Year at a Glance Environmental Systems 2020-2021

Readiness, Supporting, Process, Biology-Aligned

C&I approved

1st Grading Period

Classroom Procedures, Introductions, Get to Know You Activities, Safety Protocols, Capturing Kids Hearts Activities **(E.1A, E.1B)**

Review JH and Bio TEKS related to Env. Systems

- Dichotomous Keys **(B.8B)**
- Carbon and Nitrogen cycles **(B.12D)**
- Energy Interactions between Photosynthesis and Cell Respiration **(B.9B)**

Importance of Environmental Science

- The Tragedy of the Commons
- Dichotomous Keys to identify native plants and animals **(E.4A)**
- Carbon Footprint & Carbon/Nitrogen cycles **(E.4C)**

Geosphere

- Components of the Geosphere **(E.6A)**
  - Layers of the Earth
  - Rock cycle **(E.4C)**
- Natural Events **(E.8A)**:
  - Tectonic Plates,
  - Earthquakes, and
  - Volcanoes **(E.8A)**
  - Succession **(E.8A, E.8C, B.11B)**
  - Feedback loops **(E.8C, B.4B)**
- Regional Changes creating Global Effects **(E.8B, B.12E)**

Biomes

- Components of the Biosphere **(E.6A)**
- Biomes **(E.4B)**
  - Vegetation and Climate within forest biomes **(E.4B, E.4D, B.12B, B.12E)**
    - Tropical Rainforest
    - Temperate Rainforest
    - Temperate Deciduous Forest
    - Taiga

2nd Grading Period

Biomes (continued)

- Vegetation and Climate within grassland biomes **(E.4B, E.4D, B.12B, B.12E)**
  - Savanna
  - Temperate Grassland
  - Chaparral
- Vegetation and Climate within desert and tundra **(E.4B, E.4D, B.12B, B.12E)**
- Aquatic Ecosystems **(E.4B, E.4D, E.9D, B.12B, B.12E)**
  - Freshwater
  - Brackish
  - Marine

Ecology

- Natural Events impacting areas **(E.8A, B.11B, B.12E)**
  - Flood
  - Tornado
  - Hurricanes
- Thermodynamics **(E.6D)**
- Conduction, convection, radiation **(E.6C)**
- Food chains/webs **(E.4B, E.4F, B.12A, B.12C)**
  - Niche
  - Symbiotic relationships including predation and competition
  - Species extinction alters food change **(E.4G, B.12C)**
- Invasive species **(E.4F, B.12C)**
- Species Diversity **(E.4H, B.7E, B.7F)**
- How populations change in size:
  - Carrying Capacity **(E.7A, B.7D)**
  - Birth rates **(E.7B, B.7C, B.7D)**
  - Impact on Populations **(E.7D, B.7D)**

District Semester Exam

3rd Grading Period

Land Use

- Deforestation (protection), municipal development, all-terrain vehicle use **(E.9E, E.9F, B.11B, B.12E)**
- Land use and management- protected areas **(E.5A)**
- Social Ethics and legal practices- new buildings **(E.9I)**

Agriculture

Components of the Geosphere soil **(E.6A)**

- Species diversity monoculture **(E.4H, B.7E, B.7F)**
- Land use and management- agriculture **(E.5A)**
- Ethical beliefs and food production **(E.9G)**
- Organics
- Hunting and fishing **(E.9E, B.12E)**
- Soil pollution; types, causes, and concentration **(E.9A, E.9B, E.9C)**

Water

- Water sources & use **(E.5B)**
- Components of the hydrosphere, cryosphere **(E.6A)**
- Water Cycle **(E.4C, E.4D, E.9B, B.12E)**
- Water properties; Solvents, solutes, solubility **(E.4E)**
- Water environmental effects caused by: **(E.9A, E.9E, B.11B, B.12E)**
    - Human activities (include erosion and dams),
    - habitat restoration,
    - nature conservation,
    - wetlands
- Water conservation **(E.5B)**
- Convection cycles (water turnover) **(E.8D)**
    - El Nino, La Nina
- Water pollution; types, causes, and concentration **((E.9A, E.9B, E.9C)**
    - Water quality testing (E.9C)
- Waste management **(E.1B, E.5F)**

Waste

- Reduction, reuse, recycling, and composting **(E.5F)**
- Social Ethics and legal practices- recycling **(E.9I)**
- Advantages and disadvantages of "going green" **(E.9J)**

4th Grading Period

Waste (continued)

Atmosphere

- Components of the atmosphere **(E.6A)**
- Temperature inversions **(E.8D)**
- Air pollution; types, causes, and concentration **(E.9A, E.9B, E.9C)**

Climate Change

- Effects of pollution **(E.9D)**
- Temperature inversions **(E.8E)**
    - global warming,
    - ice cap and glacial melting,
    - changes in ocean currents and surface temperature
- Different views on global warming **(E.9H)**

Energy

- Renewable and Nonrenewable; natural/ alternative sources **(E.6B)**
- Effects of renewable resource depletion **(E.7C, B.12D, B.7D)**
- Resources/ Sustainability **(E.5C)**
- Cost Benefit Trade-offs of Commercial Activities- Mining **(E.9F)**
- Social Ethics and legal practices- design of new buildings and emission standards **(E.9I)**
- Resources from outside an ecosystem **(E.5D)**
- Interdependence and economics of resources **(E.5E)**
- Advantages in "going green" **(E.9J)**
    - Energy efficient homes and appliances
    - Hybrid cars

Protocols

- Endangered Species Act **(E.9K)**
- National Park Services Act **(E.9K)**
- Soil and Water Resources Conservation Act **(E.9K)**
- Clean Air Act **(E.9K)**
- Montreal Protocol **(E.9L)**
- Clean Water Act **(E.9K)**
- Antarctic treaty system, Kyoto Protocol **(E.9L)**

Review/Semester Exam/Final Project

Process skills are taught throughout the school year