

CSI/ELG/SEG2911: Professional Practice Ideas for Projects

Project 1 Sustainability Greening Thinking

This contest exercise discusses different assignments and methods used to introduce writing curriculum with sustainability principles. It inspires students to learn more about sustainability and to use their class assignment to search for ways business, the campus, and the local community can become more sustainable. This contest requires teams of two to three students to carry out each of the following activities.

Online quiz

Take the online carbon footprint quiz (<http://myfootprint.org/subscription.php>), and then write about your response to the results, including what steps you could take to lessen footprint and to live more sustainably.

Public speaker

Prepare a speech about sustainability asking stakeholder including government, people, businesses, nongovernmental organizations, and individual the following questions. What are you doing to protect the environment and contribute to SD?

Business plan

Write a sustainability business plan for one of the following topics. Organize your plan into the following four components: research, solving a need, being different, and starting small.

- Pesticide-free floral business
- Home energy retrofit plan
- Residential solar energy system
- Redesigned furniture out of recycled materials
- Green gym (energy from exercise)
- Ethanol conversion kit for a car
- Digital notebooks to replace textbooks
- Biodiesel from dormitory dining commons cooking oil

Project proposal

Write a sustainability project proposal for one of the following topics. Organize your concept with three sections: mission statement, statement of need, and project narrative.

- Small wind turbine in a farm
 - Energy incentives for home owners
 - Creating a solar rooftop plant on a campus building
 - Wind solar hybrid LED streetlight for community
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- Highlights the importance of professional practice learning in developing the module.
 - Organize your work in a well written technical report as well as oral presentation according to the requirements of the course.

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Project 2 Sustainability

Survey Task on Sustainable Development among Engineering Students

One of the most popular definitions is that contained within “Our Common Future,” the 1987 Report of the UN World Commission on Environment and Development (WCED 1987), which reads as follows: “Humanity has the ability to make development sustainable, to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs”.

- The objective of this task is to develop digital knowledge content for a survey that involves a brief two-page, tick-box style questionnaire to be delivered to 100 engineering students across several disciplines and at different stages of their courses.
- The questionnaire may be divided into several parts, starting with information about students, their level of knowledge and understanding of SD, the perceived importance of SD by the students, and previous sustainability education.
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Project 3 Sustainability

Feasibility Study of Sustainable Distributed Generation

Infrastructure projects have a major influence on the attainment of SD. Energy generation systems, and solutions, usually come with detailed feasibility studies, taking into consideration the technical and operational details, investment involved, any incentives available, and the running costs entailed.

- The concept of the feasibility study is to investigate which sustainable energy technologies could be appropriately used. In this task, develop a five-page preliminary feasibility study in support of the development of a state-of-the-art sustainable energy project for a remote community of 5000 people with thinly industries including agriculture, hunting, fishing, and a small-scale wastewater treatment plant.
- The primary services include government office, health care, and schools. Unemployment is 30% of population. The community is served by a single 69-kV transmission line and a radial 34-kV distribution line. The project should focus on energy efficiency and renewable energy (solar and/or wind).
- Data collected from the community site indicate wind and solar potential. To proceed, identify a location within your region to approximately match this case, collect data and information, and proceed with the required procedure.
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**Project 4
Sustainability**

The 12 Principles of Green Engineering

Read the 12 principles of green engineering. Create 12 logos and arrange them in a poster format that correspond to the 12 principles and arrange them in a table format.

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Project 5 Sustainability Sustainable Design Guidelines

Currently, cities, communities, universities, and other organizations are developing sustainable design guidelines (SDG) to assist in advancing sustainable design. The guidelines are intended to be applied to new construction and major renovation projects like the STEM building at the University of Ottawa. Designers, contractors, and developers of projects shall be required to incorporate the guidelines into their projects. The goal is to meet as many of the guideline objectives as possible.

- Teams of two students will team up to submit their project report of proposing a new energy efficient academic building at the campus to the coordinator of the Sustainable Design Advisory Committee (SDAC) of the University. The SDAC usually holds regularly scheduled meetings, but may call special meetings as needed depending on project schedule requirements. The SDAC will review all projects for compliance with the guidelines.
- In the conceptual design phase, the team should use the SDG in addition to following related laws and regulations. First, when making the site plan and floor plans, they should consider spatial elements, such as specified spaces, areas relating to water use and hot water supply, and green areas. In addition, considering natural ventilation and day lighting, the team should plan position and area of windows.
- The team should also examine how to install a solar energy system and equipment for rainwater use. At the beginning of the detailed design stage, the team should request the architects of the building to refer to the “guidelines” and to the team report.
- In the report the team should determine the site plan, floor plans, elevation, and fundamental specifications. After that, the architects will design the building’s elements such as framework, exterior, windows and doors, interior, and lighting fixtures, so that as much as possible, the elements’ variables meet their desired values.
- Highlights the importance of professional practice learning in developing the module.
- Organize your work in a well written technical report as well as oral presentation according to the requirements of the course.