Global Engineering Certificate (GEC)

GEC Requirements

The certificate is open to current undergraduate students enrolled at a Canadian engineering school with the program is implemented.

Course-related requirements (institutional audit required)

- Introduction to Global Engineering (or equivalent)
- Discipline-specific course covering global engineer topics
- Project-based course activity that explores one or more of the topics from the Introductory course

Co-curricular requirements

- 120 hours of direct application of global engineering skills in global engineering fields
    - Two reference letters from organizations where this experience was gained

Student reflections

- Introduction to Global Engineering essay (1500 words)
- Discipline-specific reflection (400-1000 words)
- Three experiential global education practice reflections (400-800 words each)

GEC Learning Outcomes

Program-level Learning Outcomes

- Awareness of globalization and its impact on engineering practice
- Competent in exploring complex societal issues
- Capable of performing leadership roles in interdisciplinary work environments
- Ability to apply technical skills in a global context

Introductory Course Learning Outcomes

(Introduction to Global Engineer/Engineering & Society course etc.)

- Be able to perform a critical analysis of engineering practice in a globalized world context.
- Be able to form opinions on how technology contributes to changes in society and vice-versa.
- Demonstrate knowledge of the historic and present role of engineers in global systems
- Possess a functional understanding of globalization and development as complex systems,
- Understand the role of engineering in systemic change
- Be aware of systemic failures in technical and societal systems

- Be able to evaluate and make decisions on technology, policy, and processes as leverage points for systemic change.

Discipline-specific Course Learning Outcomes

- Be equipped with a foundation to apply their technical skills in a global context
- Develop knowledge of the role of electrical/civil/chemical/mechanical engineers in global systems
- Understand system level design to develop appropriate engineering projects in a globalized context.
- Possess competency in exploring complex disciplinary technical problems
- Have knowledge of appropriate discipline specific tools for the engineering design in different international contexts.

Interdisciplinary Project Learning Outcomes

- Practice their awareness of globalization and its impact on engineering projects
- Demonstrate leadership and interdisciplinary team skills
- Practice and apply disciplinary technical skills in a global engineering project
- Demonstrate effective communications
- Develop an understanding the dynamics present within a team, risk management, diagnosing common project problems
- Knowledge of Global Engineering Projects, and common attributes of successful and unsuccessful projects.

Co-curricular Experience Learning Outcomes

- Develop leadership skills including communication, listening, global collaboration, and ethics; an ability to participate in, foster and motivate teams, and a willingness to seize new opportunities.
- Demonstrate the ability to develop and iterate on plans based on identified goals and objectives, and to foster innovation.
- Demonstrate ability to monitor and reflect on personal leadership and progress.
- Deepen understanding and appreciation of the complexity and value found in connections with team members.
- Participate in building a community for global engineering leaders to connect and learn together.
- Develop the Core Competencies of a leader
- Students will demonstrate:
    - Commitment
        - having the energy, ability, and determination to serve a group and its goals
    - Congruence
        - understanding the connection between own values and those of the group
    - Emotional Intelligence

        - being self-aware of the values, attitudes, and beliefs that motivate him/her to act and commit
    - Collaboration
        - working with others towards a common goal while sharing responsibility, accountability, and knowledge
        - having the ability to increase group effectiveness by capitalizing on and nurturing various perspectives, viewpoints, and talents, and using these various perspectives, viewpoints, and talents to the benefit of the group as a whole
    - Common Purpose
        - reevaluating and adjusting strategy and goals based on the changing needs of the individual/group
    - Community
        - having the ability to recognize the systemic lens of contributions to the group/organization on a local to international level
    - Change
        - demonstrating the importance of making a better society and world for oneself and others
        - demonstrating individuals and communities are capable of working together to create change