UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Report No. 3476 Revised

MEMORANDUM

To: Executive Committee of Faculty Council (November 2, 2015)
Faculty Council (December 8, 2015)

From: Dr. Graeme Norval
Chair, Undergraduate Curriculum Committee

Date: December 11, 2015

Re: Major Curriculum Changes for the 2016-2017 Academic Year

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 present and voting to carry).

BACKGROUND

The Undergraduate Curriculum Committee is tasked with managing the curriculum change process for the Faculty. This report summarizes program course changes for the upcoming academic year.

STRUCTURE

There are a number of final curriculum changes for the 2016-17 academic year.

1. Chemical Engineering

a) The second year of chemical engineering has an excessive number of contact hours (33 fall, and 31 winter). This negatively impacts student learning. The program proposes the following changes, for the 2016-17 academic year, which will reduce the student contact hours to 31 fall and 28 winter. The program can afford the reduction in academic units, as the minimum path is in excess of 2030 AUs.

b) CHE221F Calculus and Numerical Methods: the course will shift from 3/2/2 to 3/0/2, and the two-hour weekly computer practical will be eliminated.

c) CHE222S Applied Differential Equations: the course will shift from 3/0/2 to 3/2/1 with the addition of a two-hour computer tutorial.

d) CHE223S Statistics (3/0/1) will be cancelled.

e) CHE299Y Communication: the course contact hours will be corrected from 1.5/0/0 to 0/0/2 to properly reflect the manner in which the material is delivered.

f) A new technical elective is proposed: CHE4XX Biotechnology Technology and Design. This will be an eligible elective for the Bioengineering minor.

Course Description: "Building upon CHE353 and CHE354, the aim of this course is to learn and apply engineering principles relevant to bioprocess engineering, including energetics and stoichiometry of cell growth, cell and enzyme kinetics, metabolic modeling, bioreactor design, and bioseparation processes. In addition to course lectures, students will complete two laboratory exercises that will provide hands-on learning in bioreactor set-up and use".

Key Deliverables: "Coming into the course, the student has learned core principles of biochemistry, molecular biology, bacterial and eukaryotic cell physiology and metabolic diversity, along with common molecular approaches and instrumentation used to study biological systems".

At the end of the course, the student will be able to write mass and energy balances at cellular and bioreactor scales, in continuous and batch modes, and apply concepts of biomass residence time versus hydraulic residence time. The student will also know how to use Monod kinetics to describe cell growth, and develop equations for biological processes solved for a chemostat. This know-how will be used to calculate cell and bioproduct yields based on supplied carbon sources, electron acceptors, and electron donors. Impacts of bioreactor design, along with rate limiting steps in biological processes (e.g. mass transfer and separations), will also be incorporated into corresponding estimates. In addition to course assignments and case studies involving industrial applications of cell and enzyme catalyzed reactions, hands-on practice and implementation of course concepts will be provided through mandatory course laboratories.

The student will use the knowledge gained through CHE46XXto successfully contribute to a broad range of biosector industries and lead-edge research, including in pharmaceutical, environmental, and bioenergy sectors.

2. Civil Engineering

a) The elective course CIV541S Environmental Biotechnology will have the term changed to F.

3. Electrical and Computer Engineering

a) A new course ECE4XX VLSI Technology is proposed to replace the courses ECE534 Integrated Circuit Engineering and ECE535 Advanced Semiconductor Devices, in Area 3 – Electronics.

The course description is: "The introduction to VLSI fabrication techniques, integrated circuit designs and advanced semiconductor devices will give a proper perspective of the past, present and future trends in the VLSI industry. Following the evolution of MOS and bipolar devices, digital and analog CMOS, BiCMOS, deep submicron CMOS, SOI-CMOS, RF-CMOS and HV-CMOS technologies will be studied. Special attention will be given to the physical scaling limits such as short channel effects. In addition, CAD tools and design methodology for the development of advanced semiconductor devices and integrated circuits will be introduced in the laboratory environment. These include the simulation of device fabrication, device characteristics, device modeling, circuit layout, design verification. Finally, advanced technology such as GaN HEMTs, grapheme devices, carbon nano-tube devices, power devices, heterojunctions, InPand GaSb HBTs will also be studied. Prerequisite: ECE331 or ECE334 or ECE354; and ECE335 or ECE350".

b) The following courses will be renumbered at the 4XX level:
- ECE 512 Analog Integrated Systems
- ECE524 Microwave Circuits
- ECE530 Analog Integrated Circuits

The following courses have minor course description changes:

c) ECE201H1 F Electrical and Computer Engineering Seminar
This seminar introduces second year students to the various career pathways within the field of Electrical and Computer Engineering. Instructors from the various areas will talk about third and fourth year ECE courses and will offer a weekly seminars lecture to help guide students with the selection of a set of practical and worthwhile upper year courses for their intended career. The course also offers talks and advice to aid students transitioning into second year, as well as to enhance students' skill such as stress and time management. This courses will be offered on a credit/no credit basis. Credit will not be given to students who attend fewer than 70% of the seminars. Students who receive no credit for the course must re-take it in their 3F session. Students who have not received credit for this course at the end of their 3F session will not be permitted to register for the 3S session.

d) ECE243H1 S Computer Organization

Basic computer structure. Design of central processing unit. Hardwired control. Microprogrammed control. Input-output and the use of interrupts. Arithmetic

language programming circuits. Assembly language programming. Main memory organization and caches. Peripherals and interfacing. Microprocessors. System design considerations. The laboratory will consist of experiments involving logic systems and microprocessors and a large open project. Design activity constitutes a major portion of laboratory work.

e) ECE302H1 F/S Probability and Applications
Events, sample space, axioms of probability. Discrete and continuous random variables, distribution and density functions. Bernoulli trials, Binomial, geometric, Poisson, exponential and Gaussian distributions. Expectation, moments, characteristic function, correlation coefficient. Functions of random variables. Random vectors, joint distributions, transformations. Applications will be chosen from communication theory, estimation and hypothesis testing, predictive analytics and other areas of electrical engineering. Prerequisite: MAT290H1 and MAT291H1 and ECE216H1. Exclusion: STA286H1

f) ECE431H1 F Digital Signal Processing
An introductory course in digital filtering and applications. Introduction to real-world signal processing. Review of sampling and quantization of signals. Introduction to the discrete Fourier transform and its properties. The fast Fourier transform. Fourier analysis of signals using the discrete Fourier transform. Structures for discrete-time systems. Design and realization of digital filters: finite and infinite impulse response filters. DSP applications to communications, multimedia, video coding, human computer interaction and medicine. decimators and interpolators, estimation, equalization. DSP applications to multimedia: DCT and video coding.

g) ECE422H1 S Radio and Microwave Wireless Systems
Analysis and design of systems employing radio waves, covering both the underlying electromagnetics and the overall system performance aspects such as signal-to-noise ratios. Transmission/reception phenomena include: electromagnetic wave radiation and polarization; elementary and linear dipoles; directivity, gain, efficiency; integrated, phased-array and aperture antennas; beam-steering; Friis transmission formulas. Propagation phenomena include: diffraction and wave propagation over obstacles; multipath propagation in urban environments; atmospheric and ionospheric effects. Receiver design aspects include: receiver figures of merit, noise in cascaded systems, noise figure, and noise temperature. System examples are: fixed wireless access; mobile and personal communication systems; wireless cellular concepts; terrestrial communication systems, satellite communications; radar; software-defined radio radiometric receivers; GPS. Prerequisite: ECE320H1 or ECE357H1

h) ECE472H1 F/S Engineering Economic Analysis & Entrepreneurship
The economic evaluation and justification of engineering projects and investment proposals are discussed. Cost concepts; financial and cost accounting; depreciation; the time value of money and compound interest; inflation; capital

budgeting; equity, bond and loan financing; income tax and after-tax cash flow; measures of economic merit in the private public sector; sensitivity and risk analysis. Applications: evaluations of competing engineering project proposals; replacement analysis; economic life of assets; lease versus buy decisions; break-even analysis; decision tree analysis. Entrepreneurship and the Canadian business environment will be discussed.

i) MAT291H1 F Calculus III
The chain rule for functions of several variables; the gradient. Maxima and minima, Lagrange multipliers. Multiple integrals; change of variables, Jacobians. Line integrals, independence of path, Green's theorem. The gradient, divergence and curl of a vector field. Surface integrals; parametric representations, applications from electromagnetic fields, Gauss' theorem and Stokes' theorem. Maxima and minima, Lagrange multipliers.

j) ECE419S Distributed Systems has a contact hour change from 3/1.5/0 to 3/3/0.

k) The following courses have changes in prerequisites:
- ECE455F Digital Signal Processing: add ECE 355 Signal Analysis and Communication
- CSC467 Computers and Interpreters: add ECE243 Computer Organization
- ECE510 Introduction to Lighting Systems: for Engineering Science students, change to ECE320 or ECE357

4. <u>Engineering Science</u>

a) Change the name of MAT292F "Calculus III" to "Ordinary Differential Equations".

b) Where there is a technical elective, adjust the wording "CS/HSS or Technical Elective", and add footnotes defining the number of technical and CS and HSS electives that students must complete in their program.

Aerospace Option

c) In term 3F, replace the core course MAT389 Complex Analysis with either MAT 389 Complex Analysis or ROB310 Mathematics of Robotics.

It is noted that the course ROB310 will be added as a prerequisite for the course AER521 Mobile Robotics and Perception; and that students currently in Year 3 will not be subject to this prerequisite.

Biomedical Systems Option

d) In term 3F, CHE374 Economic Analysis and Decision Making will be adjusted to say: "One of CHE374 Economic Analysis and Decision Making or Technical Elective, with a similar entry placed in term 4F".

e) BME396 Biomedical Systems Engineering III: Molecules and Cells – change the course description to: "A quantitative approach to understanding cellular behaviour. Using engineering tools (especially derived from transport phenomena and chemical kinetics) to model molecular dynamics in living cells and make predictions about cellular behavior. Integrate and enhance what is known about mammalian cell behaviour at the molecular level. Specific topics include: receptor-ligand interactions, morphogens, cell adhesion and migration, signal transduction, and mechanotransduction cell growth and differentiation. Examples from in vitro tissue culture systems and model organisms in vivo gene therapy, and cellular and tissue engineering are used".

f) BME460 Biomaterial and Medical Device Product Development: add a prerequisite of MSE352 Biomaterials and Biocompatibility.

g) BME489 Biomedical Systems Engineering Design: change delivery from 1/2/2 to 1/0/4.

h) Add the following courses as technical electives:

Neuro Sensory Systems and Rehabilitation Stream

- CSC318 The Design of Interactive Computational Media
- CSC428 Human-Computer Interaction
- CSB332 Neurobiology of the Synapse
- ECE355 Signal Analysis and Communication
- ECE470 Robot Modelling and Control

Systems and Synthetic Biology Stream

- CSC343 Introduction to Database

Electrical and Computer Engineering Option

i) The course BME498 Biomedical Engineering Capstone Design will be added as an alternative to the current list of three capstone design choices, with the footnote that student will use one of their technical electives for the second half of the course.

The footnote preventing students from taking ECE350 and ECE358 in the same term will be removed, as it is no longer needed.

Energy Systems Option

j) Change the name of the course CHE308 "Chemical Processes for Energy Generation and Storage" to "Energy Systems and Fuels: Global Needs, Challenges and Technological Opportunities".

k) The course CIV301 Design of Hydro and Wind Electric Plants will be removed from term 3S, and replaced with a technical elective.

l) A technical elective in term 4S will be replaced with the modified course CIV4XXF Design and Optimization of Hydro and Wind Electric Plants. The course description will be: "The application of turbo-machinery, including the design and operations of typical wind and hydroelectric plants from first principles to the various types of turbo-machine choices. Fundamental fluid mechanics equations, efficiency coefficients, momentum exchanges, characteristic curves, similarity laws, specific speed, vibration, cavitation of hydraulic turbines, pump/turbines; variable speed machines including transients and hydraulic stability. An introduction to overall system configuration and both component and system optimization. Case studies."

m) The following courses are added as allowable technical electives:
- CHE333 Chemical Reaction Engineering
- ECE357 Electromagnetic Fields

n) The term 4F list of electives will be consolidated with the current choice of one of ECE510 Introduction to Lighting Systems or ECE514 Power Electronics Convert Topologies removed, and these two courses will be added to the existing list of technical electives from which the student need to choose two.

o) Infrastructure Option
Add the course CME358 Survey Camp as a Specialty Elective, with the footnote that the course is offered in the summer, there is a fee associated with it, and enrollment is limited with priority given to CIV/MIN students.

p) Engineering Mathematics, Statistics and Finance Option
The following courses will be added as technical electives:
- CSC411 Machine Learning and Data Mining
- CSC263 Data Structures and Analysis

5. Material Science and Engineering

a) Move MSE235 Materials Physics to third year and replace it with MIE222 Solid Mechanics to address a curricular weakness in the lack of basic skills of structural analysis (according to alumni feedback). The course MSE235 relates most directly to several of our fourth year technical electives, and this reduces the gap in time.

b) The course MSE558 Nanotechnology in Alternate Energy Systems will have the contact hours changed from 3/0.5/1 to 3/0/2.

The following courses will have updated calendar entries:

c) MSE202

Old: Enthalpy and energy balances of reactions and processes. Gibbs free energy and its use to determine equilibrium compositions for single phase and two phase systems. Introduction of Ellingham and pre-dominance area diagrams for solid-gas systems. Treatment of ideal and non-ideal solutions with the introduction of the concept of activity and activity coefficient. Binary and ternary phase diagrams and their applications to materials processing and materials properties.

New: The three laws of thermodynamics, thermodynamic functions, reaction stoichiometry and thermodynamics of reactions, Gibbs free energy and equilibrium, graphical representation of thermodynamics, equilibria involving ideal gases and pure condensed phases, thermodynamics of solutions, reaction equilibria involving condensed phases with variable compositions, phase diagrams of multi-component systems, thermodynamics of electrochemical reactions.

d) MSE217

Old: The diffusion mechanisms in solids, liquids and gases are reviewed. The effects of imperfections in solids on diffusion rates are discussed. Topics include diffusion coefficient, Fick's law, steady state and unsteady state diffusion. The course covers factors affecting the rate at which chemical reactions take place. The effects that temperature, concentration, pressure and catalysts have on reaction rates are discussed. Topics such as homogeneous versus heterogeneous reactions, order or reaction, and activation energy are also covered.

New: Diffusion mechanisms in solids, liquids and gases. Role of crystal imperfections in solids on diffusion rates. Fick's law, steady state and non-steady state diffusion. Homogeneous and heterogeneous reactions. Orders of reactions. Metastable products and partial equilibrium. Theories on reaction kinetics. Rate limiting step in multi-step processes.

e) MSE219

Old: Both the theoretical and experimental interpretation of the structure and chemistry of inorganic materials on various length scales will be examined. Crystalline and amorphous structure is discussed in terms of electronic structure of atoms, atomic bonding, atomic coordination and packing. Extended defects in crystalline solids will be covered. Experimental techniques for characterizing materials structure and chemistry will be described including: optical and electron microscopy, x-ray diffraction, scanning probe microscopy, Auger electron spectroscopy, x-ray photoelectron spectroscopy and secondary ion mass spectrometry.

New: Introduction to two and three-dimensional crystallography and crystal structures of solids. Topics include: Pearson and Hermann-Mauguin symbols, reciprocal space, point group and space group symmetry analysis, stereographic

projections. Introduction to tensor analysis of crystalline material properties, and symmetry breakdown by imperfections in crystals. Experimental techniques used to interpret structure and chemistry of solids and their defects will be covered theoretically and in the laboratory including: X-ray diffractometry, optical, electron and scanning probe microscopy, and surface/bulk spectroscopies based on optical, X-ray, electron and ion-beam analysis methods.

f) MSE244

Old: An introduction to atomic and molecular structures, acid-base and redox reactions, transition metal complexes, systematic chemistry and physical properties of metals and elements in the periodic table. Examples of industrial practice from the metal processing industry and energy generation and storage technologies will also be discussed. The fundamentals of chemical analysis of inorganic compounds, by both classical "wet" volumetric analysis and instrumental methods are covered in the experiments.

New: Introduction to atomic and molecular structures, acid-base and redox reactions, transition metal complexes, and detailed chemical properties of the main group elements in the periodic table. Examples of industrial practice in metal processing industry and energy generation/storage technologies. Fundamentals of chemical analysis of inorganic compounds, by both classical "wet" volumetric analysis and instrumental methods.

g) MSE245

Old: Introduction to organic chemistry and organic materials. Naming of organic compounds. Properties and reactions of organic compounds. Bonding and shapes of organic molecules. Analysis of organic compounds including IR and mass spectroscopy. Introduction to natural and bio-molecules. Principles of structure of polymer molecules. Polymer synthesis. Structure of polymeric materials including amorphous, crystalline, elastomeric and fibre reinforced. Mechanical and thermal properties of polymers.

New: Introduction to organic chemistry and organic materials. Naming, bonding and shapes of organic molecules. Properties and reactions of organic compounds. Key mechanisms including electrophilic addition, nucleophilic aliphatic substitution, β-elimination reactions and electrophilic aromatic substitution. Syntheses of polymers (step-growth and radical chain growth polymerization) and processing methods. Structure and properties of polymeric materials (amorphous, crystalline, elastomeric). Thermo-transition and visco-elastic properties of polymers. Life-cycle of polymers, mechanisms of degradation and strategies of polymer recycle. Hands-on organic syntheses and separation experiments.

6. Mechanical and Industrial Engineering

a) The elective course MIE468 Facilities Planning will be cancelled and the elective course MIE4XX Analytics in Action will be created as a replacement with the following course description: "This course showcases the impact of analytics focusing on real world examples and case studies. Particular focus on decision analytics, where data and models are combined to ultimately improve decision-making. Methods include: linear and logistic regression, classification and regression trees, clustering, linear and integer optimization. Application areas include: healthcare, business, sports, manufacturing, finance, transportation, public sector".

b) A new elective course is proposed: MIE5XX Advanced Manufacturing, with the course description: "This course is designed to provide an integrated multidisciplinary approach to Advanced Manufacturing Engineering, and provide a strong foundation including fundamentals and applications of advanced manufacturing (AM). Topics include: additive manufacturing, 3D printing, micro and nanomanufacturing, intelligent manufacturing, Advanced Materials, lean manufacturing, AM in machine design and product development, process control technologies. New applications of AM in sectors such as automotive, aerospace, biomedical, electronic, food processing".

   Rationale: This 500-level course is proposed as part of the Faculty's new initiative to establish an MEng emphasis in Advanced Manufacturing, and also an undergrad minor in Advanced Manufacturing. In addition, the course will be a requirement for the manufacturing stream in the Department of Mechanical & Industrial Engineering. The course will be multidisciplinary in nature to accommodate the various departments in FASE.

c) The course MIE 488F Engineering Psychology and Human Performance will be renumbered as a 5XX course. There are presently two separate courses offered by the Human Factors group, MIE448 for undergraduates and MIE1403 Analytical Methods in Human Factors Research for graduate students. Because there is sufficient overlap between the two courses, it was felt that it would be better to merge them and offer a single course open to both graduate and undergraduate students.

d) The course APS490Y Multi-Disciplinary Capstone Design will be listed as an alternative capstone course for both Mechanical and Industrial Engineering.

e) The course MIE411 Thermal Energy Conversion will be renumbered MIE311, now that it has moved to the third-year curriculum.

f) The course description for MIE451H1F Decision Support Systems will be revised with the underlined words added: "This course provides students with an

understanding of the role of a decision support system in an organization, its components, and the theories and techniques used to construct them. The course will cover basic technologies for information analysis, knowledge-based problem solving methods such as heuristic search, automated deduction, constraint satisfaction, and knowledge representation and natural language understanding".

g) The course description for MIE515H1F Alternative Energy Systems will be modified with the underlined words added and the prerequisites updated: "This course covers the basic principles, current technologies, and ~~design~~ applications of selected alternative energy systems. Specific topics include solar thermal systems, solar photovoltaic systems, wind, wave and tidal energy, energy storage, and grid connections issues. Limited enrolment. Prerequisites: MIE210H1, MIE312H1and MIE 313H1 (or equivalent courses)

7. Cross-Disciplinary Programs

It is proposed to change the allowable electives list in the following Engineering minors.

a) Robotics and Mechatronics minor: remove PHL342 Minds and Machines (difficulty with prerequisites for this technical course).

b) Engineering Business minor: add PHL295 Business Ethics (HSS).

c) Sustainable Energy minor: move APS510 Global Energy Systems from Intro to Advanced and remove MIE210 Thermodynamics. Rationale: MIE313 Heat and Mass Transfer is a core course a (formerly Stream Elective); students are limited to counting only one core course from their degree program; MIE students have five technical electives, and can take a CS course as part of the minor; it will not impair the ability of MIE students to complete the minor.

d) Environmental Engineering minor: the structure for Engineering minors is to have some common core courses and a set of electives. This was problematic for the Environmental Engineering minor due to high enrollment in the core APS courses, and changes were made. The minor remains undersubscribed due, in part, to course enrollment issues. These changes will address the enrollment issues, and also strengthen the minor.

The students must take one of the following four courses:

- APS301 Technology in Society and the Biosphere (existing requirement)
- Add ESC203 Engineering and Society (Engineering Science Core Course)
- ENV221 Multidisciplinary Perspectives on Environment (HSS). One of two foundation courses for the School of the Environment's undergraduate program, this course introduces students to ways in which different disciplines contribute to our understanding of the environment. Instructors and guest lecturers are drawn from the sciences, social sciences and the

humanities and will present subject matter, assumptions, conceptualizations and methodologies of their disciplines.

- GGR223 Environment, Society and Resources (HSS). Focuses on society-environment relations and different approaches to resource governance and management. This includes exploration of the spatial, social, and political economic origins and implications of humans' changing relations to nature. Drawing on debates from environmental governance and political ecology literatures, the course also investigates the ways that different actors and institutions have framed and sought solutions to environmental and resource challenges.

The second required course comes from the existing list of required courses:

- CIV220 Urban Environmental Ecology
- CIV440 Environmental Impact and Risk Assessment
- CHE467 Environmental Engineering
- CHE460 Environmental Pathways and Impact Assessment

The list of allowable electives is then adjusted.

e) Add ENV222 Interdisciplinary Environmental Studies (HSS). Building upon ENV221H1, the course shows how environmental studies works to knit different disciplinary perspectives into one interdisciplinary body of knowledge; interplay of science and values in definition and framing of issues; roles of markets, politics and ethics in developing solutions; local to global scale; historical and current timeframes.

f) Add MIN511 Integrated Mine Waste Engineering (MIN). 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 contributed to the economic and environmental sustainability of the mining operation.

g) Add CHE471 Modelling Biological and Chemical Systems (CHE, ESC). This course outlines the methodology for the modelling of biological systems and its applications. Topics will include a review of physical laws, selection of balance space, compartmental versus distributed models, and applications of the conservation laws for both discrete and continuous systems at the level of algebraic and ordinary differential equations. The course covers a wide range of applications including environmental issues, chemical and biochemical processes and biomedical systems.

h) Add CIV575 Studies in Building Science (ESC). This course examines the basic principles governing the control of heat, moisture and air movement in buildings and presents the fundamentals of building enclosure design. With this background, students are required to research advanced topics related to emerging areas of Building Science, and to write and present to the class an individual comprehensive paper related to their research. Lectures for this course will be jointly offered with those of CIV375H1.

i) Remove CIV375 Building Science (CIV, CHE). Rationale: This is a core course for Civil students where there are already other core courses required above. Very few CHE students take the course and all have used it for the Sustainable Energy minor instead.

j) Remove:APS302 Technology in Society and the Biosphere II (HSS), APS304 Preventive Engineering and Social Development (HSS), CHE466 Bioprocess Engineering because they are no longer offered.

PROGRAM(S)

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

PROCESS AND CONSULTATION

This proposal has been reviewed and approved by the Undergraduate Curriculum Committee, which is comprised of faculty representatives from each undergraduate program; undergraduate students; the Vice-Dean, Undergraduate Studies; the Chair of First Year; the Associate Dean, Cross-Disciplinary Programs; and the Registrar. The Committee meets regularly and reviews changes to the undergraduate curriculum.

RECOMMENDATION AND MOTION FOR FACULTY COUNCIL

THAT the proposed curriculum changes for the 2016-2017 academic year set out in Report 3476 be approved.