WELCOME TO ENGINEER 4A03

WEEK 1

Lecture

McMaster University

ENGINEERING

Ethics, Equity and Law in Engineering FA24

Today's Agenda

01 **About The Course**

What are we getting ourselves into

02 **About You**

You will tell me a little bit about yourself

03 **About Me**

I will tell you a bit about myself

04 **A Short Lecture**

We will have our first lecture – a short one.

Learning Outcomes (1 of 2)

1. Identify and analyze the essential **characteristics of a complex problem** from a **sustainability** perspective, including its **ethical** dimensions, risks, and uncertainties. (GA 4.5)
2. Feel and explain a sense of **respect for diversity**, the environment, and past, present, and future generations in all engineering decisions. (GA 9.1, 9.2 and 9.3)
3. Identify professional **ethical dilemmas** and competing stakeholder interests and develop conscientious, well-reasoned, professional responses. (GA 10.1, 10.2, 10.3)

Learning Outcomes (2 of 2)

4. Identify and quantify short and long-term **impacts of engineering** on a scale ranging from the local to the global. (GA 9)
5. **Communication skills** for effective teamwork, influence, and effectiveness. (GA 10)
6. Thoughtfully consider personal and professional choices and **career contributions**. (GAs 8, 9, 10, 11)
7. Be able to critically evaluate and apply knowledge, methods and skills procured through self directed and self identified sources, and is aware of **engineering societies and literature**. (GA 12)

Teaching

- 5+3 TAs – check A2L
- 4 Guest Lectures – TBD
- 10 Lectures
- No Final Exam

Is there a textbook?

No

There is no required textbook for this course

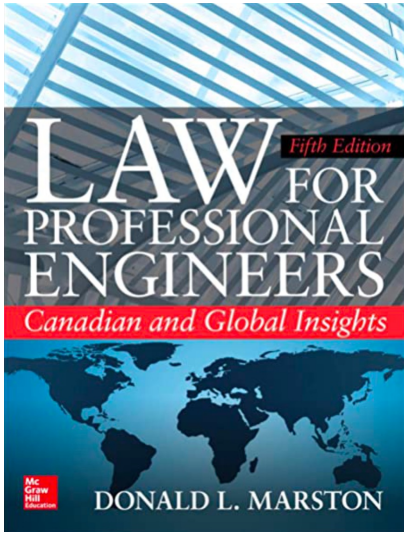
But

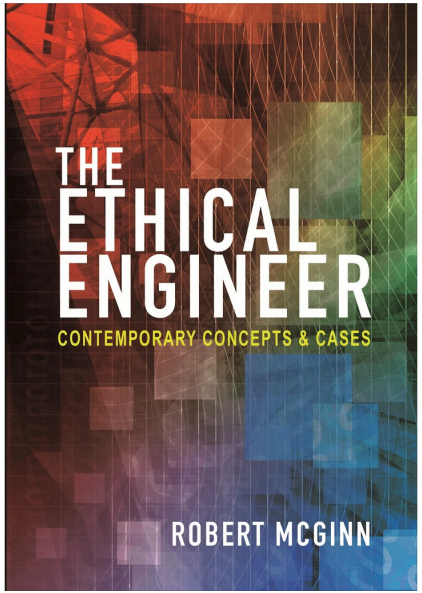
There may be posted resources worth going through from time to time.

Recommended but not necessary…

1. Marston, D. L. (2019). *Law for professional engineers: Canadian and global insights*. McGraw Hill Professional.

2.McGinn, R. (2018). *The ethical engineer: Contemporary concepts and cases*. Princeton University Press.





Graduate Attributes

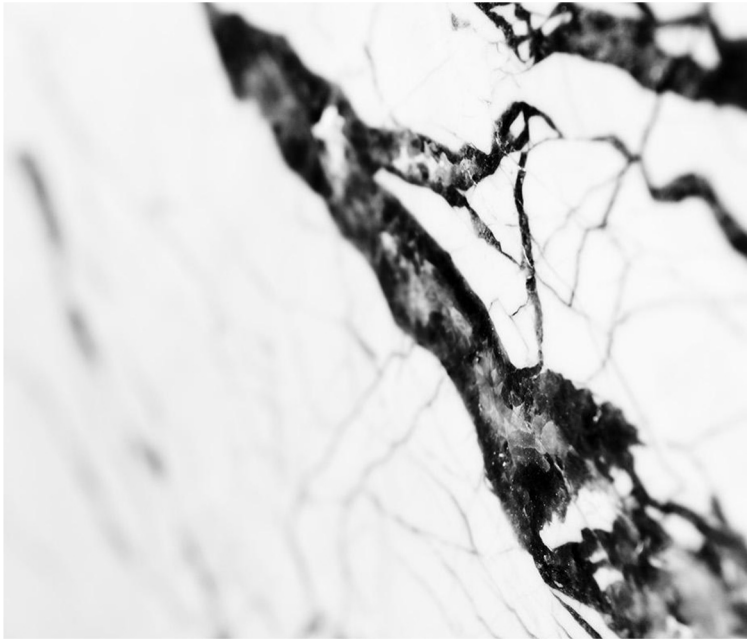
- The CEAB has asked all accredited Engineering programs to measure graduate attributes.
- There are 12 attributes and 50 indicators.
- Most courses in your program of study measures at least one indicator.
- All indicators must be measured at least twice.

Evaluation

- Quizzes – 30%
- Assignments – 30%
- Project – 27%
  - Part I: Literature Review– 7.5%
  - Part II: Case Study– 7.5%
  - Part III: Project Evaluation Report – 12%
- Multiple Mini Presentations – 5%
- Participation – 8%

04: Technology & Society

An Intro to Ethics, EDI & Law in Engineering



Learning Outcomes:

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Central Question:

What are the “real life” impact and social repercussions that engineering and technology have on different groups in society?

Why this course?

1. To understand the scope and breadth of your social/ethical responsibilities.
2. To translate a general awareness of ethical responsibility into specific engineering practices.
3. To contribute to the profession's activity in technology policy formation after you graduate and become a Professional Engineer.

ENG 4A03

Ethics

moral guidelines

EDI

social justice

Law

fairness vs Justice

Engineering is Morally Motivated.

Why?

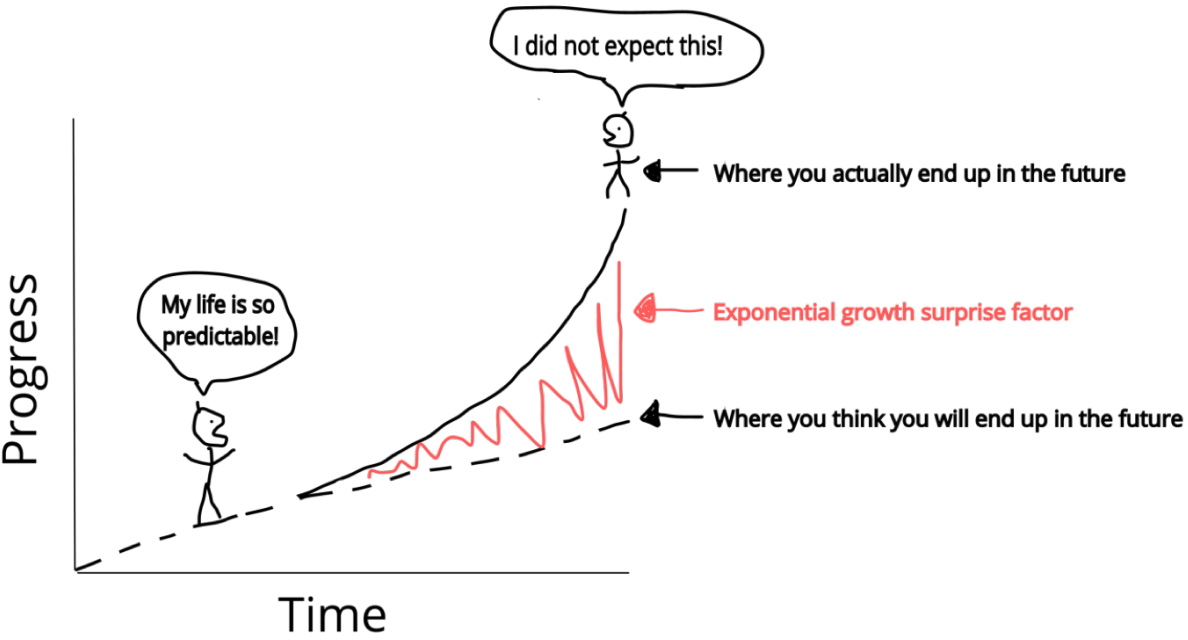
Consider Science vs Engineering

Science – Let's understand the world better
Engineering – Let's **understand** the world better and **change** it.

Moral Competencies to Consider

1. Moral sensibility
2. Moral analysis skills
3. Moral Argumentation skills
4. Moral judgement skills

Disruptive Innovation & Exponential Growth



> “Making engineering students aware of ethical challenges in engineering practice and illustrating the serious social costs attributable to engineering misconduct could help prevent or lessen some of those societal harms.”

McGinn, R. (2018). *The ethical engineer: Contemporary concepts and cases*. Princeton University Press.

x.com

Challenger Space Shuttle 1986

Bob Pearson / AFP / Getty Images

100,000,000

Tons of CO by GM added to atmosphere between 1991 and 1995

(2023). Azureedge.net. https://ccmarketplace.azureedge.net/cc-temp/listing/103/5915/9996370-1991-cadillac-coupe-deville-std.jpg

Early Technological Advancements

Agriculture

- Sustainability / Territorial Disputes

Wheel

- Mobility/Military Conquests?

Middle Ages & Rennaisance

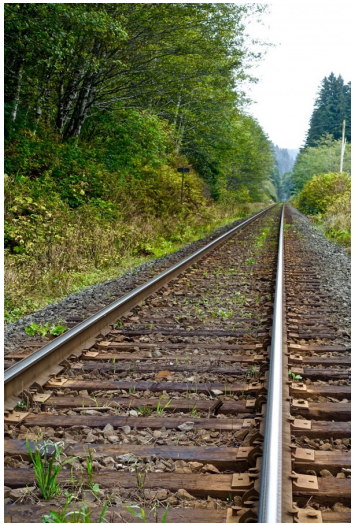
Navigation

- Exploration / Colonization?

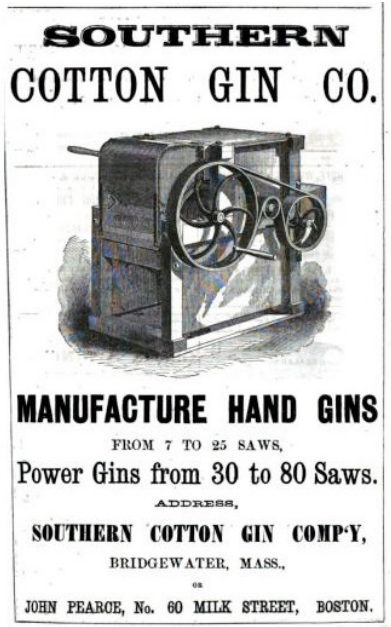
Printing Press

- Information/Control & Censorship?

The Industrial Revolution



Railways



Cotton Gin

- Impact on Slavery

Steam Engine

- Efficiency/Economic Disparities