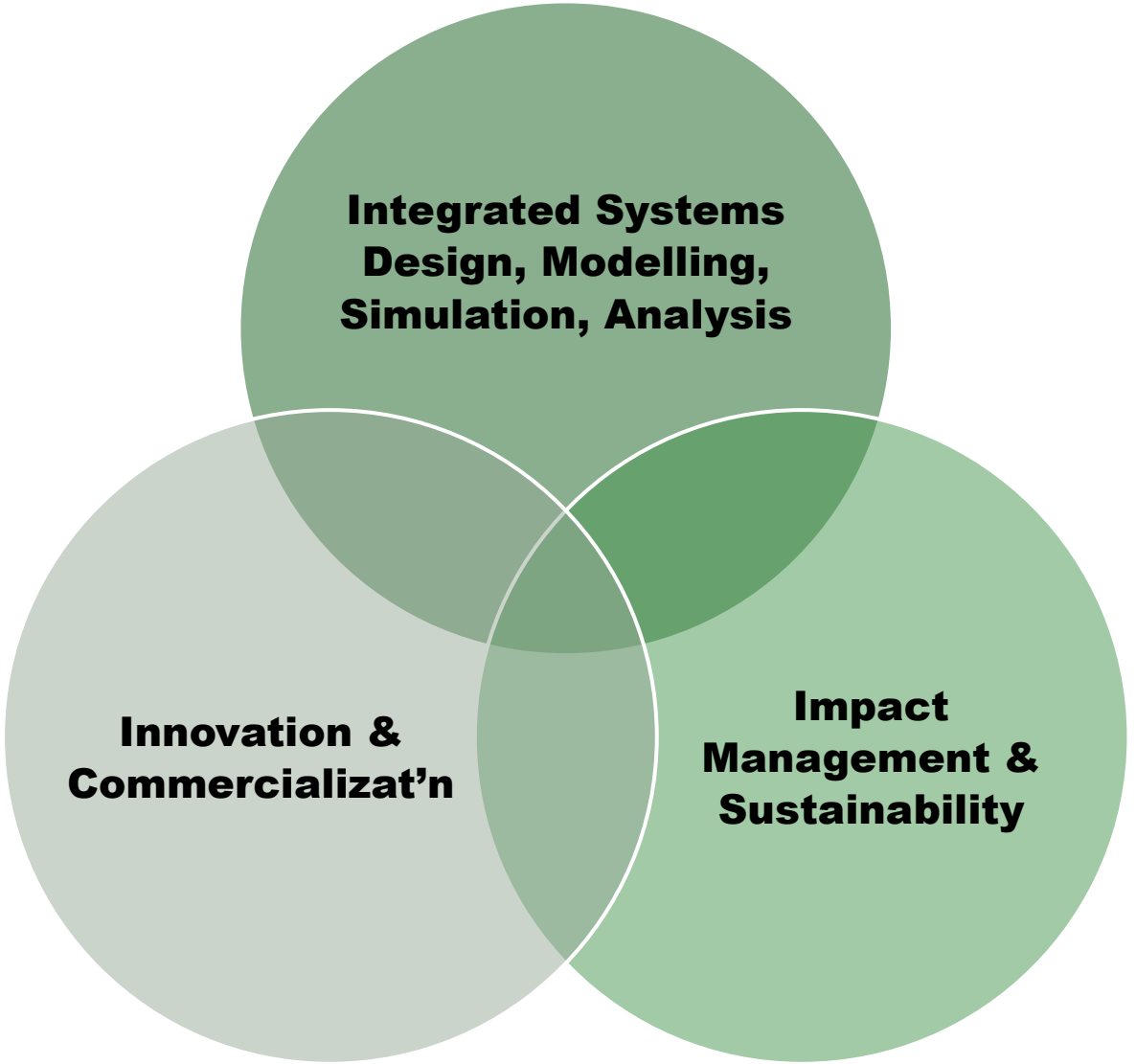
Integrated Engineering

For Complex Systems Solutions & Sociotechnical Impact

Depth & Expertise, Breadth & Adaptability

- Core Pillar I: **Integrated Systems Design, Modelling, Simulation, and Analysis**
- Core Pillar II: **Impact Management and Sustainability**
- Core Pillar III: **Innovation, Entrepreneurship, and Technology Commercialization**
- Technical Electives:
  - Build on core courses from multiple Engineering disciplines
  - Options, multiple credits, and access to technical electives across multiple disciplines to **shape a tailored career path**



CURRENT PROGRAM (23.0 cr)

Core Pillar I: Integrated Systems Design, Modelling, Simulation & Analysis

- IE 2298 Integrated System Engineering & Design
- IE 4499 Interdisciplinary Engineering Design Project (Capstone)
- NMM 2270 Applied Math II
- NMM 2276 Applied Math III
- SS 2143 Applied Statistics & Data
- CEE 2202 Mechanics of Materials
- MSE 2214 Thermodynamics
- MSE 3301 Material Selection & Manufacturing
- MME 2285 Engineering Experimentation
- CBE 2291 Computational Methods for Engineers

Core Pillar II: Impact Management & Sustainability

- IE 2298 Integrated System Engineering & Design
- ELI 4100 Engineering Leadership
- ELI 4110 The Ethical Engineer
- ELI 4300 Risk Assessment & Management (op.)
- ELI 3100 Planning and Project Management (op.)

Core Pillar III: Innovation, Entrepreneurship & Commercialization

- IE 4499 Interdisciplinary Engineering Design Project
- ELI 3000 Managing the Innovation Process
- ELI 3200 New Venture Creation (op.)
- ELI 4200 The Entrepreneurial Environment (op.)
- ELI 4400 Strategic Innovation Commercialization (op.)

Technical Tracks

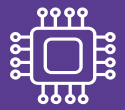
(Pre-requisite for final year technical electives)

Chemical/Biochemical

- CBE 3322 Heat Transfer Operations
- CBE2221 Fluid Flow
- CBE2220 Chem. Process Calc

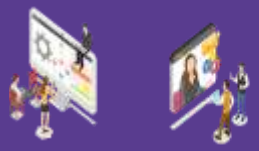
Statics/Dynamics/Structures

- CEE 2220 Introduction to Structural Theory
- CEE 2221 Structural Theory and Design II
- CEE3340 Analysis of Intermed. Structures



Electrical/Mechatronics

- MME 3374a Electrical Foundations for Mechanical Engineering
- MSE 2213 Dynamics
- ECE 2277 Digital Logic Systems



Technical Electives

- The full list of pre-approved technical electives are included in the Progression Sheets.
- More courses are likely available with completed pre-requisites. Other courses may be eligible with special permissions.

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Research Opportunities

- Opportunity to work with multi-disciplinary faculty in summer research and IE 4490/IE 4491, with technical solutions that have significant economic impact on community partners. For example:
  - **Open-source, cost-cutting high-quality devices for healthcare**
  - **Agrovoltaic indoor vertical farming of plants**
  - **Crop yield optimization with solar panels**
  - **Extraction of nutrient from discarded plastic bottles & chip bags**

Photo Credits: Adia Shadd, Integrated Engineering & Physics

Solar panel incorporation options for crops with limited farming space

Agrovoltaic indoor vertical farming

Extracting value from wastewater

Upcoming

Speakers

Usher Li, BESc./HBA 24'

Consultant, **EY-Parthenon**

As a recent grad from IE/HBA dual degree program, Usher shares insights about the school-to-work transitions, during summer co-op terms and upon graduation.

February 27 (Thurs) 6:00-7:00 pm virtual

Haida Liu, BESc. 16'

Engineer | Capacity Planning & Grid Innovation, **Toronto Hydro**

Prior to joining **Toronto Hydro**, Haida worked as a Project Manager for **Kinectrics** and was part of the Transmission & Distribution Technology team.

March 6 (Thurs) 11:30 am-12:30 pm virtual

John Vergeer, BESc./HBA 22'

Analyst, **Roland Berger**

Prior to joining **Roland Berger**, John worked as a demand planning analyst for **Lactalis Canada** and as a technology risk consulting intern at **Ernst & Young**.

March 6 (Thurs) 12:30-1:30 pm virtual

Upcoming
Speakers

Adam Gasch, BESc./HBA 24'

Consultant, **FTI Consulting**

Prior to joining **FTI Consulting**, Adam worked as a Strategy & Transformation Intern for **RBI** and was part of the Financial Services, Leadership Development Program.

March 12 (Wed) 4:30-5:30 pm virtual

Maya Archer, BESc. '25

Engineering Intern, **McCormick & Company**

Prior to joining **McCormick**, Maya worked as a Retail Productivity and Lean Analyst at **Scotiabank** in summer 2023.

March 12 (Wed) 5:45-6:45 pm on campus

Makena Murungi, BESc. '25

Project Engineering Intern, **IPEX by Aliaxis**

Prior to joining **IPEX**, Makena worked as an intern for **Kayana** in summer 2021.

March 12 (Wed) 5:45-6:45 pm on campus

Your Future Career Paths

- Traditional Engineering Careers, in various sectors including Automotive, Construction, Energy, Food, Pharmaceuticals, etc.
- Consulting in Engineering/Finance/Technology
- Engineering Management and Project Management roles as part of the career pathways

IE Graduates' Example Roles in 2019/2020	Same IE Graduates' Role Developments in 2025
Project Manager at Kinectrics	**Engineer | Capacity Planning & Grid Innovation at Toronto Hydro**
Technical Analyst, Deloitte Canada	**Product Manager at Versapay**
Test Engineering Specialist at L3 WESCAM	**System Engineer at General Dynamics**
Water Resources Engineer at Ecosystem Recovery Inc.	**Ecologist, Water Resources Specialist at LGL Limited**
Continuous Improvement and Reliability Engineer in Training at Baffinland	**Continual Improvement Engineer at Magellan Aerospace**
Technical Specialist at Stormcon Products Inc.	**Engineering Manager at Stormcon Products Inc.**
Investment Analyst at Forthlane Partners	**Portfolio Manager at Forthlane Partners**
Electrical Designer (EIT) at Quasar Consulting Group	**Team Lead at Quasar Consulting Group**

Example of Horizontal and Vertical Movements in Integrated Engineering Alumni Careers (comparing 2020 to 2025)

**Engineering Manager, Team Lead/Lead Engineer* – *these are example roles that require understanding of multiple Engineering disciplines, as well as the ability to connect Engineering to business/industry constraints and opportunities.*