UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

REVISED: Report # 3236

To: Faculty Council

From: Professor Greg A. Jamieson
Chair, Curriculum Committee

Date: November 19, 2009

Item: 1. Curriculum Updates for the 2010/2011 Faculty Calendar
2. Proposed Session Dates for 2010/2011

The Curriculum Committee presents herewith its proposed updates to Chapters 7 and 8 of the **2010/2011** Faculty Calendar. Highlights of the proposed updates include:

- "Ethics in Engineering" and "Refresh" courses for 1st-year
- a significant revision of the curriculum in Industrial Engineering;
- the proposal of a new option in Engineering Science; Engineering Mathematics and Finance.

Also included in this report are the proposed Session Dates for the 2010/2011 Academic Year.

1. **Summary of Proposed Curriculum Updates for 2010/2011 Faculty Calendar**

First Year Programs

- We propose a new zero weight required first year course entitled "Ethics in Engineering". The course would be auto-tutorial, i.e. no required class meetings. The course has two major components: Ethics in the profession and ethics in the university.
    - The ethics in the profession unit will use as a text "Canadian Professional Engineering and Geosciences: Practice and Ethics" by Andrews. The required material is in Part III ("Professional Ethics") of this text. This content includes some theory of ethics, an introduction to the code of ethics, and case studies on application of the code in practice in a number of areas including proper use of IP, ethics in computer software development, and environmental ethics.
    - The ethics in the university will build on the professional ethics unit. It will relate the use of IP in course work to professional practice. There will be a specific section on plagiarism, and the limits of allowable collaboration in development of assignments. In addition, students will be asked to read and understand the Academic Code of Conduct. There will be a number of case studies for them to read through that demonstrate the application of the code in practice. This material will be available on-line through the course website.
    - The assessment for the course will be a multiple choice exam. Sittings for the exam will be available at least twice (possible three times) each year: at the beginning of September, during the final exam period in May, and possibly at the beginning of January.
    - Calendar entry:
        - Ethics in Engineering --/--/1/0.05
    - Course description:
        - An introduction to professional ethics and the Academic Code of Conduct. Topics include: the theory of ethics, professional code of ethics, ethics in the profession, proper use of intellectual property in the professional and in academic settings, plagiarism, the Academic Code of Conduct, and application of ethics in practice.
- We propose that students who successfully complete the "ReFresh" course have it added to their transcripts. ReFresh is a winter term course for students who have withdrawn from the Faculty. The students in ReFresh are not in a degree program.
        - ReFresh aims to help students reflect on how they could improve their first semester academic performance. It teaches students how to learn in a university context. Some of these students will be eligible to return to U of T Engineering the following fall to repeat their first year. ReFresh is intended to improve the chances of success for these students. For those who are not eligible to return, this course should enable them to reflect upon their goals and motivations in order to evaluate what their next step might be,

while developing a better understanding of core first year science and engineering concepts.
        - ReFresh includes lectures and tutorials in Physics, Calculus, Linear Algebra, Computer Programming and Chemistry. The Instructors and Teaching Assistants build on high school fundamentals Life and learning skills that are key to success are integrated into the curriculum in addition to one-on-one advising and support for the students.
        - Content:
            - 5 subject courses plus seminars on life and study skills
            - Subject courses: Chemistry, Physics, Computer Programming, Linear Algebra and Calculus
            - 2 hours of lecture and 2 hours of tutorial per week, per course
            - Each week has 3 hours of life and study skills seminars
            - Some weeks include a two-hour study hall
        - Total of 23-25 hours of class per week for 8 weeks in February, March and early April
        - Evaluation: Attendance, assignments, quizzes and tests.
        - Requirements to Pass: 80% attendance of all class hours (this excludes sickness or approved absences) and overall program average of 70% (average of performance in all courses).
- Proposed changes to ECE110:
    - Summary of the changes:
        - The topic of operational amplifiers has been removed.
        - The topic of frequency response has been removed.
        - The topics of Ampere's law and Gauss's law have been added.
        - Change CEAB allocation from 40% NS, 60% ES to 50% NS, 50% ES
- Proposed changes to CME185
    - See Civil proposal for details
- Proposed cancellation of APS101
    - Industrial students have changed to APS106

Industrial Engineering Program

- Additions:
    - MIE236F, Probability with Engineering Applications
        - II-AEINDBASC; 3/2/2; 75% Math, 25% ES
        - Introduction to probability. Sample space, sets, counting, independence, conditioning, Bayes' Theorem. Discrete and continuous random variables (probability mass/density functions, expectation, variance, moment-generating functions). Multiple random variables, functions of random variables, sums of random variables, convolution, covariance, correlation. Limit theorems.

Reliability and hazard functions. Applications to reliability assessment in service and manufacturing industries.

- MIE242F, Psychology for Engineers
  - II-AEINDBASC; 3/3/-; 100% NS
  - Introduction to brain structures and processes that are core to perception, cognition, language, decision making, and action. Use of experiments to test hypotheses concerning brain activities and computations. Conducting and reporting experimental research, including satisfaction of research ethics requirements.
- MIE250F, Fundamentals of Object Oriented Programming
  - II-AEINDBASC; 2/3/0; 100% ES
  - Introduction to object-oriented programming using the Java programming language with heavy emphasis on practical application; variable types; console and file input/output; arithmetic; logical expressions; control structures; arrays; modularity; functions; classes and objects; access modifiers; inheritance; polymorphism. Prerequisites: APS105/APS106 or equivalent.
- MIE263S, Stochastic Operations Research
  - II-AEINDBASC; 3/-/2; 100% ES
  - Modeling and analysis of systems subject to uncertainty using probabilistic methods. Advanced topics in probability: multiple random variables, convolution, Bayes' theorem, transform techniques. Introduction to decision analysis. Derivation and application of Bernoulli and Poisson processes, Markov chains, and queuing models. Applications to engineering, games of chance, health care, and management. (Prerequisite: MIE231H1 F)
- MIE490Y1Y, Capstone Design
  - IV – AEINDBASC; -/-/4/1.0; 100% ED
  - An experience in engineering practice through a significant design project whereby student teams meet specific client needs through a creative, iterative, and open-ended design process. The project must include:
    • The application of disciplinary knowledge and skills to conduct engineering analysis and design,
    • The demonstration of engineering judgment in integrating economic, health, safety, environmental, social or other pertinent interdisciplinary factors,
    • Elements of teamwork, project management and client interaction, and
    • A demonstration of proof of the design concept.
- MIE498 F/S/Y, Research Thesis
  - IV-AEINDBASC (elective); -/-/4/0.5; 100% ES
  - An opportunity to conduct independent research under the supervision of a faculty member in MIE. Admission to the course requires the approval of a project proposal by the Undergraduate

office. The proposal must: 1) Explain how the research project builds upon one or more aspects of engineering science introduced in the student's academic program, 2) provide an estimate of a level of effort not less than 40 productive hours of work per term, 3) specify a deliverable in each term to be submitted by the last day of lectures, 4) be signed by the supervisor, and 5) be received by the Undergraduate Office one week prior to the last add day.

- Deletions:
  - MIE380S, Ecological Systems
  - MIE460, Manufacturing and Production Systems
- Changes to course content:
  - MIE237, Statistics with Engineering Applications
    - Title change (from Statistics and Design of Experiments)
    - Removal of design of experiments
  - MIE240, Human Centred Systems Design
    - removal of information processing covered in MIE242, Psychology for Engineers
    - greater emphasis on applications
  - MIE253, Data Modelling
    - removal of Java content covered in MIE250F
    - Drop APS105S and MIE235F prerequisites; add MIE250
  - MIE258, Engineering Economics and Accounting
    - Eliminate reference to Indy
    - Change pre-req to MIE231/MIE236
  - MIE262, OR I: Deterministic OR
    - removal of stochastic methods, greater focus on deterministic methods
  - MIE335, Num. Methods & Algorithms
    - removal of Java content covered in FOOP
    - additional methods incorporating OR I and OR II
    - Moved from 2nd- to 3rd-year (formerly MIE235)
  - MIE360, Systems Modelling and Simulation
    - less coverage on queuing models covered in OR II
    - incorporation of lean manufacturing
  - MIE365, ORIII: Advanced OR
    - removal of several deterministic and stochastic methods covered in ORI and OR II
  - MIE459, Organizational Design
    - incorporation of project management content
  - MIE561, Healthcare Systems
    - Add AEESCBASE POSt code
- Changes to pre-requisites:
  - MIE350, Design and Analysis of Information Systems
    - Drop APS105S prerequisite
  - MIE343, Industrial Ergonomics and the Workplace; MIE360, Simulation; MIE540, Product Design; and MIE566, Decision Analysis pre-reqs

        - MIE231/MIE236 or equivalent
    - MIE448, Engineering Psychology and Human Performance pre-req:
        - MIE231/MIE236/STA286 or equivalent, MIE237 or equivalent recommended
    - MIE363 and MIE468 pre-req
        - MIE231/MIE236 or equivalent, MIE262
    - MIE364 pre-req
        - MIE231/MIE236 or equivalent, MIE237
    - MIE469 pre-req
        - MIE231/MIE236 or equivalent, MIE258
- Miscellaneous:
    - Format corrections to Master AU list:
        - MIE562 & MIE566: 3/-/2 is correct (Calendar); not 3/1/1 (Master Au list)
    - Drop IND POSt code from MIE231, Probability and Statistics with Engineering Applications & MIE496, Thesis
    - MIE448, Engineering Psychology & Human Performance
        - old: 50% NS and 50% ES
        - new: 75% ES and 25% ED
    - Code changes:
        - MIE235F -> MIE335S
        - MIE359S -> MIE459S
        - MIE240F -> MIE240S

Mechanical Engineering Program

- Add two courses to meet ECP objectives
    - MIE297H1S, Foundations of Design Portfolio
        - Format: 0/0/0.5; 100% CS
        - Students will assemble a short design portfolio with items drawn from engineering courses and extra-curricular experience. The portfolio will demonstrate an understanding and application of basic principles of engineering design through a showcase of the student's best work. The portfolio will further demonstrate competence in written and oral communication through a brief summary of each item and an introduction to the portfolio. Students whose communication work is not up to standard will be provided with opportunities for remediation. The course will be offered on a credit/no credit basis; students who receive no credit must retake the course in year 3.
    - MIE397H1Y, Design Portfolio
        - Format: 0/0/0.5; 100% CS
        - Students will assemble a comprehensive design portfolio with items drawn from engineering courses and extra-curricular experience. The portfolio will articulate and demonstrate an understanding and application of basic and advanced principles of engineering design through a showcase of the student's best work.

The portfolio shall also anticipate continued development of design skills through the capstone design courses and reflect on the transition to a career in engineering. The portfolio will demonstrate competence in written and oral communication through a brief summary of each item and an introduction to the portfolio. Students whose communication work is not up to standard will be provided with opportunities for remediation. The course will be offered on a credit/no credit basis; students who receive no credit must retake the course in year 4. Prerequisite: MIE297S

- Change course title, description, and AU numbers for MIE411:
  - Title: Computer Aided Design II -> Design Optimization
  - Description: No mention of DfX -> Design for tolerancing, manufacturing, & assembly
  - AU: 70% ES, 30% ED -> 50% ES, 50% ED
- Cancel MIE518, Aircraft Design
- MIE342F, Circuits with Applications to Mechanical Engineering Systems
  - correction to course description
- MIE333S, Engineering Physics
  - correction to POSt code (III-AEMECBASC; not II-AEMECBASC)
  - AU change from 75/25% NS/ES to 100% NS
- MIE418, Fluid Mechanics II: Change format from 2/2/- to 2/3/2

Electrical and Computer Engineering Programs

- Additions
  - Add a new course, ECE 4xx, "Robot Modeling and Control," to the ECE curriculum, with the following course description:
    - Classification of robot manipulators, kinematic modeling, forward and inverse kinematics, velocity kinematics, path planning, point-to-point trajectory planning, dynamic modeling, Euler-Langrange equations, inverse dynamics, joint control, computed torque control, passivity-based control, feedback linearization.
    - CEAB components: 25% natural science, 75% engineering science.
  - Add a new course, ECE 4xx, "Optical Communications and Networks," (3/1.5/1/0.5) to the ECE curriculum, with the following course description:
    - This course provides an introduction to optical communication systems and networks at the system and functional level. Applications range from telecommunication networks (short to long haul) to computing networks (chip-to-chip, on chip communications, optical backplanes). Basic principles of optical transmission and associated components used for transmission of light and optical networks; system design tools for optical links; multi-service system requirements; optical network design tools

(routing and wavelength assignment), network management and survivability.
        - Co/Pre-requisites: Either one of ECE302/ECE316/ECE318. ECE361 beneficial.
        - CEAB Components: 25% engineering science, 75% engineering design.
- Deletions
    - ECE 467H1 S, "Optical Networks"
    - ECE 425H1 S "Optical Communication Systems"
- Changes to Course Content
    - Course description of ECE 110H1 S, Electrical Fundamentals, to be changed to:
        - A simplified overview of the physics of electricity and magnetism: Coulomb's law, Gauss' law, Ampere's law, Faraday's law. Physics of capacitors, resistors, and inductors. An introduction to circuit analysis: resistive circuits, nodal and mesh analysis, network theorems. Natural and forced response of RL and RC circuits. Sinusoidal steady-state analysis and power in AC circuits.
        - CEAB Components of ECE 110H1 S changed to: 50% natural science, 50% engineering science.
    - The course title of ECE 315H1 F, Switch-Mode Energy Conversion, to be changed to "Fundamentals of Electrical Energy Systems" (may need a new course number), and its course description to be changed to:
        - Introduction to 3-phase systems, single line diagrams and complex power flow. Energy conversion via switch-mode power electronic circuits: DC/DC converters, DC/AC converters. Energy conversion via magnetic devices: Faraday's Law for time varying fields, characterization of hysteresis and eddy current losses in magnetic materials, modeling of magnetic circuits, transformer and inductor modeling and design. Introduction to electromechanical energy conversion: Lorentz Force, concepts of energy, co-energy, forces between ferromagnetic materials carrying flux, simple magnetic actuators.
    - Other miscellaneous course description changes to APS 105H1 F, ECE 221H1 S, ECE 353 H1 F, ECE 431H1 F/S, ECE 445H1 F, ECE 452H1 F, ECE 463H1 S, ECE 510H1 F, ECE 516H1 S, ECE 535H1 F: see attached document for the actual changes.
- Changes to prerequisites
    - The pre-requisite of CSC326 will be removed from CSC467H1 F – Compilers and Interpreters.
    - STA286H1 S will be added as a pre-requisite to ECE361H1 S – Computer Networks I.
    - ECE 353H1 S will be added as a pre-requisite to CSC444H1 F – Software Engineering I. The updated pre-requisites to this course are: ECE 353H1 S/ECE 344H1 F/S.

- ECE 353H1 S will be added as a pre-requisite to ECE419H1 S – Distributed Systems. The updated pre-requisites to this course are: ECE 353H1 S/ECE 344H1 F/S.
- ECE 349H1 F will be added as a pre-requisite to ECE510H1 F – Introduction to Lighting Systems. The updated pre-requisites to this course are: ECE 315H1 F/ECE 349H1 F/ECE 359H1 F.
- ECE 315H1 F and ECE 349H1 F will be added as pre-requisites to ECE413H1 S – Energy Systems and Distributed Generation. The updated pre-requisites to this course are: ECE 315H1 F/ECE 349H1 F/ECE 359H1 F.

Materials Science and Engineering Program

- MSE408H1 S: Title and outline change; addition of postcodes and prerequisite
  - Title: MSE408H1 S: Energy Management of Metals Extraction and Recycling Processes -> MSE408H1 S: Energy Management in Materials Processing
  - New Description: Basic materials processing flowsheets including primary processing and recycling of metals. Materials and energy balances of individual units and of overall process flowsheets. Use of computer software for flowsheet evaluation. Energy sources, transformations, utilization and requirements. Energy loss, recovery and re-use. Life cycle impact of materials processing on energy consumption and environment. Economic and environmental impacts due to the usage of various energy forms.
  - Add Postcode: IV-AEMMSBASC(elective)
  - Add Prerequisite: MSE202F or equivalent
- MSE290S Communications I: Format change: -/-/2 -> -/-/1
- MSE390F Communications II: Format change: -/-/2 -> -/-/1
- Correction to Calendar: MSE450: Plant design for materials industries; error in title on page 250 in calendar ;(Page 250 says: Plant design for “Process” Industries, should be “Materials” Industries

Chemical Engineering Program

- Cancel CHE463H1S, Polymer Science & Engineering

Lassonde Mineral Engineering Program

- Change the name of CME263S, Probability Theory for Civil Engineers to CME263S, Probability Theory for Civil and Mineral Engineers.
- Change the code for Capstone Courses Mineral Project Design I and II, MIN566 and MIN567 to MIN4XX and MIN4YY.
- Add New Technical Electives
    - MIN5xx, Integrated Mine Waste Engineering
        - IV – AELMEBASC, AECIVBASC (elective); 3/-/1/0.50
        - The engineering design of conventional mine waste management systems, including tailings ponds, rock dumps, and underground mine backfill systems, is considered first. Emerging trends in integrated mine waste management systems, including paste stacking and "paste rock" on surface, and cemented paste backfill for underground mining, will then be covered. Engineering case studies will be used throughout, and each case study will be evaluated in terms of how the mine waste systems used contribute to the economic and environmental sustainability of the mining operation. (Prerequisite: CME321 Geotechnical Engineering I)
        - 30% CS, 70% ES
    - MIN5xx, Borehole Geophysics for Engineers and Geoscientists
        -
        - The process of wireline logging of boreholes for mineral, hydrocarbon and groundwater exploration, geotechnical and environmental studies involve a number of measurement devices, or sondes. Some of these are passive measurement devices; others exert some influence of the rock formation being traversed. Their measurements are transmitted to the surface by means of wire line. Logging applications includes the identification of geological environment, reservoir fluid contact location, fracture detection, estimate of hydrocarbon or water in place, determination of water salinity, reservoir pressure determination, porosity/pore size distribution determination, and reservoir fluid movement monitoring.
        - 30% NS, 70% ES
- Make MIN320H1F (Explosives and Fragmentation in Mining) compulsory for the MIN program

Engineering Science Program

Foundation Curriculum: Course Description Changes

- CSC180H1F: Introduction to Computer Programming (3/2/1/0.5)
    - The first of two problem-based courses that introduce students to programming and computational thinking, and prepares them for additional study across a breadth of programming fields. Students will design and implement computational solutions to problems drawn from their 1F courses, with specific focus on problem decomposition and the use of programming paradigms appropriate to the problems being solved. Computational thinking is introduced as a means to solve problems through a focus on algorithm, data, and models of computation.
- CSC190H1S: Computer Algorithms, Data Structures and Languages (3/3/0/0.5)
    - The second of two problem-based courses that introduces students to programming and computational thinking, and prepares them for additional study across a breadth of programming fields. Students will design and implement computational solutions to problems drawn from their 1S courses, and will explore new programming paradigms appropriate to these challenges. More advanced forms of computational thinking suitable for understanding and solving a wider variety of problems are introduced.
- CSC192H1F: Computer Programming, Algorithms, Data Structures and Languages (3/2/1/0.5)
    - An accelerated and combined version of CSC180H1F and CSC190H1S intended for students who have some previous programming experience (e.g. one year programming in Turing, Pascal, Java, C or similar languages.) Students will focus on problem decomposition and the use of programming paradigms appropriate to the problems being solved. Computational thinking is introduced as a means to solve problems through a focus on algorithm, data, and models of computation. Students will design and implement computational solutions to problems drawn from their 1F courses, and will explore new programming paradigms appropriate to these challenges. More advanced forms of computational thinking suitable for understanding and solving a wider variety of problems are introduced.
- ECE253H1F: Digital and Computer Systems (3/3/0/0.5)
    - Digital system design principles. Logic circuits, logic synthesis. Registers, arithmetic circuits, counters, finite state machines, and programmable logic devices. Verilog hardware description language. Computer structure, machine language instruction execution and sequencing, addressing techniques. Processors, input/output techniques, and memory hierarchy. The laboratory work consists of exercises involving the design of logic circuits, and microprocessor systems. Modern computer-aided design tools and FPGA technology are used. Design aspects constitute a major portion of laboratory work.
- STA286H1S: Probability and Statistics (3/0/1/0.5)

- A course in probability and statistics for Engineering Science students, with focus on building solid probabilistic and statistical foundations. Topics include: sample space, events, definitions of probability, conditional probability, Bayes' theorem, important classes of discrete and continuous random variables and their distributions, joint, conditional, and marginal distributions, expectation, moment generating and characteristic functions, transformations of random variables, central limit theorem and approximations. Graphical methods, quantile plots, point and interval estimation of population parameters, method of maximum likelihood. Hypotheses testing, simple and multiple regression, correlation analysis, and introduction to Bayesian statistics. Minitab software is used to solve some assignment problems in the course.

<u>Option Curriculum</u>

AER:

- CSC446H1S: Computational Methods for Partial Differential Equations
  Remove course as technical elective from 4F curriculum
- AER315H1F: Combustion Processes
  Remove lab component (to bring in line with practice). Should be 3/0/1

BME:

- CHE393H1F: Biotransport Phenomena
  Is 3/1/1 NOT 3/3/1 (bring in line with practice)
- CHE391H1F: Organic Chemistry and Biochemistry
  Is 3/1/1 NOT 3/3/1 (bring in line with practice)
- MIE561H1S: Healthcare Systems
  Add to year 4 technical elective list
- CHE575H1S: Mechanical Properties of Bio-Composites and Biomaterials
  Add to year 4 technical elective list
- MSE442H1S: Surgical and Dental Implant Design
  Add to year 4 technical elective list (MSE452H1S as recommended co-requisite)
- HMB200H: Introduction to Neuroscience
  Added to year 4 “at least one, but no more than two of BCH210, PSL300, HMB265, PCL201”

ENERGY:

- MSE408H1S: Energy Management in Materials Processing
  Add to year 4 technical elective list

ECE:

- Some adjustments will be made to the technical elective list. Also, both the new combined option and remaining students in the separate options will draw from the same elective list.
  - AER336H1S: Scientific Computing (ECE)
  - AER507H1F: Introduction to Fusion Energy (Technical Elective List)
  - CSC309H1S: Programming on the Web (ECE - Software)
  - CSC318H1F/S: The Design of Interactive Computational Media (ECE - Software)

- CSC384H1F/S: Introduction to Artificial Intelligence (ECE - Software)
- CSC401H1S: Natural Language Computing (ECE - Software)
- CSC411H1F: Machine Learning and Data Mining (ECE - Software)
- CSC428H1F: Human-Computer Interaction (ECE - Software)
- CSC443H1S: Database System Technology (ECE - Software)
- CSC487H1F: Foundations of Computer Vision (ECE-Software)
- PHY456H1F: Quantum Mechanics II (ECE- Photonics and Semiconductors)
- PHY487H1F: Condensed Matter I (ECE – Photonics and Semiconductors)
- ECE442H1F: Intro to Micro- and Nano- Fabrication Technologies (ECE – Photonics and Semiconductors)
- ECE362H1S: Digital Signal Processing (AEESCBASEC or AEESCBASEE only)
- ECE353H1S: Systems Software (AEESCBASEC or AEESCBASEE only)
- ECE4XX Robot Modelling and Control (ECE – Control, Communications and Signal Processing)
- ECE4XX Optical Communications and Networks (ECE – Photonics and Semiconductor Physics)
- Remove ECE431H1F/S and ECE344H1F/S (EngSci-only versions now available)
- Remove ECE467H1S and ECE425H1S (merged to create optical communications and networks course)

- Capstone Design Requirement: students in the electrical, computer and combined E&C options must take at least one of the following in year 4:
  ECE532H1S – Digital Systems Design
  ESC470H1S – Energy Systems Capstone Design
  ESC471H1S – Engineering Science Capstone Design

INFRA:

- CIV456H1S: Collaborative Design Project
  Changes to contact hours (1-0-3)

NANO: (all additions to year 4 elective list)

- CHM446: Organic Materials Chemistry
- ECE442H1F: Intro to Micro and Nano Fab Technologies
- CHE467H1F: Environmental Engineering
- MIE515H1F: Alternative Energy Systems

PHY: (additions to year 4 elective list)

- CHE568H1S: Nuclear Engineering
- AER507H1F: Introduction to Fusion Energy

ESC499H1/Y1 F/S/Y: Course Description Update
Thesis
IV-AEESCBASE
3/2/0/0.5/1.0

Every student in Fourth Year Engineering Science is required to prepare a thesis on an approved subject. The thesis provides students with an opportunity to conduct, document and experience independent engineering research as an undergraduate student. This course is structured to provide resources to support that process, in particular with the documentation of the research. This includes interim requirements and a number of required thesis workshops. Students may select a project with any faculty member at the University of Toronto, as long as the proposed research topic is relevant to engineering (topics are subject to an approval process by the Division of Engineering Science). Instructions concerning the thesis requirements and the selection of a thesis topic are issued during the winter semester of the third year.

Engineering Minors

BIO:

- Add MIE242, Psychology for Engineers to Introductory Courses
- Remove MIE452, Bioinformatics Systems (no longer offered)

ENVIRO

- Remove MIE380, Ecological Systems from core list (no longer offered)
- Remove CHE568, Nuclear Engineering from Advanced Courses list

ENERGY

- Add to Introductory Courses list:
    - CHE467F, Environmental Engineering
    - MIE210S, Thermodynamics
- Delete from Introductory Courses List:
    - MSE318F, Phase Transformations
    - MSE332F, Heat and Mass Transfer for Materials Processing

2. Proposed Session Dates for 2010/2011

	APSC
First Day of fall classes	Thursday Sept 9
Thanksgiving	Monday Oct 11
Last day of Q1 courses	Friday Oct 22
First day of Q2 courses	Monday Oct 25
Q1 final exams	Oct 25-29
Last day of fall classes	Wednesday Dec 8
Exam Study Period	Thursday Dec 9
Fall Exams Start**	Friday Dec 10
Fall Exams End	Tuesday Dec 21
Number of instructional days	64 days/12.8 weeks
First day of winter classes	Wednesday Jan 5
Last day of Q3 courses	Friday Feb 18
Reading Week	February 21-25

First day of Q4 courses	Monday Feb 28
Q3 final exams	Feb 28-Mar 4
Last day of winter classes	Monday April 11
Exam Study Period	Tuesday April 12
Winter Exams Start	Wednesday April 13
Good Friday	Friday April 22
UofT Holiday	Monday April 25
Winter Exams End	Friday April 29
Number of instructional days	64 days/12.8 weeks

**APSC may potentially hold exams on Saturdays during the exam period and during the evenings