

FINAL ASSESSMENT REPORT
Institutional Quality Assurance Program (IQAP) Review
Engineering Physics
Undergraduate Programs

Date of Review: March 31 – April 1, 2016

*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 the undergraduate programs delivered by the **Department of Engineering Physics**. This report identifies the significant strengths of the programs, together with opportunities for program improvement and enhancement, and it sets out and prioritizes the recommendations that have been selected for implementation.*

The report 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.

**Executive Summary of the Cyclical Program Review of the
Undergraduate Engineering Physics Program**

In accordance with the Institutional Quality Assurance Process (IQAP), the Department of Engineering Physics submitted a self-study in January 2016 to the Associate Vice-President, Faculty to initiate the cyclical program review of its undergraduate programs. The approved self-study presented program descriptions, learning outcomes, and analyses of data provided by the Office of Institutional Research and Analysis. Appendices to the self-study contained all course outlines associated with the program and the CVs for each full-time member in the department.

Two arm's length external reviewers, one from Ontario and one from Quebec and one internal reviewer were endorsed by the Dean, Faculty of Engineering, and selected by the Associate Vice-President, Faculty. The review team reviewed the self-study documentation and then conducted a site visit to McMaster University on March 31 – April 1, 2016. The visit included interviews with the Provost and Vice-President (Academic); Associate Vice-President, Faculty, Chair of the department and meetings with groups of current undergraduate students, full-time faculty and support staff.

The Chair of the department and the Dean of the Faculty of Engineering submitted responses to the Reviewers' Report (October 2016). Specific recommendations were discussed and clarifications and corrections were presented. Follow-up actions and timelines were included.

The Final Assessment Report was prepared by the Quality Assurance Committee to be submitted to Undergraduate Council, and Senate (December 2016).

Strengths

In their report (September 2016), the Review Team confirmed confirm the high quality of the Engineering Physics program, and the adequate resourcing, for the time being, of the Department of Engineering Physics. The reviewers noted that the program was recognized as “cutting edge” by students and faculty alike, and one that reflects the needs of industries in the areas of the program’s specialization. The reviewers highlighted that this favourable context is a guarantee of the sustainability of the program.

The visiting team was also impressed by the leadership displayed by the management of the Department, particularly in its efforts to optimize the quality of teaching and training throughout the program.

Areas for Improvement

- Find a solution for the Nuclear Engineering laboratories. This is a restatement of a key recommendation made in the previous review report.
- Better use should be made of the Department’s Advisory Committee. Some of its recommendations are currently under consideration, such as continuing the emphasis on communications skills, teaching the fundamentals, and the importance of software skills. Extending the membership, scope and frequency of meetings of the Advisory Committee is recommended.
- A better coordination with the Coop office. The Department could share information with the office on the potential industries and government laboratories that could provide internships to Engineering Physics students.

Areas for Enhancement

- Participation of the Department in the future Biomedical Engineering program. Its expertise in Biophotonics, Nuclear Radiation, Sensors and Materials is well in phase with the requirements of such a program.
- A stronger effort in marketing the Biomedical Engineering could attract more female students.
- Increase the number of faculty to ensure a critical mass in all its sub-programs while taking advantage of new areas of relevance to Engineering Physics (such as Biomedical Engineering).

The Dean of the Faculty of Engineering, in consultation with the Chair of the Department Engineering Physics shall be responsible for monitoring the recommendations implementation plan. The details of the progress made will be presented in the progress report and filed in the Associate Vice-President, Faculty's office.

Summary of the Reviewers' Recommendations with the Department's and the Dean's Responses

Recommendations

Recommendation	Proposed Follow-Up	Responsibility for Leading Follow-Up	Timeline for Addressing Recommendation
It is recommended that the department establishes (or enhances the role of) the Advisory Committee comprised of industry executives, senior practicing engineers and the alumni of the Engineering Physics program working in the fields represented by the program.	Formation of formal Advisory Committee	Department Chair	September 2017
Find a solution for the Nuclear Engineering laboratories. This is a restatement of a key recommendation made in the previous review report.	Review of nuclear lab space requirements; possible expansion of labs to NRB 117/118	Department Chair	September 2017
A better coordination with co-op office. The department could share information with the office on the potential industries and government laboratories that could provide internships to Engineering Physics students.	Ongoing implementation of seminar series, alumni events, capstone sponsorship, Industry Night/Recruiter Night, and sharing the ensuing information with the co-op office	Department Chair	May 2017
Participation of the Department in the	The department is already committed to	In progress	

<p>future Biomedical Engineering program. Its expertise in Biophotonics, Nuclear Radiation, Sensors and Materials is well in phase with the requirements of such a program. A stronger effort in marketing the Biomedical Engineering could attract more female students</p>	<p>participation in the new Biomedical Engineering program. The department is taking action to promote biomedical engineering options within its programs, including revisions to its website, social media, and program brochures.</p>		
<p>Increase the number of faculty to ensure a critical mass in all its sub-programs while taking advantage of new areas of relevance to Engineering Physics (such as Biomedical Engineering)</p>	<p>In its latest strategic hiring plan, the department has identified the need for one new faculty member in biomedical engineering, one in nuclear engineering, and another in optoelectronics, in that order of priority. These new faculty positions are pending Faculty approval, with an expected hiring date of July 2018.</p>	<p>In progress</p>	

Faculty Response:

As detailed in the Chair's response, the recommendations in the review have sparked a series of discussions within the Department, which included substantial input from the undergraduate students via an undergraduate departmental retreat. To date, this has resulted in substantial revisions and enhancements to the departmental website, the formation of a formal Advisory Board and a substantial review of the laboratory space devoted to the undergraduate nuclear program. The other concerns raised by the reviewers, such as better co-ordination with our Engineering Co-op and Career Services are currently underway

Quality Assurance Committee Recommendation

McMaster's Quality Assurance Committee (QAC) reviewed the above documentation and the committee recommends that the program should follow the regular course of action with a progress report and subsequent full external cyclical review to be conducted no later than 8 years after the start of the last review.