



**To: Faculty Council**

**From: Dr. Graeme Norval  
Chair, Undergraduate Curriculum Committee**

**Date: November 19, 2010**

**Item: Proposed Curriculum Changes for the 2011-2012 Academic Year**

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### **Curriculum Changes**

A new CS elective is proposed – it is a second limited enrollment Leadership course. The enrollment will be capped, and students will be prevented from enrolling in both this course and APS501, as demand outstrips supply. The course mimics an existing course offered to graduate students – APS1010.

#### **APS 4XX - Cognitive and Psychological Foundations of Effective Leadership (3/0/0 0.5 wt)**

This course investigates the cognitive and psychological foundations of effective leadership. Students will explore current theories driving effective leadership practice including models of leadership, neurophysiological correlates of leadership and psychodynamic approaches to leadership. Students will learn and apply skills including mental modeling, decision-making, teamwork and self-evaluation techniques. This course is aimed at helping Engineering students to gain practical skills that will enhance their impact as leaders throughout their careers.

#### ***Chemical Engineering***

The contact hours for courses CHE220F, Inorganic Chemistry and CHE223S, Probability and Experimental Design are reduced from 3/0/2 to 3/0/1. Course CHE553F, Electrochemistry, will be cancelled; it will be renumbered as a 1000 level course, eligible for graduate students only.

Course CHE341F, Engineering Materials, will become a core course in term 4F replacing a technical elective. As a result of this change, the rule requiring students to take a “Fundamental” technical elective will be removed. In addition, the rule requiring students take no more than 3 non-CHE technical electives will be removed – this rule is not tenable with the new APS courses and the Sustainable Energy Minor. Students will take a set of 7 electives from a pre-approved list.

Course CHE403H1S, Professional Practice, is converted to CHE403Y1Y CR/NCR; this course requires that students attend 4 seminars on professional practice than can be held at any time during the year, and eliminates the requirement for graded work. This change reduces student contact time and also reduces the restrictions on technical electives.

### ***Civil Engineering***

The course description of CIV358F Survey Camp is changed with the addition that students will do environmental sampling and analysis in addition to surveying. A new 500 level Environmental Bioengineering will be added as a Bioengineering and Environmental Engineering technical elective. The course CIV382S Engineering Communications II will be removed from third year (effective Winter 2011). The contact time for the core capstone course CIV497F Engineering Design and Professional Practice will change from 3/0/1 to 2/0/2.

### ***Materials Science***

A new course MSE4XX, Forensic Engineering; which will teach the investigative methods for failures, and teach how to generate recommendations to prevent is proposed. In addition, MSE330S, Polymer Processing, will be moved to MSE330F.

### ***Mechanical and Industrial Engineering***

A new capstone design course MIE491Y (1.0 wt) is proposed for mechanical engineering, with MIE498F/S/Y Research Thesis becoming a technical elective; this achieves the capstone design requirement. As a consequence of the change most of the current Capstone Design courses are renamed Design Electives, with the remainder becoming regular technical electives. MIE440 is changed from 25%ES 75%ED to 50/50 ES & ED as a result of a change in the type of projects. MIE516 Combustion has a 1 hr tutorial added making it 3/0/1. MSE 4XX Forensic Engineering becomes an approved technical elective.

### ***Electrical and Computer Engineering***

Minor changes are proposed for the following courses: ECE527F Photonic Devices (name and description), ECE259S Electromagnetism (AUs and course description), ECE302F/S Probability and Applications, ECE496Y Design Project (AU breakdown), ECE320F (course description change), ECE510F Introduction to Lighting Systems (AU breakdown), BME595S Medical Imaging (AU breakdown), ECE422S Radio and Microwave Wireless Systems (AU breakdown), ECE244F Programming Fundamentals (AU breakdown), ECE535F Advanced Electronic Devices (AU breakdown), ECE448F Biocomputation (AU breakdown), CSC470F (course needs to be removed from calendar – already cancelled), ECE452F Computer Architecture (change to a 500 level course). Two new courses are proposed ECE5xxF Random Processes, and ECE5XX Infinite Algorithms.

### ***Engineering Science***

It is proposed that students in the Division of Engineering Science be allowed to complete the Bioengineering Minor, save for those in the Biomedical Engineering Option (who will receive a Biomedical Engineering Major).

BME105S, Engineering Biology, is moving to term 2S, with MSE260S moving to the first year (MSE260 needs to be taught to both 1<sup>st</sup> and 2<sup>nd</sup> year student in 2011-12).

New course descriptions for CSC180F and CSC190S have been proposed (linking the computer courses with the other technical courses), with no changes in contact time or weighting. Course descriptions for PHY293 and PHY294 were proposed to better organize the material (same material delivered, different order). CIV102F is changed from 3/0/2 to 3/1/1 to match current practice. These changes in course descriptions are retroactive for the 2010-2011 academic year.

### ***Options***

The following changes are made to the various options: Aerospace: MSE350S is cancelled; Biomedical: a new course is proposed BME4XXF Biomaterial and Medical Device Product Development, and MSE452S is added as a technical elective to 3S, and MSE350 is cancelled; Electrical and Computer: a new team based capstone design course ECE4XX is proposed, and CSC373S is added as a technical elective to term 4S; Energy: CIV576S is proposed as a technical elective to 4S; Engineering Mathematics, Statistics and Finance: MIE479 is proposed as the capstone design course; Infrastructure: CIV1599F is added as a technical elective to 4F; Nanoengineering: MSE439F and MSE4XX Forensic Engineering are added as technical electives; Physics: In term 3F, the choice between ECE360F (Electronic) and PHY408S (Time Series Analysis) is changed: students must take ECE360F and PHY408S becomes a Group A elective; PHY357S and PHY358S are added as technical electives.

### **Recommendation and Motion for Faculty Council:**

THAT the curriculum changes for the 2011-2012 Academic Year presented in the report be approved.