Course Outline – Engineering Ethics

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Course Description

In this course, students will learn about core ethical issues in the engineering profession. In the first section of the course, students will cover basics in public speaking, professional codes of ethics, and normative ethical theories, including Kantianism, utilitarianism, and virtue ethics. In the second section of the course, students will apply these ethical frameworks through case studies to topics such as engineering as experimentation, safety and risk, environmental impact, and animal ethics. In the final section of the course, students will examine whistleblowing and global justice within engineering practice.

Course Objectives

- Understand foundational concepts in moral philosophy and major normative ethical frameworks.
- Analyze professional engineering codes of ethics and evaluate competing obligations to clients, employers, regulators, and the public.
- Apply ethical theories to contemporary engineering case studies involving safety, risk, environmental sustainability, and animal welfare.
- Communicate complex ethical arguments clearly in both written papers and structured oral presentations.

Topics and Sample Readings

Section I: Foundations of Communication, Professional Codes, and Ethical Theory

- **Module 1: Introduction to the Course and Public Speaking Basics (Part 1)**
  Readings: *Public Speaking: The Virtual Text* (PS), Chs. 1, 7, & 8.
- **Module 2: Public Speaking Basics (Part 2) and Professional Codes of Ethics**
  Readings: *Public Speaking: The Virtual Text*, Chs. 11, 12, 15, & 16; Martin & Schinzinger (MS), Ch. 2; National Society of Professional Engineers (NSPE) Code of Ethics.
- **Module 3: Normative Ethics (Part 1) — Kantianism and Utilitarianism**
  Readings: Martin & Schinzinger, Ch. 3 (pp. 49–59); Dale Jamieson, “Kantianisms”; Louis Pojman, “Strengths and Weaknesses of Utilitarianism.”
- **Module 4: Normative Ethics (Part 2) — Virtue Ethics**
  Readings: Martin & Schinzinger, Ch. 3 (pp. 60–75); Charles Kahn, “Aristotle and Driver on Virtues”; Jon Alan Schmidt, “Engineering Ethics as Virtue Ethics.”

Section II: Applied Engineering Ethics and Case Studies

- **Module 5: Engineering as Social Experimentation**
  Readings: Martin & Schinzinger, Ch. 4.
- **Module 6: Safety, Risk, and Professional Responsibility**
  Readings: Martin & Schinzinger, Ch. 5; Applied Case Studies (e.g., 2023 Titan submersible implosion).
- **Module 7: Engineering and the Environment (Part 1)**
  Readings: Martin & Schinzinger, Ch. 9; William Baxter, “People or Penguins.”
- **Module 8: Engineering and the Environment (Part 2)**
  Readings: Paul Taylor, “Respect for Nature”; Aldo Leopold, “The Land Ethic.”
- **Module 9: Engineering and Animal Ethics**
  Readings: Peter Singer, “All Animals Are Equal”; Tom Regan, “The Case for Animal Rights.”

Section III: Organizational Loyalty, Whistleblowing, and Global Justice

- **Module 10: Whistleblowing and Organizational Responsibility**
  Readings: Martin & Schinzinger, Ch. 7.
- **Module 11: Global Justice in Engineering Practice**
  Readings: Martin & Schinzinger, Ch. 10.

Representative Assignments

- **Descriptive & Ethical Case Presentations:** Structured oral presentations analyzing real-world engineering cases, stakeholder obligations, and ethical dilemmas.
- **Value-Analysis (VA) Papers & Final Research Paper:** Scaffolded analytical essays applying normative theories to contemporary engineering problems.
- **Weekly Discussion Boards & Final Speech:** Collaborative argument reconstruction and a culminating oral presentation on a student-selected engineering ethics topic.

> **Primary Texts & Materials:**
> • Mike W. Martin and Roland Schinzinger, *Ethics in Engineering* (MS)
> • *Public Speaking: The Virtual Text* (PS) — Open-Access Resource
> • Supplemental scholarly articles and professional codes provided via Open Educational Resources (OER) and library reserves.