

**MEDFORD HIGH SCHOOL
COURSE SYLLABUS**

Department:	Science
Course Title:	Environmental Science
Level and/or Grade:	Honors; Grades 11-12
Prerequisite:	Grades of “B-” or better in Honors Biology and Honors Chemistry or “A-“ or better in Standard Biology and Standard Chemistry or department approval.

Course Description:

The course explores the role which humans play in causing environmental change and the underlying values and ethical judgments involved in making choices. Students will investigate, through inquiry, labs, independent research, project work, presentations, and community service, topics such as: fundamental ecological principles, environmental history, human overpopulation, food and agricultural resources, air and water pollution, global climate change, ozone depletion, acid rain, hazardous and solid waste, alternative energy resources, soil, deforestation, overfishing, biodiversity and endangered species, and their ecological, economical and human health impacts. An independent science fair research project is required. Students in this course are also responsible for overseeing the recycling program at MHS, as well as participating in the annual Earth Week celebration. This course also has a required online component that will further enhance the concepts learned in class.

Learning Standards: *Students will be able to....*

Ecological Principles:

- ◆ Investigate factors that influence and are influenced by the natural environment.
 - ◆ Understand the structure and function of ecosystems.
 - ◆ Explore the major biomes of the earth and the biodiversity associated with these biomes.
 - ◆ Analyze and interpret population dynamics.
 - ◆ Relate earth processes to ecosystems dynamics.
 - ◆ Understand interdependence in ecosystems.
 - ◆ Explore factors affecting the vulnerability of a species to extinction.

Human Population Dynamics:

- ◆ Understand the nature of human population dynamics.
 - ◆ Examine factors affecting human population dynamics.
 - ◆ Consider causes and consequences of human population growth.
 - ◆ Investigate approaches that address overpopulation.

Natural Resources:

- ◆ Survey non-energy natural resources and their conservation.
 - ◆ Explore the types, uses, and history of non-energy renewable and nonrenewable resources.
 - ◆ Investigate methods of conservation of common non-energy resources.
 - ◆ Determine the impact of waste production and management on the environment.

Energy:

- ◆ Analyze energy use and its environmental consequences.
 - ◆ Explore both conventional and alternative energy sources.
 - ◆ Understand the types of energy related pollution.
 - ◆ Compare various methods of energy conservation.

Human Interaction with the Environment:

- ◆ Trace the interaction of humans with their environment.
 - ◆ Understand the causes, environmental effects, and methods for controlling pollution.
 - ◆ Investigate the environmental impact on human health.
 - ◆ Explore the relative sustainability of various practices in the areas of watershed management, agriculture, solid waste management, wastewater management, and development.

Personal and Civic Responsibility:

- ◆ Understand his/her personal and civic responsibility concerning issues related to the environment.
 - ◆ Evaluate and articulate his/her own personal views concerning the environment.
 - ◆ Recognize his/her rights and responsibilities as a citizen in maintaining a healthy environment.

Standards for Literacy in History/Social Studies, Science, and Technical Subjects:***Key Ideas and Details***

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

Standards for Writing in History/Social Studies, Science, and Technical Subject:

Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development organization and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, and trying a new approach.
6. Use technology, including the internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary and informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Course Alignment with 21st Century Learning Expectations:

Students will...

- Become self-directed learners.
- Communicate effectively.
- Apply problem-solving skills and critical and creative thinking.
- Use technology appropriately as a tool for learning, collaboration, presentation, research, and design.
- Act with integrity, respect and responsibility toward themselves, others and the environment.
- Exhibit flexibility and adaptability.
- Collaborate in diverse groups to share knowledge, build consensus, and achieve goals.
- Practice leadership in and service to their community.
- Become contributing citizens in a global society.

Assessment:

- See grading policy attached.

