.** SAST6.D