

WRHS Science Curriculum Syllabus

Course Name: Natural History of New England

Grade Level: 11 & 12

Course Description:

A general survey course designed to acquaint the student with the nature of New England. This will include studies of soil and rock formation, plants, animals and the ecology of the area.

Links to Student Expectations:

- All students will develop skills to utilize technology to gather, to evaluate, to assimilate, and to present information.
- All students will utilize critical thinking skills to identify and to provide resources to solve a problem.
- All students will be able to make decisions and solve problems using logical processes (e.g., scientific method, induction, deduction, syllogism, etc.)
- All students will develop skills to promote a sense of confidence in tackling the rigors of standardized tests such as the required MCAS and optional AP, SAT.

Interdisciplinary Connections:

Natural History of New England is a field study course that contrasts the Massachusetts environment to the other major terrestrial biomes of North America. This field study course integrates ecology, botany, chemistry and earth science to the social sciences. Students must be able to describe Massachusetts' physical and biological parameters and relate them to their human environment and its social issues. Through written and oral communication, students need to access and plan for man's impact in this state.

I. Essential Questions for Course

- Is the climate of Massachusetts indicative of a Temperate Deciduous Forest?
- How do soils influence their biotic communities?
- What are the natural resources of Massachusetts?
- Can the people of Massachusetts effectively manage their land?

II. Student Objectives

- To explain the climatic conditions of the major terrestrial biomes

- To diagram and contrast forest biome canopy layers
- To describe the seasonal changes in a temperate deciduous forest
- To identify by leaf or twig the dominate tree / shrubs of a Massachusetts' forest
- To describe the layers and spheres of the earth
- To diagram and explain the rock cycle
- To differentiate between the formation and characteristics of igneous, sedimentary and metamorphic rocks
- To understand the geological history of Massachusetts
- To identify the major soil components and discuss their role in plant growth
- To diagram and describe soil horizons
- To explain the role of soil nutrients in plant growth
- To discuss wise land use practices
- To identify by characteristics the major forest trees of Massachusetts
- To understand the process of forest succession and recognize it stages
- To calculate the timber resources and forest age of an area
- To effectively manage a forest ecosystem for wildlife, and timber.

III. Suggestions for Instruction

- Lecture
- Discussion
- Laboratory Experiments
- Field Studies
- Videos
- Slides

IV. Suggestion for

- Written Assessments
- Field Studies
- Data Analysis
- Mapping Projects

V. Curriculum

- Climate
- Terrestrial Biomes
- Temperate Deciduous Forests / Trees
- Solid Earth
- Rocks / Minerals
- Soils
- Forest Ecology / Management

VI. Lesson Extensions

- Independent project that extends the materials covered in class.