



## Integrated Engineering Final Assessment Report & Implementation Plan

<b>Faculty / Affiliated University College</b>	Faculty of Engineering
<b>Degrees Offered</b>	BESc
<b>Modules Reviewed</b>	Integrated Engineering
<b>External Consultants</b>	<p>Prof. Vishwanath Baba Don Pether Chair in Engineering and Management McMaster University</p> <p>Prof. Anders Nygren Associate Dean, Academic and Planning Schulich School of Engineering University of Calgary</p>
<b>Internal Reviewer</b>	Mary Weil Faculty Director, HBA Program Ivey Business School
<b>Date of Site Visit</b>	November 26, 2018
<b>Evaluation</b>	<b>Good Quality with Report in Two Years</b>
<b>Approval Dates</b>	SUPR-U: April 17, 2019 SCAPA: May 1, 2019 Senate (FYI only): June 7, 2019
<b>Year of Next Review</b>	2026-27

In accordance with Western’s Institutional Quality Assurance Process (IQAP), the Final Assessment Report provides a summary of the cyclical review, internal responses and assessment and evaluation of the undergraduate modules delivered by the Department of Integrated Engineering. This report considers the following documents: the program’s self-study, the external consultants’ report and the responses from the Department and Faculty. The Final Assessment Report identifies the strengths of the program, opportunities for program enhancement and improvement and details and prioritizes the recommendations of the external consultants and prioritizes those recommendations that are selected for implementation.

The Implementation Plan details the recommendations from the Final Assessment Report that are selected for implementation, identifies who is responsible for approving and acting on the recommendations, any action or follow-up that is required and the timeline for completion.

The Final Assessment Report and Implementation Plan is sent for approval through SUPR-U, SCAPA, Senate and the Ontario Universities' Council on Quality Assurance and is made available on a publicly accessible location on Western's IQAP website. The Final Assessment Report and Implementation Plan is the only document resulting from the undergraduate cyclical review process that is made public, all other documents are confidential to the Program, Faculty and SUPR-U.

### **Executive Summary**

The site visit took place on November 26, 2018, the same day as site visits for all Engineering programs and coinciding with the Canadian Engineering Accreditation Board (CEAB) site visit.

During the one-day visit, the team of reviewers met with the following individuals and groups:

- Vice-Provost (Academic Programs)
- Acting & Former Directors
- Dean & Associate Dean of Engineering
- Director of Centre of Engineering Leadership & Innovation
- Undergraduate Services Team
- Faculty members
- Librarians
- Students

The external reviewers noted the recent redesign of the IE program from one focusing on multi-disciplinary engineering "to one focusing on engineering applied to business and innovation is aligned with current trends, as well as with Western's priorities." They added that this focus on business and innovation appears to resonate with students in the program, as shown by the number that chose to participate in the Ivey and Engineering combined degree program.

The report discusses the innovative curriculum components including four Engineering Innovation courses "which provide a clear innovation "spine" through the upper years of the program," but note that the sense of the program is less strongly articulated in second year. Adding to that, while the report notes that student satisfaction in general is high, it also says that a stronger sense of community would benefit IE students as it does in all engineering programs, and that sense of belonging is especially important in smaller programs such as this one.

### **Significant Strengths of the Program**

The following program strengths are identified in both the self-study and the External Consultants' Report

- Opportunities for experiential learning
- A clear focus on entrepreneurship through the redesign of the program to focus on business and innovation
- A high level of participation in the business and engineering combined degree program with Ivey
- Innovative components of the curriculum, specifically the four Engineering Innovation courses in third and fourth years as well as the final year capstone course which integrates the knowledge and skills acquired throughout the engineering program through a full-year design project
- The recent opening of the Chakma Engineering Building which has benefitted the faculty, adding modern teaching and other space to the engineering facilities
- Extensive study spaces in the library both for collaborative work and quiet study space

- Alignment of the program with Western's strategic priorities and values

### **Summary of the Reviewers' Key Recommendations and Department/Faculty Responses**

The reviewers made six recommendations and the Department responded positively to them:

1. Appoint a dedicated program director for the IE program
  - The Department fully agrees with this recommendation, noting an active search is ongoing for a dedicated Program Director.
2. Consider mechanisms for adding a multi-disciplinary team design experience to the IE curriculum.
  - The Department noted that the Faculty Undergraduate Committee has been discussing the capstone design experience in each of its nine programs with a view to creating a multi-disciplinary experience for students. That new structure that will permit students from other disciplines to partake in the IE capstone course, thereby creating truly multi-disciplinary teams.
3. Establish a formal and regular feedback mechanism for student input in the IE curriculum.
  - The Department responded that this used to happen through regular meetings with second-, third- and fourth-year students. This will be reinstated immediately.
4. Establish a sustainable target for the number of IE students, and ensure that recruitment activities are sufficient to achieve the target.
  - The Department agrees that a target of 25-30 new students entering IE in Year 2 is an appropriate target.
5. Encourage the creation of a student club or society for the IE program.
  - The Department agrees that this is a good suggestion; beginning in the 2019-2020 school year, the idea will be proposed to the incoming second-, third- and fourth-year classes with the goal of creating a self-organized Undergraduate Club/Society for Integrated Engineering students similar to those that exist in other programs.
6. Create a second-year design and innovation course to provide context to the IE curriculum for new students.
  - The Department said the goal of providing IE context to second-year students is wholly appropriate. The addition of a new course, however, would require the removal of another course to make room. The Department said it is not clear how this would be accomplished, but that this would be a subject for consideration by the IE Curriculum committee.

### **Other Opportunities for Program Improvement and Enhancement**

Within the discussion about ensuring there is a sustainable number of students, the reviewers also noted that active recruitment of female students would serve the diversity mission of Western. They suggest that this may require targeted recruitment activities to raise awareness of the program among first-year students especially among females, with an eye to filling the program with first-choice students.

## Implementation Plan

The Implementation Plan provides a summary of the recommendations that require action and/or follow-up. The Department Chair/Director, in consultation with the Dean of the Faculty will be responsible for monitoring the Implementation Plan. The details of progress made will be presented in the Deans' Annual Report and filed in the Office of the Vice-Provost (Academic).

Recommendation	Proposed Action and Follow-up
1. Ensure appropriate academic leadership is provided to the program	An active search is ongoing for a dedicated Program Director.
2. Consider adding a multi-disciplinary team design experience to the IE curriculum	This has been under discussion and a new structure will now permit students from other disciplines to partake in the IE capstone course, thereby creating truly multi-disciplinary teams.
3. Establish a formal and regular feedback mechanism for student input in the IE curriculum.	Regular meetings with the Director/Acting Director and second-, third- and fourth-year students will be reinstated
4. Establish a sustainable target for the number of IE students, and ensure that recruitment activities are sufficient to achieve the target.	Appropriate outreach to first year students. Ensuring clear placement at events such as Fall Preview Day with IE in the room with other programs.  The Department agrees that a target of 25-30 new students entering IE in Year 2 is an appropriate target.
5. Encourage the creation of a student club or society for the IE program.	Work with incoming second-, third- and fourth-year students toward creating a self-organized Undergraduate Club/Society for Integrated Engineering students.