

Environment and Natural Resources 690: Global Change Education

Quarter Credit Hours - 3 under/grad

Course description:

Global Change Education is designed for preservice, inservice or nonformal science/environmental educators of grades 6-12. The course introduces methods and materials for presenting interdisciplinary aspects of global climate change and its impacts on Great Lakes and global settings. Taught by example using collaborative learning, portfolios and projects, the course uses classroom materials developed through NSF and Sea Grant funding and appropriate to middle and high school classes. Topics include changes that affect all of Earth, such as volcanism, stratospheric ozone, atmospheric composition, including proxy data, but focuses on how scientists predict that the Great Lakes region will respond to a doubling of CO₂. Impacts on water quantity, forests, wetlands, fish and other water organisms, recreation, agriculture and the like will be considered. Special focus will be placed on how the process of science works, how science disciplines relate to each other, and how the public deals with uncertainty associated with climate change.

Course objectives:

Educators who successfully complete this course will be able to

- demonstrate lesson plans integrating the science of Earth subsystems (water, land, ice, air, life) using non-lecture experiences for teaching/learning.
- organize Earth system concepts to illustrate basic relationships of climate change as they are predicted to affect the Great Lakes region.
- describe how observable short-term change in the Great Lakes region relates to global environmental changes.
- collect, analyze, interpret and report environmental data to demonstrate interactive changes in Earth systems.

Evaluation:

Attendance and participation in all class activities	20%
Concept map of global change	25%
Assignment portfolio	30%
Final team project	25%

Materials:

Workshop fee of \$15, payable in class, covers curriculum materials and handouts. Fee includes *Great Lakes Instructional Materials for the Changing Earth System*, *Scenarios for Global Change in the Great Lakes*, a packet of materials from government agencies, and folder of additional resources.

continued

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Tentative schedule:

Each day's expanded plan will be posted in the morning. Activities will be subject to change based on weather, participant background, and lab vessel schedules.

- Sunday PM Course introduction; preassessments; Earth systems education overview
- Monday AM Global climate change basics. Discussion and activities for teaching relationships
PM South Bass Island resources. Project discussion
- Tuesday AM Climate change in the Great Lakes
PM Labs and activities on biodiversity
- Wednesday Field trip to Kelleys Island. Comparison of environments; project work
- Thursday AM Complete biodiversity activities
PM Possible effects of climate change on human enterprises (shipping, energy use, recreation)
- Friday AM Climate change and the nature of science
PM Trip to Middle Bass: history of viticulture; grooves, shore studies
- Saturday AM Cars on trial; what can we do about climate change?
Teams present projects; post-assessment. Finished by noon.