

## Teaching a Lesson about Climate Change?

Here are Massachusetts science standards that could fit your lesson.

### GRADES K-2

LABEL	STANDARD
Earth and Space Science 2	Understand that air is a mixture of gases that is all around us and that wind is moving air.
Earth and Space Science 5	Recognize that the sun supplies heat and light to the earth and is necessary for life.
Biology 1	Recognize that animals (including humans) and plants are living things that grow, reproduce, and need food, air, and water.

### GRADES 3-5

LABEL	STANDARD
Earth and Space Science 9	Differentiate between weather and climate.
Biology 10	Give examples of how organisms can cause changes in their environment to ensure survival. Explain how some of these changes may affect the ecosystem.
Biology 13	Give examples of ways in which organisms interact and have different functions within an ecosystem that enable the ecosystem to survive.
Physical Sciences 5	Give examples of how energy can be transferred from one form to another.
Physical Sciences 12	Recognize that light travels in a straight line until it strikes an object or travels from one medium to another, and that light can be reflected, refracted, and absorbed.

## GRADES 6-8

<b>LABEL</b>	<b>STANDARD</b>
Earth and Space Science 3	Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through the earth's system.
Earth and Space Science 4	Explain the relationship among the energy provided by the sun, the global patterns of atmospheric movement, and the temperature differences among water, land, and atmosphere.
Physical Sciences 14	Recognize that heat is a form of energy and that temperature change results from adding or taking away heat from a system.
Physical Sciences 16	Give examples of how heat moves in predictable ways, moving from warmer objects to cooler ones until they reach equilibrium.

## GRADES 9-12

<b>LABEL</b>	<b>STANDARD</b>
Earth and Space Science 1.1	Identify Earth's principal sources of internal and external energy, such as radioactive decay, gravity, and solar energy.
Earth and Space Science 1.3	Explain how the transfer of energy through radiation, conduction, and convection contributes to global atmospheric processes, such as storms, winds, and currents.
Earth and Space Science 1.4	Provide examples of how the unequal heating of Earth and the Coriolis effect influence global circulation patterns, and show how they impact Massachusetts weather and climate (e.g., global winds, convection cells, land/sea breezes, mountain/valley breezes).
Earth and Space Science 2.2	Describe the effects on the environment and on the carbon cycle of using both renewable and nonrenewable sources of energy
Earth and Space Science 3.2	Describe the carbon cycle.
Biology 6.2	Analyze changes in population size and biodiversity (speciation and extinction) that result from the following: natural causes, changes in climate, human activity, and the introduction of invasive, non-native species.
Biology 6.4	Explain how water, carbon, and nitrogen cycle between abiotic resources and organic matter in an ecosystem, and how oxygen cycles through photosynthesis and respiration.
Physics 2.1	Interpret and provide examples that illustrate the law of conservation of energy.
Physics 3.1	Explain how heat energy is transferred by convection, conduction, and radiation.
Physics 3.3	Explain how heat energy will move from a higher temperature to a lower temperature until equilibrium is reached.
Physics 6.2	Describe the electromagnetic spectrum in terms of frequency and wavelength, and identify the locations of radio waves, microwaves, infrared radiation, visible light (red, orange, yellow, green, blue, indigo, and violet), ultraviolet rays, x-rays, and gamma rays on the spectrum.