



MEMORANDUM

To: Executive Committee of Faculty Council

From: Dr. Graeme Norval
Chair, Undergraduate Curriculum Committee

Date: March 28, 2012 for April 26, 2012 Faculty Council Meeting

Re: **Changes to the Robotics and Mechatronics Minor**

REPORT CLASSIFICATION

This is a *Minor 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

The Minor in Robotics and Mechatronics is a collaborative effort among the Edward S. Rogers Sr. Department of Electrical and Computer Engineering, Department of Mechanical and Industrial Engineering, the Institute for Aerospace Studies, and the Institute of Biomaterials and Biomedical Engineering. It is directed by the Institute for Robotics and Mechatronics (IRM) and is open to all students in the Faculty of Applied Science and Engineering who are interested in learning more about robotics and mechatronics.

STRUCTURE

In order to make the Minor more relevant to students and to have it reflect better the field of robotics and mechatronics, the following changes are proposed:

The Minor will be anchored by an introductory control course and a systems-based course in either robotics or mechatronics. The former course requirement remains unchanged except that BME344—Modeling, Dynamics and Control of Biological Systems (which qualifies as an introductory course in control)—will be added to the offerings of control courses.

Furthermore, the latter course requirement of

One of

- (i) ECE532 Digital Systems Design
- (ii) MIE438 Microprocessors and Embedded Microcontrollers

will be changed to

One of

- (i) AER525 Robotics
- (ii) ECE470 Robot Modeling and Control
- (iii) MIE422 Automated Manufacturing
- (iv) MIE443 Mechatronics Systems: Design and Integration
- (v) MIE444 Mechatronics Principles

A number of courses (which were not particularly central to robotics or mechatronics) will be dropped. These are

ECE314 Fundamentals of Electrical Energy Systems
ECE331 Analog Electronics
ECE334 Digital Electronics
ECE342 Computer Hardware
ECE344 Operating Systems
ECE349 Introduction to Energy Systems
ECE352 Computer Organization
ECE354 Electronic Circuits
ECE361 Computer Networks I
AER506 Spacecraft Dynamics and Control
ECE442 Introduction to Micro- and Nano-Fabrication Technologies
ECE452 Computer Architecture
MIE402 Vibrations
MIE464 Smart Materials and Structures

Added to the advanced courses is

ECE445 Neural Electricity

The full requirements for the Minor are summarized in the accompanying appendix.

The changes are proposed for the 2012-2013 academic year. Students who are were registered in 3rd or 4th year in the 2011-2012 academic year can receive the Minor through completion of either the 2011-2012 or 2012-2013 requirements.

PROCESS

The proposed changes were discussed and approved by the IRM Steering Committee. The Undergraduate Curriculum Committee is composed of representatives from each program; the Vice-Dean, Undergraduate Studies; the Chair, First Year; the Associate Dean, Cross-Disciplinary Programs; and the Registrar's Office. The Committee meets regularly, and reviews changes to the curriculum.

PROGRAM

All programs are involved in these changes, and the impact on students in the various programs has been considered.

RECOMMENDATION AND MOTION FOR FACULTY COUNCIL

“THAT the proposed changes to the Robotics and Mechatronics Minor be accepted for implementation beginning in the 2012 - 2013 academic year.”