18-Month Follow-Up
SUMMARY REPORT
September 8, 2023
Bachelor of Engineering (Hons), Nuclear Engineering
Dean: Dr. Hossam Kishawy

Under Ontario Tech University's Institutional Quality Assurance Process (IQAP) and the Ontario Quality Assurance Framework (QAF), all programs are subject to a comprehensive review at least/at minimum every eight years to ensure that they continue to meet provincial quality assurance requirements and to support their ongoing rigour and coherence. Program reviews involve several stages, including:

1. A comprehensive and analytical self-study brief developed by members of the program under review.
2. A site visit by academic experts who are external to and arm's length from the program. The visit involves discussions with senior academic administrators, faculty, staff, and students.
3. Submission of an external reviewers' report including recommendations on ways the program may be improved based on a review of the program's self-study brief, discussions during the site visit and supporting material.
4. Internal responses to the external review and recommendations prepared separately by the Program and Dean.
5. Development of an Implementation Plan prepared by the Dean including resource requirements and a timeline for acting on and monitoring the implementation of the recommendations.

All programs that undergo a review must provide a report eighteen months after the completion of the review to gather information on the progress that has been made implementing the agreed upon plans for improvement.

In 2019 – 2021 a review was scheduled for the Bachelor of Engineering in Nuclear Engineering program, with a site visit on May 25 – 28, 2021. The program has submitted to the Provost's Office a report outlining the progress they have made relative to the implementation plan resulting from the review. A summary of this progress is provided on the following pages.

Implementation Plan Action Item(s) (corresponding recommendation # from reviewers' report)		Status*	Comments from Dean
1. Formal incorporation of SMR topics within existing courses, including changing of course descriptions where necessary. This could be done via a review of appropriate courses by the Nuclear Engineering Curriculum Committee and discussion with instructors.	Additional lecture or guest speaker in the 4th year Capstone.	Complete	This is now included in the Capstone lecture series.
	There is also potential for SMR material to be inserted in courses already offered in the core of the program.	Complete	Several courses include SMR examples and in each of the 2021-2022 and 2022-2023 Capstone courses there has been at least one SMR topic available.
	A longer-term response is to develop an elective course, perhaps in conjunction with the graduate program that covers SMR topics.	On-going	A Special Topics elective course was approved in 2022-2023 with the intent of giving a BWR SMR course in 2023-2024.
2. Consideration be given to offering an additional Elective(s) on Decommissioning, to address the potential needs associated with Pickering. This should probably be done in discussion with the OPG decommissioning team.	Develop course material for an elective for decommissioning; the rationale is that there is an identifiable industry need.	Complete	Decommissioning is included in the NUCL 4625U: Radioactive Waste Management Design course.
	Add a lecture on decommissioning to capstone lecture series	Complete	An additional lecture on Pickering Nuclear Generating Station is included (decommissioning discussed).
3. Ensure that Nuclear is clearly placed within the context of the low-carbon electricity mix in terms of addressing climate change; perhaps best done as exercises/examples	Recommend to the Dean's Council that Nuclear is clearly placed within the context of the low-carbon electricity mix in terms of addressing climate change in the proposed Bachelors of Science	Complete	The proposed BSc in Sustainability includes low-carbon energy (e.g., nuclear).

	in COMM 1050U, SSCI 1470U and/or ENGR 3360U.	Sustainability program and in courses like COMM 1050U, SSCI 1470U, and/or ENGR 3360U; the rationale for this is that this spreads the appropriate message about nuclear early in program.		
		Task the Program Curriculum Committee with creating appropriate material and liaising with course instructors directly.	Ongoing	Work underway and discussions held with several course instructors.
4.	Evaluate the potential for alternative delivery modes such as flipped classrooms and blending learning for courses, where such approaches are appropriate.	Discuss this issue with the Department of Energy and Nuclear Engineering as part of a faculty retreat. This is important to keep the program more engaging and also staying current with the best practices in education.	Ongoing	Several instructors previously recorded lectures. This is no longer an option, however, the Department and Faculty may want to re-visit this.
		After a Faculty retreat the next steps will be to generate a report outlining a detailed plan of action on this issue.	Ongoing	This is part of the continuous learning and industry training programming as well.
5.	Teach students a programming language other than C++ in the first year, one that is applicable to the rest of the course and to industry, e.g., Python.	Discuss this with Dean of FEAS and with IT. Since this has broad implication across all engineering disciplines a collegial discussion is appropriate.	Ongoing	The first-year programming course ENGR 1200U: Introduction to Programming for Engineers focusses on teaching the principles of programming, the choice of language not being the focus. If a specific language is needed for a given program, the expectation is that the PCC will implement this discipline specific language in existing upper year courses as appropriate.

6.	Develop approaches to ensure hands-on use of CAD by all students, perhaps by having individual CAD based assignments within 2nd and/or 3rd year courses.	This recommendation will be forwarded to the Program Curriculum Committee for discussion with the objective being a plan for implementation. This will then be presented to the whole faculty for approval in accordance with our good governance model.	Ongoing	PCC is reviewing vis a vis the loss of NUCL 1530U: Radiation and Nuclear Technologies and consolidated labs across FEAS.
7.	Several of the 1st year courses and 1st year labs could be more effectively targeted at the FESNS program if delivered by FESNS faculty / on FESNS topics rather than FEAS.	Discuss this with Dean of FEAS and the Dean of Science. Since this has broad implication across all engineering disciplines a collegial discussion is appropriate.	Complete	The Faculty disagrees with this comment since exposure to other engineering programs is a CEAB requirement. For example, the first-year programing courses is taught by software engineering professors. Also, with the merger of the engineering programs into one Faculty and implementation of the Common First Year, the two engineering courses in first year are taught by different professors from different engineering programs.
8.	The required FESNS internship report be divided into two sections, one which fulfills PEO requirements, a second which adds such additional information/detail as is required from a pedagogical assessment point of view.	Review the current requirements for internship reports. Once these have been determined, this recommendation will be forwarded to the Program Curriculum Committee for discussion with the objective being a plan for implementation. This will then be presented to the whole faculty for approval in accordance with our good governance model.	Complete as well as Ongoing	With PEO's withdrawal of the EIT program and revisions to the FEAS co-op program, this issue is being addressed Faculty-wide (as well as by other Ontario universities).

9.	FESNS work with the University to increase representation and outreach to improve recruitment, especially during high-school outreach.	Create a recruitment committee within FESNS to propose strategies for increasing the outreach for FESNS. Increasing the enrollment will make the program more financially viable and enrich the learning experience for all students. Further, this will support our core industry partners.	Complete	Unique program information provided. With the merger of FESNS and FEAS, this initiative is now part of the broader Engineering Outreach program offerings. Also, at the University level, the merger of all engineering programs at the open house has resulted in increasing the exposure for nuclear engineering and increasing the number of applications.
10.	Introduction of a mandatory TA training session.	Create material to be distributed to all Teaching Assistants (TAs) to ensure that quality support from the TAs remains in place. It is necessary to clarify roles and goals at all levels of the faculty.	Complete	Material prepared. In addition, Department Chair now meets with all TAs at the start of semester.
11.	Ensure that course material is available to students after courses have finished, ideally through the learning management system. At present the lack of access to prior courses represents a barrier to learning.	Liaise with the departments responsible for CANVAS maintenance and upkeep. Further this is an issue for the Dean's Council. Having paid for course material, and knowing that the program builds on material previously presented, having some means to access the material in upper years has been a desire expressed by many students (and echoed by the reviewers).	Complete	Consistent with other programs in FEAS.
		Independent of the University at large, FESNS may be able to solve this issue at the faculty level.	Complete	To the extent possible, yes, students provided course material, consistent with FEAS however, they are also informed of limitations of long-term availability of course material. Students are encouraged to download the course material for their future reference.

12.	Introduce one or more detailed examples of how CSA standards apply to a specific industry relevant issue.	Further introduce CSA standards into the program where appropriate. This is important as maintain standards are mission critical in nuclear engineering.	Complete	Included in Capstone lecture series.
13.	FESNS should look for opportunities with the University to provide additional group study space for students.	Monitor the use of designated study space under control by FESNS, to gain understanding of any trends or patterns of space usage. Creating space for undergraduate students to work in (especially as the return to campus) is in keeping with the "sticky campus" initiative.	Complete	This is an issue common across the Faculty (and the University at large).
14.	FESNS should seek out new partnerships for internships, for example Candu Energy, and Hatch.	Create a list of companies with whom FESNS has a partnership and seek new partners. This is important to maintain the strong ties that FESNS has with industry and to make sure that we continue to show that we are willing to engage with new companies as well.	Complete	This information readily available. Several companies standing by to provide internships consistent with Bruce Power pilot, 'Women in Clean Energy'.
15.	Develop a clearer summer program that defines courses to be offered well in advance so that students can plan to take advantage of summer offerings.	Develop a list of courses that FESNS will offer in the summer on a regular basis.	complete	Varies by year (it depends on the students' needs and number of students).

16.	Set a goal and plans to improve participation in end-of-course student surveys.	Prepare a survey for each yearly cohort	complete	Consistent with other programs in FEAS, each class has a class rep who meets the Department Chair , twice each term, along with the class representatives of the same cohort. Also an end of the program survey is currently under development.
17.	An exit survey be administered to the graduating class every year to assist in overall continuing improvement.	Prepare a survey for employers	complete	A survey is part of the Capstone final exam.
18.	Set a target for increased representation of women in the undergraduate population that is commensurate with the 30 by 30 goal, and put a sequence of activities in place to achieve it. This could start with a survey of existing members of FESNS.	Monitoring the enrollment of gender breakdown of incoming class on yearly basis will allow tracking of numbers and ratios.	Ongoing	Several companies standing by to provide internships consistent with Bruce Power pilot, 'Women in Clean Energy'. Department discussing initiative to set a public target for Nuclear and Energy Engineering (vis a vis FEAS).

*Process Status Legend:

Complete: *Accomplished action item; no further steps required.*
Continuous: *Initial action item complete but requires ongoing monitoring and/or enhancement.*
In Progress: *Progress on the action item has been initiated but is not complete at this time. Outline all steps taken in the comment's column.*
On Hold: *Unable to complete due to other dependent factor(s).*
Cancelled: *Item no longer relevant or resources unavailable.*

This summary report will be sent for approval to the appropriate standing committee of Academic Council (USC or GSC), and will subsequently be reported to Academic Council. It will then be posted on the Ontario Tech corporate website.

Next Scheduled Program Review: 2024 - 2026