

# Evaluating Student Outcomes to Ensure Impactful Program Redesign

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## Motivation

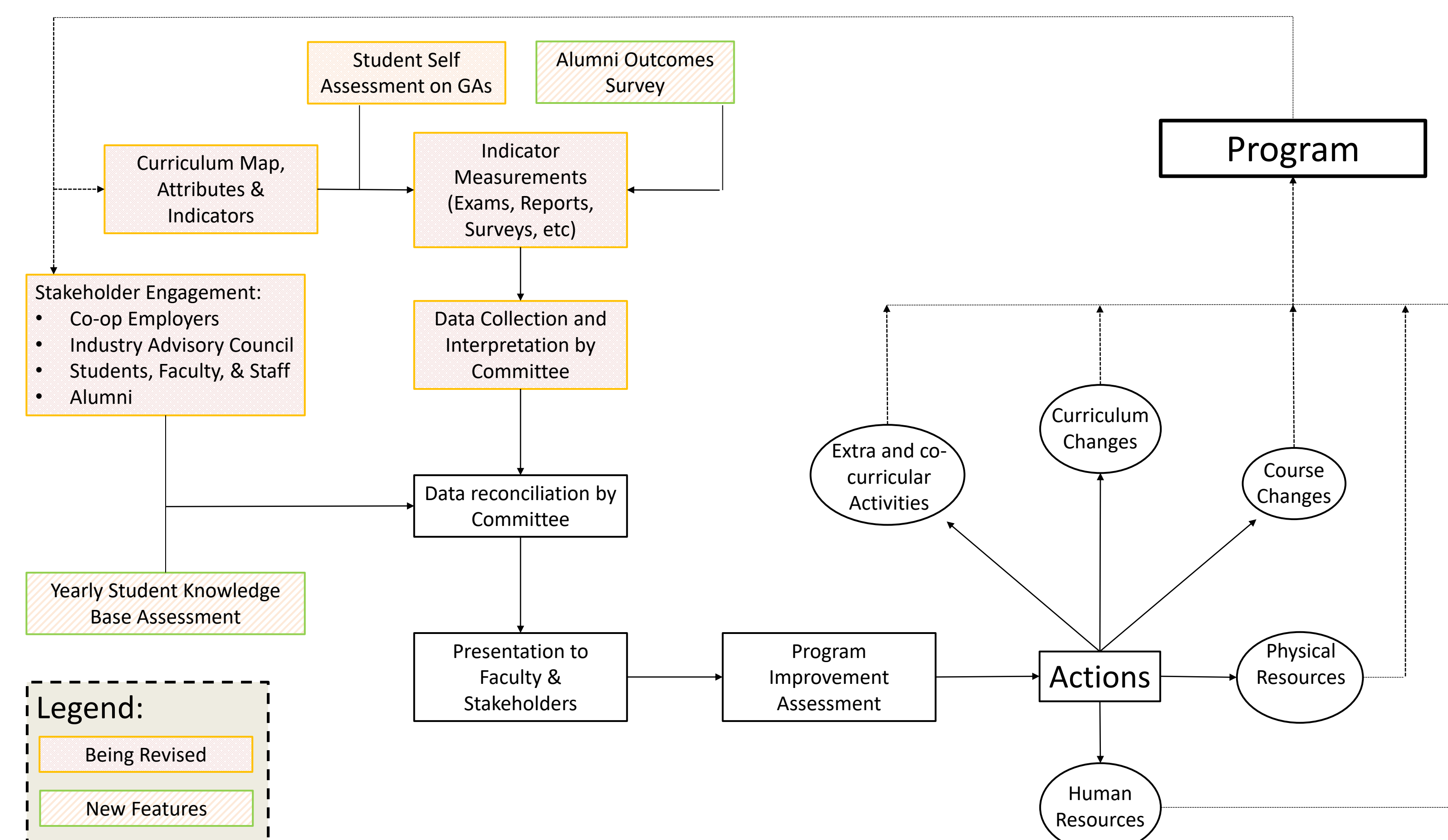
“Are we properly equipping our students for success?” This is a question that educators routinely ask themselves – and one that is often challenging to answer. The UBC Department of Chemical and Biological Engineering (CHBE) aims to nurture not only accomplished engineers – ones who will transform fields such as nanotechnology, clean energy, biotechnology and biomedical engineering for the better – but also innovative leaders and global citizens who make an indelible impact on the world.

## Description and Goals

Thanks to financial support from the Teaching and Learning Enhancement Fund (TLEF), the department of Chemical and Biological Engineering has undergone a comprehensive update of its two Engineers Canada (EC) accredited programs, Chemical Engineering (CHML) and Chemical & Biological Engineering (CHBE). The main goal of the project was to develop a robust, efficient, sustainable system to evaluate program outcomes with the following outputs:

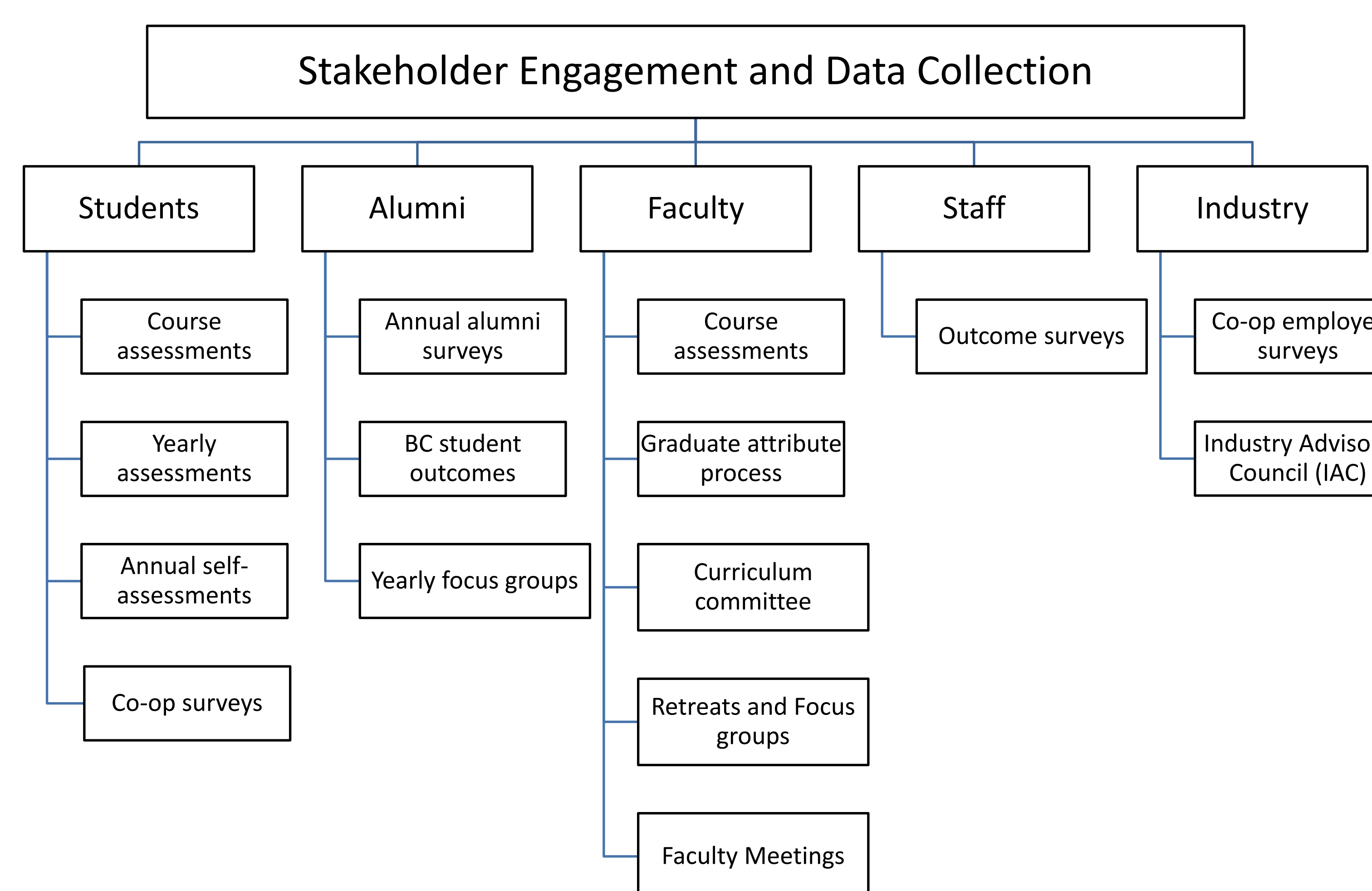
- Renewed set of Engineers Canada Graduate Attribute (GA) indicators<sup>1</sup>
- More efficient indicator data collection system
- More robust evaluation system
- Improved alumni tracking and alumni outcome evaluation system

## Continual Improvement Process



## The Updated Evaluation System

Data to inform the revised system will come from extensive surveys and interviews involving current students, alumni, employers and faculty members, as well as retreats and feedback sessions where stakeholders are able to learn about and discuss the results



## Yearly Assessment

To assess students' knowledge gain and retention in each year of the curriculum.

- Trained graduate students to develop conceptual multiple-choice questions (MCQs) based on the key concepts extracted from the learning outcomes of each course – 4hr workshop in collaboration with the CTLT
- Questions are reviewed by graduated students, ranked and finalized by the course instructor
- These assessments
  - are not for marks
  - administered as pre- and post-year
  - include an “I don’t know” option to eliminate guess work
  - are about 2 hours long; about 1.5 minutes per question

## Visual Curriculum Map

A visual curriculum map has been created to help students and faculty better visualize the curriculum and understand connections between courses including pre-requisite and co-requisite requirements.

## References

1. <https://engineerscanada.ca/accreditation>

## Acknowledgement

We gratefully acknowledge the financial support for this project provided by UBC Vancouver students via the Teaching and Learning Enhancement Fund.

We would also like to thank all the undergraduate students and teaching assistants who worked with us and contributed to this project.