NEW JERSEY INSTITUTE OF TECHNOLOGY
PHIL334: ENGINEERING ETHICS
Fall 2025

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Office Hours: By appointment

Course Description:
Engineering Ethics provides a practical introduction to the ethical dimensions of engineering and technological innovation. Through ethical frameworks, professional codes of ethics, case studies and examination of emerging technologies, students will explore how engineering decisions intersect with moral responsibility and societal impact. The course introduces foundational ethical literacy. It applies diverse decision-making approaches to real-world dilemmas while building skills in ethical reasoning, respectful discourse, and team-based analysis. Emphasis is placed on anticipating ethical challenges in future technologies and developing original frameworks for responsible innovation. Students will engage with virtual reality tools and traditional as well as generative AI to support reflection, disagreement, and applied problem-solving. This course is intended to prepare students to think critically and act ethically in their professional practice.

Course Outcomes:
By the end of the course, students will be able to:

- Identify, understand and recall ethical issues: identify different ethical decision-making approaches, and recognize the ethical responsibilities of engineers
- Analyze engineering ethics cases, apply different ethical decision-making approaches, and evaluate the broader societal and environmental impacts of engineering
- Develop and defend positions about issues in engineering ethics, engage respectfully in ethical discussions, demonstrate ethical reasoning, and evaluate the broader societal and environmental impacts of engineering
- Anticipate ethical questions from emerging technologies, create self-guided frameworks for understanding innovation through the lens of engineering ethics

Course Materials:
There is no specific textbook assigned for this course. Readings are posted weekly on Canvas.

All required course readings will be posted on Canvas as library resources and/or .pdf files

Assignments & Evaluation:
Class Participation 25%
Short Reflection Paper 1 5%
Short Reflection Paper 2 5%
Short Reflection Paper 3 5%
Quizzes 30%
Final Exam 15%
Group Presentation 15%

Grading Scale:
A >=90
B+ 89-85
B 84-80
C+ 79-75
C 74-70
D 69-60
F <60

Artificial Intelligence Policy:
Student use of artificial intelligence (AI) is required in this course. AI usage must be cited as is shown within the NJIT Library AI citation page.

Technology Policy:
Students are allowed to use both smartphones and laptops during class meetings, but **for class-related activities only**. In the case of a need for emergency phone use, please excuse yourself from the classroom. Violations of this policy may result in a participation/attendance grade deduction.

FULL COURSE SCHEDULE

Week/Dates	**Themes**	**Topics**
Week 1: Sep 2–5	Introduction	Course orientation, syllabus review, expectations, and introduction to engineering ethics
Week 2: Sep 8–12	Engineering, Professions, and Ethical Responsibility	Introduction to the nature of engineering as a profession, distinguishing engineering from science, and discussing foundational ethical responsibilities
Week 3: Sep 15–19	Foundations of Ethical Reasoning: Human, Natural, and Technological Values	Exploration of consequentialism, deontology, virtue ethics, and environmental ethics; linking philosophical roots with technological contexts
Week 4: Sep 22–26	Professional Codes of Ethics and the Tragedy of the Commons	Review of NSPE, IEEE, ASCE codes; resource exploitation, sustainability, and shared moral responsibility
Week 5: Sep 29–Oct 3	Governance, Risk, and Safety in Engineering Practice	Process safety, risk/benefit analysis, organizational responsibility, and the ethics of precaution
Week 6: Oct 6–10	Engineering and Business Ethics: Market Failures, Pressure, and Whistleblowing	Navigating the interface between profitability and professional duty; examining the moral courage to dissent
Week 7: Oct 13–17	Climate Change, Energy Systems, and Intergenerational Ethics	The ethical dimensions of climate disruption, energy justice, and long-term impact of engineering systems
Week 8: Oct 20–24	Obsolescence, Consumerism, and the Ethics of Waste	Planned obsolescence, electronic waste, recycling ethics, and design for sustainability
Week 9: Oct 27–31	Robotics, AI, and Human–Machine Interaction	Ethics of automation, bias in algorithms, responsibility in design of intelligent systems
Week 10: Nov 3–7	The Social and Global Impact of Emerging Technologies	Ethical implications of AI, surveillance, and data technologies, especially in underserved and global contexts
Week 11: Nov 10–14	Technology Transfer, Innovation, and Global Justice	Ethical challenges in exporting technologies, global governance, and access in the developing world
Week 12: Nov 17–21	Mistakes, Fraud, and Heroism in Engineering	Case studies of failures, deception, and whistleblowing; highlighting engineers who acted ethically under pressure
Thanksgiving Week: Nov 24–28	—	—
Week 13: Dec 1–5	Ethics, Entrepreneurship, and Engineering Futures	Innovation ethics, ethical entrepreneurship, and creating frameworks for responsible technological advancement
Week 14: Dec 8–11	Final Team Presentations	Student-led synthesis of course learning through team presentations and ethical case applications

Grading Policies:

- *The course will adhere very strictly to assignment due dates*. Makeup dates will *only* be administered in cases of documented conflicts.
- There is no makeup for late reflection papers. Following an emergency, please contact the instructor.
- Each course participant should engage often in discussions of the reading assignments and is expected to have read the material for each lecture.
- Students must engage in civil discussion of course material.
- There is an attendance policy (with two unexcused absences permitted) because participation (speaking, attentiveness, engagement etc.) is crucial to facilitate an engaging classroom environment. Unexcused absences beyond the allotted two will drop the attendance grade in 5% increments.
- Course participants will write three 1-2 pp. reflection papers according to a simple rubric.
- There is a final exam and a quiz covering the course content. To receive a final grade, students *must* sit for all scheduled exams and quizzes.
- A final student presentation based on a specific topic is due at the end of term. Students will: (1) choose a specific issue, (2) organize into a group of 3-4 (3) develop and present their ideas together. Every student in the presentation group will receive the same grade for this presentation.

Accommodations and Disability:
Students with any accommodation needs and/or requests (e.g., accessible instructional texts and materials) are strongly encouraged to inform the instructor in a timely manner. Any accommodation requests in accordance with NJIT's accessibility policy and services should be submitted through proper institutional channels.

Statement on Academic Integrity:
Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: NJIT Academic Integrity Code.