HPS Unit 9 Astronomy Objectives (edited)

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| **9.  ASTRONOMY**  The student will be able to: | Text Pages | Key Concepts |
| 1. Explain the evolution of astronomical theories due to changing technologies and methods. | GS 28.1 | Hipparchus, Copernicus, Brahe, Kepler, Galileo, Newton, Hubble, Penzias and Wilson  Sextant, Parallax, Telescope (reflector/refractor, space/land- based),  Spectroscopy, Space probes |
| 2.  Explain the common terms and methods astronomers use to locate and study celestial objects in the sky. | 28.3 | Declination, Right Ascension, Ecliptic, Zenith, Altitude, Azimuth, Paths of celestial bodies, North star and Southern cross, constellations |
| 3.  Describe the structural organization of the solar system. | GS 29.4 | Sun, Planets, Terrestrial, Jovian, Asteroid belt, Kuiper belt, Oort cloud, Comets, Meteoroids |
| 4.  Explain each of Kepler’s Laws and apply them qualitatively. | GS  29.1 | Eccentricity, Semi-major axis |
| 5. Compare & contrast the properties of different stars. | GS 30.2- 30.3 | Magnitude, Temperature, Brightness, Luminosity, Mass, Composition, HR Diagram  b=L/(4πd2), λT=2.90\*10-3 m\*K |
| 6. Sequence & summarize the processes in the life cycle of the stars. | GS 30.3 | Nebula, Protostar, Main Sequence Star, Red Giant, Super Red Giants, White Dwarf, Black Dwarf, Red Dwarf, Neutron Star, Black Hole, Element formation |
| 7.  Compare relative distances and sizes of astronomical entities. | GS 30.2 | Astronomical Unit, Light year, Parsec, Relative distances between/radius of: Planets, Stars, Galaxies, Universe |
| 8. Explain the Big Bang Theory & summarize supporting evidence. | GS 31.2- 31.3 | Steady State Theory, Hubble’s Constant, Redshift, Cosmic Microwave Background, Open/Closed/Flat Universe,  Big rip/crunch/freeze, Critical density |

*Unit 9:  Astronomy (5 weeks)*

Week 1—History of Astronomy, Studying the night sky (astronomical terms) (GS Ch 28.1, 29.1)

Week 2—Continue with astronomical terms, Solar system (GS Ch 29.4)

Week 3—Kepler’s Laws (GS Ch 29.1), Star Properties (GS Ch 30.2-3)

Week 4—Star Properties (GS Ch 30.2-3), Stellar Evolution (GS Ch 30.3)

Week 5—Universe, EXAM (GS Ch 31.2-3)

4th Quarter Final Exam