2026-2027 Academic Year

Computer Engineering – Class of 2029

June 2026

SMITH ENGINEERING
Queen's University

Electrical and Computer Engineering

Our programs are subject to Canadian Engineering Accreditation Board requirements set at the federal level.

CEAB prescribes some of the curriculum content, mandates number of accreditation units (AUs) and credits, and number of technical and complementary courses students need to take

For example, a course may be worth 4 credits and have 48 AUs

Accreditation Rules - Example

ELEC 271 Digital Systems Units: 4.00

Boolean algebra applied to digital systems; logic gates; combinational logic design; electronic circuits for logic gates; arithmetic circuits; latches and flipflops, registers and counters; synchronous sequential logic and state machine design; implementation in programmable logic chips.
(Lec: 3, Lab: 0.5, Tut: 0.5)

Requirements: Prerequisites: APSC 171, APSC 172, APSC 174

CEAB Units:

Mathematics 0

Natural Sciences 0

Complementary Studies 0

Engineering Science 21

Engineering Design 27

Academic Plan:

Electrical Engineering, 2nd Year

Electrical Engineering Graduation Requirements

- Satisfy the minimum Accreditation Units (AU) set by ECE in each CEAB category
- Have at least 5 courses from Electives List A
- Have at least 5 four-hundred level elective courses
- Counting required core courses and elective courses in all four years, result in a total of no fewer than 157.5 (160.5 for ECEi) credits for the complete program

Electrical Engineering 2nd Year Courses

Fall 2026	
ELEC 221	Electric Circuits
ELEC 231	Math Methods I for ECE
ELEC 271	Digital Systems
ELEC 278	Data Structures
ELEC 290	ECE Design and Practice
ELECTIVE	Complementary Studies

Winter 2027	
ELEC 224	Continuous-Time Signals and Systems
ELEC 232	Mathematical Methods II for Electrical Engineering
ELEC 252	Electronics I
ELEC 274	Computer Architecture
ELEC 280	Fundamentals of Electromagnetics
ELEC 292	Introduction to Data Science

Electrical Engineering, 3rd Year Curriculum

Fall 2027	Winter 2028
ELEC 324 Discrete-Time Signals and Systems	**ELEC 372** Numerical Methods and Optimization
ELEC 326 Probability	**ELEC 381** Applications of Electromagnetics
ELEC 343 Linear Control Systems	**ELEC 392** ECE 3rd Year Design
ELEC 353 Electronics II	**ENPH 336** Solid State Devices
ELEC 371 Microprocessor Interfacing…	**APSC 221** Eng. Economics (F/W/S) non-ECEI only
Complementary Studies Elective (any term, F or W)	
Technical Elective (any term, F or W) optional, can be deferred to 4th year	

Electrical Engineering 4th Year

Fall 2028	
ELEC 490A	Computer Engineering Project
ELECTIVE	
ELECTIVE	
ELECTIVE	
ELECTIVE	

Winter 2029	
ELEC 490B	Computer Engineering Project
ELECTIVE	
ELECTIVE	
ELECTIVE	

STREAMS – Flexibility

ECE with streams instead of options

- Suggested streams give a coherent set of courses in a particular area, e.g., AI;
- Streams provide primary and secondary course suggestions; primary courses are essential for a given concentration;
- Streams allow you to mix and match as you wish and provide larger number of courses to choose from.

EE Streams

Streams of Specialization for Elective Courses in Electrical Engineering

- Biomedical Engineering
- Communications and Signal Processing
- Photonics, Nanotechnology and Integrated Circuits
- Mechatronics
- Power Electronics and Systems
- Robotics and Control

EE: Technical Electives offered in 2026-2027

Fall 2026		Winter 2027	
ELEC 343	Linear Control Systems	**ELEC 333**	Electric Machines
ELEC 425	Machine Learning and Deep Learning	**ELEC 373**	Computer Networks
ELEC 431	Power Electronics	**ELEC 374**	Digital Systems Engineering
ELEC 436	Electric Machines and Control	**ELEC 408**	Biomedical Signal & Image Proc
ELEC 446	Autonomous Mobile Robotics	**ELEC 421**	Digital Signal Processing
ELEC 457	Analog Integrated Circuits & Systems	**ELEC 433**	Energy and Power Systems
ELEC 473	Cryptography and Network Security	**ELEC 435**	Energy Storage Technology
ELEC 475	Computer Vision with Deep Learning	**ELEC 451**	Digital Integrated Circuit Engineering
		ELEC 470	Computer System Architecture
		ELEC 472	AI
		MREN 348	Intro to Robotics

Academic Plan:

Computer Engineering Direct, 2nd Year

Computer Engineering Graduation Requirements

- Satisfy the minimum Accreditation Units (AU) set by ECE in each CEAB category
- Have at least 5 four-hundred level elective courses
- Have at least 3 courses from the Electives List that are offered by the Department of Electrical and Computer Engineering
- Counting required core courses and elective courses in all four years, result in a total of no fewer than 157.5 (160.5 for ECEi) credits for the complete program

Computer Engineering 2nd Year Courses

Fall 2026	
ELEC 221	Electric Circuits
ELEC 226	Probability & Random Processes
ELEC 231	Math Methods I for ECE
ELEC 271	Digital Systems
ELEC 290	ECE Design and Practice
ELECTIVE	Complementary Studies

Winter 2027	
ELEC 252	Electronics I
ELEC 270	Discrete Mathematics with CE App
ELEC 274	Computer Architecture
ELEC 279	AI-Assisted Software Development & Design
ELEC 280	Fundamentals of Electromagnetics
ELEC 292	Introduction to Data Science

Computer Engineering 3rd Year Courses

Fall 2027	
ELEC 371	Microprocessor Interfacing & Embedded Syst.
ELEC 377	Operating Systems
ELEC 379	Algorithms with Engineering Applications
ELEC 376	S/W Dev. Methodology (or ELECTIVE)
ELEC 385	Fundamentals of Quantum Computing
ELECTIVE	

Winter 2028	
ELEC 373	Computer Networks
ELEC 374	Digital Systems Engineering
ELEC 392	Engineering Design and Development
CMPE 223	Software Specifications (or ELECTIVE)
APSC 221	Economic and Business Practice
ELECTIVE	

Computer Engineering 4th Year

Fall 2028	
ELEC 498A	Computer Engineering Project
ELECTIVE	
ELECTIVE	
ELECTIVE	
ELECTIVE	

Winter 2029	
ELEC 498B	Computer Engineering Project
ELECTIVE	
ELECTIVE	
ELECTIVE	

Academic Plan:

Computer Engineering Regular, 2nd Year

Computer Engineering 2nd Year Courses – Regular Stream

Fall 2026	
ELEC 221	Electric Circuits
ELEC 231	Math Methods I for ECE
ELEC 271	Digital Systems
ELEC 278	Data Structures
ELEC 290	ECE Design and Practice
ELECTIVE	Complementary Studies

Winter 2027	
ELEC 252	Electronics I
ELEC 270	Discrete Mathematics with CE App
ELEC 274	Computer Architecture
ELEC 279	AI-Assisted Software Development & Design
ELEC 280	Fundamentals of Electromagnetics
ELEC 292	Introduction to Data Science

Computer Engineering 3rd Year Courses – Regular Stream

Fall 2027	
ELEC 371	Microprocessor Interfacing & Embedded Syst.
ELEC 377	Operating Systems
ELEC 379	Algorithms with Engineering Applications
ELEC 376	S/W Dev. Methodology (or ELECTIVE)
ELEC 326	Probability & Random Processes
ELECTIVE	

Winter 2028	
ELEC 373	Computer Networks
ELEC 374	Digital Systems Engineering
ELEC 392	Engineering Design and Development
CMPE 223	Software Specifications (or ELECTIVE)
APSC 221	Economic and Business Practice
ELECTIVE	

Computer Engineering 4th Year

Fall 2028	
ELEC 498A	Computer Engineering Project
ELECTIVE	
ELECTIVE	
ELECTIVE	
ELECTIVE	

Winter 2029	
ELEC 498B	Computer Engineering Project
ELECTIVE	
ELECTIVE	
ELECTIVE	

CMPE Streams of Specialization

- In 3rd and 4th year of your program, you will be choosing **Technical Elective Courses.**
- The ECE programs offer **Streams of Specialization:**

unofficial lists of elective courses you can complete to specialize in a particular area (e.g., AI, mechatronics, software engineering, etc.)

Examples of *Streams* in Computer Engineering

- Computer hardware
- Computer systems
- Software engineering
- Mechatronics
- Artificial intelligence

Visit ECE website for courses

CE: Technical Electives offered by ECE in 2026-2027

Fall 2026	
ELEC 343	Linear Control Systems
ELEC 376	S/W Development Methodology
ELEC 425	Machine Learning and Deep Learning
ELEC 431	Power Electronics
ELEC 446	Autonomous Mobile Robotics
ELEC 471	Safety Critical Software Engineering
ELEC 473	Cryptography and Network Security
ELEC 475	Computer Vision with Deep Learning
SOFT 437	Performance Analysis

Winter 2027	
ELEC 224	Cont.-Time Signals & Systems
ELEC 372	Numerical Methods and Optimization
ELEC 408	Biomedical Signal and Image Processing
ELEC 451	Digital Integrated Circuit Engineering
ELEC 470	Computer System Architecture
ELEC 472	AI
ELEC 477	Distributed Systems
MREN 348	Intro to Robotics

CE: Technical Electives offered by the Queen's Computing

Fall 2026	
CMPE 204	Logic for Computing Science
CMPE 223	Software Specifications (Opt. Core)
CMPE 227	S/W Requirements & Quality Assurance
CMPE 328	Formal Specific. & Analysis in S/W Eng
CMPE 330	Health AI: Image-Guided Interventions
CMPE 457	Image Processing & Comp. Vision

Winter 2027	
CMPE 322	Software Architecture
CMPE 325	Human-Computer Interaction
CMPE 332	Database Management Systems
CMPE 351	Advanced Data Analytics
CMPE 454	Comp. Graphics
CMPE 472	Health AI: 2D and 3D Image Analysis

ECE Design and Research Project Courses

- **ELEC 392** Engineering Design and Development
  - A component of the four-year "design spine" which includes APSC 100, ELEC 290, ELEC 392 and ELEC 490/8. Focuses on taking the technical expertise and learning skills you have gained thus far, and applying it to an engineering design project;
  - topics in design, teams and project management, engineering documentation, social and ethical impacts.

- **ELEC 490/498** Capstone Design Project course
  - prerequisites: 3rd year core courses incl. ELEC 392
  - instructors and project supervisors
  - group of 3-4 to design/build/document

- ELEC 497 Research project (available to 4th year students):
  - For those with an interest in exploring in depth some technical area in a more independently-driven research study

Get to know your CURRICULUM

- Academic Calendar
    - Academic Plans and course information
    - Smith Engineering Policies and Regulations
    - Sessional Dates
- SOLUS – information about teaching instructors, class location, course schedule;
- Department of Electrical and Computer Engineering
    - ECE Degree Planning Spreadsheets,
    - Pre-requisite Charts
- Smith Engineering
    - FORMS and Student Services resources: academic considerations, accommodations, supplemental exam etc.

Academic Calendar and Registration Dates

- **June 22** The 2026–2027 Academic Calendar is published.
- **June 22** The timetable is published.
- **Mid-July** Course pre-load: students will be preloaded into 2nd-year core courses, provided prerequisites are met.
- **July 13** The Shopping Cart opens, and enrollment appointment times are issued.

  You will not be able to enroll in courses until your Enrollment Appointment begins. However, you can log in to SOLUS and start adding courses to your Shopping Cart to plan your schedule. Your Enrollment Appointment is your designated time to enroll in courses.

- **July 20** Course selection and self-enrollment begin (check your enrollment appointment date and time on SOLUS). This is the time to add optional core courses and electives.

Registration

- Students are block enrolled into all 2nd year core courses

  As a 2nd year student, you do not need to do anything other than check that the appropriate core courses have been added to your schedule in mid-July and select a course to take as your complementary studies elective (CS) during your enrollment appointment. This is part of your “Arts elective” requirement as an ECE student.

  Complementary Studies is a required component of the ECE degree program and complement the technical content of a student's curriculum. A full list of eligible courses and their categories can be found here.

Useful Links:

Registration Guide

SOLUS Help

Complementary Studies Program Requirement

- Complementary Studies (CS) – *not Innovation Stream*
  - Must complete a total of 3 courses or 9 credits (108 units) of CS:
    - 1 course (3 credits) must be from List A Humanities and Social Sciences group;
    - Remaining 2 courses (or 6 credits) can be from List A or List B
  - Typically, take one CS course in each of 2nd, 3rd, and 4th year, but whenever it can fit into schedule is fine.
  - Some CS courses are available online (see Arts and Science Online, SSB online, LAW online).

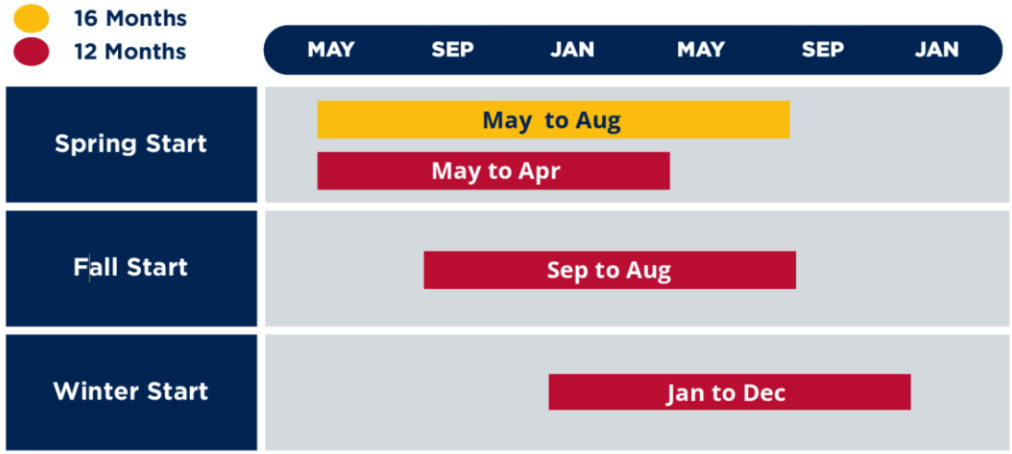
Q&A:

1. Can we use QUIP (APSC 303) toward a CS course? – *No.*
2. Can I still enroll in the course when the seats appear "reserved"? Why are the seats reserved?

Many Arts & Science courses are restricted ("reserved") to Arts & Science students during initial registration to ensure they can enroll in required core courses. These restrictions can be lifted after Aug. 17.

3. Where do I go if I have questions specific to an Arts & Science course? – *Contact the course Home Department*

QUIP - Internship



- 12-16 month accredited paid work experience, students go after completing 2nd or 3rd year (after 3rd year is preferred).
  - QUIP Requirements, Fees, and Policies
- You will be enrolled in courses APSC 301, 302, 303 and 304 - Professional Internship.
- Completion acts as a technical elective (**APSC 303**), **3.5CR.**
- Work Counts towards P. Eng Designation
- Students can register in one academic course per term while on internship.
- For more information about QUIP, please visit the Career Services QUIP page or contact the QUIP team: quip@queensu.ca
- For Engineering-specific advising and support, contact Corporate Relations: Corporate Relations Career Education Team

Substitutions

- Courses in each curriculum (CORE, TECH, COMP) meet CEAB requirements and the Smith Engineering Faculty Regulations and listed on your Academic Plan.
- If a student takes a course that is not on the approved curriculum for their program, the course will not count towards their program

  ……except……

- Sometimes a student can *substitute* a course with:
  - Courses taken at another university
  - Courses taken while on exchange at another university
  - Courses that are not on the approved TECH lists
  - A course to replace a CORE course (NOTE: This form of substitution is rare and requires detailed information as to why the student is not taking the CORE course at their home university)

Substitution Process

1. Send an email with the substitution request form to the Undergraduate Program Assistant (UPA) indicating the course you would like to take and what course you would like to substitute it for. Also include a web link to the following information:

    a) Course syllabus
    b) Total # of lecture/lab/tutorial hours
    c) Course grading scheme
    d) Reason why you would like to substitute one course with another

2. Instructor Signature:

    a) CORE/TECH Courses: The instructor of the course to be substituted will also need to sign the form as an indication that the course is a good substitute

    b) Complementary Studies Courses: No instructor signature required

3. UPA will submit the course substitution material(s) to the Undergraduate Program Chair for review. The UG Chair will sign the form if they support the request.

4. UPA then submit the completed paperwork to the Smith Engineering Faculty Office for review by the Operations Committee. For courses taken outside of Queen's, the $63.00 administration fee needs to be paid via online system at https://store.engineering.queensu.ca/index.php?main_page=index&cPath=8

5. You will receive an email from the Faculty Office with the Operations Committee's decision. This email can be used as a Letter of Permission (LOP) to register for courses at another institution.

Prerequisites

- Prerequisites: capture material necessary to do the course
    - If the professor thought you could do the course without knowing that material, it would not have been made a prerequisite
- Prerequisites are only waived in exceptional circumstances
    - Submit a Prerequisite Waiver form to the course instructor, then if approval granted, forward your request to the UG Program Assistant, which will ask the UG Chair to waive the prerequisite.

Before submitting the form, the instructor of the course for which the waiver is required must approve the waiver justification in writing (sign the form or provide the approval over email).

Student Academic Success

Resources – what is available to students?

- iCons – After-hour access to ILC lab resources; help with coursework
- EngLinks – Workshops/Tutorials, 1-on-1 Tutoring
- Exam Bank
- Office Hours – see your course OnQ
- Wellness Centre
- EngQ Hub

Academic Experience

- Courses and labs become more challenging but more rewarding!
- Increased workload == Increased time management skills
- Settle in with your ECE community through common courses and ECE spaces!
- Gain a lot of positive personal growth and stress management skills
- Use your resources!!

Culture in Undergraduate ECE

Extracurricular Life

ECE Discipline Club (ECE Club)

- Represent Students
- Plan & Run Events
  - Power Cup/Power Ball
  - ECE Night
  - Banquet
- Design Merchandise
- Assist with New Equipment

Design Teams/Clubs

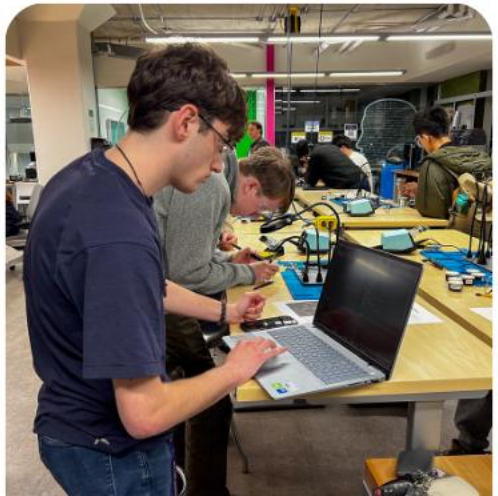

VICK
90


12

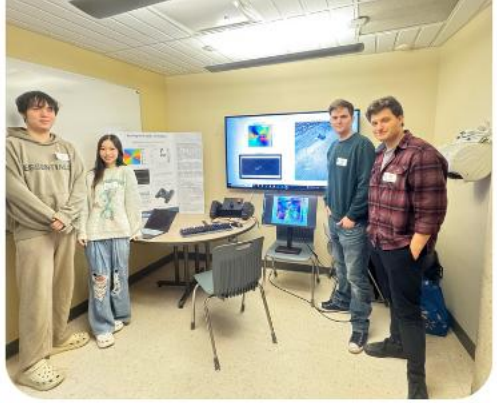


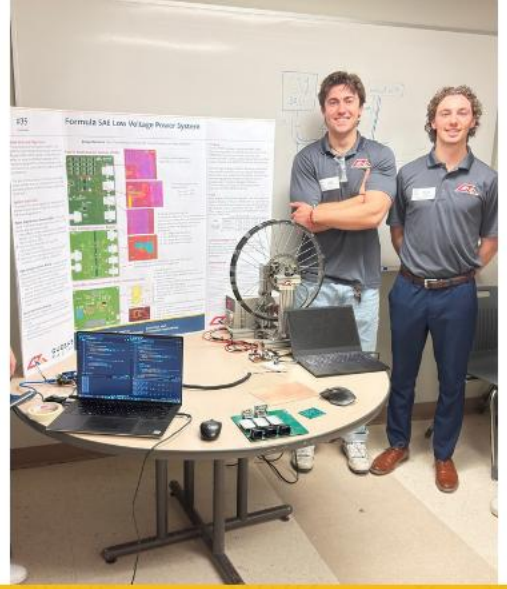


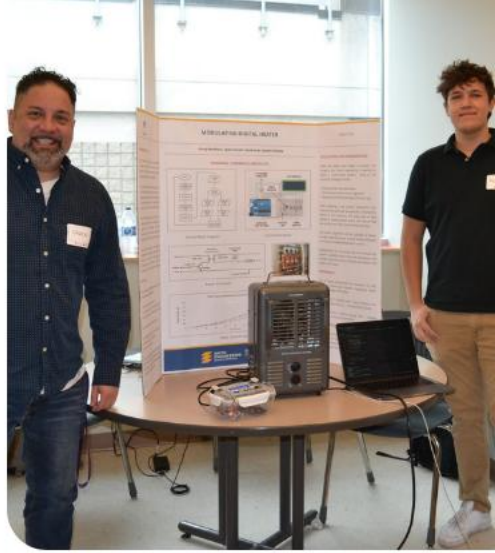



ECE NIGHT 2026






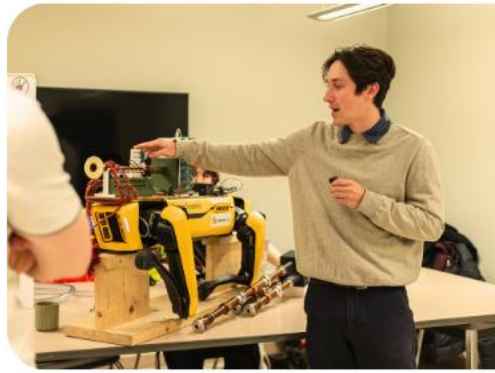


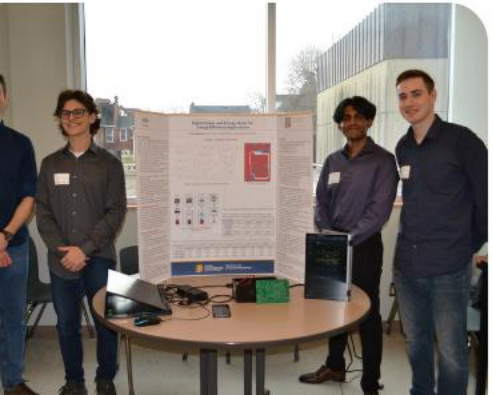


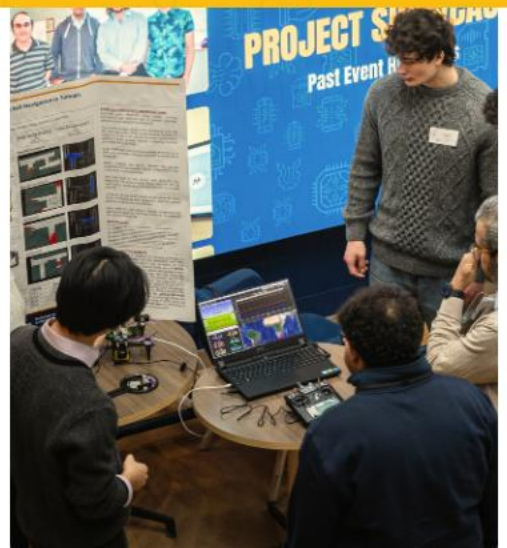
4th Year Capstone

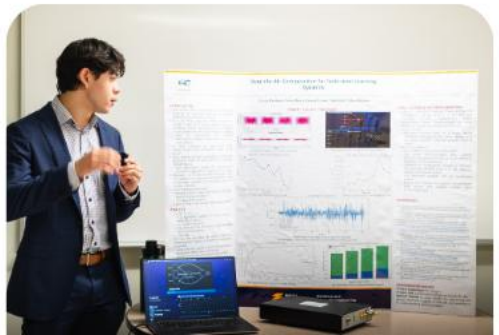
Electrical and Computer Engineering

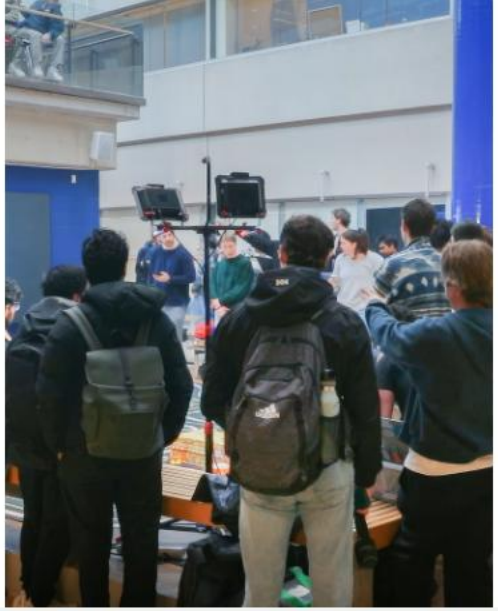
PROJECT SHOWCASE

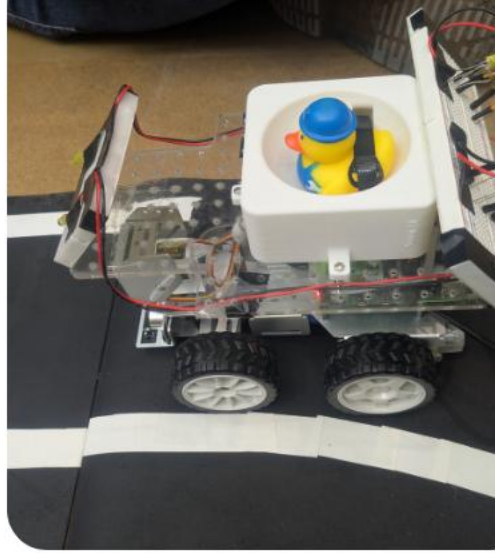


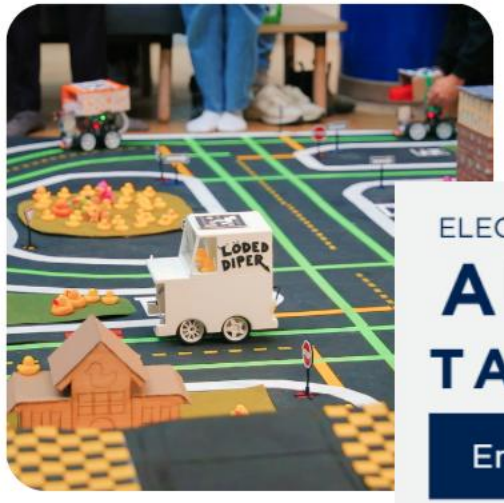












ELEC 392 Engineering Design and Development

AUTONOMOUS TAXI COMPETITION

Engineering intelligence in motion

Walter Light Hall Facilities

Vince Lentini

Undergraduate Lab Technologist

What is in WLH?

The Bain Lab

24/7 access for UG students

Sci '65 MakerSpace

Monday to Friday

Mandatory Safety Orientation – Scan Qr Code at 201 W

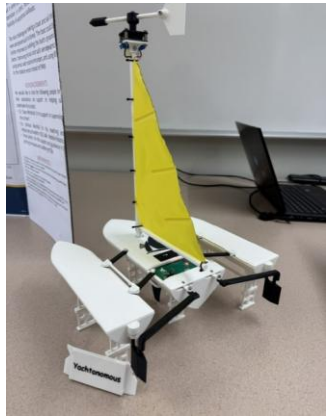
- All Labs are for ECE undergraduate students only.
- Doors unlocked with FOB system; purchase at Campus Bookstore

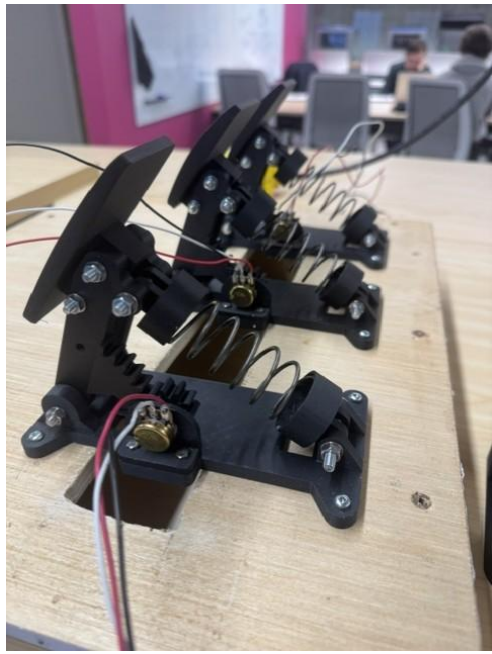
Contact

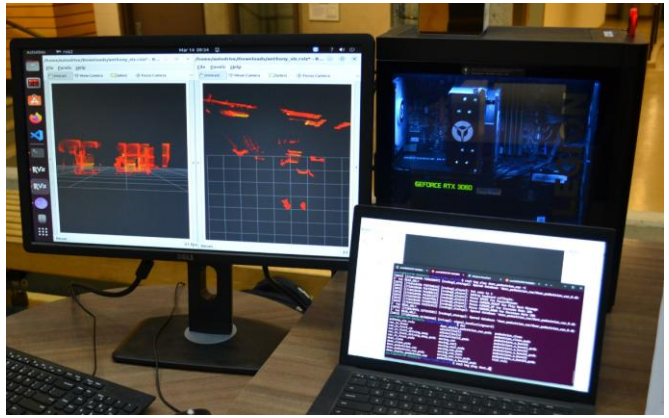
Vince Lentini
Undergraduate Engineering Lab Technologist
Electrical and Computer Engineering, Staff
v.lentini@queensu.ca
Walter Light Hall, 214B

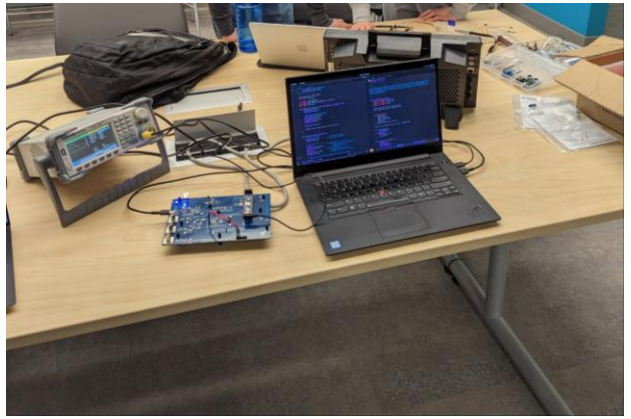
Electrical ‘65 E.D Lab or Maker Space

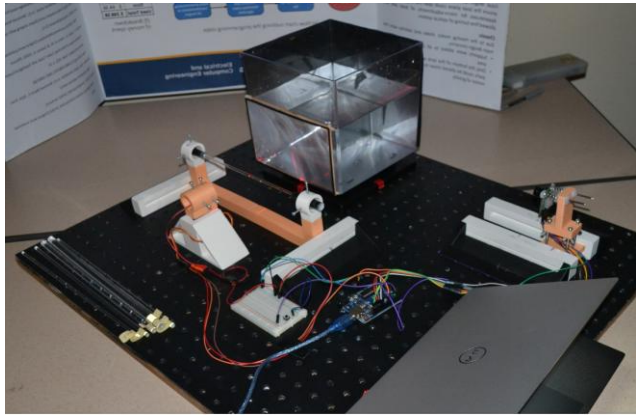
Some of our recent *ELEC 490/8* Capstone Projects:





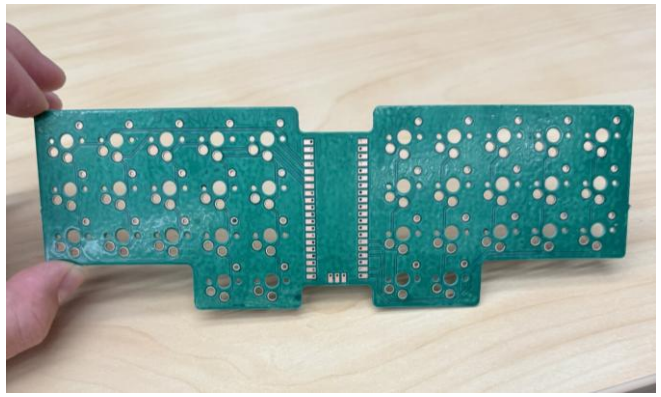


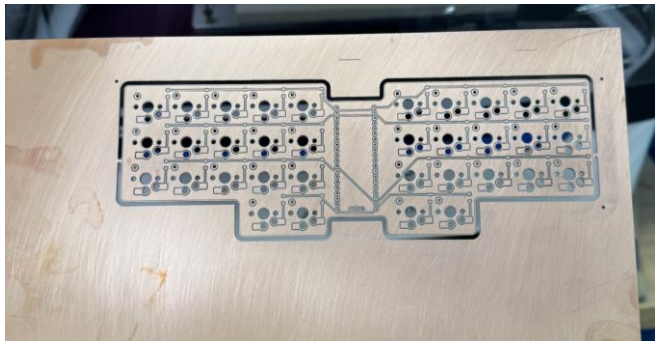


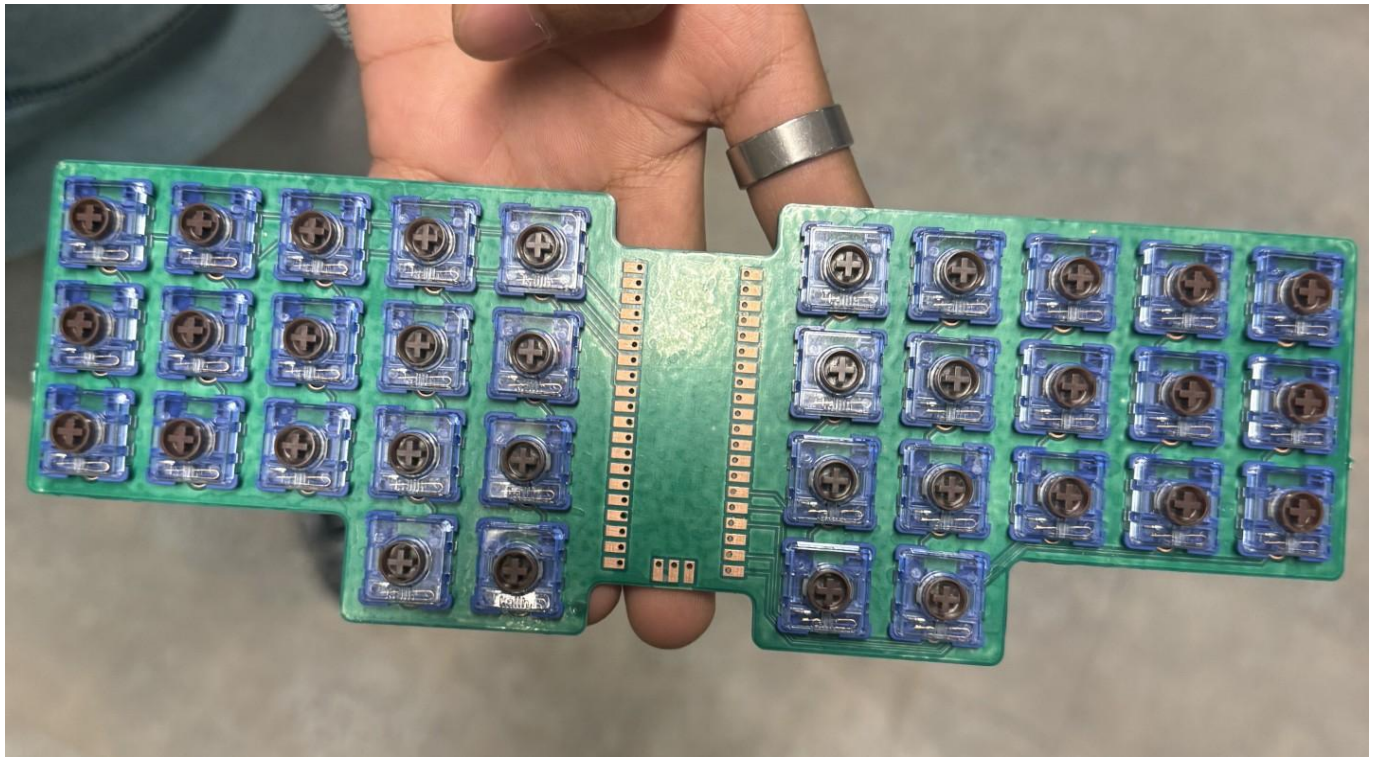


Electrical ‘65 E.D Lab or Maker Space

Some of our recent Personal Projects:







Community

- Get involved!
- Try new things!
- Join a Design Team!

ECE Advisors: how we communicate with students

Sherri Fuller
Undergraduate Program Assistant
Staff, Electrical and Computer Engineering
slf3@queensu.ca

UNDERGRADUATE STUDENT SUPPORT CONTACTS:

- Students with last names A–L: Contact TBD
- Students with last names M–Z: Contact Sherri Fuller at slf3@queensu.ca

https://eceadvisors.youcanbook.me/

Welcome to the ECE department!

SMITH ENGINEERING
Queen's University

Electrical and Computer Engineering

SMITH
ENGINEERING
Queen's University

Electrical and Computer Engineering