

# **PRAXIS Secondary Education EAS Content Sheet**

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## Astronomy

- i. The Sun-Earth-Moon System
  - a. Earth's motions and their characteristics and consequences
    - Rotation and revolution
    - Effects of axial tilt (e.g., seasons, solstices, and equinoxes)
  - b. Relationships within the Sun-Earth-Moon system
    - Tides (e.g., causes, cycles, spring, neap)
    - Eclipses (solar, lunar)
    - Phases of the Moon
    - Effects of solar wind on Earth (e.g., communication satellites, blackouts, auroras)
- ii. The solar system
  - a. Formation and organization of the solar system
  - b. Structure and characteristics of the Sun (e.g., layers, sunspots, nuclear fusion)
  - c. Location and orbits of the planets and the Moon (e.g., Kepler's laws of planetary motion)
  - d. Characteristics of solar-system objects (e.g., planets, asteroids, moons, comets, dwarf planets)
- iii. The universe and its stars
  - a. Life cycle of stars (e.g., main sequence, white dwarf, supernova, black holes)
    - b. Characteristics of stars (e.g., mass, color, temperature, brightness, Hertzsprung-Russell diagram)
    - b. Nuclear fusion and the formation of elements (e.g., carbon, iron)
    - c. Characteristics of the universe and galaxies (e.g., Milky Way)
    - d. Big Bang theory and evidence for the origin and evolution of the universe (e.g., redshift, cosmic background radiation)
- iv. Geology
- v. Tectonics and internal Earth processes
  - a. Theory of plate tectonics and its supporting evidence
    - Plate movement and potential driving forces (e.g., slab pull and ridge push; convection)
    - Types of plate boundaries (convergent, divergent, and transform)
  - b. Deformation of Earth's crust and resulting features (e.g., mountains, trenches)
  - c. Characteristics of earthquakes and how they provide information about Earth's interior (e.g., distribution, magnitude, seismic waves)

- d. Types, features, and distribution of volcanoes (e.g., shield, hot spots, Ring of Fire)
  - e. Layered structure of Earth and related processes - Characteristics and composition of the layers - Magnetic field
- vi. Earth's minerals and rocks
  - a. Properties of minerals (e.g., density, streak, hardness, cleavage, luster, crystal structure)
  - b. Rocks and the rock cycle - Types of rocks (i.e., igneous, metamorphic, sedimentary) - Rock-cycle processes (e.g., weathering, erosion, deposition, melting)
- vii. Evidence for the history of Earth
  - a. Principles of relative dating (e.g., superposition, fossil succession)
  - b. Principles of absolute (radiometric) dating (e.g., radioactive decay, Earth's age)
- viii. Earth's hydrosphere
  - a. Properties of water (e.g., density changes, polar solvent, high heat capacity)
  - b. The water cycle
  - c. Groundwater (e.g., water table, aquifers)
  - d. Rivers and watersheds (e.g., deltas; erosion and deposition)
  - e. Glaciers, ice sheets, and sea ice (e.g., features, change over time)
  - f. Characteristics and processes of the oceans - Ocean circulation (e.g., Gulf Stream) - Waves (e.g., energy) - Seawater composition
  - g. Hazards (e.g., flooding, sinkholes, storm surge, sea-level rise)
- ix. Earth's atmosphere
  - a. Basic structure and composition of the atmosphere
    - Chemical composition - Layers and their physical properties (e.g., stratosphere, troposphere, thermosphere)
- x. Meteorology
  - a. b. Basic concepts in meteorology
    - Absolute and relative humidity
    - Cloud types and formation - Precipitation types and formation - Barometric pressure, wind (e.g., sea and land breezes)
    - Air masses, fronts, storms, and severe weather
    - Interpreting weather maps
  - b. Factors and processes that influence climate
    - Latitude, geographical location, and elevation (e.g., climate belts, rain shadow effect)
    - Atmospheric circulation (e.g., global wind belts, Coriolis effect)
    - Characteristics and locations of climate zones (e.g., Tropics, Arctic)
    - Effects of natural phenomena on climate change (e.g., volcanic eruptions, asteroid impacts, variations in solar radiation)