REU 2024 - Ethics Class #1

Introduction to practical ethical decision making
Basic Ethics Theories
Engineering Ethics

• Does an engineer have a responsibility other than to produce the best product or process?

• Why are ethics important?

• What are the possible consequences of not using ethics?
  • Loss of life
  • Loss of property
  • Going out of business
  • Loss of reputation
  • .....
Being ethical – is it really this simple?

- Standards for ethical decision making
  - **ABET** – Accreditation Board for Engineering and Technology
  - **NSPE** – National Society of Professional Engineers
  - **ASME** – American Society of Mechanical Engineers

- These are only *guidelines*

- Ethics are achieved by following a mixture of moral, legal, and personal values.
Ethical Decision Framework

- Personal Feelings
- Ethical Standards
- Legacy Data
- Morals
- Other opinions (technical / non-tech)

Issue Decision
Evolution due to the Information Age

- New car design & production times have decreased by over 50% in the last 15-20 years
- Software design times were up 5-6 years in the mid 90’s.
  - Now less than 12 months
- How does this affect ethical decision making?
Morality and Ethics

• How does morality mix with ethics?
  • What other items/traits does this bring to answering ethical issues?
    • Emotions
    • Personal experiences
    • Religious
  • What is the biggest problem with including morals in an ethics procedure?
Ethics and Law

Should ethics have to be enforced legally?

Legal enforcement has many characteristics:

1. Laws have to be passed and then enforced

2. Breaking of a law has to be proven

3. Decisions are often made by non-technical citizens
Ethics and the Engineer

- Engineers are increasingly becoming required to foresee problems and design their solutions

Is this fair?

Question: How do you do it?

Answer: You approach this problem like any other in engineering

Gather data, analyze and make an intelligent choice
Consequentialist

- Commonly referred to as “the end justifies the means”.
  - Focuses on outcomes of decisions
  - Look at a decision in terms of effect on individuals involved
- Correct decisions produce “the greatest good for the greatest number” - John Stuart Mill (1806-1873)
Other types of Consequentialist

- Altruism - Decisions should benefit all
- Egoism - Decisions should benefit oneself the most
Deontological Theory

• Focus on the decision and reasoning behind it
  • Some decisions are wrong regardless of outcome

• Often reduced to morality and should be governed by the *Categorical Imperative* (Immanuel Kent, 1724-1804):
  • Always treat humanity as an end and *never* as a means

• Examples?
Deontological Theory

- The general idea is that all people are considered valuable and worthy of moral respect

- Or, said another way

- “Do unto others as you would have them do unto you”
Virtue Theory

- Aristotle (384-322 BC)

- Focus is on the individual over his/her entire life
  - Does not focus on individual decisions

- A virtuous person has wisdom through experience and knows how to apply this to practical decision making

- Rather than using formulas, codes, or standards, judgement is used to make decisions
Homework

• Look up information on Theranos and Elizabeth Holmes

• ‘The Inventor: Out for Blood in Silicon Valley’ Max

• ‘The Dropout’ Hulu

• ‘60 Minutes: Elizabeth Holmes and the Theranos Deception’ Youtube

• ‘Elizabeth Holmes: Valley of Hype’ Youtube