



MEMORANDUM

To: Executive Committee of Faculty Council (February 5, 2024)
Faculty Council (February 27, 2024)

From: Professor Evan Bentz
Chair, Undergraduate Curriculum Committee

Date: January 22, 2024

Re: Major Curriculum Changes for the 2024-2025 Academic Year

REPORT CLASSIFICATION

This is a major policy matter that will be considered by the Executive Committee for endorsement 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.

PROPOSED

This report summarizes course changes proposed for the 2024-2025 academic year.

CONSULTATION PROCESS

These changes have been reviewed and approved by the Undergraduate Curriculum Committee, which is comprised of teaching staff representatives from the Faculty’s departments and institutes; undergraduate student representatives; the Vice-Dean, Undergraduate; the Vice-Dean, First Year; the Director, First Year Curriculum; the Associate Dean, Cross-Disciplinary Programs; the Assistant Dean and Director, Diversity, Inclusion and Professionalism; and the Faculty Registrar. The Committee meets regularly to review and approve proposed changes to the undergraduate curriculum. The impact of these changes on students in the relevant programs has been considered.

RECOMMENDATION FOR COUNCIL

THAT the proposed curriculum changes for the 2024-2025 academic year, as described in Report 3761, be approved.

PROPOSED CURRICULUM CHANGES

1. CHEMICAL ENGINEERING & APPLIED CHEMISTRY

1.1. Update calendar description and AU distribution for **CHE304/305: Chemical Engineering and Applied Chemistry – Laboratory III & IV**

CURRENT calendar description: This laboratory course involves experiments investigating thermodynamics and kinetics, complementing two courses this term. Thermodynamic experiments include phase equilibrium and calorimetry, and kinetics experiments include investigations of rate constants and Arrhenius behaviour. Experimental applications of physical and chemical principles using pilot scale equipment. Experiments illustrating major unit operations: distillation; absorption; reactors; extraction; humidification; heat exchange.

CURRENT AU Distribution: 100% NS

PROPOSED calendar description: This is a laboratory course that provides a hands-on exploration of fundamental chemical engineering principles. Students apply and integrate core engineering concepts and principles, including fluid statics and dynamics, heat and mass transfer, thermodynamics and phase equilibria, chemical kinetics and reactions, and separations. The course also develops skills in trouble shooting, process scale-up design and optimization, data analysis, and process safety.

PROPOSED AU Distribution: 100% ES

- *New description is more concise and emphasizes important skill development.*
- *AU distribution was a clerical error that needs to be corrected.*

1.2 Update AU distribution for **CHE204/205: Chemical Engineering and Applied Chemistry – Laboratory I & II**

CURRENT AU Distribution: 100% NS

PROPOSED AU Distribution: 60% NS, 20% ES, 20% CS

- *The ES content is picked up through the application of NS to practical problems and the development of experimental procedures. The CS content is attributed to the time spent in the course teaching students how to properly document information, communicate ideas to their peers and TAs, and write technical documents.*

1.3 Update AU distribution for **CHE399: Professional Engineering Consultancy**

CURRENT AU Distribution: None

PROPOSED AU Distribution: 30% ED, 20% ES, 50% CS

- *Course was missing AU distribution.*

2. CROSS-DISCIPLINARY PROGRAMS

2.1 Add new course: APS380H1 F – Introduction to Electric Vehicle Design

3/3a/0/0.5

AECEREVD

PROPOSED calendar description: A multi-disciplinary introduction to key aspects of electric vehicle design, taught in modular form. Sub-system design perspective: electrical, mechanical, battery, powertrain and control; vehicle design; Manufacturing perspective: battery manufacturing, and life cycle; Industry 4.0 Automation perspective: vehicle-, manufacturing-, and city-level; Future directions: electrification, smart-grid, supply chains, and infrastructure.

PREVIOUSLY PRESENTED calendar description: A multi-disciplinary introduction to all aspects of Electric Vehicle Design, taught in modular form. Systems Design Perspective: Power, Mechanical, Battery, and Control Systems. Manufacturing Perspective: Battery design manufacturing, and life cycle; vehicle design; Industry 4.0 Automation Perspective: Vehicle-, Manufacturing-, and City-level. Future Directions: Electrification, Supply Chains, and Infrastructure.

- *Following further consultation and curriculum development, we are bringing forward the following new course in support of the proposed Certificate in Electric Vehicle Design.*