

ACADEMIC COUNCIL REPORT

ACTION REQUESTED:

Recommendation
Decision
Discussion/Direction
Information

DATE: 26 March 2024

FROM: Undergraduate Studies Committee

SUBJECT: Minor Program Adjustment – Bachelor of Engineering – Nuclear Engineering program and Engineering and Management in the Faculty of Engineering and Applied Science program

COMMITTEE MANDATE:

In accordance with Section 1. b) of the Undergraduate Studies Committee (USC) Terms of Reference, USC has the responsibility “to approve minor program adjustments and report them to Academic Council for information.”

BACKGROUND/CONTEXT & RATIONALE:

The Faculty proposed to:

- Remove MATH 2810U: Advanced Engineering Mathematics/MATH 2070U Numerical Methods from Year 2, Semester 2 and replace with ENGR2100U: Computational Engineering Applications to Year 2, Semester 2 which contains similar mathematical concepts with applications towards engineering problems

This change also helps address a Canadian Engineering Accreditation Board (CEAB) comment regarding adding Python to the nuclear engineering program. Additionally, ENGR 2100U has a longer tutorial (1.5 hours) than the MATH courses and a 1.5-hour lab, which will increase the experiential learning/practice time. This also adds 12 Accreditation Units (AU) in the MATH category to the program (CEAB requirement).

- Remove BUSI3700U: Strategic Management for Professionals from Year 4, Semester 1
- Add new Course NUCL2240U: Nuclear Engineering Fundamentals to Year 2, Semester 2
- Move NUCL3820U: Nuclear Reactor Kinetics from Year 2, Semester 2 to Year 3, Semester 1
- Remove RADI3570U: Environmental Effects of Radiation as a core course from Year 3, Semester 1, and add to the list of engineering electives
- Add an Engineering Elective to Year 3, Semester 2. Implementation date is pending further review of 3rd and 4th year courses in the Nuclear program map.

- Move NUCL4730U: Reactor Control from Year 3, Semester 2 to Year 4, Semester 1
- Remove NUCL4810U: Nuclear Fuel Cycles as a core course from Year 4, Semester 2, and add to the list of engineering electives
- Move ESNS4660U Risk Analysis Methods from Year 4, Semester 1 to Year 4, Semester 2
- Note that in the case of the Engineering and Management program, this change removes a restriction that was placed on that program for Nuclear Engineering students. Nuclear Engineering students were forced to take BUSI 3710U Small Business Management to account for BUSI3700U being in the core program. This is no longer the case.

These changes will enhance academic opportunities, as students will gain a 3rd engineering elective increasing their choice. A planned exercise will connect related electives into themes appropriate for certain employment allowing for the students to increase their specialization in a chosen area.

The relocation of courses will reduce the labs in the heaviest term of the program improving the workload and the moving of nuclear reactor kinetics to 3rd year will allow for completion of an additional math course that should improve competency.

The core courses will remain as useful electives that students can take to assist in their specialization. Nuclear Fuel Cycles, in particular, can be adjusted in the future to be geared towards new changes in fuel technology now that it is no longer a core course.

These changes result in the program's overall credit hours being reduced from 138 to 132.

RESOURCES REQUIRED:

No additional resources required.

TRANSITION PLAN:

Fall 2024 entry (students starting Year 1) and future cohorts will follow new program map

Fall 2023 entry (students starting Year 2) will follow new program map and take new course NUCL 2240U

Fall 2022 entry and earlier cohorts (students starting Year 3 and Year 4) will follow existing program map with the exception of BUSI 3700U

CONSULTATION AND APPROVAL:

- ✓ FEAS Curriculum Committee: 23 November 2023, 18 January 2024
- ✓ Faculty Council: 30 November 2023, 25 January 2024
- ✓ Undergraduate Studies Committee (Approval): 16 January 2024, 20 February 2024
- Academic Council (Information): 26 March 2024

Additional consultation with Department Council and Nuclear Curriculum Committee was completed with approval received.

NEXT STEPS:

Following presentation to Academic Council, this change will be included in the 2024-2025 Academic Calendar.

SUPPORTING REFERENCE MATERIALS:

- [Minor Program Adjustment Proposal – Nuclear Engineering](#)
- [Minor Program Adjustment Proposal – Engineering and Management](#)
- [New Course Proposal – NUCL 2240U](#)