Astronomy
Students will…
The Moon
1 Phases of the Moon
1.1 ▲demonstrate the cause of the change in the moon's appearance. (4.3.2e)
1.2 ▲ identify the phases of the moon. (4.3.2e)
1.3 ▲observe the changes in the phases of the moon over the course of time. (4.3.2d)

2 Moon Motion
2.1 identify maria.
2.2 identify highlands.
2.3 identify major craters.

3 Moon Motion
3.1 relate the Moon's orbital period to its rotational period.
3.2 explain the Earth-Sun-Moon relations during a solar and lunar eclipse.
3.3 describe the Moon's gravitational effects on the Earth (ocean and land tides).

The Sun
1 Structure of the Sun
1.1 describe each layer of the sun (core, radiative zone, convective zone, corona)
1.2 describe phenomena found on the surface of the sun (sun spots, prominence, flare)
1.3 explain the effects of solar wind on Earth (aurora, electronics).
1.4 explain how the sun produces energy.

2 Electromagnetic Spectrum
2.1 describe the waves that compose the electromagnetic spectrum.
2.2 relate the wavelength of a type of wave to its energy.
2.3 explain how the Doppler effect is applied to the motion of stars in relation to Earth.
2.4 differentiate between absorption spectra and emission spectra.
2.5 observe the emission spectra of various elements.
2.6 determine the composition of various stars using the emission spectra of known elements.

3 Tools for Studying Space
2.1 explain how refracting, reflecting and radio telescopes work.
2.2 describe the advantages and disadvantages of each type of telescope.
2.3 explain the advantages that a space telescope has over an Earth-based telescope.

Stars
1 Getting Your Bearings
1.1 identify the stars of the Big Dipper
1.2 locate Polaris using the Big Dipper
1.3 use the Big Dipper (and other pointer star systems) to locate other prominent stars and constellations in the sky

2 Star Magnitudes
2.1 distinguish between apparent magnitude and absolute magnitude.
2.2 list the factors that determine a star's apparent magnitude.

3 Star Color and Temperature

3.1 relate a star's color to its temperature
3.2 observe stars of each color.

4 Hertzsprug Russell Diagram
4.1 ▲use the HR diagram to classify stars. (4.4.1e)
4.2 ▲describe the relationship shown on the HR diagram. (4.4.1e)
4.3 ▲locate and describe the basic characteristics of main sequence, dwarf and giant stars (4.4.1f)

Stellar Evolution ▲HS.4.4.1
1 Birth of Stars
1.1 ▲describe a nebula. (HS.4.4.1a)
1.2 describe the formation of a protostar.
1.3 explain why the T-Tauri stage is important for a star to develop.
1.4 identify the conditions necessary for a brown dwarf to develop.
1.5 locate the closest brown dwarf to Earth.
1.6 identify star clusters.
1.7 ▲explain the process of nuclear fusion and its effect on the core of a star. (4.4.1a)

2 Death of Stars
2.1 ▲explain the situation required for a star to begin to collapse. (4.4.1c)
2.2 describe the death of a low mass star (white dwarf, black dwarf).
2.3 describe the death of a medium mass star (red giant, planetary nebula, white dwarf, black dwarf).
2.4 ▲describe the death of a massive star (red supergiant, supernova, neutron star, pulsar). (4.4.1d)
2.5 ▲describe the death of a really massive star (black hole). (4.4.1d)

The Universe
1 Galaxies and The Milky Way
1.1 locate home.
1.2 describe the size and structure of the Milky Way Galaxy.
1.3 list the ways in which galaxies differ from one another.

2 The Universe
2.1 cite the evidence that indicates the universe is expanding.
2.2 describe how the universe began according to the big bang theory.

3 What's Out There?
3.1 explore the search for Earth-like planets.
3.2 recognize the reasoning for looking for Earth-like planets.
3.3 describe the search for extraterrestrial intelligence.