The goal of National Science Foundation Ethics Education in Science and Engineering Grant #1135327 ("Graduate Pedagogy for Ethical Dimensions of Coupled Natural and Human Systems Research'') was to create interactive, open-access online modules that teach first year graduate students about an expanded understanding of the role of ethics in Science, Technology, Engineering and Math (STEM) fields. The focus of traditional research ethics training has been responsible conduct of research (RCR) issues, which include topics such as preventing falsification, fabrication, and plagiarism, good data management strategies, and understanding how to avoid or manage conflicts of interest. While these are certainly important components of ethics training, we developed what we refer to as an "expanded understanding" of ethics in order to indicate that these issues are not the only ones that arise during the process of STEM research.

All of these modules present training in the three domains of ethics relevant to STEM research: Research Integrity, Broader Impacts, and Embedded Ethics. Those using the modules are provided with opportunities to develop skills in what we call "ethics spotting" and ethical analysis through case based learning.

Moral Literacy and Ethical Dimension of STEM Research

The first is an introductory online module that is broken into two parts: An Introduction to Moral Literacy and An Introduction to Ethical Dimensions of STEM Research. These modules present researchers with an overview of ethics, moral literacy, an ethical analysis decision framework, and an introduction to the ethical dimensions of STEM research.

Moral Literacy

Ethical Dimension of STEM Research

Topical Modules

These specific topics were chosen not only for their connection to living in a sustainable world, but also for our ability to tap into the expertise of the Penn State community and the institutes, networks, and programs housed at Penn State.

Biofuels

Solar