UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Report No: 3369

To: Faculty Council

From: Dr. Graeme Norval
Chair, Undergraduate Curriculum Committee

Date: October 31, 2012 for November 29, 2012 Faculty Council Meeting

Item: **Proposed Undergraduate Academic Certificate: Nuclear Engineering**

REPORT CLASSIFICATION

This is a major policy matter that will be considered by the Executive Committee for endorsing and forwarding to Faculty Council for vote as a regular motion (requiring a simple majority of members voting to carry).

BACKGROUND

An Undergraduate Certificate in Nuclear Engineering Certificate is proposed.

One of the weaknesses in the Faculty's suite of energy courses relates to nuclear engineering courses. This has been addressed, in part, through the use of sessional instructors, and the creation of two courses (MIE) on nuclear reactor design. The students remain weak on the fundamentals of nuclear engineering.

The Certificate would require the completion of three courses, or half a minor. Successful completion of the certificate would appear on the student's academic record. This would strengthen the Faculty's offerings in this field.

PROCESS

The Certificate has been brought forward by the Cross-Disciplinary Office to Chairs and Directors and the Undergraduate Curriculum Committee.

STRUCTURE

The three courses would be a required new course - CHE5XXF, Introduction to Nuclear Engineering, plus two of the existing courses: MIE407S – Nuclear Reactor Theory and Design, MIE408S – Thermal and Mechanical Design of Nuclear Power Reactors, AER507F – Introduction to Fusion Energy, or CHE568S – Nuclear Engineering.

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The new course CHE5XXF – Introduction to Nuclear Engineering, which will cover the following topics: nuclear technology, atomic and nuclear physics, thermonuclear fusion, nuclear fission, nuclear reactor theory, nuclear power plants, radiation protection and shielding, environment and nuclear safety, and the nuclear fuel cycle.

Further, the course MIE407F – Nuclear Engineering I – Reactor Physics and the Nuclear Fuel Cycle is moved to term S, with a title change to Nuclear Reactor Theory and Design. The other courses remain unchanged.

PROPOSAL/MOTION

Recommendation and Motion for Faculty Council:

> "THAT the Faculty establishes an Undergraduate Academic Certificate in Nuclear Engineering and that the associated course changes be approved."