

Environmental Education Curricula

The State of Maine Department of Environmental Protection has created environmental education curricula for Maine students in middle and high school to enhance their education about environmental stewardship and career opportunities in the environmental regulatory field in Maine.

Lesson plans covering 14 different topics are available for your use, including nine middle school and five high school level lessons. Each lesson is designed to address a given Next Generation Science Standard (NGSS), as listed in the table below.

Note that each topic contains a classroom slide presentation and a lesson plan with student activity included. Please read each lesson plan thoroughly for information such as time typically required to complete the lesson, required activity items, teacher prep, materials needed, and student materials and handouts - all found in the lesson plan.

Please feel free to use these lesson plans as you wish to enhance your school curriculum, and to speak with DEP staff if and when questions arise or further information is desired. Contact David Madore, (207) 287-5842

Topic/NGSS	Objectives	Level	Lesson Plan	Presentation
Acid Rain MS-ESS3-3	<p>Objective 1: Determine the natural and manmade contributions to acid rain formation.</p> <p>Objective 2: Demonstrate understanding of the pH scale.</p> <p>Objective 3: Determine the effects of acid rain on the environment and human health.</p> <p>Objective 4: Explore options for reducing manmade contributions to acid rain formation.</p>	Middle school	Acid-Rain-LP.docx	Acid-Rain-PP.pptx
Air Pollution MS-LS2	<p>Objective 1: To observe how temperature inversions are formed and how inversions influence air pollution levels.</p> <p>Objective 2: To discuss the health effects of air pollutants and how the Clean Air Act is a tool to reduce air pollution in the U.S.</p> <p>Objective 3: To introduce students to actions that they and/or other members of our community can take to reduce air pollution.</p>	Middle school	Air-Pollution-LP.docx	Air-Pollution-PP.pptx
Composting and Food Sustainability MS-ESS3-4	<p>Objective 1: Students will learn the basic actions needed for composting.</p> <p>Objective 2: Students will learn the benefits provided by composting.</p> <p>Objective 3: Students will discuss food sustainability in their school.</p>	Middle school	Compost-Food-Sustainability-LP.docx	Compost-Food-Sustainability-PP.pptx
Environmental Careers HS-ESS3-4	<p>Objective 1: Students will learn about the different levels of post high school educational opportunities.</p> <p>Objective 2: Students will discuss seven popular environmental careers, considering topic areas such as – what do they do? where do they work? Level of education needed?</p> <p>Objective 3: Students will research career opportunities by utilizing the United States Department of Labor Bureau of Labor Statistics web site.</p>	High school	Environmental-Careers-LP.docx	Environmental-Careers-PP.pptx

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Environmental Regulations HS-ESS3-4	<p>Objective 1: Students will gain a brief awareness of environmental issues in the United States</p> <p>Objective 2: Students will understand the reasons for the formation of the Environmental Protection Agency.</p> <p>Objective 3: Students will review the purpose of several key environmental regulations in the United States.</p>	High school	Environmental-Regulations-LP.docx	Environmental-Regulations-PP.pptx
Hazardous Waste HS-ETS1-3	<p>Objective 1: Students will discuss which characteristics make a waste hazardous.</p> <p>Objective 2: Students will discuss several major regulations that are in place to control the generation, transportation, and disposal of hazardous and e-wastes.</p> <p>Objective 3: Students will learn how to report a suspected oil spill or hazardous waste spill/storage.</p> <p>Objective 4: Students will define e-waste and discuss known issues with its collection and recycling.</p>	High school	Hazardous-Waste-LP.docx	Hazardous-Waste-PP.pptx
Health Effects of Air Pollution HS-LS2-7	<p>Objective 1: Students will list and discuss the six criteria air pollutants in the United States.</p> <p>Objective 2: Students will discuss the detrimental health effects of exposure to the criteria air pollutants.</p> <p>Objective 3: Students will determine the air quality of their town on the day of their Health Effects of Air Pollution Project.</p>	High school	Health-Effects-Air-Pollution-LP.docx	Health-Effects-Air-Pollution-PP.pptx
Invasive Species HS-LS2-7	<p>Objective 1: Learn how to define invasive species.</p> <p>Objective 2: Discuss how invasive species have historically spread.</p> <p>Objective 3: Discuss actions that can be taken to reduce the spread of invasive species.</p> <p>Objective 4: Discuss what effects might occur in an ecosystem after an invasive species has been introduced.</p>	High school	Invasive-Species-LP.docx	Invasive-Species-PP.pptx
Ocean Acidification MS-ESS3-4	<p>Objective 1: Promote student understanding of ocean acidification.</p> <p>Objective 2: Learn the causes of ocean acidification and actions that can be taken to reduce ocean acidification.</p> <p>Objective 3: Discuss why scientists are concerned about ocean acidification and lowering pH levels in our oceans.</p>	Middle school	Ocean-Acidification-LP.docx	Ocean-Acidification-PP.pptx

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Renewable Energy MS-ETS1-1	<p>Objective 1: Students will state the difference between fossil and renewable fuels.</p> <p>Objective 2: Students will review the different advantages and disadvantages of several renewable energy types.</p> <p>Objective 3: Students will be able to discuss the societal contributions and limitations of using renewable energy versus fossil fuel based energy.</p> <p>Objective 4: Students will adopt a classroom action plan to conserve energy.</p>	Middle school	Renewable-Energy-LP.docx	Renewable-Energy-PP.pptx
Solid Waste MS-ESS3-4	<p>Objective 1: Generate an understanding of solid waste issues in Maine.</p> <p>Objective 2: Determine how public and private sectors can influence the generation and treatment of municipal solid waste.</p> <p>Objective 3: Discuss the waste hierarchy and each individual level.</p>	Middle school	Solid-Waste-Recycling-LP.docx	Solid-Waste-Recycling-PP.pptx
Sustainability MS-ESS3-3	<p>Objective 1: Students will be able to list and discuss the three pillars of sustainability.</p> <p>Objective 2: Students will consider “strong” versus “weak” sustainability.</p> <p>Objective 3: Students will define “anthropogenic” and discuss how it may affect our view of sustainability.</p> <p>Objective 4: Students will discuss ways to contribute to a more sustainable world.</p>	Middle school	Sustainability-LP.docx	Sustainability-PP.pptx
Watersheds MS-ESS3-3	<p>Objective 1: Define a watershed and those factors that can help keep a watershed clean.</p> <p>Objective 2: List and discuss what services watersheds provide.</p> <p>Objective 3: Determine what types of threats may affect the function of watersheds in the future.</p>	Middle school	Watershed-LP.docx	Watershed-PP.pptx
Wetlands MS-ESS3-3	<p>Objective 1: List the benefits of wetlands.</p> <p>Objective 2: Understand the relationship between wetlands and the plants animals that utilize them.</p> <p>Objective 3: Understand the benefits wetlands bring to an area in terms of flood control.</p>	Middle school	Wetlands-LP.docx	Wetlands-PP.pptx