DATE: November 15, 2022

TO: Senate

FROM: Dr. Dwight Deugo, Vice-Provost and Associate Vice-President (Academic), and Chair, Senate Quality Assurance and Planning Committee

RE: Final Assessment Reports and Executive Summaries

The purpose of this memorandum is to request that Senate approve the Final Assessment Reports and Executive Summaries arising from cyclical program reviews. The request to Senate is based on recommendations from the Senate Quality Assurance and Planning Committee (SQAPC).

The Final Assessment Reports and Executive Summaries are provided pursuant to article 5.4.1. of the provincial Quality Assurance Framework and article 7.2.24 of Carleton's Institutional Quality Assurance Process (IQAP). Article 7.2.24.3 of Carleton's IQAP (passed by Senate in November 2021 and ratified by the Ontario Universities Council on Quality Assurance in April 2022) stipulates that, in approving Final Assessment Reports and Executive Summaries 'the role of SQAPC and Senate is to ensure that due process has been followed and that the conclusions and recommendations contained in the Final Assessment Report and Executive Summary are reasonable in terms of the documentation on which they are based.'

In making their recommendations to Senate and fulfilling their responsibilities under the IQAP, members of SQAPC were provided with all the appendices listed on page 2 of the Final Assessment Reports and Executive Summaries. These appendices constitute the basis for reviewing the process that was followed and assessing the appropriateness of the outcomes.

These appendices are not therefore included with the documentation for Senate. They can, however, be made available to Senators should they so wish.

Any major modifications described in the Implementation Plans, contained within the Final Assessment Reports, are subject to approval by the Senate Committee on Curriculum, Admission, and Studies Policy, the Senate Quality Assurance and Planning Committee (SQAPC) and Senate as outlined in articles 7.4.1 and 5.1 of Carleton's IQAP.

Once approved by Senate, the Final Assessment Reports, Executive Summaries and Implementation Plans will be forwarded to the Ontario Universities' Council on Quality Assurance and reported to Carleton's Board of Governors for information. The Executive Summaries and Implementation Plans will be posted on the website of Carleton University's Office of the Vice-Provost and Associate Vice-President (Academic), as required by the provincial Quality Assurance Framework and Carleton's IQAP.

Omnibus Motion
In order to expedite business with the multiple Final Assessment Reports and Executive Summaries that are subject to Senate approval at this meeting, the following omnibus motion will be moved.

Senators may wish to identify any of the following 4 Final Assessment Reports and Executive Summaries that they feel warrant individual discussion, that will then not be covered by the omnibus motion. Independent motions as set out below will nonetheless be written into the Senate minutes for those Final Assessment Reports and Executive Summaries that Senators agree can be covered by the omnibus motion.

> **THAT** Senate approve the Final Assessment Reports and Executive Summaries arising from the Cyclical Reviews of the programs.

Final Assessment Reports and Executive Summaries

1. **Undergraduate Programs in Electrical Engineering**
   SQAPC approval: October 27, 2022

SQAPC Motion:
THAT SQAPC recommends to SENATE the approval of the Final Assessment Report and Executive Summary arising from the cyclical program review of the Undergraduate programs in Electrical Engineering.

Senate Motion November 25, 2022:
> **THAT** Senate approve the Final Assessment Report and Executive Summary arising from the Cyclical Review of the Undergraduate programs in Electrical Engineering.

2. **Joint Graduate Programs in Civil Engineering**
   SQAPC approval: May 12, 2022

SQAPC Motion:
THAT SQAPC recommends to SENATE the approval of the Final Assessment Report and Executive Summary arising from the cyclical program review of the Graduate programs in Civil Engineering.

Senate Motion November 25, 2022:
> **THAT** Senate approve the Final Assessment Report and Executive Summary arising from the Cyclical Review of the Graduate programs in Civil Engineering.

3. **Undergraduate programs in Sustainable and Renewable Energy Engineering**
   SQAPC approval: November 10, 2022

SQAPC Motion:
THAT SQAPC recommends to SENATE the approval of the Final Assessment Report and Executive Summary arising from the cyclical program review of the Undergraduate programs in Sustainable and Renewable Energy Engineering.

Senate Motion November 25, 2022:
> **THAT** Senate approve the Final Assessment Report and Executive Summary arising from the Cyclical Review of the Undergraduate programs in Sustainable and Renewable Energy Engineering.

4. **Undergraduate programs in Global and International Studies**
   SQAPC approval: October 27, 2022

SQAPC Motion:

THAT SQAPC recommends to SENATE the approval of the Final Assessment Report and Executive Summary arising from the cyclical program review of the Bachelor of Global and International Studies.

Senate Motion November 25, 2022:

THAT Senate approve the Final Assessment Report and Executive Summary arising from the Cyclical Review of the Bachelor of Global and International Studies.

CARLETON UNIVERSITY COMMITTEE ON
QUALITY ASSURANCE
Cyclical Review of the undergraduate program
in Electrical Engineering
Executive Summary and Final Assessment Report

This Executive Summary and Final Assessment Report of the cyclical review of Carleton's undergraduate program in Electrical Engineering in the Department of Electronics is provided pursuant to the provincial Quality Assurance Framework and Carleton's Institutional Quality Assurance Process (IQAP).

EXECUTIVE SUMMARY
The undergraduate program in Electrical Engineering resides in the Department of Electronics, a unit administered by the Faculty of Engineering and Design.

As a consequence of the review, the program was categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of good quality. (Carleton's IQAP 7.2.13-7.2.14).

The External Reviewers' report offered a very positive assessment of the program. Within the context of this positive assessment, the report nonetheless made a number of recommendations for the continuing enhancement of the program. These recommendations were productively addressed by the Chair of the Department of Electronics, and the Dean of the Faculty of Engineering and Design in a response to the External Reviewers' report and Implementation Plan that was submitted to SQAPC on October 13, 2022.

FINAL ASSESSMENT REPORT

<u>Introduction</u>

The undergraduate program in Electrical Engineering resides in the Department of Electronics, a unit administered by the Faculty of Engineering and Design. This review was conducted pursuant to the Quality Assurance Framework and Carleton's Institutional Quality Assurance Process (IQAP). As a consequence of the review, the program was categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of good quality. (Carleton's IQAP 7.2.13-14).

The site visit, which took place on November 1, 2 and 3, 2021, was conducted by Dr. Ivan Fair, from the University of Alberta, and Dr. Andre Ivanov from the University of British Columbia. The site visit involved formal meetings with the Provost, the Vice-Provost and Associate Vice-President (Academic), the Dean of the Faculty of Engineering and Design, and the Chair of the Department of Electronics. The review committee also met with faculty members, staff, and undergraduate students.

The External Reviewers' report, was submitted on November 29, 2021. offered a very positive assessment of the program.

This Final Assessment Report provides a summary of:

- Strengths of the program
- Challenges faced by the program
- Opportunities for program improvement and enhancement
- The Outcome of the Review
- The Implementation Plan

This report draws on five documents:

- The Canadian Engineering Accreditation Board Self-study and Cyclical Program Review Volume I Supplement was developed by members of the Department of Electronics (Appendix A)
- The Report of the External Review Committee (Appendix B)
- The response and implementation plan from the Chair of the Department of Electronics (Appendix C)
- The Response from the Dean of the Faculty of Engineering and Design (Appendix D)
- The internal discussant's recommendation report (Appendix E)

Appendix F contains brief biographies of the members of the External Review Committee.

This Final Assessment Report contains the Implementation Plan (Appendix C) developed by the Chair of the Department of Electronics and agreed to by the Dean of the Faculty of Engineering and Design, for the implementation of recommendations for program enhancement identified as part of the cyclical program review process.

The Implementation Plan identifies who is responsible for implementing the agreed-upon recommendations, as well as the timelines for implementation and reporting.

Strengths of the program

General

"Electrical Engineering is a well-established, well-understood, and remains a generally in-demand program in Canada as well as internationally. Although there have been some fluctuations in the demand for EE programs over the years, EE remains one of the main, well-identified engineering programs recognized worldwide. With the advent of electronics embedded everywhere and in everything (i.e., the "internet of things" IoT) the relevance, importance, and demand for such program will continue to be strong and likely grow."

Faculty

Speaking with regard to faculty, the external reviewers stated:

"The current Department Chair appears to be generally appreciated and generally supported by his faculty peers and staff; his calm demeanor was a quality highlighted by his fellow faculty members."

"The Dean is committed to growing the faculty complement while holding undergraduate student enrolment steady; this is a timely initiative aimed at redressing the current unduly large student-to-faculty ratios in Electrical Engineering and other engineering programs at Carleton."

Students

The external reviewers noted that "[t]he program involves a considerable amount of experiential learning; many of the courses offered include a laboratory component, and co-op opportunities for students are both encouraged and supported."

"The program is structured such that most semesters expect students to register in five courses rather than what is often six courses at a number of other schools in Canada; assuming an appropriate workload in each course, this feature can result in a more manageable overall workload for Carleton's EE students compared to those at other schools, thereby resulting in better overall knowledge retention and a better learning experience for the students."

Curriculum

The external reviewers noted that:
"Recent curricular changes in Carleton's EE program; in particular the introduction of courses pertinent to electric machines and power systems, and a mandatory course on automatic control (intelligent systems), have broadened the program from its previous

focus on electronics such that it is more "up with the times" and compares well with other EE programs in Canada and abroad."

Opportunities for program improvement and enhancement

The External Reviewers' Report made 27 recommendations for improvement:

1. We recommend that a succession plan be drawn up immediately regarding transitioning the current workload and responsibilities for technical support to new hires. To this end, we recommend that university-level Human Resources be consulted, as needed, in order ease this transition process and to assist the current technical support individual in reducing the extent of his activities and responsibilities. (weakness)
2. We recommend that funds currently allocated for faculty recruitment be reallocated to hire additional technical support staff. (opportunity)
3. Consider merging the Department of Electronics with the Department of Systems and Computer Engineering. (opportunity)
4. Consider reducing the number of ECE-related programs. (opportunity)
5. Institute a five-year standard length for the term of Department Chair. (opportunity)
6. Expect and support Department Chairs and other faculty members who show interest and potential in leadership to participate and complete the Carleton Leader Program. (opportunity)
7. Establish clear departmental aspirations (vision) along with tactical and strategic priorities (short and longer terms) for guiding collective and individual decisions and resource allocations. (opportunity)
8. Revisit the departmental administrative structure and leadership portfolios such that new models can be deployed and experimented with, noting that:
   - Associate Chairs specifically responsible for coordinating and supporting research initiatives have been instrumental at other institutions in advancing research activities and outcomes
   - Associate Chairs for outreach, external activities, entrepreneurship, innovation, and/or other strategic initiatives have proven helpful in other institutions for enabling and achieving departmental successes affecting and valued by multiple stakeholders, including students, faculty, and the community at large
   - High-energy/visionary/unconventional-thinking individuals with different views/ideas can have significant positive impact on departmental operations and outcomes (opportunity)
9. Increase faculty member engagement. (opportunity)
10. Raise departmental levels of enthusiasm/excitement. (opportunity)
11. Consider taking a larger and more engaged role in departmental external engagements and promotions. (opportunity)
12. Look externally for ideas for alternatives toward improving academic programs, program delivery, research activities, departmental business operations, student engagement, etc. (opportunity)
13. Engage the curriculum committee in the amalgamation and evolution of ECE programs at Carleton. (opportunity)

14. Give serious reconsideration to the manner in which the final year capstone course is organized and delivered. (opportunity)
15. . Review overall workload for students. (opportunity)
16. Develop mechanisms to support the regular and critical review of laboratory components to ensure they are truly engaging and instructive and not simply comprised of rote procedures for students to complete. (opportunity)
17. Re-examine the possibility of integrating low- cost test and measurement devices/platforms into the EE program for students to use outside of traditional labs and classrooms. (opportunity)
18. Encourage the revitalization of delivery/learning models even within a classical lecture based classroom model.
19. Develop feedback, self-assessment and improvement processes at the department level for courses and the manner in which they are offered.
20. Provide additional training for TAs.
21. Re-examine the basis on which admission to the Electrical Engineering program is offered.
22. Re-examine what is sufficient for a student to pass a course
23. Provide greater and more structured and formal support for extracurricular project clubs and activities which provide tremendous learning opportunities for students.
24. Create better lines of communication with student leaders.
25. Create 5 and 6 year program maps
26. Encourage faculty members to connect students with their research programs and relate/introduce research examples into the undergraduate program.
27. We recommend that the department contemplate activities that promote and support undergraduate research opportunities for its students.

The Outcome of the Review

As a consequence of the review, the undergraduate program in, Electrical Engineering was categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of **GOOD QUALITY** (Carleton's IQAP 7.2.13-14).

The Implementation Plan

The recommendations that were put forward as a result of the review process were productively addressed by the Chair of the Department of Electronics, and the Dean of the Faculty of Engineering and Design in response to the External Reviewers' report and Implementation Plan that was considered by SQAPC on October 13, 2022.

The Department:

- agreed unconditionally to recommendations #1, 2, 6, 20, 24, 26 and 27
- agreed to recommendations #5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 23 and 25 in principle
- the unit did not agree with recommendations # 3, 4, 17, 21 and 22

It is to be noted that Carleton's IQAP provides for the monitoring of implementation plans. A monitoring report is to be submitted by the academic unit(s) and Faculty Dean(s) and forwarded to SQAPC for its review by June 30, 2024.

The Next Cyclical Review

The cyclical program review (CPR) aligns with the Canadian Engineering Accreditation Board review of the undergraduate engineering programs. The Canadian Engineering Accreditation Board's review typically occurs within 1- 6 years; this time frame falls within the program's next CPR cycle. Based on this approach, the next CPR will be held by 2028/29.

Electronics
Unit Response to External Reviewers' Report & Implementation Plan
Programs Being Reviewed: Electrical Engineering

Note: This document is forwarded to Senate, the Quality Council and posted on the Vice- Provost's external website.

UNIT RESPONSE AND IMPLEMENTATION PLAN					
Programs Being Reviewed:					
Prepared by (name/position/unit):					
External Reviewer Recommendation & Categorization	**Unit Response (choose only one for each recommendation):** 1- Agreed to unconditionally 2- Agreed to if additional resources permit (describe resources) 3- Agreed to in principle 4- Not agreed to Rationales are required for categories 2, 3 & 4	**Action Item**	**Owner**	**Timeline**	**Will the action described require calendar changes? (Y or N)**
1. We recommend that a succession plan be drawn up immediately regarding transitioning the current workload and responsibilities for technical support to new hires. To this end, we recommend that university-level Human Resources be consulted, as needed, in order ease this transition process and to assist the current technical support individual in reducing the extent of his activities and responsibilities. (weakness)	*Agreed to unconditionally* *The Department of Electronics includes 7 continuing technical staff members. 2 staff members support the Microfabrication laboratory which serves senior undergraduate courses and graduate research. 2 staff members support the Department computer network and resources including undergraduate courses, graduate research, and administrative computing. 3 staff members support undergraduate hardware labs and some experimental research labs. While the technical roles are distinct there is sufficient overlap and faculty expertise to support a transition should a staff member leave.* *It is likely this recommendation regarding technical support was based on an ad-hoc interview with a single staff member who assumed considerable responsibility during the*	*Hiring technical staff and managing evolution of workload and responsibilities is ongoing.* *All continuing technical staff positions are filled from October 10, 2022.*	*Department Chair*	*September 2022*	N

	COVID pivot to remote laboratory activity. There is ongoing coordination with HR regarding lab staffing and responsibilities.				
2.We recommend that funds currently allocated for faculty recruitment be reallocated to hire additional technical support staff. (opportunity)	*Agreed to unconditionally*	*Hiring technical staff and defining responsibilities is ongoing*	*Department Chair and Faculty Dean*	*September 2022*	*N*
3. Consider merging the Department of Electronics with the Department of Systems and Computer Engineering. (opportunity)	*Not agreed* *This is a major structural change to the faculty with potential negative impact*				
4. Consider reducing the number of ECE-related programs. (opportunity)	*Not agreed* *Smaller programs enhance the sense of community in student cohorts and subsets of faculty members*				
5. Institute a five-year standard length for the term of Department Chair. (opportunity)	*Agreed in principle* *While a longer term can have benefits, flexibility can also be valuable. I thought Carleton used a standard 4 year term but 5 years could be discussed.*	*Discuss with Chairs and Directors*	*Faculty Dean*	*May 2022*	*N*

6. Expect and support Department Chairs and other faculty members who show interest and potential in leadership to participate and complete the Carleton Leader Program. (opportunity)	*Agreed unconditionally*	*I believe this is already done*	*Faculty Dean*	*May 2022*	*N*
7. Establish clear departmental aspirations (vision) along with tactical and strategic priorities (short and longer terms) for guiding collective and individual decisions and resource allocations. (opportunity)	*Agreed in principle*	*Document vision and priorities in annual academic and financial planning*	*Department Chair*	*February 2023*	*N*
8. Revisit the departmental administrative structure and leadership portfolios such that new models can be deployed and experimented with, noting that: o Associate Chairs specifically responsible for coordinating and supporting research initiatives have been instrumental at other institutions in advancing research activities and outcomes o Associate Chairs for outreach, external activities, entrepreneurship, innovation, and/or other strategic initiatives have proven helpful in o (ther institutions for enabling and achieving departmental successes affecting and valued by multiple stakeholders, including students, faculty, and the community at large o High-energy/visionary/unconventional-thinking individuals with different views/ideas can have significant positive impact on departmental operations and outcomes (opportunity)	*Agreed in principle* *These roles are currently administrative load assignments for faculty members*	*Discuss with Dean and Department Faculty Board*	*Department Chair*	*September 2022*	*N*

9. Increase faculty member engagement. (opportunity)	*Agreed in principle*	*Increase number of Department faculty meetings*	*Department Chair*	*September 2022*	*N*
10. Raise departmental levels of enthusiasm/excitement. (opportunity)	*Agreed in principle*	*Will try to be more aggressive in communicating and promoting opportunities to faculty?*	*Department Chair*	*September 2022*	*N*
11. Consider taking a larger and more engaged role in departmental external engagements and promotions. (opportunity)	*Agreed in principle* *Multiple faculty members are actively engaged in outreach through the University and technical society activities*	*Encourage faculty to look for additional opportunities to promote the EE program*	*Department Chair*	*September 2022*	*N*
12. Look externally for ideas for alternatives toward improving academic programs, program delivery, research activities, departmental business operations, student engagement, etc. (opportunity)	*Agreed in principle* *This is an ongoing activity but change is gradual*	*A topic for discussion at the Department faculty meetings (#9)?*	*Department Chair*	*September 2022*	*N*
13. Engage the curriculum committee in the amalgamation and evolution of ECE programs at Carleton. (opportunity)	*Agreed in principle.*	*Review of program overlap*	*Dept. Electronics Curriculum Committee*	*September 2022*	*Maybe?*
14. Give serious reconsideration to the manner in which the final year capstone course is organized and delivered. (opportunity)	*Agreed in principle* *Ongoing discussion*	*Review of capstone structure*	*Capstone committee*	*September 2022*	*N*

15. Review overall workload for students. (opportunity)	*Agreed in principle*	*Review program course load* *Solicit feedback from students to clarify concerns*	*Curriculum committee*	*September 2022*	*Maybe ?*
16. Develop mechanisms to support the regular and critical review of laboratory components to ensure they are truly engaging and instructive and not simply comprised of rote procedures for students to complete. (opportunity)	*Agreed in principle* *Ongoing process*	*Review laboratory components*	*Curriculum committee*	*September 2022*	*N*
17. Re-examine the possibility of integrating low-cost test and measurement devices/platforms into the EE program for students to use outside of traditional labs and classrooms. (opportunity)	*Not agreed* *We have developed equivalent in-person and remote access student experiences using professional quality test equipment.* *Take-home test and measurement is supported where appropriate*				
18. Encourage the revitalization of delivery/learning models even within a classical lecture based classroom model.	*Agreed in principle*	*Encourage course instructors to engage with TLS*	*Department Chair*	*August 2022*	*N*
19. Develop feedback, self-assessment and improvement processes at the department level for courses and the manner in which they are offered.	*Agreed in principle*	*Review student feedback from town hall in winter term* *Encourage faculty to engage Department teaching mentor*	*Department Chair, Curriculum committee*	*August 2022*	*N*

20. Provide additional training for TAs.	*Agreed unconditionally*	*Encourage course instructors to organize training*	*Department Chair*	*September 2022*	*N*
21. Re-examine the basis on which admission to the Electrical Engineering program is offered.	*Not agreed* *This is the territory of the Associate Dean Student Success and Registrar and will be difficult to change for a program of this size*				
22. Re-examine what is sufficient for a student to pass a course.	*Not agreed* *Challenging courses are already offered in different terms providing multiple opportunities to complete.*				
23. Provide greater and more structured and formal support for extracurricular project clubs and activities which provide tremendous learning opportunities for students.	*Agreed in principle*	*Encourage more faculty to sponsor student extracurricular activities*	*Department Chair*	*May 2022*	*N*
24. Create better lines of communication with student leaders.	*Agreed unconditionally* *Student representatives are already included in governance*	*Increase frequency of meetings and town halls*	*Department Chair*	*September 2022*	*N*

25. Create 5 and 6 year program maps.	*Agreed in principle* *Students falling off-pattern on 4 years may still be off-pattern on 5 or 6 year plans.*	*Investigate practical extended program maps*	*Curriculum Committee*	*September 2022*	*N*
26. Encourage faculty members to connect students with their research programs and relate/introduce research examples into the undergraduate program.	*Agreed unconditionally* *This is natural for active researchers*	*Promote to faculty*	*Department Chair*	*December 2022*	*N*
27. We recommend that the department contemplate activities that promote and support undergraduate research opportunities for its students.	*Agreed unconditionally* *See 26.*	*Promote to faculty (USRA, I-CUREUS)*	*Department Chair*	*December 2022*	*N*

CARLETON UNIVERSITY COMMITTEE ON
QUALITY ASSURANCE
Cyclical Review of the joint graduate programs
in Civil Engineering
Executive Summary and Final Assessment Report

This Executive Summary and Final Assessment Report of the cyclical review of Carleton's joint graduate programs in Civil Engineering are provided pursuant to the provincial Quality Assurance Framework and Carleton's Institutional Quality Assurance Process (IQAP).

EXECUTIVE SUMMARY

The joint graduate programs in Civil Engineering reside in the Ottawa-Carleton Institute of Civil Engineering, a unit administered by the Department of Civil and Environmental Engineering in the Faculty of Engineering at Carleton, and the Department of Civil Engineering in the Faculty of Engineering at the University of Ottawa.

As a consequence of the review, the programs were categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of good quality. (Carleton's IQAP 7.2.13).

The External Reviewers' report offered a very positive assessment of the programs. Within the context of this positive assessment, the report nonetheless made a number of recommendations for the continuing enhancement of the programs. These recommendations were productively addressed by the Director of the Ottawa-Carleton Institute of Civil Engineering, the Dean of the Faculty of Engineering and Design at Carleton University, and the Dean of the Faculty of Engineering at the University of Ottawa. This response was to the External Reviewers' report, along with an Implementation Plan, was submitted to SQAPC at Carleton University on May 12, 2022.

FINAL ASSESSMENT REPORT

Introduction

The joint graduate programs in Civil Engineering reside in the Ottawa-Carleton Institute of Civil Engineering, a unit administered by the Department of Civil and Environmental Engineering in the Faculty of Engineering at Carleton, and the Department of Civil Engineering in the Faculty of Engineering at the University of Ottawa.

This review was conducted pursuant to the Quality Assurance Framework and Carleton's Institutional Quality Assurance Process (IQAP). As a consequence of the review, the programs were categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of good quality. (Carleton's IQAP 7.2.13).

The site visit, which took place on March 15-18th, 2021, was conducted by Dr. Jeff Rankin, from the University of New Brunswick and Dr. Amin Elshorbagy from the University of Saskatchewan. The site visit involved formal meetings with the following parties:

- Vice-Provost and Associate Vice-President (Carleton University)
- Director, Office of Quality Assurance (University of Ottawa)
- Dean, Faculty of Graduate and Postdoctoral Affairs (Carleton University)
- Dean, Faculty of Engineering and Design (Carleton University)
- Vice-Provost, Graduate and Postdoctoral Affairs (University of Ottawa)
- Provost and Vice-President (Carleton University)
- Provost and Vice-President, Academic Affairs (University of Ottawa)
- Dean, Faculty of Engineering (University of Ottawa)
- Associate Director, Ottawa-Carleton Joint Institute of Civil Engineering
- Associate Chair, Graduate Studies (Carleton University)
- Associate Chair, Graduate Studies (University of Ottawa)
- Faculty members from both institutions
- Students from both institutions

The External Reviewers' report, submitted on April 11, 2021, offered a very positive assessment of the program.

This Final Assessment Report provides a summary of:

- Strengths of the programs
- Challenges faced by the programs
- Opportunities for program improvement and enhancement
- The Outcome of the Review
- The Implementation Plan

This report draws on five documents:

- The Self-study developed by members of Ottawa-Carleton Joint Institute of Civil Engineering (Appendix A)
- The Report of the External Review Committee (Appendix B).

- The response and implementation plan from the Director of the Ottawa-Carleton Joint Institute of Civil Engineering (Appendix C)
- The Response from the Dean of the Faculty of Engineering and Design (Carleton University) and the Dean of the Faculty of Engineering (University of Ottawa) (Appendix D).
- The internal discussant's recommendation report (Appendix E).

Appendix F contains brief biographies of the members of the External Review Committee.

This Final Assessment Report contains the Implementation Plan (Appendix C) developed by the Director of the Ottawa-Carleton Institute of Civil Engineering and agreed to by the Dean of the Faculty of Engineering and Design (Carleton University), and the Dean of the Faculty of Engineering (University of Ottawa), for the implementation of recommendations for program enhancement identified as part of the cyclical program review process.

The Implementation Plan identifies who is responsible for implementing the agreed upon recommendations, as well as the timelines for implementation and reporting.

Strengths of the programs

General

The External Reviewers' Report were of the opinion that 'the OCIECE is meeting all expectations with respect to program requirements,' and had much potential to further leverage their unique position within the discipline. The strength of the 'joint' aspects of the OCIECE is acknowledged with respect to its breadth of expertise.

Faculty

Speaking with regard to faculty, the external reviewers' stated:

"Localized expertise is leveraged well and specifically appears to be well-managed (teaching and research). Faculty complement is a strength with a commitment of significant number of hires over the coming two to three years."

Students

The external reviewers observed that the quality and quantity of research-based applicants was healthy, and noted the use of recurring surveys to help guide future program improvements. The OCICE demonstrated a functioning continuous improvement process and have taken action on previously identified concerns surrounding time to completion and retention, student concerns through the satisfaction survey and overlap between civil engineering with and environmental engineering."

Curriculum

With regard to the program structure and curriculum, the External Reviewers' stated:

"The structure of the Program matches with institutional mission and academic plans with emphasis on experiential learning opportunities and emphasis on a sustainable future. The breadth of courses

within OCICE programs exceeds most other programs in Canada with good coverage in most areas of specialization within the discipline."

Opportunities for program improvement and enhancement

The External Reviewers' Report made 10 recommendations for improvement:

1. The outstanding issues with the course-based M.Eng program option require resolution. (Weakness)
2. Internal coordination and communication processes need improvement. (Weakness)
3. There is a need for a consistent approach to ensure the preparedness for students in the MASc program. (Weakness)
4. The objectives of experiential learning outcomes for the M.Eng programs should be clarified. (Weakness)
5. The strengths and capabilities of the joint institute should be better communication to external audiences (including peers, research partners and potential candidates. (Concern)
6. The goals and objectives of the programs with respect to the issues of EDI should be explicitly defined. (Concern)
7. Support should be provided for a student organization/society as a joint institute activity. (Opportunity)
8. A mechanism for the inclusion of external program partners in strategic planning and program improvement should be considered. (Opportunity)
9. A mechanism for identifying interdisciplinary research and programs should be considered. (Opportunity)
10. Formal process for mentorship of junior faculty and HQP should be considered. (Opportunity)

The Outcome of the Review

As a consequence of the review, the joint graduate programs in Civil Engineering were categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of **GOOD QUALITY** (Carleton's IQAP 7.2.13).

The Implementation Plan

The recommendations that were put forward as a result of the review process were productively addressed by the Director of the Ottawa-Carleton Institute of Civil Engineering, the Dean of the Faculty of Engineering and Design (Carleton University), and the Dean of the Faculty of Engineering (University of Ottawa) in separate responses to the External Reviewers' report and Implementation Plan that was considered by SQAPC on May 12, 2022. The joint Institute agreed unconditionally to recommendations #1, 2, 4, 6, 8 and 10 and agreed to recommendations #3, and 5 if resources permit. They also agreed in principle to recommendation # 7, and 9. The Dean of the Faculty of Engineering and Design (Carleton University), agreed to the response and plan for recommendations #1,2,4,5,7 and 8; agreed with the response for recommendations #6 and 9; and expressed uncertainty around resources for recommendations #3 and 10. The Dean of the Faculty of Engineering (University of Ottawa) agreed with all recommendations and planning.

It is to be noted that Carleton's IQAP provides for the monitoring of implementation plans. A monitoring report is to be submitted by the Ottawa- Carleton Institute of Civil Engineering, the Dean

of the Faculty of Engineering and Design (Carleton University), and the Dean of the Faculty of Engineering (University of Ottawa), and forwarded to SQAPC for its review by December 31, 2022.

The Next Cyclical Review

The next cyclical review of the joint graduate programs in Civil Engineering will be conducted by the University of Ottawa during the 2023-24 academic year.

Note: This document is forwarded to Senate, the Quality Council and posted on the Vice- Provost's external website.

Introduction & General Comments
Please include any general comments regarding the External Reviewers' Report.

The Ottawa-Carleton Institute for Civil Engineering was pleased to receive the External Reviewers' positive report. The reviewers indicate that "*OCICE is meeting all expectations with respect to program requirements. The joint institute is uniquely positioned in its breadth of expertise within the discipline and has much potential to further leverage this from many perspectives*." The concerns noted regarding the M.Eng. program were already identified by us, and noted in our submission to the reviewers. This report was shared with our Board of Management, including the Chairs of the departments at both Carleton and Ottawa U.   The Joint-Institute and the constituent departments are committed to the continual improvement of our programs to enhance the student, staff, and faculty experience. The response to the External Reviewers' Report and the Implementation Plan (Section B) represent the consensus of the two departments, and have been shared with the Dean.

For each recommendation one of the following responses must be selected:

Agreed to unconditionally: used when the unit agrees to and is able to take action on the recommendation without further consultation with any other parties internal or external to the unit.
Agreed to **if additional resources permit:** used when the unit agrees with the recommendation, however action can only be taken if additional resources are made available. Units must describe the resources needed to implement the recommendation and provide an explanation demonstrating how they plan to obtain those resources. In these cases, discussions with the Deans will normally be required and therefore identified as an action item.
Agreed to in principle: used when the unit agrees with the recommendation, however action is dependent on something other than resources. Units must describe these dependencies and determine what actions, if any, will be taken.
Not agreed to: used when the unit does not agree with the recommendation and therefore will not be taking further action. A rationale must be provided to indicate why the unit does not agree (no action should be associated with this response).

Calendar Changes
If any of the action items you intend to implement will result in calendar changes, please describe what those changes will be. To submit a formal calendar change, please do so using the Courseleaf system.

UNIT RESPONSE AND IMPLEMENTATION PLAN					
Programs Being Reviewed:					
Prepared by (name/position/unit):					
External Reviewer Recommendation & Categorization	Unit Response: 1- Agreed to unconditionally 2- Agreed to if additional resources permit (describe resources) 3- Agreed to in principle 4- Not agreed to Rationales are required for categories 2, 3 & 4	Action Item	Owner	Timeline	Will the action described require calendar changes? (Y or N)
1. The outstanding issues with the course based M.Eng program option require resolution. (Weakness)	*Agreed to unconditionally*	*Institute has undertaken a review of the M.Eng. program and will propose solutions to the identified issues*	*Institute Director and the Department chairs at Carleton & Ottawa U.*	*Fall 2023*	*Y*
2. Internal coordination and communication processes need improvement. (Weakness)	*Agreed to unconditionally*	*The Institute will endeavor to improve communications. The hiring of a new admin person to support the joint Institutes (by FED Dean's office) will facilitate THIS* *Both departments offer a "Graduate Student Orientation" session each year, where guidance is provided to students for on-boarding and progress through the program.* *Improvements of the website will be undertaken and the information presented at orientation will be shared on the website for ongoing access.*	*Institute Director, the Department chairs & the Board of management*	*Winter 2023* *(Admin person expected to be hired next year).*	*N*

3. There is a need for a consistent approach to ensure the preparedness for students in the MASc. program. (Weakness)	*Agreed to if additional resources permit*	*There is no formal research proposal at the Master's level and the supervisors provide guidance on it. We intend to leave it that way.* *But, a new course on research methods aimed at thesis students will be introduced to facilitate better preparedness of the students, and assist the individual professors.*	*Institute Director, the Department chairs & the Board of management*	*Fall 2022*	*Y*
4. The level of experiential learning outcomes for the M.Eng programs should be clarified. (Weakness)	*Agreed to unconditionally*	*Will be considered during the review of the M.Eng. program*	*Institute Director, the Department chairs & the Board of management*	*Fall 2023*	*Y*
5. The strengths and capabilities of the joint institute should be better communicated to the external audiences (including peers, research partners, and potential candidates)(Concern)	*Agreed to if additional resources permit*	*FED @ Carleton is in the process of hiring a dedicated person to assist the Institutes, and this position will facilitate improved communications via updates, posts on web pages. Possible engagement via social media platforms will also be considered*	*Institute Director, the Department chairs, Faculty members & the Dean.*	*Fall 2022*	*N*
6. The goals and objectives of the programs with respect to EDI should be explicitly defined. (Concern)	*Agreed to unconditionally*	*The Institute has fully adopted the EDI goals and the objectives of the two Universities, and will work with the Faculty of Engineering at both Institutions to implement any Engineering Faculty specific goals. We will post links to the policies on the Institute web page at the next update cycle.* *We do not see a need to develop institute specific EDI within FED. (EDI issues in engineering are anticipated to be somewhat different than those at other faculties, but*	*The Department chairs, the Institute Director, & the Dean*	*Fall 2022*	*N*

		we believe a common set of principles within engineering would be sufficient) *We have taken action to address some EDI challenges already (e.g., There has been a significant increase in female faculty members in recent years at both departments).* *Additional initiatives if resources permit:* *The CPR report included some statistics related to EDI, but additional resources will permit more detailed tracking.* *There is an initiative to appoint an Associate Dean to handle EDI issues at Carleton FED which would enhance the ability of the joint institutes to address EDI issues more effectively.*			
7. Support should be provided for a student organization/society as a joint institute activity. (Opportunity)	*Agreed to in principle*	*We have strong CSCE and ACI chapters at each University, but do not have a joint organization. However, many events are conducted across the departments on a regular basis. We will promote the merits of joint student organization at the graduate level among the student groups, and will assign a faculty mentor to support the initiative from both departments.*	*Institute Director, the Department chairs & Faculty members.*	*Winter 2023*	*N*
8. A mechanism for the inclusion of external program partners in strategic planning and program improvement should be considered. (Opportunity)	*Agreed to unconditionally*	*Both departments have many adjunct professors who can contribute in this capacity. They are currently admitted to Institute as Associate Members and engage in research, but do not directly contribute to program planning and management, except that they have a voice at the AGM but*	*Institute Director, the Department chairs & the Board of management*	*Winter 2022*	*N*

		participation rates have been low. We will strongly encourage the participation of all associate members at the meetings. *Further, the by-laws of the Institute will be amended to include one associate member from each department into the board of management to better engage these external program partners.*			
9. A mechanism for identifying interdisciplinary research and programs should be considered. (Opportunity)	*Agreed to in principle*	*Interdisciplinary programs are generally easier within each University, and it is difficult to engage in interdisciplinary collaboration across the Universities.* *The Institute has taken initiatives to foster interdisciplinary research with the context/limitations of its current programs (e.g., Collaborative specialization in climate change at Carleton, Sustainability and Resiliency at uOttawa). Broader expansion beyond such efforts is difficult within the current framework.* *Greater collaboration and willingness at the upper levels at each institution would be required to solve this issue.*	*Institute Director, the Department chairs, Deans & Higher Management.*		*N*
10. Formal processes for the mentorship of junior faculty and HQP should be considered. (Opportunity)	*Agreed to unconditionally*	*There are processes at both departments for mentorship of junior faculty and HQP.* *Mentorship of junior faculty is addressed through formal meetings with the respective Department Chair and Faculty Dean in each university, the assistance of research facilitators at each university, and identified research mentors.*	*Director, Department chairs & Deans*		*N*

		Mentorship of HQP is generally provided by individual professors. All admitted students are assigned a research supervisor (or academic advisor, in the case of coursework M.Eng. students) at the time of admission to the Institute. *The current mentorship process is informal. Formal mentorship arrangements and additional initiatives will be considered if extra resources become available* *Co-supervision across the departments is encouraged, and the possibility of establishing a scholarship to support HQP in joint-supervision will be explored in discussions with the Dean & the FGPA/FGPS.* *.*			

**CARLETON UNIVERSITY COMMITTEE ON
QUALITY ASSURANCE
Cyclical Review of the undergraduate program
in Sustainable and Renewable Energy Engineering (streams A and B)
Executive Summary and Final Assessment Report**

This Executive Summary and Final Assessment Report of the cyclical review of Carleton's undergraduate program in Sustainable and Renewable Energy Engineering (streams A and B) in the Department of Electronics and the Department of Mechanical and Aerospace Engineering is provided pursuant to the provincial Quality Assurance Framework and Carleton's Institutional Quality Assurance Process (IQAP).

EXECUTIVE SUMMARY
The undergraduate program in Sustainable and Renewable Energy Engineering (streams A and B) resides in the Department of Electronics and the Department of Mechanical and Aerospace Engineering, units administered by the Faculty of Engineering and Design.

As a consequence of the review, the program was categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of good quality. (Carleton's IQAP 7.2.13-7.2.14).

The External Reviewers' report offered a very positive assessment of the program. Within the context of this positive assessment, the report nonetheless made a number of recommendations for the continuing enhancement of the program. These recommendations were productively addressed by the Chairs of the Department of Electronics and the Department of Mechanical and Aerospace Engineering, and the Dean of the Faculty of Engineering and Design in a response to the External Reviewers' report and Implementation Plan that was submitted to SQAPC on November 10, 2022.

FINAL ASSESSMENT REPORT

<u>Introduction</u>

The undergraduate program in Sustainable and Renewable Energy Engineering (streams A and B) resides in the Department of Electronics and the Department of Mechanical and Aerospace Engineering, units administered by the Faculty of Engineering and Design. This review was conducted pursuant to the Quality Assurance Framework and Carleton's Institutional Quality Assurance Process (IQAP). As a consequence of the review, the program was categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of good quality. (Carleton's IQAP 7.2.13-14).

The site visit, which took place on October 18, 19, and 20 2021, was conducted by Dr. Francois Bouffard from McGill University and Dr. Wayne Peters from the University of PEI. The site visit involved formal meetings with the Provost, the Vice-Provost and Associate Vice-President (Academic), the Dean of the Faculty of Engineering and Design, and the Chairs of the Department of Electronics and the Department of Mechanical and Aerospace Engineering. The review committee also met with faculty members, staff, and undergraduate students.

"The External Reviewers' report was submitted on November 11, 2021, and offered a very positive assessment of the program."

This Final Assessment Report provides a summary of:

- Strengths of the program
- Challenges faced by the program
- Opportunities for program improvement and enhancement
- The Outcome of the Review
- The Implementation Plan

This report draws on five documents:

- The Canadian Engineering Accreditation Board Self-study and Cyclical Program Review Volume I Supplement developed by members of the Department of Electronics and the Department of Mechanical and Aerospace Engineering (Appendix A)
- The Report of the External Review Committee (Appendix B)
- The response and implementation plan from the Chairs of the Department of Electronics and the Department of Mechanical and Aerospace Engineering (Appendix C)
- The Response from the Dean of the Faculty of Engineering and Design (Appendix D)
- The internal discussant's recommendation report (Appendix E)

Appendix F contains brief biographies of the members of the External Review Committee.

This Final Assessment Report contains the Implementation Plan (Appendix C) developed by the Chairs of the Department of Electronics and the Department of Mechanical and Aerospace Engineering and agreed to by the Dean of the Faculty of Engineering and Design, for the implementation of recommendations for program enhancement identified as part of the cyclical program review process.

The Implementation Plan identifies who is responsible for implementing the agreed-upon recommendations, as well as the timelines for implementation and reporting.

Strengths of the program

General

The External Reviewer's noted that "SREE-A and SREE-B are unique engineering programs in the Canadian higher education landscape. The two programs aim at training highly qualified engineers capable of working across disciplinary boundaries in the general area of renewable energy and its rational use. Considering how Canada and the rest of the world are transitioning towards a lower carbon future, demand for graduates from the SREE programs is bound to increase in the near term."

"The programs leverage strengths and teaching resources across two academic units (Mechanical & Aerospace Engineering and Electronics Engineering). Although stretched at the time of the visit, teaching resources, in terms of both faculty positions and teaching space, are growing and are set to continue their growth as confirmed by the senior leadership of the Faculty of Engineering and the University. Moreover, senior leadership of both the University and the Faculty acknowledge the importance of these two programs as being two integral parts of their strategic vision."

"Recent changes in the curricula of both programs demonstrate commitment of the institution to program evolution and perennity, adapting to the fast-changing industrial ecosystem served by SREE. For instance, the evaluators see quite positively the recent reform of the delivery of the common first year across the Faculty of Engineering. Finally, the evaluators are pleased to see how experiential learning, primarily through laboratories and a senior capstone project, has been weaved in explicitly in the programs."

Faculty

The External Reviewer's noted that "[b]y inspection of Faculty CVs, the evaluators confirm that the expertise of professors involved in the programs are adequate for appropriate delivery of the two programs."

"Faculty numbers are increasing in both academic units involved in the delivery of the SREE programs. There is strong commitment from Faculty and unit leadership to hire a significant number of new professors with expertise in the SREE-related areas. In fact, considering the large number of new hires from the last few years and the years to come, mentorship of junior faculty is and will be primordial."

"From interactions with faculty members involved in the delivery of the two SREE programs, the evaluators could see that new hires are well integrated into the existing faculty teams, and that morale was high across the board. The evaluators sensed pride, enthusiasm, and motivation in teaching in such unique programs. This growth phase represents an extraordinary opportunity to leverage new expertise to increase the diversity of final year technical electives in the SREE areas and to expand the number of SREE-related capstone project experiences (especially for SREE-A students)."

Students

The External Reviewer's noted that , "students interviewed by the evaluators (solely from the SREE-A stream) were overall quite satisfied from their experiences in the SREE programs. Some concerns were expressed regarding post-graduation job opportunities considering the novel nature of the SREE programs. The students were concerned also about the low availability of 4th year electives and SREE-A-flavoured capstone projects."

Opportunities for program improvement and enhancement

The External Reviewers' Report made 7 recommendations for improvement:

1. Ensure the programs are properly resourced to ensure their perennity in current form and their possible growth -- both in terms of faculty numbers and teaching space. (concern)

2. Promote and increase the visibility of the programs and its graduates to potential students and employers -- highlight the skills and know-how of graduates to showcase their value to employers in the sustainable and renewable energy sector. (concern)

3. Work to provide more interdisciplinary sustainable energy capstone project opportunities for SREE students, especially externally sponsored. (concern)

4. Integrate SREE-related advisory board members to help with curriculum development and strategic governance of the programs. (opportunity)

5. Development of more SREE targeted final year electives. (opportunity)

6. Introduce elements of data science to mirror evolution seen in industry. (opportunity)

7. Stream A only - Review the sequencing of electromechanical energy conversion course. (opportunity)

The Outcome of the Review

As a consequence of the review, the undergraduate programs in, Sustainable and Renewable Energy Engineering (streams A and B) were categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of **GOOD QUALITY** (Carleton's IQAP 7.2.13-14).

The Implementation Plan

The recommendations that were put forward as a result of the review process were productively addressed by the Chairs of the Department of Electronics and the Department of Mechanical and Aerospace Engineering, and the Dean of the Faculty of Engineering and Design in response to the External Reviewers' report and Implementation Plan that was considered by SQAPC on November 10, 2022.

The Department:

- agreed unconditionally to recommendations #1, 3, 4, and 7
- agreed to if additional resources permit #2, 5
- agreed to recommendations in principle #6

It is to be noted that Carleton's IQAP provides for the monitoring of implementation plans. A monitoring report is to be submitted by the academic units and Faculty Dean and forwarded to SQAPC for its review by June 30, 2024.

The Next Cyclical Review

The cyclical program review (CPR) aligns with the Canadian Engineering Accreditation Board review of the undergraduate engineering program. The Canadian Engineering Accreditation Board's review typically occurs within 1- 6 years; this time frame falls within the program's next CPR cycle. Based on this approach, the next CPR will be held by 2028/29.

Unit Response to External Reviewers' Report & Implementation Plan
Programs Being Reviewed: Sustainable and Renewable Energy Engineering

Note: This document is forwarded to Senate, the Quality Council and posted on the Vice- Provost's external website.

Introduction & General Comments
Please include any general comments regarding the External Reviewers' Report.

The Department of Electronics and the Department of Mechanical and Aerospace Engineering appreciate the time and energy the Reviewers have dedicated to their report. Following consultation involving members of both departments we present this response to the report and corresponding implementation plan.

For each recommendation **_one_** of the following responses must be selected:

Agreed to unconditionally: used when the unit agrees to and is able to take action on the recommendation without further consultation with any other parties internal or external to the unit.
Agreed to **if additional resources permit:** used when the unit agrees with the recommendation, however action can only be taken if additional resources are made available. Units must describe the resources needed to implement the recommendation and provide an explanation demonstrating how they plan to obtain those resources. In these cases, discussions with the Deans will normally be required and therefore identified as an action item.
Agreed to in principle: used when the unit agrees with the recommendation, however action is dependent on something other than resources. Units must describe these dependencies and determine what actions, if any, will be taken.
Not agreed to: used when the unit does not agree with the recommendation and therefore will not be taking further action. A rationale must be provided to indicate why the unit does not agree (no action should be associated with this response).

Calendar Changes
If any of the action items you intend to implement will result in calendar changes, please describe what those changes will be. To submit a formal calendar change, please do so using the Courseleaf system.

UNIT RESPONSE AND IMPLEMENTATION PLAN					
Programs Being Reviewed: Sustainable and Renewable Energy Engineering					
Prepared by (name/position/unit): *The Department of Electronics and the Department of Mechanical and Aerospace Engineering*					
External Reviewer Recommendation & Categorization	Unit Response (choose only one for each recommendation): 1- Agreed to unconditionally 2- Agreed to if additional resources permit (describe resources) 3- Agreed to in principle 4- Not agreed to Rationales are required for categories 2, 3 & 4	Action Item	Owner	Timeline	Will the action described require calendar changes? (Y or N)
1. Ensure the programs are properly resourced to ensure their perennity in current form and their possible growth, both in terms of faculty numbers and teaching space. (Concern)	*1- Agreed to unconditionally*	*The program is managed by both the Department of Electronics (DOE) and the Department of Mechanical and Aerospace Engineering (MAAE). Faculty numbers and teaching space have been made available to support the program.* *Two new faculty members were hired in MAAE in the area (Prof. Kristen Schell and Prof. Ahmed Abdulla) on top of Prof. Jean Duquette. Another CRC position will be advertised soon. One new faculty member (Prof. Himavarsha Dhulipati) in a related area will join DOE in 2022.* *Additional space for the program will become available in 2022 (EDC, Engineering Design Centre, Building) and 2025 (SRC, Sustainable Research Centre, Building).*	*Chairs*	*2022-2025*	*N*

2. Promote and increase the visibility of the programs and its graduates to potential students an employers- highlight the skills and know how it graduates to showcase their value to employers in the sustainable and renewable energy sector. (Concern)	*2- Agreed to if additional resources permit (describe resources)*	*Engage with upper administration regarding advertisement (radio, cinemas, magazines, digital advertising, updating SREE website, etc.) and outreach (high schools in Ottawa and GTA, Fall high school outreach event at Carleton, and annual Ontario university outreach event) more proactively. Profs. Ahmed Abdulla, Kristen Schell, and Jean Duquette are currently developing an updated interactive slide presentation for these events (to be used for in-person events and posted online with text or narration). Another possibility is to target engaging sustainable energy speakers (outside of Carleton, e.g., professional contacts or alumni) for the general 1ˢᵗ year ECOR 1055 course. To increase the visibility of the program to employers, we have engaged the MAE Industrial Advisory Board. The IAB includes Andrew Penner, a director at BGIS and active member of the BEIC (https://beic.ca/)*, Charles Zaloum, Engineering Supervisor, Conservation and Demand Management, Hydro Ottawa Ltd and Paula Murthy, Senior Associate and Discipline Lead for the Mechanical Team – Stantec Ottawa Buildings. These contacts and their network will be an important resource in connecting with employers. no additional resources are required - we are engaging existing resources, such as the FED outreach are recruitment team and our IAB.	*Chairs SREEB Curriculum Chair SREEA Curriculum Chair*	*2022/2023*	*N*

3. Work to provide more interdisciplinary sustainable energy capstone project opportunities for SREE students, especially externally sponsored. (Concern)	*1- Agreed to unconditionally*	*There are already sustainable energy capstone project opportunities.* *Strive to create a new combined sustainable energy capstone project ECOR4907.*	*Chairs* *MAAE Capstone Project Coordinator*	*2022/2023*	*Y*
4. Integrate SREE related Advisory Board members to help with curriculum development and strategic governance of the programs. (Opportunity)	*1- Agreed to unconditionally*	*Make sure that during the meetings with Advisory Board members, curriculum and strategic governance of the programs are discussed.*	*Chairs*	*2022*	*N*
5. Development of more SREE targeted final year electives. (Opportunity)	*2- Agreed to if additional resources permit (describe resources)*	*Department Chairs to discuss the possible implementation of additional 4th-year elective courses.* *-This will happen as a result of recent hires in both MAE and DOE who are related to the sustainable energy area. They are developing elective courses that will be suitable for SREE students (as well as students in other programs in MAE and DOE).*	*Chairs*	*2022*	*N*
6. Introduce elements of data science to me revolution seen in the industry. (Opportunity)	*3- Agreed to in principle*	*The SREEB curriculum committee agrees that introducing data science elements into the program would be a valuable addition. This can be achieved in the following ways:* *- implementation of a new Capstone project (e.g., learning and applying new Python models related to sustainable energy).* *- Providing a new course in data science at the department level.* *Introduce and apply data science analysis methods in existing SREE courses (as students would need to learn these tools,*	*SREEB Curriculum Chair* *SREEA Curriculum Chair*	*2022/2023*	*Y*

		each course could only include a couple of methods at most). ** Prof. Kristen Schell has expressed interest in the first two bullet points (i.e., new capstone and new course) due to her relevant background.*			
7. Stream A only - Review the sequencing of electromechanical energy conversion courses. (Opportunity)	*1- Agreed to unconditionally*	*Content of courses in the context of the program will be reviewed by Department curriculum committee and reported to the SREE program governance committee with calendar changes, if necessary, prepared for submission in fall 2022.*	*Chair*	*2022*	*Y*

**CARLETON UNIVERSITY COMMITTEE ON
QUALITY ASSURANCE
Cyclical Review of the Bachelor of Global and International Studies**

Executive Summary and Final Assessment Report

This Executive Summary and Final Assessment Report of the cyclical review of Carleton's Bachelor of Global and International Studies (BGIns) are provided pursuant to the provincial Quality Assurance Framework and Carleton's Institutional Quality Assurance Process (IQAP).

EXECUTIVE SUMMARY
The Bachelor of Global and International Studies resides in the Arthur Kroeger College of Public Affairs which is administered by the Faculty of Public Affairs.

As a consequence of the review, the program was categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of good quality. (Carleton's IQAP 7.2.13-7.2.14).

The External Reviewers' report offered a very positive assessment of the programs. Within the context of this positive assessment, the report nonetheless made a number of recommendations for the continuing enhancement of the programs. These recommendations were productively addressed by the Director of the Bachelor of Global and International Studies and the Dean of the Faculty of Public Affairs in responses to the External Reviewers' report and Implementation Plan that was submitted to SQAPC on September 22, 2022.

FINAL ASSESSMENT REPORT

Introduction

The Bachelor of Global and International Studies resides in the Arthur Kroeger College of Public Affairs, a unit administered by the Faculty of Public Affairs. This review was conducted pursuant to the Quality Assurance Framework and Carleton's Institutional Quality Assurance Process (IQAP). As a consequence of the review, the program was categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of good quality. (Carleton's IQAP 7.2.13-7.2.14).

The site visit, which took place on February 7-9, 2022 was conducted by Dr. Helen Yanacopulos, University of British Columbia and Dr. Emmanuel Brunet-Jailly, University of Victoria. The site visit involved formal meetings with the Vice-Provost and Associate Vice-President (Academic), the Dean of the Faculty of Public Affairs, and the Director of the Bachelor of Global and International Studies. The review committee also met with faculty members, staff, and undergraduate students.

The External Reviewers' report, submitted on March 13th, 2022 offered a very positive assessment of the program.

This Final Assessment Report provides a summary of:

- Strengths of the programs
- Challenges faced by the programs
- Opportunities for program improvement and enhancement
- The Outcome of the Review
- The Implementation Plan

This report draws on five documents:

- The Self-study (volume 1) developed by faculty members for the Bachelor of Global and International Studies (Appendix A)
- The Report of the External Review Committee (Appendix B)
- The response and implementation plan from the Director of the Bachelor of Global and International Studies (Appendix C)
- The Response from the Dean of the Faculty of Public Affairs (Appendix D).
- The internal discussant's recommendation report (Appendix E).
- Appendix F contains brief biographies of the members of the External Review Committee.

This Final Assessment Report contains the Implementation Plan (Appendix C) agreed to by the Director of the Bachelor of Global and International Studies and the Dean of the Faculty of Public Affairs for the implementation of recommendations for program enhancement identified as part of the cyclical program review process.

The Implementation Plan identifies who is responsible for implementing the agreed upon recommendations, as well as the timelines for implementation and reporting.

Strengths of the programs

General

The External Reviewers' Report states that "the program engages with Experiential Learning effectively thanks to two specific courses that prepare students prior to their internship. Since the beginning of COVID, the program found ways to provide students with their international experience requirement (IER) i.e. internships, and placements at foreign universities, that are entirely virtual. Although originally such options were conceived to address issues with students unable to travel (for a diversity of reasons) such e-internships and placement abroad options also strengthened the program options."

Faculty

Speaking with regard to faculty, the external reviewers' stated:

"All faculty members, qualification, research and records are coherent and of sufficient quality at Carleton University. However, their research production may suffer from large classes, a tight faculty complement, and stretched administrative support. Since the Covid pandemic two assistant teaching professors have been promoted to assistant professor, which is a demonstration of strong research and teaching records. However, midterm planning should review the teaching capacity of the teaching complement when faced with increasing student numbers. The current program capacity is 600 students in a single year. More than 600 students (i.e. large classes, management of internships and related courses, honors' thesis supervisions, and increased pressures to link honors thesis to post-internship coop placement) will lead to much pressure on the faculty complement."

Students

The external reviewers noted that "The program core courses, 18 areas of specialisation (streams) and internship courses prepare the students well to their international exposure, either thanks to a course abroad, and internship or a university term. The structure of the program is solid in parts because of the quality of the faculty's past and present research areas. All colleagues are solid scholars."

Curriculum

The external reviewers noted that "the current curriculum reflects the established state of the discipline. However, what is notable is that the curriculum is also developing three new courses that will complement and strengthen the original curriculum and reflect the current state of the discipline (new courses regarding Indigenous, and climate issues) which has focused on both international and global discussions regarding indigenous resurgence, nationhood, and internationalism, and, indigenous specific perspectives on climate and ecological issues."

Opportunities for program improvement and enhancement

The External Reviewers' Report made 7 recommendations for improvement:

1.That the program continues to explore curriculum innovations in their teaching (good example being the three proposed courses). (Opportunity)

2. That the post Covid IER is further rethought. BGIns should explore ways of making this unique element of the program equitable in terms of costs, access and reduction of climate miles. (Opportunity).

3. That faculty pressures be considered. Faculty burnout is a real issue and the small size of the core BGIns faculty would mean that the program is vulnerable. (Concern)

4. That BGIns becomes its own department with a department head. (Concern)

5. That a BGIns curriculum group is developed for core faculty. This group should meet at least every few months to discuss curriculum and operational issues of the program outside of the meetings with the BGIns management group. (Weakness)

6. That the BGIns core faculty create a strategic plan for the program and the group, outlining its vision, mission, values and ways forward for the program and the group. (Weakness)

7. Specialisation – language component should remain strengthened. The 18 specializations lead to much frustration, so these should be revisited and potentially collapsed. (Weakness)

The Outcome of the Review

As a consequence of the review, the Bachelor of Global and International Studies was categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of **GOOD QUALITY** (Carleton's IQAP 7.2.13-14).

The Implementation Plan

The recommendations that were put forward as a result of the review process were productively addressed by the Bachelor of Global and International Studies program and the Dean of the Faculty of Public Affairs in response to the External Reviewers' report and Implementation Plan that was considered by SQAPC on September 22, 2022. The Department:

•agreed unconditionally to recommendations #2, 3, 6
•agreed to recommendation #1, if resources permit
.•agreed to recommendations #5 and 7 in principle
•the unit did not agree with recommendation # 4

It is to be noted that Carleton's IQAP provides for the monitoring of implementation plans. A monitoring report is to be submitted by the academic unit and Faculty Dean and forwarded to SQAPC for its review by June 30, 2025.

The Next Cyclical Review

The next cyclical review of the Bachelor of Global and International Studies will be conducted during the 2027-28 academic year.

Arthur Kroeger College
Unit Response to External Reviewers' Report & Implementation Plan
Programs Being Reviewed: Undergraduate Program in Global and International Studies

Note: This document is forwarded to Senate, the Quality Council and posted on the Vice- Provost's external website.

Introduction & General Comments
Please include any general comments regarding the External Reviewers' Report.

[Sample Text: The Department/School/Institute was pleased to receive the Reviewers' very positive External Reviewers' report on [date]. This report was shared with our faculty and staff, and we are committed to the continual improvement of our programs to enhance the student, staff, and faculty experience. This document contains both a response to the External Reviewers' Report and an Implementation Plan (Section B) which have been created in consultation with the Dean(s).

For each recommendation ***one*** of the following responses must be selected:

Agreed to unconditionally: used when the unit agrees to and is able to take action on the recommendation without further consultation with any other parties internal or external to the unit.
Agreed to if additional resources permit: used when the unit agrees with the recommendation, however action can only be taken if additional resources are made available. Units must describe the resources needed to implement the recommendation and provide an explanation demonstrating how they plan to obtain those resources. In these cases, discussions with the Deans will normally be required and therefore identified as an action item.
Agreed to in principle: used when the unit agrees with the recommendation, however action is dependent on something other than resources. Units must describe these dependencies and determine what actions, if any, will be taken.
Not agreed to: used when the unit does not agree with the recommendation and therefore will not be taking further action. A rationale must be provided to indicate why the unit does not agree (no action should be associated with this response).

Calendar Changes
If any of the action items you intend to implement will result in calendar changes, please describe what those changes will be. To submit a formal calendar change, please do so using the Courseleaf system.

Hiring
Where an action item requires additional hiring (faculty or staff) the owner should at minimum include the Dean of the faculty and member of the unit.

UNIT RESPONSE AND IMPLEMENTATION PLAN					
Programs Being Reviewed: BGINS					
Prepared by (name/position/unit):					
External Reviewer Recommendation & Categorization	**Unit Response (choose only one for each recommendation):** 1- Agreed to unconditionally 2- Agreed to if additional resources permit (describe resources) 3- Agreed to in principle 4- Not agreed to Rationales are required for categories 2, 3 & 4	**Action Item**	**Owner**	**Timeline**	**Will the action described require calendar changes? (Y or N)**
1) That the program continues to explore curriculum innovations in their teaching (good example being the three proposed courses).	2. Agreed to if additional resources permit. Program is working on revising an existing course and developing new courses, but additional teaching resources, either in the form of CIs, or an additional faculty appointment, would be required to mount the classes. Regularized program meetings can also be used to ensure this recommendation is met.	- Re-engage the curriculum committee to start a review of all core courses to look for opportunity for improvement and innovation. - Pilot two new courses if resources are available. Initially these will be piloted as special topics classes: 1. Add a global indigeneity course 2. Add a policy analysis seminar taught by government practitioner - Ensure regular program meetings to discuss curriculum innovation	BGInS Program Director BGInS Program Director BGInS Program Director	Committee to be established fall 2022 Run global indigeneity course in fall 2022 Ongoing	N N N N
2. That the post Covid IER is further rethought. BGIns should explore ways of making this unique element of the program equitable in terms of costs, access and reduction of climate miles.	1. Agreed to unconditionally. The program has always considered cost and equitable access to the IER. It has always offered domestic options for placements and there is a bursary available to students if needed. The	- work with Career Services to ensure continuation of virtual placement options - removal of GINS 3200 from IER options	BGInS Program Director BGInS Program Director	Ongoing Calendar changes submitted in	N Y

| | program sends students many reminders about applying for the bursary. That said, BGInS can look more at virtual alternatives in light of its pandemic experiences. It can also remove GINS 3200 – a class that used to travel to Belize. It was very expensive, did not generate a lot of student participation, and the partnership in Belize has ended. This will lead to a reduction of climate miles. | - establish a procedure for reviewing and approving placements, including domestic placements, identified by students.

- Establish new BGInS staff position focused on placements. | BGInS Program Director

Kroeger College Director | summer 2022 for a 2023-24 removal.

winter 2023

New position approved by PBWG in March 2022

Consult faculty on position needs May 2022

Develop job description in fall 2022

Hire in winter 2023 | N

N

N

N

N

N |
| 3. That faculty pressures be considered. Faculty burnout is a real issue and the small size of the core BGInS faculty would mean that the program is vulnerable. | 2. Agreed to unconditionally.

The pandemic has meant isolation for some faculty which has contributed to some burnout. | - BGInS program director to have an annual 1:1 informal check with faculty

- Revisit the idea of professional development activities for faculty

- Request the return of a pre-tenure resignation to BGInS | BGInS Program Director

BGInS Program Director

Director, Kroeger College | Ongoing

Fall 2022

Winter 2022 | N

N

N |

4. That BGIns becomes its own department with a department head.	4. Not agreed to. The administrative structure of the program was intentionally designed and agreed to by the Deans of FASS and FPA. While the reviewers made this recommendation, they also recommended keeping BGInS within Kroeger College (pg 5): It cannot be both an independent department and part of the College. Effectively, the BGInS Program Director is the program head. The Kroeger College model does not allow for independent departments within the College. It is not the same as a Faculty. That said, there are some internal improvements that can be made.	- Ensure each annual retreat includes an opportunity to discuss governance. - Look at moving to appoint BGInS faculty to the position of Program Director - Initiate a review of the Management Committee's terms of reference	BGInS Program Director Deans FPA and FASS BGInS Program Director	Ongoing Fall 2022 Fall 2022	N N N
5. That a BGIns curriculum group is developed for core faculty. This group should meet at least every few months to discuss curriculum and operational issues of the program outside of the meetings with the BGIns management group.	3. Agree to in principle. This recommendation is to have a curriculum group, but then it also references the need to discuss operational issues. This would be outside the scope of a curriculum committee. It should also be noted that there is an existing BGInS curriculum committee. It has not been overly active during the pandemic and can be reactivated. Curriculum changes also need to be approved by the BGInS Management Committee.	- Ensure the BGInS management Committee meets twice per year (once in fall and once in winter). - Regularize BGInS program meetings with core faculty - Re-engage Curriculum committee	BGInS Program Director BGInS Program Director BGInS Program Director	Ongoing Ongoing Fall 2022	N N N
6. That the BGIns core faculty create a strategic plan for the program and the group, outlining its vision, mission, values and ways forward for the program and the group.	1. Agreed to unconditionally. BGInS recently completed its initial strategic plan with its last hire in 2021. The program held off on developing a new plan until the completion of the program review and clarification of post-pandemic norms.	- hold a retreat with BGInS core faculty to initiate a process for developing a new strategic plan to address issues that would include: Revisions to IER program, curriculum changes, hiring priorities, strategy for online courses, indigenous content, EDI initiatives, and other issues.	BGInS Program Director	Retreat is planned for Spring 2022	N

7. Specialisation – language component should remain strengthened. The 18 specialisations lead to much frustration, so these should be revisited and potentially collapsed.	3. Agree to in principle. It is agreed that the 18 specializations are a lot. That said restructuring is complicated because of the way the relationship with contributing units was established. Students in each specialization count as students in the corresponding unit. This gives units an incentive to contribute to the BGInS program. Collapsing could remove this incentive and result in departure of contributing units, which would seriously hurt the program and its students.	- Maintain language requirement at 2 credits - Raise issue of number of specializations for discussion in the BGInS Management Committee	BGInS Program Director Kroeger College Director	Ongoing Fall 2022	N N