Engineering Q&A

SPH3U7

What do you think engineering is?

- **Designing** complex mechanical systems that people use on a daily basis.
- **Designing** systems with the purpose of accomplishing a task.
  - For example, a task would be to build a tunnel and solutions must be engineered to accomplish the task.
- **Designing** things. **Building** things. **Making** things out of sheer smarty-smarts that can be used to help people or make life easier or at least more interesting.
- **Making** things to solve problems.
- **Applying** science to **make** stuff
- **Building** and **creating** machines
- It incorporates the electrical, mechanical and software systems to **make** things that satisfy specific needs
- The **application** of science and mathematics to create/design and modify a program/object.
- Calculated ingenuity
- Combination of innovation, invention, design, modeling, and building
- Integral part of the society and is required in all fields of work
- The study of physics which can be applied to real world situations to innovate new products.

About Engineering

Professional Engineers Ontario

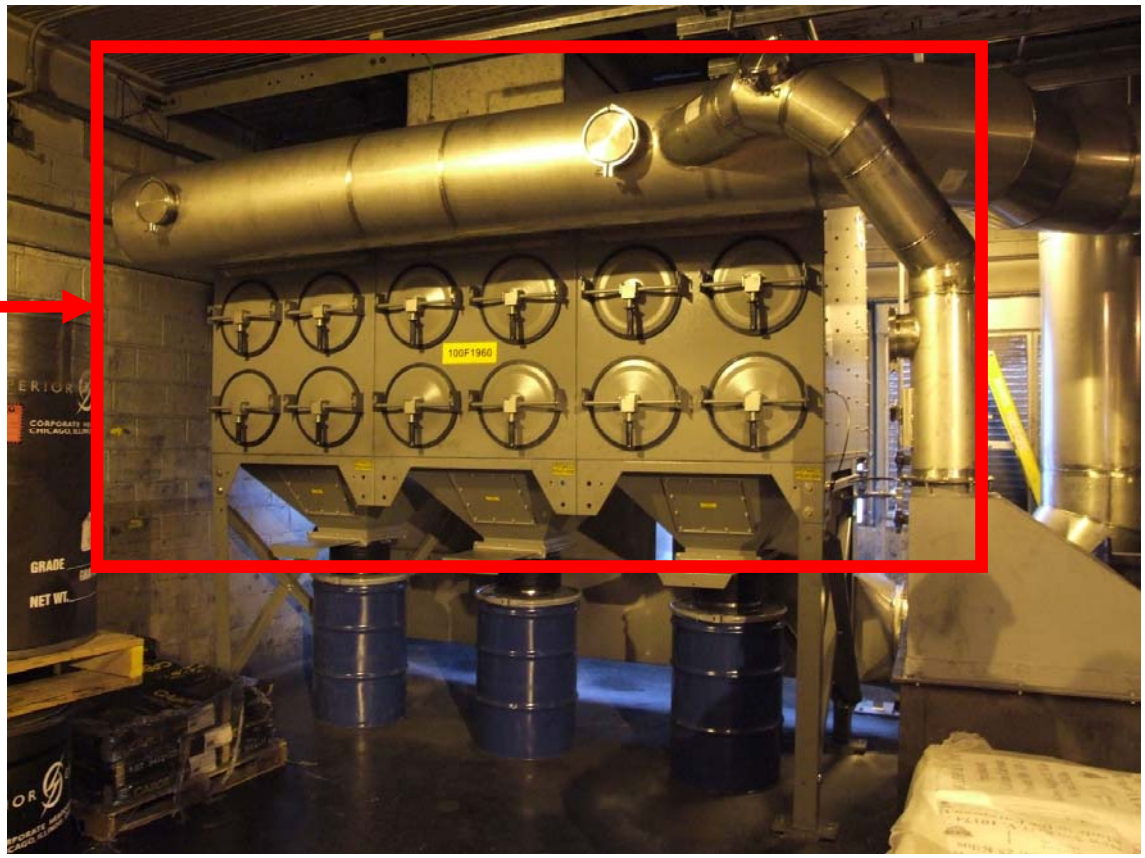
- Self-Regulated Profession, like doctors, accountants, lawyers
- Need: Bachelors Degree, 4 year of experience and pass exam

What is a Professional Engineer?

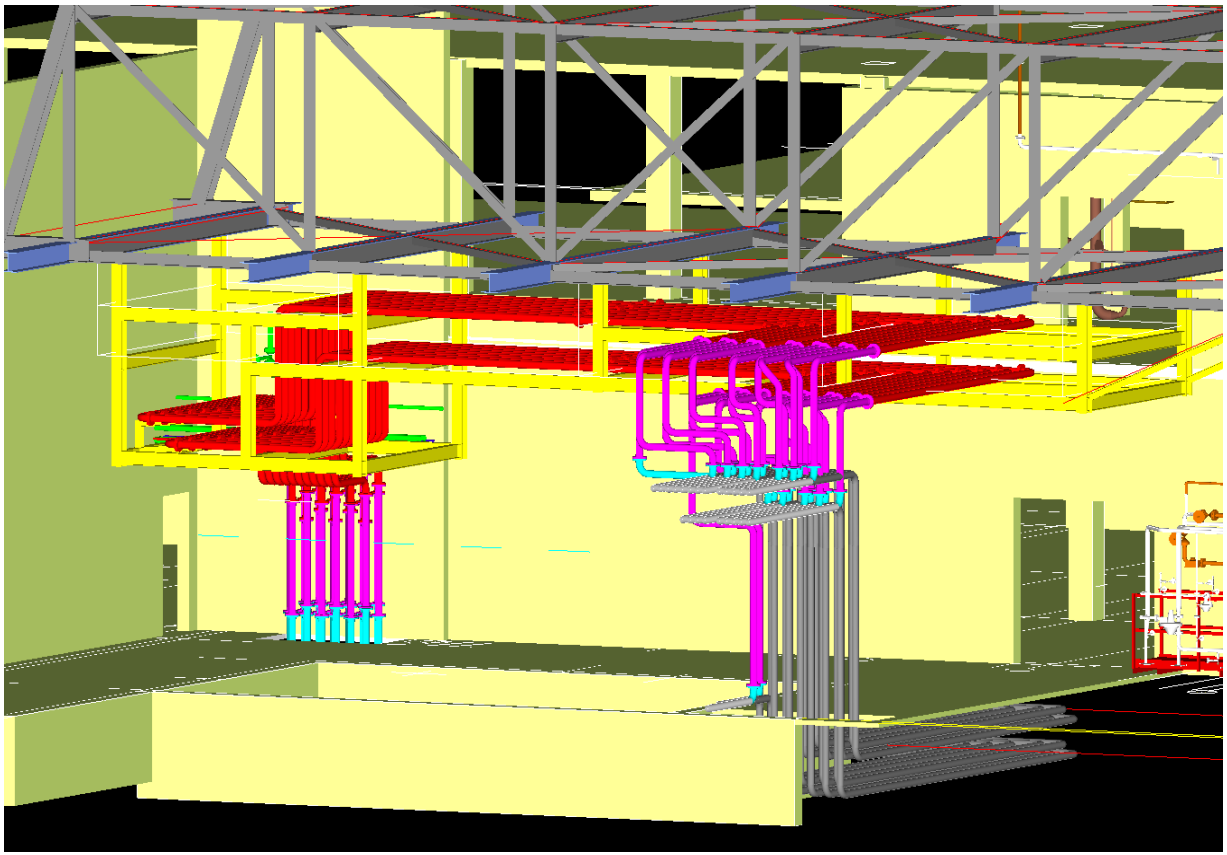
The practice of professional engineering is defined in Section 1 of the *Professional Engineers Act* and comprises of three tests. Professional engineering is:

1. any act of planning, designing, composing, evaluating, advising, reporting, directing or supervising (or the managing of any such act);
2. that requires the application of engineering principles; and
3. concerns the safeguarding of life, health, property, economic interests, the public welfare or the environment.

Project Example – Upgrading an old system $650K

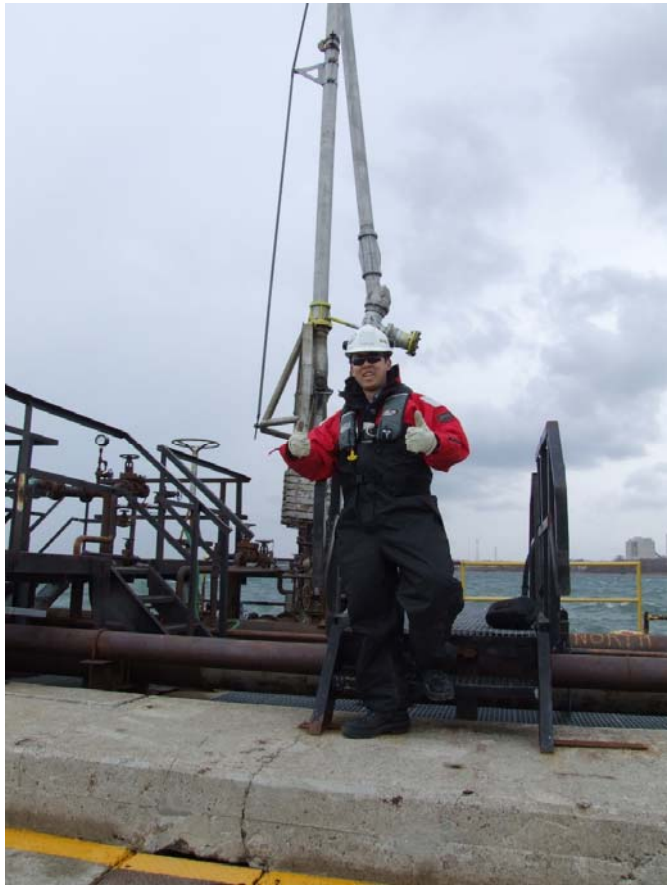


The Design and Documentation – 80%



1. PROBLEM STATEMENT
2. PROJECT JUSTIFICATION
3. PRESENT SYSTEM DESCRIPTION
4. PROPOSED PLAN
5. PROJECT ASSUMPTIONS
6. PROJECT RISKS/CONCERNS
7. PROCESS DESIGN BASIS AND DEVELOPMENT
8. ENGINEERING AND DESIGN SCOPE
9. ENVIRONMENTAL, HEALTH AND SAFETY
10. RELIABILITY AND MAINTENANCE PHILOSOPHY
11. OPERATING PHILOSOPHY
12. PROJECT EXECUTION PLAN (EPC STRATEGY)
13. SCHEDULE
14. COST ESTIMATE
15. APPENDICES

In the Field – 10%

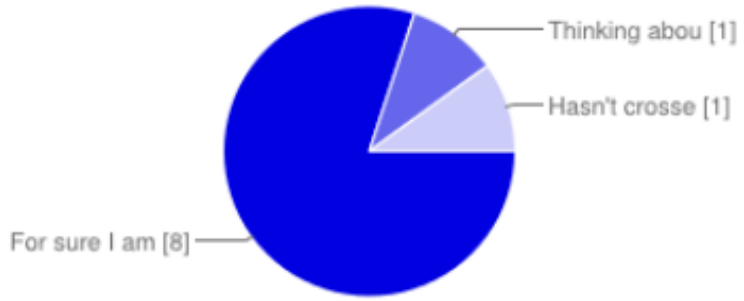


Meetings and Other Boring Stuff 10%

Necessary reality….

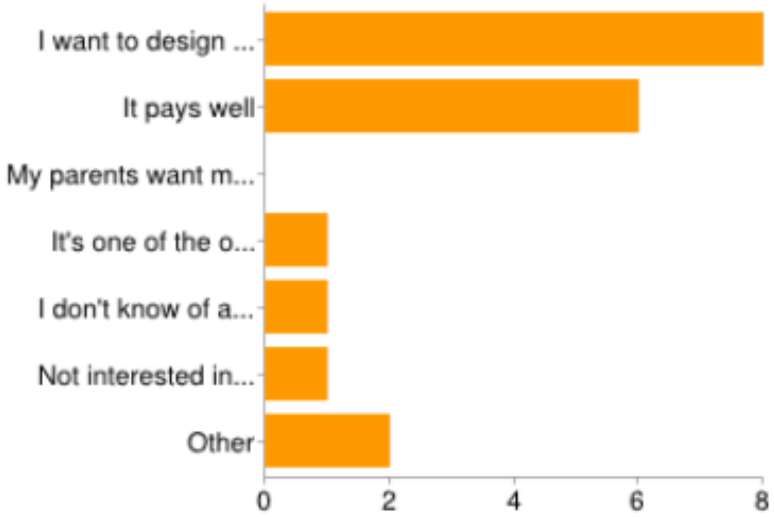
“Extra-Curricular” in the Workplace

How interested are you in pursuing engineering in university



For sure I am applying for it	**8**	80%
Thinking about it	**1**	10%
Hasn't crossed my mind	**1**	10%

What is your motivation for pursuing engineering?



I want to design stuff	**8**	80%
It pays well	**6**	60%
My parents want me to	**0**	0%
It's one of the only acceptable profession in my culture	**1**	10%
I don't know of any other options	**1**	10%
Not interested in engineering	**1**	10%
Other	**2**	20%