**UNIVERSITY OF WINDSOR**
**UNIVERSITY PROGRAM REVIEW (UPR)**
**FINAL ASSESSMENT REPORT AND IMPLEMENTATION PLAN:** MECHANICAL, AUTOMOTIVE, AND MATERIALS ENGINEERING
UNDERGRADUATE AND MASc/PhD PROGRAMS
January 2024

## Executive Summary of the Cyclical Program Review of the Department of Mechanical, Automotive, and Materials Engineering's Programs

In accordance with the University's Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the external review and the internal responses of the undergraduate and graduate programs in the Department of Mechanical, Automotive, and Materials Engineering.

In addition to identifying the significant strengths of the programs, together with opportunities for program improvement and enhancement, the report prioritizes the recommendations that have been selected for implementation and sets out a plan (including the agent(s) responsible for addressing the recommendations and deadline dates) for follow-through. Timelines for monitoring the implementation of the recommendations are built into the process, with areas reporting mid-cycle on their progress to the Senate Program Development Committee, or earlier where there are significant concerns requiring urgent follow-up.

The Department of Mechanical, Automotive, and Materials Engineering's 2019-2020 Self-Study, submitted to the Office of Quality Assurance on October 19, 2022, included: 1) descriptions and an analysis of the programs, their learning outcomes, curriculum structure, and student experience; 2) information on enrolments and retention, as well as financial, physical, and human resources; and 3) the program data including the standard data package provided by the Office of Quality Assurance. Included in the appendices to the Self-Study were faculty member CVs, recommendations from the previous IQAP review, undergraduate and graduate course outlines and calendar descriptions, and student-related surveys and data.

The Department of Mechanical, Automotive, and Materials Engineering's programs were reviewed by Dr. Markus Bussmann (Department of Mechanical and Industrial Engineering, University of Toronto), Dr. Michael Collins (Department of Mechanical and Mechatronics Engineering, University of Waterloo), Dr. Pascal Hubert (Department of Mechanical Engineering, McGill University), and Dr. Joel Cort (Faculty of Human Kinetics, University of Windsor). In addition to assessing the Self-Study, the Review Team conducted a two-day on-site visit on March 2-3, 2023, which included meetings with faculty, students, administrative and technical staff, the Head of the Department of Mechanical, Automotive, and Materials Engineering, the Dean and Associate Deans of the Faculty of Engineering, members of the Undergraduate and Graduate Committees, and the Associate Vice-President Academic.

In their report (May 14, 2023), the Review Team acknowledged the delay in completing the Self-Study and site visit, noting that this was due to extenuating circumstances relating to the pandemic and leadership changes at the Head and Decanal levels, with some information and concerns having already been addressed by the time of the site visit. The Review Team noted that the programs meet the IQAP evaluation criteria and are consistent the University of Windsor's mission statement. Specifically, the Review Team confirmed that undergraduate and MASc/PhD program requirements and learning outcomes are clear, appropriate, and aligned with degree level expectations and, in the case of undergraduate programs, accreditation requirements. The programs are delivered by faculty with overall research profiles and supported by dedicated administrative and technical staff, all committed to providing an exceptional and supportive student experience. However, the Review Team did note that the latter could be compromised if administrative staffing support for the Department and technical staffing for the Faculty are not increased.

It was also noted that undergraduate and MASc/PhD admission requirements are appropriate and aligned with learning outcomes, though it was recommended that the undergraduate admissions average be increased to reflect

the high mean entrance average of students. Assessment methods for both these programs were also noted as being appropriate and effective. It was noted that harmonization around academic administrative roles (eg, graduate program coordinators) for the various programs would create efficiencies and provide greater clarity to students. The Review Team also urged reconsideration of undergraduate program sequencing to allow students to graduate in Spring (rather than October) and enter the workforce more quickly. The Review Team also expressed concern that some MASc and PhD students do not complete their degree program, primarily due to lack of funding, and urged some minimum level of guaranteed graduate funding.

Overall, the Review Team was impressed with the Department of Mechanical, Automotive and Materials Engineering, noting a collegial and positive working environment and strong leadership at the Department and Decanal levels, and concluded that the Faculty offers very consistent and solid undergraduate and MASc and PhD programs. The Review Team noted that the space and physical resources within which the programs are delivered are of high quality.

The Head of the Department of Mechanical, Automotive, and Materials Engineering and Dean of Science submitted their responses to the External Reviewers' Report (July 25, 2023 and August 9, 2023, respectively), addressing the recommendations, identifying follow-up actions, and providing clarification or corrections, as appropriate. The Senate Program Development Committee (PDC) Final Assessment Report and Implementation Plan (January 2024) considered all the above documentation. The Executive Summary and Implementation Plan, along with any response from the area on the final recommendations, were submitted to Senate in March 2024.

**Final Recommendations and Implementation Plan (in priority order)**

*Final recommendations were arrived at by the Program Development Committee, following a review and assessment of the External Reviewers (ER) report, the response from the Department, and the Dean's response.*

**Recommendation 1:** That the Department, with the assistance of the Manager of Student Success and Academics, report on efforts to:

a) improve course and program information (e.g. courses offered, sequence, etc.); [ER Recommendation 7]
b) develop a process and supports to alleviate course registration confusion [ER Recommendation 8]
c) assist students with their progression through their programs particularly in cases where a student fails or misses a course. [ER Recommendation 7]

**Agents:** Head, Manager of Student Success and Academics
**Completion by:** Fall 2025

**Recommendation 2:** That the Department modernize the existing Materials option by:

a) adding courses (on composites and metallurgy, for example), and/or more closely align the option to the Automotive and Aerospace options; or
b) expanding the option to a Materials and Manufacturing Option.

[ER Recommendation 4]
**Agents:** Head, AAU Council, faculty members in Materials and Industrial engineering
**Completion by:** Fall 2025

**Recommendation 3:** That the Department review and modernize the Mechanical Engineering Automotive option curriculum to include emerging topics (autonomous vehicles, hybrid and electric vehicles, batteries, vehicle light-weighting, etc.). [ER Recommendation 5]
**Agents:** Head, AAU Council, faculty members in Automotive engineering
**Completion by:** Fall 2025

**Recommendation 4:** That MAME consider realigning the undergraduate curriculum to allow for non-co-op students to graduate in Spring. [ER Recommendation 9]
**Agents:** Head, AAU Council
**Completion by:** Fall 2025

**Recommendation 5:** That the Department explore opportunities to strengthen its relationship with the Co-op Office, with a view to addressing concerns such as with the lack of placements for students in certain options, and advising engineering students on how to take best advantage of co-op program opportunities. [ER Recommendation 15]
**Agents:** Head, Manager Student Success and Academics, Co-op Office
**Completion by:** Fall 2025

**Recommendation 6:** That the Department harmonize the MASc and PhD programs in each of ME, IE and Materials Engineering, and that a single Graduate Program Coordinator be assigned to oversee all research graduate programs. [ER Recommendation 10]
**Agents:** Head, AAU Council, faculty members
**Completion by:** Fall 2026

**Recommendation 7:** That the Department further explore developing a policy that guarantees ALL research graduate students (MASc, PhD) a certain minimum level of funding, for a reasonable period of time, and report on challenges or progress made to this end. [ER Recommendation 17]
**Agents:** Head, AAU Council
**Completion by:** Fall 2025

**Recommendation 8:** That the Department develop a mechanism to review the offer letters provided to graduate students, regarding funding and tuition fees, to ensure that the information is clearly and correctly presented; and to, more generally, review communications to graduate students. [ER Recommendation 18]
**Agents:** Head, Graduate Coordinator
**Completion by:** Fall 2024

**Recommendation 9:** That the Department raise the minimum entrance average for applicants to the Mechanical Engineering and Industrial Engineering programs from 74% to 78%, and report back on its consideration of adding Grade 12U Calculus and Vectors to its admission requirements to further support student success. [ER Recommendation 1]
**Agents:** Head, AAU Council
**Completion by:** Fall 2024

**Recommendation 10:** That the Department improve its messaging around the WINONE program, clarifying to students that its services can be accessed by students beyond first year. [ER Recommendation 21]
**Agents:** Head
**Completion by:** Fall 2024

**Recommendation 19:** That the Department review and update the lists of graduate courses and Special Topics courses that are likely to be offered at least occasionally, to provide students a clear sense of graduate course offerings in the coming year or two. [ER Recommendation 19]
**Agents:** Head, Graduate Coordinator
**Completion by:** Fall 2024

**Recommendation 12:** That the Department consider introducing:
a) an annual in-person orientation session for new research graduate students (MASc, PhD); and
b) formal agreements between each research graduate student and their supervisor, to establish a mutual understanding of communication, financial support, progress tracking, paper authorship, etc.

[ER Recommendation 20]
**Agents:** Head, faculty members
**Completion by:** Fall 2025

**Recommendation 13:** That faculty be expected to submit three-year progress reports for feedback by the Head, in addition to the annual submission of eCVS, consistent with the collective agreement. [ER Recommendation 16]
**Agents:** Head, Dean
**Completion by:** Fall 2024

**Recommendation 14:** That the Department actively participate in discussions around the Faculty-level review and streamlining of administrative, IT, and technical staff positions, and that it report on the progress of this review as relates to administrative and technical staffing support for its programs. [ER Recommendations 11 and 12]
**Agents:** Head, Dean
**Completion by:** Fall 2026

**Recommendation 15:** That the Department review and revise (as needed) its academic administrative structures and positions to ensure their effectiveness in assisting the Head with MAME leadership and management duties, in alignment with the WUFA collective agreement and Senate bylaws. [ER Recommendation 13]
**Agents:** Head
**Completion by:** Fall 2025

**Recommendation 16:** That the Department report on whether and how the funding from the MEng programs continues to be used to enhance supports for students, faculty teaching and research, and labs and facilities. [ER Recommendation 14]
*[In their response to the external reviewers, the Department and Dean clarified that funding from the MEng programs has flowed back to the Faculty and its Departments, resulting in the creation of an Associate Dean of Professional Programs, supports for students, research funds for faculty, and upgrades to labs and facilities, and will continue to do so in accordance with the ABB model and within University budget constraints.]*
**Agents:** Head
**Completion by:** Fall 2024