04 Human Influence on the Planet - Natural Resources & Hazards

Content Area: **Science**
Course(s):
Time Period: **Full Year**
Length: **25 blocks**
Status: **Published**

General Overview, Course Description or Course Philosophy

Environmental Science covers major environmental topics such as acid rain, global warming, pollution, and renewable and non-renewable energy sources. The interdependence of earth's systems, the human population, the loss of biodiversity and the trade-offs between the environment and society will be studied. The course includes laboratory and field investigations.

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

In this unit of study, students evaluate claims, analyze and interpret data, and develop and use models to explore the core ideas centered on the Earth's natural resources and hazards. Students evaluate the validity and reliability of claims in published materials of the effects that different geographic and economic availability to natural resources and hazards on impacts to the planet. They apply these core ideas when they view resource availability and natural hazards as to how human society and history has been used to drive human migrations. They use empirical evidence to differentiate between cause and correlation and make claims about specific causes and effects. Modern civilization depends on major technological systems. Geoscience data uses the claim that one change to Earth's surface can cause changes to other Earth systems, such as the climate system. Finally, students analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems. The crosscutting concepts of cause and effect, stability and change, energy and matter, and structure and function are called out as an organizing concept for these disciplinary core ideas.

CONTENT AREA STANDARDS

SCI.HS-ESS3-2	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
SCI.HS-ESS3-1	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
SCI.HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

STUDENT LEARNING TARGETS

Declarative Knowledge

Students will understand that:

- The availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
- Evaluating competiting desgn solutions for developing, managing and utilizing energy and mineral resources based on cost-benefit ratios.
- Computational simulation to illustrate the relationships among management of natural resources, the sutstainability of human population and biodiversity.
- Specific cause and effect relationships between environmental factors (natural hazards, changes in climate, and the availability of natural resources) and features of human societies including population size and migration patterns
- Technology in modern civilization has mitigated some of the effects of natural hazards, climate, and the availability of natural resources on human activity.

Procedural Knowledge

Students will be able to:

- Construct an explanation based on valid and reliable evidence obtained from a variety of sources and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.
- Construct an explanation based on valid and reliable evidence obtained from a variety of sources and the assumptions that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.
- Construct an explanation that include specific cause and effect relationships between enviromental factors and features of human socieites including population size and migration patterns
- Explain how resource availability and natural hazards/geologic events have guided the development of human society, human populations and drive human migrations.
- Evaluate competing design solutions to a real-world problem based on scientific ideas and principles, empirical evidence, and logical arguments regarding relevant factors.
- Use computational respresentation of phenomena or deisgn solutions to describe and/or support claims and/or explanations.

EVIDENCE OF LEARNING

Formative Assessments

Homework

Notes

Do-Now

Labs/Experiments/Projects

Activities

Video Clips/Annimations

Summative Assessments

- Benchmarks – departmental benchmark given at the end of MP1, MP2, and MP3 based on lab practices
- Alternative Assessments
    - Lab inquiries and investigations
    - Lab Practicals
    - Exploratory activities based on phenomenon
    - Gallery walks of student work
    - Creative Extension Projects
    - Build a model of a proposed solution
    - Let students design their own flashcards to test each other
    - Keynote presentations made by students on a topic
    - Portfolio

RESOURCES (Instructional, Supplemental, Intervention Materials)

Global Science by Christensen and Christensen

Biozone - Earth and Space Science NGSS sections ESS3.A Natural Resources and ESS3.B Natural Hazards

INTERDISCIPLINARY CONNECTIONS

Physical Science

Life Science

Mathematics

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.