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. Amirkianoosh Kiani
Program Level: ☑ Graduate ☐ Undergraduate
Program Name and Degree Designation: Graduate Diploma (G.Dip) in Digital Transformation in Advanced Manufacturing

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 Digital Transformation in Advanced Manufacturing Graduate Diploma integrates experiential learning through hands-on, project-based coursework focused on smart manufacturing systems, robotics, and digital design. Students will apply Industry 4.0 tools such as computer-aided manufacturing, digital twins, and data-driven process optimization to solve real-world manufacturing challenges.

Assignments and projects are embedded within existing graduate courses and do not require additional facilities beyond those already available in the Faculty of Engineering and Applied Science. This approach builds both technical and professional competencies in advanced manufacturing, aligning with Ontario Tech's emphasis on applied, technology-driven learning.

Overview of Proposed Program

Please briefly describe the proposed program.

The Digital Transformation in Advanced Manufacturing Graduate Diploma is designed to prepare engineers and professionals to lead innovation in advanced manufacturing systems. The program focuses on integrating digital technologies such as automation, robotics, data analytics, and smart design to enhance productivity, sustainability, and competitiveness in manufacturing environments. It emphasizes the principles of Industry 4.0 and digital transformation, equipping graduates with the technical and analytical skills needed for modern, connected manufacturing ecosystems.

Students complete four (4) graduate-level courses (12 credits total) from the list below, providing both theoretical understanding and practical training in advanced manufacturing methodologies and digital tools:

- ENGR 5223G - Advanced Manufacturing Processes and Methodologies
- ENGR 5243G - Mechanics and Dynamics of Machine Tools

- ENGR 5245G - Micro and Nano Manufacturing
- ENGR 5271G - Innovative Design Engineering
- ENGR5005G = Sp Tp: Composite Structures
  Optional Replacement:
  - Related ENGR 5005G – Special Topics and/or Senior Undergraduate course (upon approval by the Graduate Program Director and relevant to the scope)

The diploma can be completed on a part-time or full-time basis and is fully stackable into the MASc or MEng in Mechanical Engineering programs. It provides a flexible pathway for professionals seeking to upskill in advanced manufacturing or transition into leadership roles in smart-industry settings.

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

The Digital Transformation in Advanced Manufacturing Graduate Diploma integrates equity, diversity, inclusion, and decolonization principles by promoting equitable access through hybrid delivery and flexible scheduling. The program encourages participation from women, Indigenous peoples, and other underrepresented groups in engineering through targeted outreach and mentorship opportunities. Its curriculum highlights global perspectives in manufacturing and design, emphasizing inclusive innovation and workforce transformation. Course projects and case studies reinforce responsible engineering practices and the social dimensions of automation and digitalization, ensuring students appreciate the human and ethical aspects of technological change.

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

The program currently does not include specific Indigenous content. However, future iterations may incorporate case studies on inclusive manufacturing, sustainable industrial design, and technology development in partnership with Indigenous communities. Any inclusion of Indigenous content will be preceded by consultation with the Indigenous Education Advisory Circle (IEAC) to ensure cultural accuracy and alignment with Ontario Tech's 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.

Comparable programs at Ontario institutions:
While no exact graduate diploma in Digital Transformation in Advanced Manufacturing currently exists in Ontario, there are related credentials and programs that signal demand in this field:

University	Program
Sheridan College	Graduate Certificate in Advanced Manufacturing Management.
Humber College	Master of Engineering in Advanced Manufacturing Engineering

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

The program is intended for engineers and technical professionals in mechanical, manufacturing, industrial and systems engineering who require up-skilling in digital manufacturing, automation, robotics, micro & nano manufacturing, smart design and Industry 4.0 technologies. It also targets recent graduates wishing a short, stackable credential that can ladder into the MEng or MASc in Mechanical &

Manufacturing Engineering. The anticipated Year 1 intake is approximately 10–15 students, with a steady-state enrolment of around 20–25 students per year (mix of part-time professionals and full-time students).

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.

Across Ontario and Canada, the manufacturing sector is undergoing a significant transformation driven by digitalization, automation, and data-driven decision-making. Industry reports highlight the growing need for professionals skilled in robotics, advanced materials, micro and nano manufacturing, and digital system integration. This diploma responds directly to that need by preparing graduates to lead innovation, productivity improvements, and sustainable practices in modern manufacturing environments.

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 Digital Transformation in Advanced Manufacturing Graduate Diploma will be delivered by existing faculty in Mechanical and Manufacturing Engineering with expertise in digital manufacturing, robotics, and design innovation. No new hires or additional resources are required. The program will utilize existing classrooms, laboratories, and computational facilities already supporting graduate teaching and research.

The impact on existing programs will be minimal, as the courses are part of the current graduate curriculum. The diploma consolidates these offerings into a focused, stackable credential that strengthens Ontario Tech's leadership in advanced and smart manufacturing education. Marketing will target engineers and professionals through the university website, professional networks, and industry partnerships.

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 strategic focus on digitalization, advanced manufacturing, and applied research. The program also aligns with ongoing collaborations and industry engagement in automation, robotics, and smart manufacturing systems.

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