

The ethics of sustainability
Module developed for use in STEM and possibly other courses
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General nature and purpose of the module:

This module is designed to be used in STEM courses at any level. It could easily be adapted for use in Business courses as well as in courses in other disciplines. It could function well in an introductory undergraduate course. The purpose is to bring ethical thinking about sustainability into STEM courses in an explicit and focused way. Since few STEM students will have been exposed to thinking about ethics in a systematic way, it will have an introductory character to it regardless of the level at which it is taught. But it includes resources for going into greater depth, so that it can be taught in an upper level undergraduate or even in a graduate course. It is scalable, in the sense that it could occupy as little as one class period or as many as four. Ideally, the basic ideas and resources could be presented in one period. Readings, research assignments, discussion groups, case studies, and individual and group projects could follow. Resources on which these assignments and activities could be based are included in the module. Additional class periods could be dedicated specifically to some of these assignments (e.g., working through a case study, watching and discussing a video, or presenting projects.) It would also be possible, and would likely be more effective, for the ideas and methods introduced in the presentation period to be adapted and applied within the ordinary flow of work in the class (for example, by including ethical analysis in a case study in environmental science, especially if the case touched on the science, technology or policy of sustainability).

The module has several related purposes. The first is to appreciate that sustainability is a moral and not merely a technical concept, in the sense that understanding and addressing it raises moral issues and requires moral commitment, and also in the sense that failure to think well about it or to address it is a moral failure. The second is to acquire tools for thinking about and drawing conclusions about moral issues of the sort that sustainability presents. In particular this means acquiring a framework for thinking about moral issues that is useful regardless of one's preferred ethical theory, and coming to understand the way that one can take appropriate responsibility for collective moral challenges. Along with the framework, the module will familiarize students with the extensive, free on-line library of resources on sustainability available from the United Nations Environmental Programme and other sources.

Finally, while many specific moral "problems" or puzzle-cases arise in connection with sustainability, a goal of this module is to lead students to think about ethics in general, and sustainability in particular, as a way of life rather than as a series of problems to be solved. In the context of this class, that should mean integrating the module's material into the class, rather than including it as a separable piece. In practice, that should mean taking one period to present the tools the module provides, to discuss and practice their use, and to clear the decks of some of the common

obstacles to addressing ethical issues in a classroom or in similar public contexts. Then it would mean *using* those tools to explore the ethical dimensions of class material throughout the remainder of the semester. Good opportunities should arise in case study work, also in class discussion about science and public policy, but perhaps also in terms of some larger practical study in which the class might be involved.

Specific elements of the module:

- 1) Short summary of the module (this document)
- 2) Instructor's guide for use of the module (includes possible assignments, list of resources, short notes on issues that are likely to come up, links to YouTube videos, materials students can use to uncover the origins of the current environmentally specialized notion of sustainability (link to Brundtland Report), and a short summary of Carolyn Whitbeck's approach to engineering ethics, "Ethics as Design.")
- 3) Power point presentation of a three-perspective framework for ethical reflection and analysis, with specific application to sustainability.
- 4) Accompanying short reading summarizing the three-perspective framework, and showing how it can be used as a question generate to facilitate ethical analysis of an issue in environmental science (biodiversity loss).
- 5) Exercises using the three perspective framework to reflect on the ethics of sustainability (attached to instructor's guide)
- 6) Annotated list of reports, articles, TED talks, books and other research resources. Several are readily available to students at no charge; others are journal articles or suggested selections from books that could be placed on reserve or made available to students without violating fair use (included in instructor's guide)
- 7) List of possible assignments or projects to go with the module.