Title: 4A. Ethical Methods and Processes

Goal: To review knowledge of major ethical theories and introduce tools for assessing science, technology, and engineering.


Prerequisites by Topic:
- Module 2A
- Module 3A

Required Texts:

Required Text:
Reading: Write-up of this module
References: [Refs. 14-17, 20, 23]

Student Learning Outcomes:
- Be able to explain the nature of professional and personal responsibility
- Be able to recognize the ethical dimensions of decisions, actions, and policies
- Be able to distinguish between cultural or individual preferences and ethically relevant situations and practices.
- Be able to employ major ethical theories – Pragmatism
- Be able to utilize The Ethical Cycle
- Be able to discuss and debate the ethical dimensions of decisions, actions, and policies
- Be able to propose possible solutions to ethical concerns
- Be able to compare and evaluate differing possible solutions
- Demonstrate critical thinking skills and judgment
- Develop an ethical identity to carry forward to working life
Topics Covered: (Green highlighted topics are priority #1, Yellow highlighted are if time permits)

- **Lecture I: Developing an Ethical Framework 4:**
  - Review of Ethical Theories: Deontology, Utilitarianism, Virtue Ethics
  - Pragmatism and Engineering Ethics (Emison, Gerald A)
  - Introducing The Ethical Cycle (van de Poel, Ibo and Lambèr Royakkers)

- **Lecture II: Developing an Ethical Framework 5:**
  - Global Dimensions (Salamanca-Buentello, Fabio, et al)
  - The Ethical Cycle (van de Poel, Ibo and Lambèr Royakkers)

**Relationship to ABET Program Outcomes**

[Note: Please, refer ABET program outcomes list (a) through (l) in attached standard template.]

(c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical constraints as well as considerations of public health and safety, manufacturability, and sustainability.

(f) An understanding of professional and ethical responsibility.

(g) An ability to communicate effectively.

(h) The broad education necessary to understand the impact of engineering solutions in a global economic, environmental, and societal context.

(i) A recognition for the need for and an ability to engage in lifelong learning.

(j) A knowledge of contemporary issues.