CHE 383: CHEMICAL ENGINEERING DESIGN WORKSHOP

WORKSHOP 1 – PART 1 - INSTRUCTIONS

1.TEAM ENROLMENT

Form a team of 3-4 students and self-enroll on LEARN. Note that there will be an opportunity to change teams around when we start working on the capstone project, so this does not need to be your project team.

2.INDIVIDUALLY

Identify one need/problem that could be fixed with an engineered solution and write a brief statement describing the need/problem. The needs/problem must relate to one of the Canadian Engineering Grand Challenges (CEGC). See: https://collaborate.engineerscanada.ca/files/lth2hvzd

Potential sources for ideas:

- Some relationship to chemical engineering is preferable, but your needs/problem can be drawn from anywhere.
- Consider some familiar aspects of life or work. You might particularly want to consider ones that involve chemical engineering fundamentals such as heat/mass transfer or reaction.
- Think of everyday activities, energy and material flows at school, home or work. What you consume of or dispose of. Previous coop jobs or your dream job. Try to have fun! You can think big if you like.

3. AS A TEAM

Select one CEGC needs/problem to follow through. It can be a totally new one.

1. Specify each needs/problem as thoroughly as you can
    - Defining clearly the needs/problem will help you know when you have solved it
    - Note - you are not defining the solution
2. Create a problem statement
    - This is a short (four sentences at most), clear and concise description of the specific problem your design will address.
    - Note that this is a narrow and specific statement: Example, don't claim you will mitigate global warming by reducing GHG emissions (though that is useful context) but do claim you will aim to reduce the GHG emissions per unit production of product X.
    - The problem statement is also called an *issue statement*.
    - Useful reading: http://www.ceptara.com/blog/how-to-write-problem-statement

4. PROVIDE AN EXPANDED CONTEXT FOR YOUR PROBLEM BY ADDRESSING THE 5WS.

- **Who** is affected by the problem (stakeholders)?
    - Be specific, e.g. groups, organizations, customers, employees, suppliers. Consider any relevant cultural aspects.
- **What** are the boundaries, the issue; the impact of the issue; the impact is the issue causing; will happen if the issue is addressed; or not addressed?
    - Consider the stakeholders. Think about whether you are focusing on the correct issue.
- **Where** is the issue occurring?
    - Does it occur everywhere or only in certain locations, processes, products?
- **When** does the issues occur; does it need to be fixed?
- **Why** is it important that we fix the problem; what impact does it have on the business, customers, other stakeholders?

5. SUBMISSION WILL BE PART OF ASSIGNMENT 1

- Work should be clearly laid out. I suggest typed bulleted lists for now. Give thoughts to how the work is arranged.
    - A formal report is **not** required for workshop #1.
    - Sketches are not required, but if included then hand-drawn ones are suitable.
- The work done in this workshop will get you started with Assignment 1 and will be further refined during workshop 2 next week.

NOTES

- The problems you identify could (but probably won't) become your capstone project.
- This exercise has been deliberately provided with vague instructions and context. You can do this exercise badly very fast, but please aim to spend at least 15 min individually and 45 min as a group. This will provide you with significant time to think around problem definition.
- You have spent the last several years learning a lot about problem-solving. What we are doing now is "problem-finding", which is quite different!

WORKING TOGETHER

- Your group can choose its preferred platform. However, I would suggest MSTeams. The main benefit of using MSTeams is you will have access to your chat history/documents in 4A and 4B. We also can add your faculty supervisor and industrial advisor later. You can also tag the instructor anytime and chat about your questions in the middle of your group conversations.