



**Graduate
& Postdoctoral
Studies**

Office of the Vice-Provost and Dean
Yeates School of Graduate & Postdoctoral Studies

Final Assessment Report (FAR) and Implementation Plan (IP)

Periodic Program Review (PPR)

Graduate Program in Electrical and Computer Engineering (MAsc, MEng, PhD)

Last Updated: October 21, 2025

FINAL ASSESSMENT REPORT

In accordance with the University Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the external evaluation and the internal response and assessments of this graduate program. This report identifies the peer review identified strengths of the program, together with opportunities for program improvement and enhancement, and it sets out and prioritizes the recommendations that have been selected for implementation.

The report also includes an Implementation Plan that identifies who will be responsible for approving the recommendations set out in the final assessment report; who will be responsible for providing any resources entailed by those recommendations; any changes in organization, policy or governance that will be necessary to meet the recommendations and who will be responsible for acting on those recommendations; and timelines for acting on and monitoring the implementation of those recommendations.

Electrical and Computer Engineering (MAsc, MEng, PhD)

EXECUTIVE SUMMARY

The Electrical and Computer Engineering (ELCE) graduate program at Toronto Metropolitan University (TMU) encompasses three degree pathways: the Master of Applied Science (MAsc), Master of Engineering (MEng), and Doctor of Philosophy (PhD). A notable feature is the MEng with Artificial Intelligence (AI) specialization, which offers targeted training in cutting-edge AI technologies. Each pathway is designed to provide advanced education and research opportunities in core areas such as energy systems, signal processing and communication systems, and computer systems. The program collaborates extensively with institutions such as the Vector Institute and St. Michael's Hospital, AMD, providing students with exposure to innovative research in biomedical sciences, sustainable energy, and AI applications.

The ELCE program boasts 42 core faculty members who secure significant research funding—averaging \$100,000 per faculty member annually—to support graduate research, infrastructure development, and experimental work. This funding ensures competitive financial assistance, enabling graduate students to focus on their studies and research. Over the past seven years, the department has secured over \$35 million in total funding, directly benefiting students through enhanced resources and stipends that are at an all-time high. Students receive a guaranteed funding package (tuition + \$15,000-\$18,000 for PhD students, guaranteed for 4 years, and tuition + \$12,000 for MASc students guaranteed for 2 years) facilitated by the faculty.

Graduate students have access to extensive research facilities spanning over 25,000 square feet across four campus buildings. These spaces are equipped to support cutting-edge research, enabling students to make substantial scholarly contributions. In the past seven years, the program has facilitated the publication of approximately 2,000 academic articles, reflecting its commitment to advancing knowledge in the field. Students in research-focused programs, such as the MASc and PhD, frequently present their findings at prestigious conferences and publish in leading journals, thereby achieving key program learning outcomes. Of the graduate students (PhD and MASc) in research programs since 2015, 100% of doctoral students and 80% of master's students with theses have at least one publication stemming directly from their graduate work.

The program's structure and curriculum align with its stated objectives and learning outcomes, emphasizing both theoretical knowledge and practical skills. MASc students complete five graduate courses, a full-year research seminar, and a thesis that typically spans 1.5 years, culminating in a formal defense. MEng students can choose between a course-based pathway or a major research project option, offering flexibility for career-oriented or research-focused goals. The PhD program demands a higher level of research rigor, requiring a dissertation, a written and oral candidacy exam, and at least four graduate courses, typically completed over four years. All programs incorporate professional skill

development, interdisciplinary collaboration, and ethical considerations, equipping graduates to address complex engineering challenges responsibly.

The program has a strong track record of graduate success. Alumni have secured positions at leading companies such as AMD, Amazon, and IBM, and many pursue advanced academic opportunities at top-tier institutions, including the University of Toronto and TMU itself. PhD graduates often transition to postdoctoral roles or faculty positions at universities like the University of Windsor and the University of Guelph. Graduates consistently report high levels of satisfaction with the program, citing strong mentorship, robust funding, and a collaborative learning environment as key factors contributing to their success.

The program also actively promotes equity, diversity, and inclusion (EDI). A holistic admissions process and targeted outreach efforts aim to attract students from underrepresented groups. The curriculum integrates EDI principles by addressing the ethical and societal impacts of engineering solutions, ensuring students graduate as socially responsible engineers. This commitment aligns with TMU's mission to foster applied knowledge and innovation that meet societal needs.

In conclusion, the ELCE graduate program provides a comprehensive, supportive, and inclusive environment for students to achieve academic excellence, develop professional skills, and contribute meaningfully to their fields. Its emphasis on research, funding, and real-world application ensures graduates are well-prepared to excel in academia, industry, and beyond.

PEER REVIEW

The graduate program in **Electrical and Computer Engineering (MAsc, MEng, PhD)**, submitted a Self-Study Report to the Yeates School of Graduate & Postdoctoral Studies that outlined program descriptions and learning outcomes, an analytical assessment of the program, program data including

data from student surveys and the standard data packages. Course outlines and CVs for full-time faculty members were also appended.

Two external and one internal arm's-length reviewers were selected from a set of proposed candidates. The Peer Review Team (PRT) for the Periodic Program Review (PPR) of this graduate program consisted of Dr. Dongmei Zhao, Professor, Electrical and Computer Engineering, McMaster University; Dr. Ping Wang, Professor, Electrical Engineering and Computer Science, York University; and Dr. Miranda Kirby, Associate Professor, Physics, Toronto Metropolitan University.

The PRT site visit was conducted on March 12 and 13, 2025. The visit included interviews with the University and Faculty Administration including the Provost and Vice-President Academic, Faculty Dean, Faculty Associate Dean, Vice-Provost and Dean Yeates School of Graduate & Postdoctoral Studies (YSGPS); Associate Dean Programs YSGPS, Graduate Program Director of the Graduate Program, Director Graduate Program Administration, and meetings with Faculty, a group of current students, administration, and support staff. The PRT report was communicated to the Associate Dean, YSGPS, on April 3, 2025. A response to the report from the graduate program and the Faculty Dean was sent to YSGPS on May 23, 2025. The responses of the Program and the YSGPS were reviewed and approved during the meeting of the Programs and Planning Committee (PPC) on September 11, 2025. This was then approved by YSGPS Council on October 21, 2025.

PROGRAM STRENGTHS, WEAKNESSES, AND OPPORTUNITIES

The PRT noted that the program stands out for its interdisciplinary focus, offering diverse specializations in AI, Biomedical Engineering, Communications, Power Systems, and Signal Processing, ensuring students gain expertise in high-demand fields. They also noted that the program integrates experiential learning and industry collaboration, providing students with hands-on research opportunities through partnerships with IBM, Siemens, AMD, St. Michael's Hospital, and the MedTech Talent Accelerator. Additionally, the program demonstrates a commitment to Equity, Diversity, and Inclusion (EDI) through outreach initiatives, curriculum integration, and strategies to support

underrepresented groups. These attributes collectively enhance the program's academic rigour, industry relevance, and global competitiveness.

Strengths

Strong Research Grant Support: The program benefits from significant external research funding through collaborations with IBM, Siemens, AMD, and St. Michael's Hospital, supporting faculty-led projects and student research initiatives. Faculty members have secured major federal and provincial research grants, contributing to the program's ability to fund cutting-edge research.

Well-Equipped Facilities: The department houses more than 16 advanced research laboratories with state-of-the-art computing, testing, and measurement equipment. Dedicated graduate student office spaces, technical support, and IT infrastructure enhance the research environment.

Entrepreneurial Ecosystem: TMU's startup incubators, including Digital Media Zone (DMZ), iBoost, and the Center for Urban Energy, provide students with opportunities to commercialize their research and collaborate with industry partners. The MedTech Talent Accelerator program further bridges the gap between research and industry.

Research Excellence and Career Readiness: With 42 full-time faculty across multiple disciplines, the program provides strong mentorship and research supervision, fostering high-quality academic and industry collaborations. In addition, with 59 elective courses and the flexibility of Directed Studies, students can tailor their curriculum to meet specific research and career interests. This strength translates into high employability, with 85.71% of alumni securing jobs in industry or academia, reflecting the program's effectiveness in preparing students for competitive job markets.

Areas for Improvement

Financial Barriers for Students: Many students face financial hardships, particularly international students who require significant funding support. Faculty have also expressed concerns about the high cost of supporting international MASc students, limiting international admissions.

High Course Load for Students: The MASc program requires five courses, along with a one-year research seminar course, and PhD program requires four courses, along with a one-year research seminar course, which is higher than at comparable institutions. Additionally, PhD students must complete a written and oral qualification exam, which may pose workload challenges.

The PhD program's time-to-completion (TTC) and graduation rate: The long average TTC remains a concern, and the graduation rates are still relatively low, particularly within the first five years. After 4 years, graduation rates range from 13.3% to 38.5%, indicating that only a small percentage of students complete their PhD within the standard duration. After 5 years, the rate increases to 29.4% to 50.0%, showing gradual improvement but still highlighting delayed completions.

Space Constraints for Research Expansion: Despite strong research facilities, there are concerns about space shortages, particularly for expanding lab capacity to accommodate growing student and faculty research needs.

Opportunities for Enhancement

Increase Targeted Financial Support: Expanding scholarships, assistantships, and funding for international MASc and PhD students can help attract top talent while easing financial burdens. Develop industry- funded research fellowships to provide additional financial resources and industry exposure.

Reduce Time-to-Completion for Students: Reduce the course load by one course and provide more financial support to alleviate students' TA load, allowing students to have more time for research. Implement structured progress tracking and milestone reviews to ensure students stay on schedule.

Improve Research Facilities & Space Allocation: Address space shortages by expanding lab capacity to accommodate growing student and faculty research needs. Provide dedicated workspaces for interdisciplinary research teams to enhance collaboration.

SUMMARY OF PRT RECOMMENDATIONS, GRADUATE PROGRAM, FACULTY DEAN, AND YSGPS RESPONSES, AND IMPLEMENTATION PLAN

A report on the progress of these initiatives will be provided in the 1 Year Follow-up Report which will be due in one year from the date of Senate approval.

PRT Recommendations	PRT Rationale	Program Response	Proposed Program Action	Dean of Faculty of Engineering and Architectural Science (FEAS) Response	Program Timeline and Responsibility/Lead	YSGPS Response
Recommendation 1: Addressing the high funding cost for international MASc students.	The current funding structure presents a significant barrier to recruiting high-quality international MASc applicants. To address this issue, we recommend: a) Introducing a direct PhD admission pathway for exceptional candidates with a bachelor’s degree, allowing them to bypass the MASc stage and receive more competitive PhD funding. b) Establishing additional scholarships, assistantships, and external funding	The program acknowledges that the high funding burden on research supervisors has effectively halted international MASc admissions. The international MASc applicant pool is typically strong and could enrich the program’s research culture. However, given financial limitations, resuming international MASc admissions is not feasible. The program supports exploring a direct-entry PhD pathway for exceptional candidates.	a) Form a department/faculty level Committee to assess the feasibility and framework of a direct-entry PhD pathway. b) Continue advocating for faculty-level and university-level support to explore long-term solutions for MASc international student funding.	The Dean of the Faculty of Engineering and Architectural Science (FEAS) and the Office of Graduate and Postdoctoral Studies acknowledge the ongoing challenges associated with graduate student funding and share the Program’s concerns regarding this issue. These difficulties are largely due to broader systemic constraints beyond the immediate control of the University and the Faculty, which have resulted in limited available resources. Nevertheless, the FEAS Office of Graduate and Postdoctoral Studies remains committed to working collaboratively with the Program to implement prompt and effective solutions. These may include measures such as limiting the intake of international PhD students in order to reallocate capacity to highly qualified international MASc applicants.	GPD- Fall 2025 meeting: Discuss pros and cons of a direct-entry PhD pathway in the department council meeting. GPD- Implement direct-entry PhD pathway according to YSGPS guidance (TBD)	YSGPS acknowledges the issues with respect to international student funding and continues to explore mechanisms to ensure international students can be appropriately supported during their studies. The program might consider how international students in the MASc program might be supported by revenue generated from within the program, such as through the expansion of enrollment in the MEng program. YSGPS supports the program's interest in considering a direct-entry PhD pathway, as we are currently exploring this option as part of a broader initiative. We will continue to keep the program informed of any relevant developments as they emerge. In the meantime, we encourage the program to consider existing provisions within Policy 170B, which allow for MASc students to convert to a PhD program during their studies.

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	sources to support international MASc students.			With respect to direct-entry PhD admissions, we recognize that this is a broader institutional matter under the purview of the Yeates School of Graduate and Postdoctoral Studies (YSGPS). However, we are aware that YSGPS is actively reviewing this issue as part of a comprehensive policy initiative applicable across all graduate programs at TMU.		
Recommendation 2: Reducing PhD completion delays and improving graduation rates.	The current PhD time-to-completion is longer than ideal, leading to lower graduation rates. To improve this situation, we recommend: a) Reducing the required course load to allow students to focus more on research. b) Expanding course offerings to address gaps in specific	The program agrees with the Recommendation to reduce course load and notes that progress monitoring has modestly improved completion times. The addition of new courses, including optimization, is desirable but constrained by resources.	a) Propose reducing the PhD course requirement from four to three courses, and the MASc course requirement from five to four courses. b) Encourage timely formation of the PhD supervisory committee and a more consistent and regimented utilization of PhD supervisory committee meetings. c) The program routinely updates its course offerings to	a) The FEAS Dean and its Office of Graduate and Postdoctoral Studies are in agreement with the proposal to reduce the number of required courses for PhD students from four to three, and for MASc students from five to four. This adjustment would bring our program requirements into closer alignment with comparable graduate programs across Ontario and Canada. We will engage with both the Program and YSGPS to pursue the necessary approvals and formalize this change.	a) GPD Fall 2025: Propose strict tracking of PhD supervisory committee meetings at the Fall 2025 GPC meeting b) GPD - TBD based on faculty-level decisions: Await faculty-level discussion to reduce number of courses c) Graduate Program Council - Fall 2026 (tentative, contingent upon tenure-track faculty hiring): Revamp optimization course with a new faculty hire.	YSGPS supports the program's efforts to reduce the number of required courses, increase the range of elective options, and incorporate a course in optimization. Decisions regarding course offerings rightly fall within the scope of the program and Faculty, and we encourage continued collaboration in this area. As they undertake these revisions, we encourage the Program to think broadly about the overall curriculum structure, ensuring that all changes align with the program-level learning outcomes and support the achievement of the Graduate Degree Level Expectations (GDLEs). YSGPS is happy to support any curricular modifications that may be required and encourages the program to engage with us early in the

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	research areas, ensuring students receive sufficient theoretical and practical training. c) Introducing an optimization course as part of the curriculum, as it is highly relevant to multiple research domains.		maintain relevance, though expansion is constrained by faculty workload and resource limitations. A graduate course in optimization was previously offered but has been on hold following the retirement of the instructor. With new tenure-track hires underway, the program aims to revive this and other strategic courses in the near future.	b) Additionally, the FEAS Dean and its Office of Graduate and Postdoctoral Studies support the Program's efforts to enhance procedures and timelines related to supervisory committee meetings, with the aim of providing more effective support for PhD Students throughout their academic journeys. c) We also endorse the Program's proposal to expand graduate course offerings.		process to ensure timely planning and approval. YSGPS supports the program's work to monitor supervisory committee meetings as a way to identify and respond to student needs, which are consistent with the requirements as outlined in Policy 170(B).
Recommendation 3: Enhancing financial support and improving Teaching Assistant (TA) workload predictability.	Many students experience financial stress due to limited funding and the unpredictability of TA assignments, which diverts time from their research. To address this, we recommend: a) Securing additional funding	The program agrees and highlights ongoing efforts, such as increasing internal support and success in securing external Scholarships through provincial or federal sources. However,	a) Encourage and, where appropriate, require graduate students to attend grant-writing workshops offered by the faculty (FEAS) to help students secure external funding. b) Provide a small incentive to apply for	We acknowledge the significant financial pressures that graduate students are currently experiencing. These challenges, including the rising cost of living and inflation, are shared concerns among faculty, students, and the administration. a) The FEAS Office of Graduate and Postdoctoral Studies currently offers Faculty-specific	From the faculty Dean's response, it is evident that a lot of past, current, and future efforts are being put into enhancing the financial support and distributing TA-ship in a fairer manner faculty-wide. The program will act under the direction of the faculty to	YSGPS acknowledges the significant impact limited financial support can have on student success in graduate programs. We will continue to work with FEAS to identify opportunities to strengthen graduate funding. This includes ongoing efforts to examine and improve predictability in funding provided through Academic Assistant (AA) work, which are ultimately governed by collective agreements.

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	streams, such as government grants, private-sector sponsorships, and institutional fellowships. b) Implementing a more structured and predictable TA assignment system, ensuring fair workload distribution and reliable funding for students. c) Increasing guaranteed financial support for PhD students to reduce dependence on external TA work.	inevitable AA assignment variations, which are the result of various administrative factors, as well as the inflation outpacing the funding levels remain a challenge.	external funding (eg a small bursary to top internally ranked applicants). c) With support from the faculty, explore a pre-assignment TA system (modeled after McMaster or York). Faculty-level support will be required to implement such a system. d) Investigate feasibility of increasing minimum PhD funding through department or faculty initiatives.	preparatory workshops for NSERC CGS-D in August and September, and for NSERC CGS-M in November. Workshops for OGS/TMGS are conducted in January and February. Furthermore, two additional sessions are delivered as part of the FEAS Graduate Professional Development Series, which is integrated into the ECE Graduate Seminar Series. We are committed to further enhancing these offerings, with a greater emphasis on engaging supervisors, whose involvement has been shown to be a critical factor in student success. b) The Faculty continues to provide financial support for award recipients, including an annual supplement of \$5,000 for the duration of any Tri-Agency scholarship and \$4,000 for international students who secure competitive internal awards (OGS/TMGS). c) The FEAS Dean and the Office of Graduate and Postdoctoral Studies support efforts to	implement any new changes.	YSGPS fully supports FEAS' efforts to enhance support for students applying for external funding, and believes these initiatives facilitate student success in these competitions and provide important opportunities for professional development. YSGPS commends FEAS for recognizing the critical role that supervisors play, and supports efforts to facilitate their involvement in the process.

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				streamline the allocation and hiring processes for Academic Assistants (AAs), in accordance with the CUPE Local 3 Collective Agreement. Our objective is to improve contract security and ensure equitable assignment practices across departments and programs.		
Recommendation 4: Promoting equity, diversity, and inclusion (EDI).	The current composition of faculty and students reveals a significant imbalance in representation, particularly regarding gender diversity. Women and other underrepresented groups remain underrepresented in the program's faculty and student populations. To address this issue and create a more inclusive environment, we recommend:	The program acknowledges the current underrepresentation of women and equity-deserving groups. Intersectional gaps, such as absence of Indigenous students and low representation of women with disabilities or 2SLGBTQ+ identities, are particularly concerning. The program is committed to addressing these	a) Partner with community and Indigenous organizations to develop targeted outreach and recruitment initiatives. b) Advocate for the creation of EDI-focused scholarships at the faculty or Institutional levels. c) Collaborate with the Faculty of Engineering and Architectural Science (FEAS) leadership to ensure hiring	a) We further affirm our support for the Program's initiatives in this area and welcome additional proposals that enhance the graduate experience. b) FEAS Office of Graduate and Postdoctoral Studies would like to highlight that the Faculty already offers targeted funding opportunities such as the FEAS Graduate Indigenous Fellowship and the IBET PhD Fellowship, specifically aimed at supporting Indigenous and Black PhD students. c) At TMU, all hiring committees are required to complete mandatory training on equity,	GPD and department EDI committee - Fall 2025: Work with FEAS outreach to organize more targeted community events yearly (e.g. Go-code-Girl event recently hosted by FEAS).	YSGPS strongly endorses the program- and Faculty-level efforts to enhance student representation from equity-deserving groups. In addition to the initiatives already outlined, the program may also wish to consider incorporating an EDI lens directly into its program objectives. Doing so can help ensure that equity, diversity, and inclusion remain central to all aspects of the program, including admissions, curriculum design, and resource allocation. We are encouraged by the work underway and remain committed to supporting programs in advancing EDI in meaningful and sustainable ways.

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	a) Implementing targeted recruitment strategies to increase the enrollment of female students and members of underrepresented groups. b) Introducing specific fellowships and scholarships aimed at supporting underrepresented groups in graduate studies. c) Ensuring transparency in the faculty hiring processes to promote diversity among academic staff.	disparities through curriculum, mentorship, and institutional partnerships.	committees adopt transparent, EDI-centered practices and training. d) Encourage faculty to include inclusive case studies and EDI-sensitive design discussions in graduate coursework	diversity, and inclusion (EDI) and to designate one member as an EDI advocate, in accordance with the TFA Collective Agreement, Section 4.E. d) The FEAS Dean and the Office of Graduate and Postdoctoral Studies fully support the Program’s initiative in this area and remain committed to its successful implementation		