



Queen's University

Final Assessment Report: Executive Summary

Programs Reviewed: Mechanical Engineering (B.Sc.E) (renamed B.A.Sc as of June 2016)
Mechanical and Materials Engineering (M.A.Sc, MEng, PhD)
Advanced Design and Manufacturing (M.Eng.-joint program between 6 institutions).

In accordance with Queen's University Quality Assurance Processes (QUQAP), this final assessment report provides a synthesis of the external evaluation, internal responses and assessment of the above programs. This report identifies the significant strengths of the program, and opportunities for program improvement. It sets out and prioritizes the recommendations that have been selected for implementation.

An implementation plan is attached that identifies

- who will be responsible for acting on and monitoring progress on the recommendations,
- any resource or governance implications resulting from the recommendations, and
- timelines for implementation of the recommendations.

Summary of Review

- 1) The department's self-study was reviewed by the Dean, Faculty of Engineering and Applied Science, Vice-Provost and Dean, School of Graduate Studies and Vice-Provost (Teaching and Learning). It was approved on 17 February 2016.
- 2) The review team visit took place on 21-22 March, 2016. The review team members were
 - i. Dr. Gordon Stuble, University of Waterloo
 - ii. Dr. James Johnson, University of Western Ontario
 - iii. Dr. James McLellan, Queen's University
- 3) The visit included a tour of facilities and meetings with
 - i. Students (undergraduate and graduate)
 - ii. Faculty
 - iii. Staff
 - iv. Liaison librarian
 - v. Dean, Faculty of Engineering and Applied Science
 - vi. Vice-Provost and Dean, School of Graduate Studies
 - vii. Vice-Provost (Teaching and Learning)

- 4) The review team reported on 13 June 2016. Responses to the review team report were provided by the Head, Department of Mechanical and Materials Engineering, Dean, Faculty of Engineering and Applied Science, and Vice-Provost and Dean, School of Graduate Studies.
- 5) The Senate Cyclical Program Review Committee considered all the documentation at its meeting on 13 September 2016, and reported to the Provost on the programs' strengths, opportunities for enhancement, and recommendations for improvement.

The following strengths were noted:

- High student retention, at the undergraduate and graduate level
- Highly qualified and research-active faculty
- Commitment to having courses taught by core faculty members
- Excellent machine shop and experiential learning opportunities, including community service learning
- Success of Biomechanical Engineering program is enabling the department to address equity concerns

The following opportunities for enhancement were noted:

- Continue efforts to identify additional space and renovate existing space (particularly for active learning), ensuring consultation occurs with all stakeholders.
- Increase focus on external awards.
- Leverage new learning management system and other educational technologies.
- Develop recruitment efforts, including recruitment of more female students. Consult with female students and women practicing in the field on ways of attracting women to the program.
- Continue to work towards the goal of increasing women's representation among faculty members.

The academic programs in the Department of Mechanical and Materials Engineering have been approved to continue.

Date of next review: To coincide with accreditation review by the Canadian Engineering Accreditation Board. No later than 2023-2024.

Prepared by Vice-Provost (Teaching and Learning)

December 5, 2016

Implementation Plan

Recommendations N.B. RT refers to review team recommendation		Proposed Follow-up	Responsibility for Leading Follow-up	Resource or Governance Implications	Timeline for Addressing Recommendation
The Senate Cyclical Program Review Committee identified recommendations 1-3 below as first priority for implementation					
1.	Review Mechanical Engineering curriculum in light of Mechatronics Engineering perspective. Sustain MECH 452. (RT 1).	Continue curriculum review begun in Spring 2016. Develop plan, including improvement of the integration and content of the ECE courses in the MME program. Engage all stakeholders, including the Industry Research Advisory Committee.	Department Head to monitor work of relevant committee/faculty group.	Equipment upgrades in MECH 452. Time commitment from faculty and staff members to engage in curriculum review.	Aim to implement curriculum enhancements starting in the academic year 2017/18 Aim to implement changes to MECH 452 in 2017

Recommendations N.B. RT refers to review team recommendation		Proposed Follow-up	Responsibility for Leading Follow-up	Resource or Governance Implications	Timeline for Addressing Recommendation
2.	Provide support for faculty members to deliver active learning (RT 3).	<p>Continue flipped classroom development in MECH 228 in 2016-17.</p> <p>Engage professors to see benefits of this teaching style by increasing exposure of the MECH 228 experience.</p> <p>Plan for expansion to other courses, including work to secure appropriate space.</p>	Department Head	<p>Resources required for new interactive classrooms and renovation of existing classrooms.</p> <p>Time commitment from faculty members for development of approach to active learning.</p>	<p>Increase active learning offerings over the next 5 years.</p> <p>Supported by move to new Innovation and Wellness centre by 2018-19.</p>
3.	<p>Work to enhance the graduate student experience, with regard to:</p> <ul style="list-style-type: none"> • Advising (RT 10) • Professional skills-advertise existing opportunities (RT 10) 	<p>Review and inquiry into the needs of graduate students</p> <p>Hold graduate students' research day, Spring 2017</p>	Departmental Graduate Committee, working closely with School of Graduate Studies	<p>None for review. Implementation may require resources</p> <p>Minimal resources for research day</p>	<p>Begin review 2016-17 academic year</p> <p>Investigate interest in graduate student association in 2016/17.</p>

Recommendations N.B. RT refers to review team recommendation		Proposed Follow-up	Responsibility for Leading Follow-up	Resource or Governance Implications	Timeline for Addressing Recommendation
	<ul style="list-style-type: none"> Identify distinguishing features of M.Eng. and M.A.Sc (RT 5) Consider establishment of graduate students' association (RT 6) 		Department Head to monitor progress		If there is interest it will be formed 2017-18.
4.	In light of issues around space, morale and direction, engage faculty, staff and students in problem-solving, aiming for small successes. This includes placing coffee lounge close to machine shop (RT 2)	<p>Space Committee to address issues of space.</p> <p>Fall 2016 event on internship program</p> <p>Sessions on strategic vision for future of department</p>	Space Committee Department Head	Within existing departmental resources	Spring 2018
5.	Maintain and develop efforts to recruit more women into undergraduate and graduate programs.	Make hiring women faculty a priority throughout the next phase of faculty renewal	Department Head to direct and monitor	none	Ongoing

Recommendations N.B. RT refers to review team recommendation		Proposed Follow-up	Responsibility for Leading Follow-up	Resource or Governance Implications	Timeline for Addressing Recommendation
	Continue efforts to increase number of female faculty members. (RT 4)	Profile past women graduates with Masters and PhD degrees on websites. Expand and leverage presence of women role models (faculty, staff and through grad alumni network).			
6.	Encourage staff, faculty and students to work together to promote nominations for teaching, staff support and student achievement awards external to the faculty and university. (RT 7)	Seek out opportunities to nominate staff and faculty for awards. Connect to faculty-wide initiatives.	Department Manager and Head	Human resource to prioritize this-within new administrative position in department.	Goal is to have 1 external staff award and 1 external faculty award by the end of 2018
7.	Recommend developing new recruiting strategies, together with a review and possible modification of graduate	Enhance online presence. Promote the department's research	Department Manager and Head	Minimal-within department's budget	Ongoing

Recommendations N.B. RT refers to review team recommendation		Proposed Follow-up	Responsibility for Leading Follow-up	Resource or Governance Implications	Timeline for Addressing Recommendation
	programs, programming and delivery approaches to increase the appeal of graduate programs in MME, particularly to domestic students. (RT 8)	and opportunities for graduate students. Work with SGS on strategic recruitment initiatives			
8.	Recommend tracking information about the placement and career trajectories of graduates from the undergraduate and graduate programs to facilitate future cyclical reviews and support improved recruitment and curriculum design. (RT 9)	A cohort-based graduate outcomes survey is ready to be launched province-wide and the SGS is also exploring opportunities to track graduate labour market outcomes in partnership with Education Policy Research Initiative (EPRI).	Department Head in conjunction with Dean, School of Graduate Studies and Dean, Faculty of Engineering and Applied Science	Institutional level commitment needed.	2017

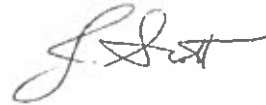
The Dean, Faculty of Engineering and Applied Science shall be responsible for monitoring the implementation plan. The details of progress made will be presented in writing to the Provost and Vice-Provost (Teaching and Learning) and filed in the Office of the Provost and Vice-Principal (Academic). Monitoring reports will be posted on the university web site.

Final Assessment Report & Implementation Plan

5 December 2016

Approval Date

Vice-Provost (Teaching and Learning)



Vice-Provost and Dean, School of Graduate Studies



Signature

Dean, Faculty of Engineering and Applied Science



Signature

Final status of Mechanical and Materials Engineering Programs

Approved to Continue

Date of next program review

Coincident with next CEAB accreditation review. No later than 2023/24 Academic Year