

Environmental Science Modules



UNIVIRTUAL

Module 1: Easter Island

Students travel to Easter Island at six different times in history, from 900AD to 1800AD. They measure the changes in, and the relation between, the island's resources and its population, tracing the effect of the increasing population on the environment and its collapse once the island's resources have been exhausted.

Module 2: Invasive Species

On a small tropical island, students are introduced to invasive/non-native species. Diving underwater, they collect and record data on fish species, algae coverage, and coral coverage over different time periods. They are taught the various methodological approaches and techniques used to survey marine biodiversity (Line Transect, Quadrant Sampling, and S Transect).

Module 3: Ice Core

Students join a scientific expedition in Antarctica, where they drill for ice core samples in a snow-swept landscape, before analysing the samples in a field lab. They add the data they collected in the virtual environment to an existing ice core data file that goes back almost 800,000 years. They use the dataset to inform a discussion of how changing CO₂ levels might affect the Earth's climate.

Module 4: Climate Change and Ocean Acidification

Returning to the tropical island, students conduct a survey on a coral reef. They learn about coral symbiosis, how atmospheric CO₂ affects seawater pH levels, how calcium carbonate dissolves in low pH, and how to design a field experiment (including controls, experiments, and replicates). They also discover that every field experiment affects the environment on a small scale.

Module 5: Nutrient Use on a Farm

After initial instruction in a large industrial barn, students visit wetlands capable of growing sugarcane. Students must determine the amount of fertilizer required to produce a healthy and commercially profitable sugarcane crop. They learn why fertilizers are used, gain an understanding of yields and nutrient use efficiency, and practice basic data analysis techniques.

Module 6: Nutrient Effect on a Watershed

Students visit six virtual watersheds in various states of eutrophication, and take dissolved oxygen readings and water samples for analysis and processing. Then they explore issues associated with eutrophication, learn how to relate fertilizer inputs to eutrophication effects, and estimate the cost of

and estimate the cost of eutrophication to a farm.

Module 7: Frogs and Atrazine

On a tropical island, students experiment on frog species using Atrazine. As well as practicing a variety of basic laboratory techniques, students are introduced to the issues surrounding environmental toxicology, and the dangers posed to vulnerable populations by human-made chemicals. They also learn about experimental and control treatments, and how to evaluate their results statistically.

Module 8: Green Building

Within a suburban housing development, students detect and identify building features, fixtures and fittings that can be made more energy efficient using a 'green scanner'. This introduces the basic principles of sustainable building and its benefits. It also teaches students how to assess different building materials according to green criteria, and enables them to evaluate the cost-effectiveness of different building choices.

To discuss our virtual world solutions, please contact us via email, phone, or use the contact form at univirtual.com/contact

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