

DATE: April 17, 2020

TO: Senate

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

RE: Final Assessment Report and Executive Summary: Graduate Programs in Infrastructure
Protection and International Security

The purpose of this memorandum is to request that Senate approve the Final Assessment Report and Executive Summary arising from the cyclical review of the Graduate programs in Infrastructure Protection and International Security.

The request to Senate is based on a recommendation from the Senate Quality Assurance and Planning Committee (SQAPC), which passed the following motion at its meeting of March 19th, 2020:

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 Infrastructure Protection and International Security.

The Final Assessment Report and Executive Summary is provided pursuant to articles 4.2.5-4.2.6 of the provincial Quality Assurance Framework and article 7.2.23 of Carleton's Institutional Quality Assurance Process (IQAP). Article 7.2.23.3 of Carleton's IQAP (passed by Senate on June 21th, 2019 and ratified by the Ontario Universities Council on Quality Assurance on November 22nd, 2019) stipulates that, in approving Final Assessment Reports and Executive Summaries 'the role of SAPC 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 recommendation 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 Report and Executive Summary. 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 Action Plan, contained within the Final Assessment Report, 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 7.5.1 and 5.1 of Carleton's IQAP.

Once approved by Senate, the Final Assessment Report, Executive Summary and Action Plan will be forwarded to the Ontario Universities' Council on Quality Assurance and to Carleton's Board of

Governors for information. The Executive Summary and Action Plan 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.

Senate Motion April 24, 2020

THAT Senate approve the Final Assessment Report and Executive Summary arising from the Cyclical Review of the graduate programs in Infrastructure Protection and International Security.

**CARLETON UNIVERSITY COMMITTEE ON
QUALITY ASSURANCE**
**Cyclical Review of the Graduate programs in Infrastructure Protection and International Security
Executive Summary and Final Assessment Report**

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

EXECUTIVE SUMMARY

The graduate programs in Infrastructure Protection and International Security are offered jointly by the Faculty of Engineering and Design and the Norman Patterson School of International Affairs in the Faculty of Public Affairs.

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 7.2.12).

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 Infrastructure Protection and International Security graduate programs in a response to the External Reviewers' report and Action Plan that was submitted to SQAPC on February 6, 2020.

FINAL ASSESSMENT REPORT

Introduction

The graduate programs in Infrastructure Protection and International Security are offered jointly by the Faculty of Engineering and Design and the Norman Patterson School of International Affairs in 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 programs were categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of good quality. (Carleton's IQAP 7.2.12).

The site visit, which took place on March 27th and 28th, 2019, was conducted by Dr. Danny Reible from Texas Tech University, and Dr. William Hurst from Northwestern University. The site visit involved formal meetings with the Provost, the Vice-Provost and Associate Vice-President (Academic), the Dean of the Faculty of Public Affairs, the Dean of the Faculty of Engineering and Design, the Dean of the Faculty of Graduate and Postdoctoral Affairs, and the Director of the Infrastructure Protection and International Security programs. The review committee also met with faculty members, contract instructors, staff, and graduate students.

The External Reviewers' report, submitted on April 26, 2019, 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 Action Plan

This report draws on five documents:

- The Self-study developed by members of the Infrastructure Protection and International Security program. (Appendix A)
- The Report of the External Review Committee (Appendix B).
- The response and action plan from the Director of the Infrastructure Protection and International Security programs, and associated Dean. (Appendix C)
- The internal discussant's recommendation report (Appendix D).

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

This Final Assessment Report contains the Action Plan (Appendix C) agreed to by the Director of the Infrastructure Protection and International Security programs, the Dean of the Faculty of Public Affairs, the Dean of the Faculty of Engineering and Design, and the Dean of the Faculty of Graduate and Postdoctoral Affairs, for the implementation of recommendations for program enhancement identified as part of the cyclical program review process.

The Action 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' observed that the unit operates in an emerging niche area, and provided advice to help cement the position of the program as a leader in the field of infrastructure protection and international security. They identified many future opportunities, noting only one weakness in the program.

Faculty

The reviewers were impressed by the genuinely collaborative nature of the program and the faculty that contribute to its success. They observed that the program is in a time of transition, which presents an opportunity to adjust the focus and directions of the program goals and to stabilize and solidify program structure.

Students

The external reviewers found the program to be successful in attracting, retaining, and placing excellent students, particularly those with a policy background. The program's ability to retain mature and employed students was also commended. The external reviewers noted that the student body has a majority of international students, and may be attractive to students from other countries such as the United States, China, and India, given the lack of competing programs in these countries.

Curriculum

While the program has historically focuses on security concerns and protection against malicious acts, the external reviewers noted the program is also focusing on increasing areas of interest such a natural hazards, design of robust infrastructure, and policy approaches that support resilient communities. The external reviewers commended on the ability of the program to provide many opportunities for experiential learning, which is of great value to the participating students.

Opportunities for program improvement and enhancement

The External Reviewers' Report made 8 recommendations for improvement:

1. **Weakness:** Future Directors must be defined and properly empowered to manage the program into the future.
2. **Concern:** Lack of coordination within the program - moving forward IPIS faculty should find the time to meet on a regular basis and to coordinate course content, broader curriculum aspects, and specific program areas more closely and consistently.
3. **Concern:** Lack of engagement of engineering faculty and engineering students - Engaging other engineering faculty, including electrical engineering and systems engineering faculty for cyber

security and electrical power infrastructure, and other civil and environmental engineering faculty focused on natural hazards, would strengthen the breadth of offerings of the program and likely make it more attractive to domestic and international students.

4. **Concern:** Support for an interdisciplinary program – 1) it is essential that interdisciplinary programs like IPIS be protected if there should be changes to the university's internal resource allocation model.
5. **Concern:** Lack of coordination with other units - It seems this would not be very difficult to coordinate, if IPIS students were asked for course preferences earlier and better and timelier communication existed between IPIS and NPSIA.
6. **Concern:** Learning Outcomes - the learning outcomes should be specific and directly indicate the skills that a student will learn and indicate the skills that an employer can expect. The learning outcomes should differentiate between the MIPIS and IPIS MEng degrees and the diploma program, and be measurable.
7. **Opportunity:** Recruitment of domestic and international students - diversifying the pool of international students and in increasing their overall numbers.
8. **Opportunity:** Hiring to replace retiring or departing faculty and meet the needs of the program

The Outcome of the Review

As a consequence of the review, the graduate programs in Communication were categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of **GOOD QUALITY** (Carleton's IQAP 7.2.12).

The Action Plan

The recommendations that were put forward as a result of the review process were productively addressed by the Director of the Infrastructure Protection and International Security programs, the Dean of the Faculty of Engineering and Design, the Dean of the Faculty of Public Affairs, and the Dean of the Faculty of Graduate and Postdoctoral Studies in a response to the External Reviewers' report and Action Plan that was considered by SQAPC on February 6, 2020. The Department agreed to recommendations if resources permit.

It is to be noted that Carleton's IQAP provides for the monitoring of action plans. A midway report is to be submitted by the academic unit(s) and Faculty Dean(s), and forwarded to SQAPC for its review by June 30th, 2021.

The Next Cyclical Review

The next cyclical review of the graduate programs in Infrastructure Protection and International Security will be conducted during the 2023-24 academic year.

IMPLEMENTATION PLAN: Infrastructure Protection and International Security
Programs being reviewed: M. Infrastructure Protection and International Security
 MEng. Infrastructure Protection and International Security
 Graduate Diploma in Infrastructure Protection and International Security
November 19, 2019

| External Reviewer Recommendation & Categorization | Action Item | Owner | Timeline | Will the action described require calendar changes? (Y or N) |
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| <p>1. <i>Weakness:</i> Future Directors must be defined and properly empowered to manage the program into the future.</p> | <p>The program directors will work with the University to identify solutions to overcome the technical difficulties and to streamline procedures.</p> | <p>IPIS Directors; IPIS Administrator</p> | <p>Meetings to be held in Fall term, 2019.</p> | <p>N</p> |
| <p>1. <i>Concern:</i> Lack of coordination within the program - moving forward IPIS faculty should find the time to meet on a regular basis and to coordinate course content, broader curriculum aspects, and specific program areas more closely and consistently.</p> | <p>The program directors will ensure that 3 meetings are scheduled each year with participating faculty, and will strongly encourage contract instructor participation.</p> | <p>IPIS Directors; IPIS Administrator</p> | <p>Ongoing</p> | <p>N</p> |
| <p>2. <i>Concern:</i> Lack of engagement of engineering faculty and engineering students - Engaging other engineering faculty, including electrical engineering and systems engineering faculty for cyber security and electrical power infrastructure, and other civil and environmental engineering faculty focused on natural hazards, would strengthen the breadth of</p> | <p>Program directors will approach relevant Dean and Chairs to request more engagement. Providing support for other faculty members to develop courses and support IPIS will require Dean participation, support, and encouragement.</p> | <p>IPIS Directors; Deans of FPA and FED</p> | <p>Meetings to be initiated in Fall term, 2019.</p> | <p>N</p> |

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| offerings of the program and likely make it more attractive to domestic and international students. | | | | |
| <p>3. Concern: Support for an interdisciplinary program – 1) it is essential that interdisciplinary programs like IPIS be protected if there should be changes to the university’s internal resource allocation model.</p> <p>2) faculty tasked with primary administrative roles in IPIS may not enjoy sufficient or appropriate release time or support from their home units.</p> <p>3) support for full-time faculty engagement in IPIS is perhaps too limited, Additional incentives could, and likely should, be offered to support regular full-time faculty’s engagement with IPIS.</p> | Program directors will approach relevant Dean and Chairs to request more engagement. | IPIS Directors; Deans of FGPA, FPA and FED | Discussions will be initiated in Fall term, 2019. | N |
| <p>4. Concern: Lack of coordination with other units - It seems this would not be very difficult to coordinate, if IPIS students were asked for course preferences earlier and better and timelier communication existed between IPIS and NPSIA.</p> | Program directors will convene a meeting of staff in NPSIA, CEE and IPIS to discuss coordination on student registration and related matters. | IPIS Directors; Director of NPSIA; Chair of CIVE and other FED departments, as necessary. | Discussions will be initiated in Fall term, 2019. | N |
| <p>5. Concern: Learning Outcomes - the learning outcomes should be specific and directly indicate the skills that a student will learn and indicate the skills that an employer can expect. The learning outcomes should differentiate between the MIPIS and IPIS MEng degrees and the diploma program, and be measurable.</p> | The program directors will meet with OPAVPA and with contract instructors and professors to refine the learning outcomes. This process will be initiated in Fall 2019 and will be included in discussions with new contract instructors as well as during the review of course outlines. | IPIS Directors; OPAVPA Program Directors and Program Assessment Specialists. | By end of Fall term, 2019. | N |

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| <p>6. Opportunity: Recruitment of domestic and international students - diversifying the pool of international students and in increasing their overall numbers.</p> | <p>The program directors will meet with FGPA and with the Deans of FPA and FED to identify the assignment of domestic student targets and the financial arrangements associated with international students.</p> | <p>IPIS Directors; Deans of FPA, FED, FGPA</p> | <p>First round by end of Fall term, 2019. Ongoing thereafter.</p> | <p>N</p> |
| <p>7. Opportunity: Hiring to replace retiring or departing faculty and meet the needs of the program</p> | <p>The program directors will meet with the Deans of FPA and FED to discuss faculty hiring, and to impress upon them the critical importance of ensuring hires (new or replacement) that are attached primarily to IPIS, and with teaching and research obligations and interests relevant to the needs of the IPIS program.</p> | <p>IPIS Directors; Deans of FPA and FED (and possibly FGPA)</p> | <p>Discussions will be initiated in Fall term, 2019.</p> | <p>Y (possibly)</p> |