Cobb County School District 2018-2019

AP Environmental Science Teaching & Learning Framework

(for detailed information and course descriptions, and pacing options refer to: http://apcentral.collegeboard.com/apc/public/courses/teachers_corner/2128.html)

Topic 1: Earth Systems and Resources	Topic 2: The Living World	Topic 3: Population	Topic 4: Land and Water Use	Topic 5: Energy Resources & Consumption	Topic 6: Pollution	Topic 7; Global Change	SLO & AP Exam
Subtopics: A. Earth Science Concepts (Geologic time scale; plate tectonics, earthquakes, volcanism; seasons; solar intensity and latitude) B. The Atmosphere (Composition; structure; weather and climate; atmospheric circulation and the Coriolis Effect; atmosphere–ocean interactions; ENSO) C. Global Water Resources and Use (Freshwater saltwater; ocean circulation; agricultural, industrial, and domestic use; surface and groundwater issues; global problems.) D. Soil and Soil Dynamics(Rock cycle; formation; composition; physical & chemical properties; soil types; erosion & other soil problems	**Subtopics:** A. Ecosystem Structure (Biological populations and communities; ecological niches; interactions among species; keystone species; species diversity and edge effects; major terrestrial and aquatic biomes) B. Energy Flow (Photosynthesis and cellular respiration; food webs and trophic levels; ecological pyramids) C. Ecosystem Diversity (Biodiversity; natural selection; evolution; ecosystem services) D. Natural Ecosystem Change (Climate shifts; species movement; ecological succession) E. Natural Biogeochemical Cycles (Carbon, nitrogen,phosphorus, sulfur, water).	**Subtopics:** A. Population Biology Concepts (Population ecology; carrying capacity; reproductive strategies; survivorship) B. Human Population 1. Human population dynamics (Historical population sizes; distribution; fertility rates; growth rates and doubling times; demographic transition; age-structure diagrams) 2. Population size (Strategies for sustainability; case studies; national policies) 3. Impacts of population growth (Hunger; disease; economic effects; resource use; habitat destruction)	**Subtopics:** Agriculture 1. Feeding a growing population (Human nutritional requirements; types of agriculture; Green Revolution; genetic engineering and crop production; deforestation; irrigation; sustainable agriculture) 2. Controlling pests(Types of pesticides; costs and benefits of pesticide use; integrated pest management) B. Forestry (Tree plantations; old growth forests; forest fires; forest management; national forests) C. Rangelands (Overgrazing; deforestation; desertification; rangeland management; federal rangelands) D. Other Land Use 1. Urban land development (Planned development; suburban sprawl; urbanization) 2. Transportation infrastructure (Federal highway system; canals and channels; roadless areas; ecosystem impacts) 3. Public and federal lands (Management; wilderness areas; national parks; wildlife refuges; forests; wetlands) 4. Land conservation options (Preservation; remediation; mitigation) 5. Sustainable land-use strategies E. Mining (Mineral formation; extraction; global reserves; relevant laws and treaties)	**Subtopics:** A. Energy Concepts (Energy forms; power; units; conversions; Laws of Thermodynamics) B. Energy Consumption 1. History (Industrial Revolution; exponential growth; energy crisis) 2. Present global energy use 3. Future energy needs C. Fossil Fuel Resources and Use(Formation of coal, oil, and natural gas; extraction/purification methods; world reserves and global demand; synfuels; environmental advantages/ disadvantages of sources) D. Nuclear Energy (Nuclear fission process; nuclear fuel; electricity production; nuclear reactor types; environ. advantages/disadvantages ; safety issues; radiation & human health; radioactive wastes; nuclear fusion) E. Hydroelectric Power F. Energy Conservation (Energy efficiency; CAFE standards; hybrid electric vehicles; mass transit) G. Renewable Energy	**Subtopics:** Pollution Types 1. Air pollution (Sources — primary and secondary; major air pollutants; measurement units; smog; acid deposition — causes and effects; heat islands and temperature inversions; indoor air pollution; remediation and reduction strategies; Clean Air Act and other relevant laws) 2. Noise pollution 3. Water pollution 4. Solid Waste B. Impacts on the Environment and Human Health 1. Hazards to human health 2. Hazardous chemicals in the environment C. Economic Impacts	**Subtopics:** Stratospheric Ozone (Formation of stratospheric ozone; ultraviolet radiation; causes of ozone depletion; effects of ozone depletion; strategies for reducing ozone depletion; relevant laws and treaties) B. Global Warming (Greenhouse gases and the greenhouse effect; impacts and consequences of global warming; reducing climate change; relevant laws and treaties) C. Loss of Biodiversity 1. Habitat loss; overuse; pollution; introduced species; endangered and extinct species 2.Maintenance through conservation 3. Relevant laws and treaties	

For AP courses, the College Board provides multiple options for teachers with respect to course planning and pacing. Teachers are encouraged to adopt the framework that best fits their school and students. AP instruction is also infused with Scientific Practices. Scientific Practices provide ways for students to coordinate knowledge and skills and establish lines of evidence which they can use them to develop and refine testable explanations and predictions of natural phenomena.