

CLIMATOLOGY AND ENVIRONMENTAL SCIENCE SYLLABUS

Course Description:

This fifteen-week integrated climatology and environmental science course explores Earth's climate systems and their deep connections to ecosystems, biodiversity, water, food, and human communities. Students will investigate how Earth's atmosphere, oceans, and land systems interact to create climate patterns, examine the evidence for human-driven climate change, and explore the environmental consequences of a changing climate across ecosystems and societies. The course is equally weighed between climate science and environmental science, with each concept grounded in hands-on investigation and real-world data analysis. Throughout the course, students develop systems thinking skills and an understanding of the interconnections between climate, environment, and human activity. The course emphasizes evidence-based reasoning, environmental literacy, and age-appropriate solutions-focused thinking while acknowledging the reality of climate and environmental challenges. The course highlights the pathways, solutions, and community actions that offer genuine hope. Students will maintain a science notebook throughout and conclude the course with an Environmental Sustainability Capstone Project addressing a real climate or environmental challenge.

Course Overview:

Unit One: Introduction to Climate Science and Environmental Systems
Unit Two: Earth's Energy Balance and the Greenhouse Effect
Unit Three: The Carbon Cycle
Unit Four: Climate Patterns and Atmospheric Circulation
Unit Five: Ocean Circulation and Climate Regulation
Unit Six: Ecosystems and Biodiversity
Unit Seven: Evidence for Climate Change
Unit Eight: Deforestation and Land Use Change

Unit Nine: Pollution, Plastics, and Environmental Health
Unit Ten: Freshwater Systems and Water Security
Unit Eleven: Energy Systems and Climate Solutions
Unit Twelve: Conservation and Ecosystem Protection
Unit Thirteen: Food Systems, Agriculture, and Sustainability
Unit Fourteen: Climate Justice, Community Action, and Individual Agency
Unit Fifteen: Capstone Project — Environmental Sustainability Presentations and Course Celebration

Student Notebook Requirement:

Students are required to maintain a science notebook throughout the entire fifteen-week course. The notebook is a central learning tool used in every class session. Students should bring their notebook to every class without exception. Notebook entries should include observations and data from activities, sketches and labeled diagrams, written reflections and responses to discussion questions, responses to quick checks for understanding, and a personal action plan developed in the final weeks of the course. Notebooks will be reviewed periodically, and a final reflection entry will be completed in the last class session.

Grading Scale:

A: 90 – 100
B: 80 – 89
C: 70 – 79
D: 60 – 69
F: 0 – 59

Grade Breakdown:

Activities and Investigations: 40%
Notebook Entries and Reflections: 25%
Quick Checks for Understanding: 20%
Capstone Project and Presentation: 15%