

ACADEMIC COUNCIL REPORT

ACTION REQUESTED:

- Recommendation**
Decision
Discussion/Direction
Information

DATE: 25 June 2024

FROM: Undergraduate Studies Committee

SUBJECT: Major Program Modification – Pre-Engineering pathway

COMMITTEE MANDATE:

In accordance with the Undergraduate Studies Committee (USC) Terms of Reference, USC has the responsibility “to examine proposals for new undergraduate degree programs and major changes to existing programs and to recommend their approval, as appropriate, to the Academic Council”.

MOTION FOR CONSIDERATION:

That pursuant to the recommendation of the Undergraduate Studies Committee, Academic Council hereby approves the Major Program Modification to add a Pre-Engineering Pathway for all Bachelor of Engineering programs.

BACKGROUND/CONTEXT & RATIONALE:

Students interested in studying engineering at Ontario Tech, but do not meet the regular admission requirements, are eligible for the Pre-Engineering program. The program is designed to help Indigenous students and other underrepresented groups, who may not have had the opportunity to complete the required science and mathematics courses in high school, the opportunity to enter an engineering program. It will also be available for other students who missed admission courses.

This program is designed to facilitate a successful transition of qualified students into an engineering program. It provides a structured pathway with specific courses to prepare students to meet the admission requirements and, once successfully completed, transfer into an engineering program of their choice depending on their academic achievements during the Pre-Engineering program.

During the first semester, students are enrolled in Pre-Engineering courses along with core courses from the common first year taken by other engineering students. By the end of the first term, a student who successfully completes all the assigned courses along with a ‘B’ average in

the math and science courses will be eligible to apply, through a program change form, to transfer into their Engineering program of choice, conditional on space.

Students in the Pre-Engineering program will have taken MHF4U: Advanced Functions in high school and have not taken the following Grade 12 courses:

- MCV4U: Calculus and Vectors
- SCH4U: Chemistry
- SPH4U: Physics

If a student has taken one or two of the above courses, they will not have to take the corresponding Pre-Engineering program course(s).

As part of the Pre-Engineering program, students must complete the following courses:

- CHEM 0900U: Preparatory Chemistry for Engineers
- MATH 0900U: Preparatory Math for Engineers
- PHY 0900U: Preparatory Physics for Engineers

Pre-Engineering Program Map

Fall Semester - Pre-Engineering Program:

- COMM 1050U: Technical Communications
- CHEM 0900U: Preparatory Chemistry for Engineers
- ENGR 1015U: Introduction to Engineering
- MATH 0900U: Preparatory Math for Engineers
- PHY 0900U: Preparatory Physics for Engineers

Once students are approved to progress into an engineering program, they will continue with the following program map to complete year one:

Winter Semester - Pre-Engineering Program:

- MATH 1010U: Calculus I
- Physics 1010U: Physics I
- ENGR 1200U: Introduction to Programming for Engineers
- ENGR 1025U: Engineering Design
- SSCI 1470U: Impact of Science and Technology on Society

Spring/Summer - Pre-Engineering Program:

- CHEM 1800U: Chemistry for Engineers
- MATH 1020U: Calculus II
- MATH 1850U: Linear Algebra for Engineers
- PHY 1020: Physics II
- Liberal Studies Elective

The Pre-Engineering program applies to all engineering programs and corresponding management programs.

RESOURCES REQUIRED:

Existing faculty members will be used to teach the three new courses: CHEM 0900U, MATH 0900U, and PHY 0900U. TA support will be required. There will be a requirement to offer CHEM

1800U, MATH 1020U, MATH 1850U, PHY 1020U, and a Liberal Studies Elective in the Spring/Summer semester. Most of these courses are already being offered in the Spring/Summer semester as part of retention efforts for first year engineering students and enrollment increases will be minimal.

TRANSITION PLAN:

No transition plan needed, as current students are not affected.

CONSULTATION AND APPROVAL:

- ✓ FEAS Curriculum Committee:
- ✓ Faculty Council:
- ✓ Undergraduate Studies Committee (Recommendation): 18 June 2024
- Academic Council (Approval): 25 June 2024

The development of the Pre-Engineering program has been done in consultation with the Faculty of Science. The Faculty of Science has created and approved the three new courses. The Office of the Registrar and Manager for First Year Academic Advising has also been consulted.

NEXT STEPS:

- Pending the approval of Academic Council, this change will be included in the 2025-2026 Academic Calendar.

SUPPORTING REFERENCE MATERIALS:

- [Major Program Modification Proposal](#)
- [New Course: CHEM 0900U](#)
- [New Course: MATH 0900U](#)
- [New Course: PHY 0900U](#)