Notice of Intent for New Degree/Diploma Programs

The Notice of Intent (NOI) is completed after Program Ideation once it is determined that a New Program is appropriate. The NOI provides additional detail regarding the nature and aspirations of a proposed program. Please submit the completed NOI to ciqe@ontariotechu.ca. The NOI will be presented to the Academic Resource Committee for evaluation and recommendation to the Provost.

Applicant Information

Faculty: Faculty of Engineering and Applied Science
Faculty Lead: Dr. Xianke Lin
Program Level: ☑ Graduate ☐ Undergraduate
Program Name and Degree Designation: Graduate Diploma (G.Dip) in Advanced Robotics
Is this program in collaboration with another faculty? No
If yes, which Faculty? N/A
Modality: ☐ Online   ☑ Hybrid
Will this program have an experiential learning component?   ☑ Yes   ☐ No

> If yes, please provide details of experiential learning, including potential partners and any anticipated impact on existing resources or placements in other programs.

The Graduate Diploma in Advanced Robotics incorporates experiential learning through hands-on, project-based coursework focused on robotic modelling, simulation, motion planning, control system design, mobile robot autonomy, and AI-enabled decision making. Students engage in practical assignments using industry-standard robotics software tools to solve real-world robotics challenges.

Experiential learning is embedded within existing courses in the Faculty of Engineering and Applied Science. No additional placement capacity or facilities are required.

Because experiential components take place within coursework and capstone-style project environments, there is no anticipated impact on placements in other programs, nor additional resource requirements.

Overview of Proposed Program

Please briefly describe the proposed program.

The Graduate Diploma (G.Dip) in Advanced Robotics is designed to equip engineers and technical professionals with specialized expertise in robotic systems and intelligent automation. The program emphasizes the modelling, design, and control of robotic manipulators and mobile robots, as well as real-time implementation and AI-based decision-making. Graduates will be prepared for careers across industrial automation, manufacturing robotics, autonomous vehicles, aerospace robotics, medical robotics, and research and development.
Students will complete 4 graduate courses (12 credits total):
Core (both required):
- METE 5280G - Robotic Manipulators
  (If previously completed at the undergraduate level, replaced with an elective upon GPD approval)
- METE 5300G - Mobile Robotics
  (If previously completed at the undergraduate level, replaced with an elective upon GPD approval)
- Electives (choose any two):

- o ENGR 5005G - Special Topics (with GPD approval)
- o ENGR 5260G - Advanced Robotics and Automation
- o ENGR 5262G - Manipulator and Mechanism Design
- o ENGR 5263G - Advanced Control
- o ENGR 5910G - Embedded Real-Time Control Systems
- o ENGR 5930G - Adaptive Control
- o ENGR 5915G - Discrete Time Control Systems
- o METE 5101G - Artificial Intelligence and Machine Learning Methods and Applications
- o METE 5102G - Control Design in Robotic Systems
- o METE 5103G - Model Predictive Control
- o METE 5104G - Multivariable Feedback Control
- o METE 5105G - Nonlinear Control Systems
- o METE4500U Machine vision for robotic systems (with GPD approval)

The diploma can be completed full-time or part-time and is stackable into the MASc and MEng programs in Mechatronics Engineering, offering a flexible pathway for professional upskilling.

Describe how the principles of Equity, Diversity, Inclusion, and Decolonization have been considered.

The Advanced Robotics Graduate Diploma integrates EDID principles by providing hybrid delivery and accessible course design. The program also aims to increase participation from women, Indigenous peoples, and other underrepresented groups in engineering through targeted outreach and inclusive learning environments. Course discussions incorporate diverse ethical and societal perspectives on automation, including workforce transformation, accessibility, and the social implications of robotics. Case studies emphasize responsible engineering and emphasize human-centered and inclusive technology design.

If this program contains any indigenous content, please provide information regarding consultation with the Indigenous Education Advisory Circle (IEAC).

The program does not currently include Indigenous-specific curriculum. Any future inclusion of Indigenous content such as robotics applications to support community needs or sustainable technology design will follow formal consultation with the Indigenous Education Advisory Circle (IEAC) in accordance with university protocols.

For more information on how Indigenous content is defined at Ontario Tech University and how to consult with the Indigenous Education Advisory Circle (IEAC), please refer to the [Protocol for Consultation with the Indigenous Education Advisory Circle.](#)

Evidence of Need

List all other Ontario universities that offer similar programs.

While no Ontario university currently offers a Graduate Diploma specifically titled Advanced Robotics, there are several closely related graduate-level offerings that demonstrate strong demand for robotics and automation:

University	Program
University of Toronto	- Collaborative Specialization in Robotics (notation added to an existing graduate degree) - MEng with Emphasis in Robotics
Western University	- MEng in Robotics and Control

In addition, a few Ontario colleges offer Ontario College Graduate Certificates in robotics and industrial automation, indicating applied-level labour-market demand. For example:

College	Program
Conestoga College	- Robotics and Industrial Automation (Ontario College Graduate Certificate)

The proposed Graduate Diploma in Advanced Robotics at Ontario Tech is differentiated as a university-level, stackable credential with a focus on advanced modelling, control, AI and systems integration, and a direct ladder into research and professional master's programs.

What is the intended applicant pool for this program and the projected enrollment?

The program targets mechanical, mechatronics, electrical, and computer engineers working in robotics and automation; graduates seeking up-skilling in control, perception, and autonomous systems; and professionals transitioning to robotics-intensive fields such as EV automation, aerospace robotics, medical robotics, and intelligent manufacturing.

Projected enrollment: Year 1: 5-10 students; steady-state: 10-20 students per year.

What are the trends indicating societal need for graduates in this area. Please visit *Ontario Job Futures*, the *Government of Canada Labour Market Trends* website, and the *Durham Workforce Authority* and Include projections for jobs in this area over the next 5 to 10 years. You may also include data from other sources, if relevant.

Robotics adoption across Canada is accelerating due to advances in automation, autonomous vehicles, Industry 4.0, surgical robotics, and AI-assisted systems. Labour market data from Ontario Job Futures, the Government of Canada Labour Market Trends, and the Durham Workforce Authority highlight continued growth in robotics and automation engineering over the next 5-10 years, particularly in automotive mobility, aerospace, logistics, health care automation, and smart manufacturing. This diploma directly supports employer needs by producing graduates with hands-on experience in advanced robotic systems.

Resources

What human and physical resources will be required to launch and sustain the program?

How will existing programs be impacted?

What is the marketing pitch for this program and what outlets should be used?
The program will be taught by existing faculty in Mechatronics Engineering with expertise in robotics, control, embedded systems, AI, and automation. No new hires or facilities are required.
The impact on existing programs will be minimal because the diploma consolidates existing courses into a focused credential. It strengthens Ontario Tech's leadership in robotics and automation while providing an additional stackable pathway to graduate degrees.
Marketing will target engineers and professionals through the university website, social media, LinkedIn campaigns, professional robotics networks, IEEE chapters, and industry partners in automation, automotive, and aerospace.

Consultation

Provide details regarding consultations with other programs and/or Faculties at Ontario Tech University, external agencies/partners, and supporting departments (e.g. the Office of the Registrar, School of Graduate and Post-Doctoral Studies), and include information about potential collaboration or possible duplication. Include an explanation of the consultation process and a summary of the feedback provided.

Preliminary consultations were held within the Faculty of Engineering and Applied Science, including discussions with the Graduate Program Director, department faculty, and the Dean's Office. Input from

the School of Graduate and Postdoctoral Studies (SGPS) will ensure alignment with Ontario Tech's graduate credential framework and stackable program structure.

Feedback confirmed that the proposed diploma complements existing MASc and MEng offerings without duplication and supports the university's leadership in advanced robotics.

Has this NOI been approved by the Faculty Dean(s)? ☑ Yes ☐ No
Date Approved: December 1, 2025