

INDE 410: Engineering Ethics

Fall 2017

Administrative details

Instructor: Nadine Marie Moacdieh

Email: nm102@aub.edu.lb

Office hours: MW 2-3 pm (or by appointment)

Office location: Bechtel 529

Class time: MWF 9-9:50 a.m.

Class location: Bechtel 205

Credits: 3

Course textbook: Van de Poel, I. and Royakkers, L. (2011). *Ethics, Technology, and Engineering: An Introduction*. Chichester, United Kingdom.

Catalog description

A course on engineering ethics covering responsibility in engineering; framing the moral problem; organizing principles of ethical theories; computers, individual morality, and social policy; honesty, integrity, and reliability; safety, risk, and liability in engineering; engineers as employees; engineers and the environment; international engineering professionalism; and future challenges.

Course topics

1. Responsibility of Engineers (Chapters 1 and 9)
2. Ethical Theories (Chapters 3 and 4)
3. Professional Engineering Codes (Chapter 2)
4. Ethics and the Design of Technology (Chapters 6 and 8)
5. Ethics and the Environment (Chapter 10)

Course objectives

This course will provide students with

1. An understanding of the responsibilities of engineers towards their employers and towards society
2. An overview of the classical ethical theories that can help guide ethical decision-making
3. An overview of the different professional engineering codes available that regulate the engineering professions and provide guidance in the case of moral conflicts
4. An awareness of different forms of lying and dishonesty that should be avoided
5. The necessary framework to carry out ethical decision-making and reach an acceptable and moral solution in the face of conflict
6. An understanding of the ethical problems that may arise in the design of technology
7. An understanding of the ethical problems related to the environment and the role that engineers can play in preventing harm to the environment
8. An ability to work in groups and prepare well-written technical reports, as well as present coherent and formal presentations to their peers

Course learning outcomes

After completing INDE 410, students should be able to

- Describe the different types of responsibilities that engineers have towards society and their employers
- Explain the concept of corporate liability and the problem of many hands
- Describe the possible conflicts that may arise between engineers and managers and the options available to engineers to overcome or avoid these problems
- Explain how to join the Lebanese order of engineers and what the benefits are
- Identify the conditions that make an engineer morally responsible (blameworthy) and/or legally responsible (liable)
- Describe the main tenets, strengths, and weaknesses of the classical ethical theories
- Analyze classic ethics texts in philosophy and apply these principles to case studies
- Describe what makes an argument valid and recognize logical fallacies
- Explain the advantages and disadvantages of engineering and corporate codes of conduct, understand the importance of social responsibility, and use engineering codes to solve engineering ethics problems
- Recognize and describe the different ethical issues or forms of dishonesty that engineers may come across in practice, such as conflicts of interest, bribery, and data manipulation
- Identify the optimal solution to complex engineering ethical problems and provide sound arguments for the decision
- Identify and explain the importance of ethics at different stages of the design process
- Outline the moral justifications for environmental sustainability

Course grading

Component	Percent	Details
Class attendance and participation	10%	<ul style="list-style-type: none">Students are expected to participate in class discussions
Assignments	10%	<ul style="list-style-type: none">Preparation and in-class exercises
Midterm	25%	<ul style="list-style-type: none">Friday, October 27 at 6 pm (location TBA)
Project	20%	<ul style="list-style-type: none">Presentation (10%) and report (10%)
Final Exam	35%	<ul style="list-style-type: none">Date: TBA

Notes

1. It is expected that all material for this course will be a student's own original work. Students are not allowed to submit or refer to other students' work. Any evidence of cheating, in exams or homework/projects, will result in a failing grade for everyone concerned.
2. Make-up exams are only administered with a valid excuse and are always significantly more difficult than the original exam.
3. Up to three absences will not affect a student's grade
4. Attendance is taken at the start of class only
5. AUB strives to make learning experiences as accessible as possible. If you anticipate or experience academic barriers due to a disability (including mental health, chronic or temporary medical conditions), please inform me immediately so that we can privately discuss options. In order to help establish reasonable accommodations and facilitate a smooth accommodations process, you are encouraged to contact the Accessible Education Office: accessibility@aub.edu.lb; +961-1-350000, x3246; West Hall, 314.