

2024-2025 Academic Year

ECE 4th Year Course Registration

June 2024

ECE Advisors

- ECE UG Assistants (WLH-416)
 - Irina Pavich (irina.pavich@queensu.ca), Last Names **A – L**;
 - Jazmine Battle (j.battle@queensu.ca), Last Names **M – Z**;
- EE Undergraduate Chair:
 - Prof. Il-Min Kim (eeugradchair@queensu.ca)
- CE Undergraduate Chair:
 - Prof. Jianbing Ni (ceugradchair@queensu.ca)
- UG Program Advisors <https://www.ece.queensu.ca/undergraduate/contacts.html>

Academic Calendar and Registration Dates

End of June – 2024-2025 Academic Calendar and Timetable will be published

July – course pre-load (students will be preloaded into 4th year capstone project course if prerequisites are met)

July 22nd - [Course Selection](#) begins as per [Enrolment Appointments](#) in SOLUS

August 28th, August 29th and August 30th – FEAS Supplemental exams

Online Resources

- [Academic Calendar 2024-20245](#), [Academic Plans](#) and course information; FEAS Policies and Regulations;
- **[Registrar & Financial Aid Services:](#)**
 - [Tuition](#), Graduation, [Sessional Dates](#) etc.
 - [Solus Tutorials](#);
- **[FEAS](#)**
 - [FORMS](#): Substitution request, Incomplete Grade Request, Late Course Add/Drop requests, Waivers etc.;
 - FEAS Student Services resources: academic considerations, accommodations, embedded counsellors, dual degree, supplemental exam, awards etc.
- **[ECE](#)**
 - ECE Degree Planning Spreadsheets, Pre-requisite Charts, Course Information
 - [ECE Faculty](#)
 - [Booking an appointment with the advisor](#)

Curriculum Updates

New elective courses:

- ELEC 446 Mobile Robotics (CE, EE) – Fall
- ELEC 471 Safety Critical Software Engineering (CE) – Fall
- ELEC 435 Energy Storage Technology (EE) – Winter

Exclusions in ECE -

only one course counts towards the degree requirements:

1. ELEC 425 Machine Learning (List A TE) and CMPE 452 Neural Networks (List B TE);

4th Year CORE

REGULAR Stream

- ELEC 490/8 Capstone Project Course (Fall-Winter), 7 credits

INNOVATION STREAM:

ELEC 490/8 – Capstone project course (Fall-Winter), 7 credits

COMM 405 New Business Development - Fall

Notes:

- All fourth-year ECE students who have completed the necessary prerequisite courses will be automatically preloaded into the ELEC 490/498 design project course, depending on their program.
- Students can self-register in ELEC490/8, or contact your UG Assistant for help in case of a missing prerequisite.
- ELEC 490/8 group building activities and project assignments will begin in September.

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 Electives Lists A and B that satisfy the Department criteria for **qualified accreditation units** in the categories of engineering science and engineering design
- Have at least **3 courses** from Elective **List B**
- 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.

CE: Technical Electives

List A for ECE-controlled courses (ELEC and SOFT);

COURSE		P.ENG	TERM	CREDITS
ELEC 224	Continuous-Time Sig&Sys	P.ENG	W	3.75
ELEC 324	Discrete-Time Sig&Sys	P.ENG	F	4
ELEC 345	Sensor Fabrication Technology		F	3.25
ELEC 353	Electronics II	P.ENG	F	4.25
ELEC 372	Numerical Methods & Optim		W	3.5
ELEC 408	Biomedical Signal & Image	N/O	W	3
ELEC 409	Bioinformatic Analytics	P.ENG	F	3
ELEC 421	DSP: Filters & Sys Design	P.ENG	F	4
ELEC 425	Machine Learning & Deep Learning	P.ENG	W	3.5
ELEC 431	Power Electronics	P.ENG	F	3.25
ELEC 443	Control Systems I	P.ENG	F	4.25
ELEC 451	Integ. Circuit Engineering	N/O	N/O	3.25

ELEC 461	Digital Communications	N/O	N/O	3.5
ELEC 464	Wireless Communications	P.ENG	W	3
ELEC 470	Comp. Sys. Architecture	P.ENG	W	3.5
ELEC 471	Safety Critical Soft Eng.		F	3.5
ELEC 472	Artificial Intelligence	P.ENG	W	3.5
ELEC 473	Cryptography and Network Security	P.ENG	F	3
ELEC 475	Computer Vision with Deep Learning	P.ENG	F	3.5
ELEC 476	Soft. Eng. for Social Good	N/O	N/O	3.5
ELEC 477	Distributed Systems	P.ENG	F	3
ELEC 497	Research Project	TBD	FW/S	3.5
SOFT 423	Software Requirements		W	3
SOFT 437	Performance Analysis	P.ENG	W	3

List B for external courses (mainly CMPE, and Internship and APSC project-based courses);

COURSE		P.ENG	TERM	CREDITS
APSC 303	Professional Internship (QUIP)		W	3.5
APSC 400	Technology, Engineering & Management (TEAM)		N/O	3.5
APSC 401	Interdisciplinary Projects	TBD	W	4.5
CMPE 204	Logic for Computing Science		F/W	3
CMPE 251	Data Analytics		F	3
CMPE 322	Software Architecture		W	4
CMPE 325	Human Computer Interaction		W	3
CMPE 327	Software Quality Assurance		F	3
CMPE 332	Database Systems		W	3

CMPE 351	Advanced Data Analytics		W	3
CMPE 422	Formal Methods in Soft. Eng.		F	3
CMPE 452	Neural & Genetic Comp.		F	3
CMPE 454	Computer Graphics		W	3
CMPE 457	Image Proc. & Comp. Vision		W	3
CMPE 458	Prog. Language Processors		W	4
ENPH 336	Solid State Devices		W	3.25
MREN 348/ ELEC 448	Introduction to Robotics	P.ENG	W	4

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

EE: Technical Electives

- List A - for ECE-controlled courses

COURSE		P.ENG	TERM	CREDITS
ELEC 270	Discrete Mathematics	P.ENG	W	3.5
ELEC 279	Intro to Obj.-Oriented Progr.	P.ENG	W	4
ELEC 333	Electric Machines	EIT	W	4.25
ELEC 345	Sensor Fabrication Technology		F	3.25
ELEC 373	Computer Networks		W	3.5
ELEC 374	Digital Systems Engineering	P.ENG	W	4.25
ELEC 408	Biomedical Signal & Image	N/O	W	3
ELEC 409	Bioinformatic Analytics	P.ENG	F	3
ELEC 421	DSP: Filters & Sys Design	P.ENG	W	4
ELEC 425	Machine Learning & Deep Learning	P.ENG	W	3.5
ELEC 431	Power Electronics	P.ENG	F	3.25
ELEC 433	Linear Control Systems	P.ENG	F	3.5
ELEC 435	Energy Storage Technology	P.ENG	W	3.5
ELEC 436	Elec. Machines and Control	P.ENG	W	3

ELEC 443	Control Systems I	P.ENG	F	4
ELEC 446	Mobile Robotics	P.ENG	F	3.5
MREN 348/ ELE	Introduction to Robotics	P.ENG	W	4
ELEC 451	Integ. Circuit Engineering	N/O	N/O	3.25
ELEC 457	Analog ICs and System Apps.	EIT	F	3.5
ELEC 461	Digital Communications	P.ENG	W	3.5
ELEC 464	Wireless Communications	P.ENG	W	3
ELEC 470	Comp. Sys. Architecture	P.ENG	W	3.5
ELEC 472	Artificial Intelligence	P.ENG	W	3.5
ELEC 473	Cryptography and Network Security	EIT	F	3
ELEC 475	Computer Vision with Deep Learning	P.ENG	F	3.5
ELEC 481	Applications of Photonics	N/O	N/O	3
ELEC 486	Fibre Optic Comm.		W	3.75
ELEC 497	Research Project	TBD	FW/S	3.5

EE: Technical Electives (cont'd)

List B - for external courses (outside ECE)

COURSE		P.ENG	TERM	CREDITS
APSC 303	Professional Internship		W	3.5
APSC 400	Technology, Engineering & Management (TEAM)	N/O	N/O	3.5
APSC 401	Interdisciplinary Projects	TBD	W	4.5
CHEE 340	Biomedical Engineering		W	3.5
CISC/CMPE 3X	3rd year Computing Science			3
CISC/CMPE 4X	4th year Computing Science			3
ENPH 460	Laser Optics		W	3.5
MTHE 337	Intro. Operations Research		W	3
MTHE 367	Engineering Data Analysis	N/O		3.5
MTHE 430	Modern Control Theory		F	4
MTHE 455	Stoch. Proc. & Apps.		F	3.5
MTHE 472	Control of Stochastic Proc.		W	3
MTHE 474	Information Theory		F	3
MTHE 477	Source Coding and Quant.		W	3
MTHE 478	Topics in Comm. Theory		FW	3
MECH 228	Kinematics & Dynamics		W	3.5
MECH 328	Dynamics & Vibration		F	3.5
MECH 393	Biomechanical Prod. Dev.		W	3.5
MECH 423	Intro. to Microsystems		W	3.5
MECH 455	Computer Integrated Manuf.		F	3.5
MECH 465	Computer Aided-Design		F	3.5
MECH 478	Biomaterials		F	3.5
MECH 494	Kinematics Human Motion		F	3.5

Complementary Studies Program Requirement

Complementary Studies – not Innovation Stream

- Must have a total of **9 credits** (108 units) of CS:
 - **1 course (or 3 credits)** must be from **List A** (Humanities and Social Sciences)
 - Remaining 2 courses (or 6 credits) can be from List A or List B

STREAMS of Specialization:

- Suggested streams give a coherent set of courses in a particular area, e.g., mechatronics. Use interest and passion as your guide;
- Streams allow you to mix and match as you wish and provide larger number of courses to choose from;

Streams of Specialization for Elective Courses in Computer Engineering

Computer Hardware
Computer Systems
Software Engineering
Mechatronics
Artificial Intelligence

Streams of Specialization for Elective Courses in Electrical Engineering

Biomedical Engineering
Communications and Signal Processing
Communication Systems and Networks
Microelectronics and Photonics
Mechatronics
Power Electronics and Systems
Robotics and Control

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 only waived in exceptional circumstances. Process:
 - **the instructor of the course for which the waiver is required must approve the waiver in writing (sign the form or provide the approval over the email)**
 - Student then submits the approved prerequisite waiver request or signed form to the Undergraduate Program Assistant for the ECE Undergrad Chair consideration

Prerequisite Charts: [EE](#) and [CE](#)

FORMS: <https://smithengineering.queensu.ca/current-students/academics/forms-online.html>

Course Planning

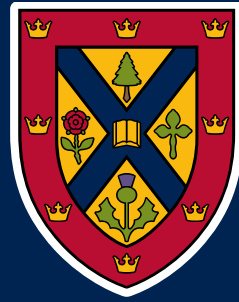
- Use your degree planning spreadsheet to verify that all program requirements will be met
- Follow Calendar & all preregistration instructions
 - Confirm core courses are preloaded
 - Select electives (technical and/or complementary studies)
 - Check course prerequisites and **exclusions**
 - Submit substitution requests for courses outside ECE that are not listed as official technical electives (CISC, MECH, MTHE)
 - AVOID **Negative Service Indicators** (SOLUS account, unpaid tuition). [Log on to SOLUS](#) to view your financial account to see if you have any outstanding debts. The University Registrar's Office can be reached at solus@queensu.ca about registration or payment.
- Respect deadlines to avoid difficulties (Add/Drop courses)

Internship or QIUP

- As an Engineering and Applied Science student, you are eligible to receive 3.5 academic credits for participating in the internship program.
- Your diploma will read: Bachelor of Applied Science, Major in Computer Engineering or Electrical Engineering with Professional Internship.
- Students are required to complete a work term report or seminar for evaluation at the end of their internship, as well as successful employer performance evaluations after four, eight and twelve months.
- Note, ELEC and CMPE programs accept APSC 303 as a List B technical elective. Credit may only be granted to students who have successfully fulfilled the necessary requirements to receive the Professional Internship designation.

Degree Planning Spreadsheet – helps to stay on track with your studies

- [Electrical Engineering](#)
- [Computer Engineering](#)



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