FINAL ASSESSMENT REPORT

Institutional Quality Assurance Program (IQAP) Review

UNENE MEng

Date of Review: April 7th, 8th and 9th

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 M.Eng. delivered by UNENE. This report identifies the significant strengths of the program, 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 Review

In accordance with the Institutional Quality Assurance Process (IQAP), the UNENE program submitted a self-study in March 20201 to the Vice-Provost and Dean of Graduate Studies to initiate the cyclical program review of its M.Eng. program. 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 and one internal reviewer were endorsed by the Dean, Faculty of Engineering, and selected by the Vice-Provost and Dean of Graduate Studies. The review team reviewed the self-study documentation and then conducted a review on April 7th, 8th and 8th, 2021. The visit included interviews with the Provost and Vice-President (Academic); Vice-Provost and Dean of Graduate Studies, Faculty Dean, Associate Dean, Grad Studies and Research, Director of the Program and meetings with groups of current students, full-time faculty and support staff.

The Director of the Program and the Dean of the Faculty of Engineering submitted responses to the Reviewers' Report (August 2021). Specific recommendations were discussed and clarifications and corrections were presented. Follow-up actions and timelines were included.

- **Strengths**

a. Focused, relevant content for the nuclear professional needing an M. Eng.
b. Experienced nuclear professionals sharing deep experience pertinent to careers of students.
c. Review courses to level the field for the heterogeneous background of the students.
d. Timing of course so working professionals can enroll in program.
e. Collaboration with the university network.
f. Small class size and individual attention for students in the courses.

- **Areas for Improvement**
  1. Work with University office of Diversity and Inclusion to evaluate accessibility of the courses.
  2. Evaluate the pedagogy used, especially the weekend long, lecture focused course delivery.
  3. Institute regular, structured advising for students in program.
  4. Explore increasing target audience within the nuclear industry and diversifying course offerings.
  5. Create stronger ties to the rest of the university, to better use university resources.
  6. Develop mechanism for maintaining institutional knowledge about the program.

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

No	Recommendation	Proposed Follow-Up	Responsibility for Leading Follow-Up	Timeline for Addressing Recommend.
1	Work with University office of Diversity and Inclusion to evaluate accessibility of the courses.	**Action 1.1** UNENE will gather information from member organizations regarding EDI practices, and hold a workshop with the objective to identify how to adopt and apply some of the recommended guidelines and activities specific to nuclear education and research and to UNENE.	Jerry Hopwood	Sep 2022
2	Evaluate the pedagogy used, especially the weekend long, lecture focused course delivery.	**Action 2.1** The current four-alternate weekend format is the result of experimentation early in the program. The current format, while not as good as a 13-week semester, is a compromise to accommodate working students. We have not identified anything better that fits our constraints. UNENE will further evaluate options in cooperation with stakeholders and propose changes if a better model is identified.	Nik Popov	Sep 2022

		Action 2.2 Action UNENE will meet with the MacPherson Institute at McMaster University and seek their advice about making our pedagogy more effective. The Teaching and Learning Centre at Ontario Tech. University fills a similar role, and might also assist us, especially for digital classrooms. Assuming they give useful guidance, we will pilot the ideas in one or more selected courses in 2022/2023, and then decide on broader implementation.	Nik Popov	Sep 2022
		Action 2.3 We will also pilot a "flipped classroom" for one or two selected topics in one of our 2021/2022 courses. The four-weekend format of UNENE courses poses a special challenge in implementing this approach (for example it cannot be sprung on students at the first weekend), so the pilot will tell us what does and does not work.	Victor Snell	Jan 2022
3	Institute regular, structured advising for students in program.	**Action 3.1** UNENE already regularly requests student feedback on the completed courses, and input in scheduling future courses. Also, UNENE conducts discussions with student groups when required. UNENE will introduce regular student meetings twice a year.	Nik Popov	Jan 2022
		Action 3.2 UNENE will introduce regular student meetings with each student individually to discuss student progress, needs and plans.	Nik Popov	Jan 2022
4	Explore increasing target audience within the nuclear industry and diversifying course offerings.	**Action 4.1** UNENE already has contacts with industry partners in terms of finding ways to increase student admissions. UNENE will continue with meetings with the senior management from the industry with the intent to find ways for increased student population.	Jerry Hopwood	Dec 2022
		Action 4.2 UNENE will explore possibilities with the CNS, OCNI and other industry organizations to organize webinars and seminars as part of the outreach to employees in various industry organizations.	Jerry Hopwood	Sep 2022
		Action 4.3	Nik Popov	Sep 2022

		UNENE will explore ways to use graduate students and alumni students as "ambassadors" of UNENE in their organizations and will explore objectives and methods to be used for increasing awareness of employees with the UNENE M.Eng. program.		
5	Create stronger ties to the rest of the university, to better use university resources.	**Action 5.1** UNENE will organize regular annual meetings with their university colleagues at McMaster SGS as well their partner universities to communicate and share developments on resources, policies and procedures such as academic integrity, grading tools, petitions, and admissions processes.	Nik Popov	Mar 2022
6	Develop mechanism for maintaining institutional knowledge about the program.	**Action 6.1** UNENE officers with M.Eng. program responsibilities to compile the UNENE program handbook and prepare a description of their on-going duties and activities regarding the program, to allow transfer of duties if needed.	Nik Popov	Sep 2022
		Action 6.2 UNENE to prepare archive materials of all courses delivered, to provide basis for a new instructor to come in more readily in future.	Areti Tsiliganos	Sep 2022

Faculty Response

UNENE is an impressive program that manages to collaboratively work between five principal universities to improve the knowledge and skills of technical persons in the Nuclear industry. The IQAP review completed this spring highlights a well-managed program with satisfied students, though the Faculty recognized there were some significant areas needing improvement as well. The review was specifically focused on the Master of Engineering degree, not addressing the diploma which has been available for only a short period of time. The Faculty agreed that closer connections to the resources of the university would be very beneficial to the program and that some of the technological focus in the courses would benefit from updating. However, the Faculty also has a number of some concerns with the review since the reviewers made quite a few recommendations on what seems like an agenda contrary to the facts.

While the Faculty was very supportive of meaningful advancement in EDI across their programs, the extensively negative coverage given by the reviewers to the topic was unnecessary, uninformed, and

most comments were far outside of the scope of an IQAP review. The review lacks a credible examination of the program when it comes to the topic of EDI. For example, the reviewers talk about needing to attract a more diverse student population – but they were never told what the composition of the classes was. Plus, since this program only attracts students from the nuclear industry, they should be reflecting on whether the courses are attracting a diverse representation from that population. They complain about weekend courses, though they know everyone who is a student also works in the industry, and seem to be manufacturing an gender bias without evidence or even reasonable cause. The Faculty supports the program seeking guidance from the Equity and Inclusion Office since nothing but positive improvements can come about from questioning the status quo but were largely disappointed that the reviewers choose to pursue an agenda on this issue without quantifiable information.

The Faculty is equally as concerned as the reviewers with the student interest in the program and continue to work with the program leaders on this issue by participating on a Nuclear advisory board to understand why the industry has pulled back on sending students to the program. At the moment this appears to be a financial issue, but the Faculty has been told by the industry leaders that this program is still heavily supported. They continue to remain invested in supporting the nuclear industry, and will help the program to remain successful. A refresh of the program pedagogical delivery may help but they understand from students and industry leaders, the main issue is that the companies have been less inclined to share tuition costs with their employees recently.

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.