



The United Nations' sustainable development goals (<https://sustainabledevelopment.un.org/sdgs>)

## CIVL 250 Self-Regulated Learning (SRL) TERM Project (35%)

### Introduction & Purpose

The ability to continually learn throughout one's career is an essential and complex professional skill. Without the constant oversight of an instructor, most people have difficulty motivating themselves, self-monitoring and questioning themselves, and knowing the steps that lead to authentic learning – yet these are all needed for life-long-learning, which is a critical aspect of engineering practice.

In Week 2 of CIVL 250, you are asked to submit your first of five self-regulated learning (SRL) project assignments, each aimed at helping you regulate and direct your own learning, while simultaneously learning about sustainable development and engineering. These five assignments (which constitute the SRL Term Project) require that you creatively grapple with a broad and open-ended question about sustainability and engineering. You will not be 100% certain that your recommendations, and whether or not your approach to each assignment, is correct. Instead, you will need to use judgement based on argumentation (i.e. convince yourself, via argumentation, that your recommendation is reasonable and justifiable).

### SRL Term Project Description

#### 1. Project Overview:

During the SRL term project, you will work on creating a 5-page **Briefing Note** (i.e. a short report) that spotlights two UN SDGs then explains an “engineered option” (e.g. an electronic device, built infrastructure, mechanism design, citizen or industry product/technology, etc) which enables and supports the SDGs you spotlight, while, simultaneously, positively influencing (or at least not harming) activities aimed at supporting all the SDGs.

#### 2. Project Context:

**YOUR ROLE:** Imagine you are a young engineering professional (an E.I.T.) working for a forward-thinking, very large, engineering consulting firm whose employees, together, have significant experience in just about every aspect of engineering practice.

**INCIDENT:** The firm's top executive (a kindly, older lady with a background in chemical engineering, who has a deep understanding of sustainable development and who, in her spare time, teaches sustainable development and engineering to undergraduate engineers) has brought the firm's leadership team together to discuss strategic directions for the firm. You are one of a small number of younger employees invited to attend this meeting and, by the end of the meeting, you understand why you are there.

**THE PROBLEM:** The leadership team recognizes the very tight timeline that countries have for turning around the bad news about climate change (i.e. significantly reduce GHG emissions by 2030, as per the most recent IPCC report). The team believes the UN's SDGs will drive government and industry investments over the next 5 to 10 years at least – investments resulting in mitigation and adaptation of both climate change and biodiversity loss.



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The leadership team sees a huge opportunity to snag jobs for the firm, while, at the same time, positively contribute to society (which helps with company morale). The problem is that the leadership is not particularly familiar with the SDGs nor how specific engineering expertise can address many of the SDGs' targets and indicators. They suspect that, if they know more, they will be able to approach potential clients (like different levels of government, and industrial sectors), to suggest "engineered options" for how best to move ahead with achieving the SDGs.

**THE SOLUTION:** *You and the other carefully selected E.I.T.s in the firm, are asked to each write a 5-page Briefing Note (BN) that explains 2 SDGs and one engineered option (i.e. engineering work or project) that will contribute to achieving the SDGs you spotlight.*

### 3. Briefing Note Template:

A template for the 5-page briefing note is attached. In this template, you will find the specifics of how the leadership team wants you to present the information you find.

Before completing any of the SRL Team Project Assignments, please read the Briefing Note template carefully, so that you know what the final submission should be. (Submit the completed template as your SRL Project Assignment 4 submission).

## SRL Term Project Instructions

Your SRL Term Project should augment and enhance what you are learning from the CIVL 250 on-line lessons. The SRL Term Project is divided into 5 assignments, each with a specific due date. The first three assignments help you get ready to write the BN. You will receive formative feedback from your TA on these assignments and this feedback will help ensure a high quality BN. Once you get the feedback, you should revise your work. The 4<sup>th</sup> assignment is the completed Briefing Note. The 5<sup>th</sup> assignment is a written reflection on the process of learning you have experienced. Below are detailed descriptions of each assignment. Please read these descriptions carefully.

## SRL Project Assignment 1: PRELIMINARY SPOTLIGHT SDGs and ENGINEERED OPTION - 3 MARKS

Imagine that, as the E.I.T. described in the Project Context on page 1, your immediate supervisor has asked you to give him up-dates on your Briefing Note project. The first thing he asks you to submit is the two SDGs you think are the best to spotlight and the engineered option you are choosing for your BN. Specifically, he is asking for:

1. The two SDGs you choose to spotlight (just the numbers and titles of each SDG)
  - a. Why are you choosing these SDGs?
  - b. Why do you think the firm should learn about these two SDGs?
2. The engineered option you think you will recommend in your BN
  - a. What engineered option will be the focus of your BN?
  - b. To limit the scope of this project, the option should be pre-existing. For example, you may choose a green technology that is mentioned within the CIVL 250 course material. Or you may choose an option you have researched on-line, or found through other due diligence. I suggest you choose something you are genuinely interested in learning more about!



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SRL Assn 1:

- is **due at the end of Week 2** (For the exact due date, go to the course schedule, located on the home page of this site)
- should be **no more than 250 to 300 words** (i.e. about 1 page)
- **Note:** In subsequent assignments, you may decide to alter quite a bit of what you submit for this assignment, and that's fine.

## SRL Project Assignment 2: PRELIMINARY ANNOTATED BIBLIOGRAPHY – 4 MARKS

Please provide references you are using as you learn about your engineered option.

- Submit 5 credible references (you are welcome to submit more if you wish)
- Use the APA format (you are welcome to use other citation formats as long as you use the chosen format consistently).
- Write one sentence for each reference, describing the value of this reference to your learning for your project.
- **Due at the end of week 3** (For the exact due date, go to the course schedule, located on the home page of this site).
- **Note that this is a preliminary list of references which may evolve considerably before you submit your BN.**

## SRL Project Assignment 3: PRELIMINARY CONCEPT MAP or CAUSAL LOOP DIAGRAM – 10 MARKS

In Module 3 (entitled *Systems & Sustainability*) you learn about how to create a concept map and also how to create a causal loop diagram. For your SRL Project Assignment 3, please submit either a preliminary concept map or a preliminary causal loop diagram that describes at least some details of the scope of connections between your spotlight SDGs and your engineered option. You will want to convey:

- The critical aspects of your engineered option
- The potential of your engineered option to influence specific SDGs over both the long and short term and also its direct and indirect (potential) impacts.

Make sure to think about the different systems, and different scales of systems, that your engineered option might influence. Consider the entire life cycle of the engineered option.

### CONCEPT MAP EXPECTATIONS:

Provide your focus question and make sure your concept map has the following:

- At least 20 concepts
- appropriate phrases that link each concept to another
- breadth (i.e. at least 3 hierarchies)
- depth (i.e. at least 3 levels in each of 3 hierarchies - the deepest hierarchies will include specific examples)
- cross-links between hierarchies

In addition to the features described above, make sure that your concept map clearly links aspects of your recommended engineered option to the appropriate indicators and targets of your spotlight SDGs.



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### CAUSAL LOOP DIAGRAMME EXPECTATIONS:

If you decide to create a causal loop diagramme, make sure you include at least 20 nodes (i.e. the causes or effects), as well as appropriately labelled arrows, all reinforcing loops, and all balancing loops.

**SRL Assn 3 is due toward the end of week 4** (For the exact due date, go to the course schedule, located on the home page of this site)

### SRL Project Assignment 4: BRIEFING NOTE SUBMISSION – 15 MARKS

Follow the instructions on the Briefing Note Template.

**SRL Assn 4 is due toward the end of week 6** (For the exact due date, go to the course schedule, located on the home page of this site)

### SRL Project Assignment 5: CRITICAL REFLECTION – 3 MARKS

Imagine one more time that you are the E.I.T. introduced on page 1 of this assignment document. After you have submitted your BN to the leadership team, your supervisor congratulates you for successfully grappling with a large, complex, open-ended, multi-layered, and ill-structured problem – not an easy task for an engineer!! He mentions that, every time he completes such a project, he carves out time to think about his project experience – asking himself questions like:

- *What did I do well?*
- *Where do I think I might improve next time?*
- *When was I most uncomfortable during the project? Why?*
- *What did I enjoy most about this project? Why?*
- *What have I learned about working with people who are different from me?*
- *How might this project-experience influence my future career?*

You decide to follow the lead of your boss and write a critical reflection on your project experience.

**Write a 250 to 300 word critical reflection about your BN project.** The reflection should address at least three of the questions listed above. Your writing should be sincere and authentic. Answer the questions using your own voice rather than the voice of the E.I.T. role described throughout this document.

**SRL Assn 5 is due in the week following the course wrap-up.** (For the exact due date, go to the course schedule, located on the home page of this site).