FACULTY OF APPLIED SCIENCE
SCHOOL OF ENGINEERING

Computer Engineering
Advising Sheet 2025W

All courses required for the Bachelor of Applied Science Degree in Computer Engineering are below. Students are advised to take 6 courses per term to complete their degree in 4 years, or 5 courses per term to complete in 5 years. Full course descriptions can be found here. Course vectors, prerequisites (in red), and corequisites (in orange) are included. Review this document thoroughly and annually, particularly the 4th year electives starting on Page 2 & 3, which change year to year.

4-year plan **5-year plan**

	Term 1	Term 2	
Year 1 of 4	**APSC_O 169** Fundamentals of Sustain. Eng. Design [3-2-0]	**APSC_O 173** Engineering Analysis II [3-0-1] *APSC_O 172*	Year 1 of 5
	APSC_O 172 Engineering Analysis I [3-0-1]	**APSC_O 177** Engineering Computation and Instrumentation [3-2*-0][1]	
	APSC_O 179 Linear Algebra for Engineers [3-0-0]	**APSC_O 178** Electricity, Magnetism, and Waves [3-0-1] *APSC_O 172, 173*	
	APSC_O 180 Statics [3-0-2] *APSC_O 179*	**APSC_O 181** Dynamics [3-0-2] *APSC_O 172, 180, 173*	
	APSC_O 182 Matter and Energy I [2-2*-2*]	**APSC_O 183** Matter and Energy II [2-2*-2*]	
Year 2 of 4	**APSC_O 176** Engineering Communication [3-0-0]	**APSC_O 171** Engineering Drawing and CAD/CAM [3-0-2]	Year 2 of 5
	APSC_O 246 System Dynamics [3-0-1] *APSC_O 173, 179, 181*	**APSC_O 201** Technical Communication [3-0-0] *APSC_O 176*	
	APSC_O 248 Engineering Analysis III [3-0-1] *APSC_O 173*	**APSC_O 255** Electric Circuits and Power [3-2*-1] *APSC_O 178*	
	COSC_O 121 Computer Programming II [3-2-0] *60% or higher in APSC_O 177 or COSC_O 111*	**CMPE_O 246** Computer Engineering Design Studio [3-2-0] *APSC_O 169 and 177, or COSC_O 111*	
	CMPE_O 201 Computing for Science, Eng., and Tech. [3-0-0] *APSC_O 176*	**COSC_O 222** Data Structures [3-2-0] *60% or higher in COSC_O 121*	
Year 3 of 4	**COSC_O 221** Discrete Structures in Computing [3-0-1] *APSC_O 173, COSC_O 121*	**APSC_O 262** Digital Logic Design [3-2*-0] *APSC_O 178*	Year 3 of 5
	APSC_O 256 Numerical Methods for Analysis [3-1-0] *APSC_O 173, 177, 179*	**APSC_O 270** Signals and Communication Systems [3-2*-0] *APSC_O 246*	
	ENGR_O 303 Engineering Project Management [3-0-0] *APSC_O 169, 201*	**APSC_O 278** Electric and Magnetic Fields *[3-0-1] APSC_O 178, 248*	
	ENGR_O 350 Linear Circuit Theory [3-0-0] *APSC_O 246, 255*	**CMPE_O 301** Software System & Design for Eng. [2-2-0] *CMPE_O 386*	
	ENGR_O 351 Microelectronics I [3-2*-0] *APSC_O 255*	**ENGR_O 305** Engineering Economic Analysis [3-0-0] *2nd yr. standing*	
Year 4 of 4	**CMPE_O 386** Industrial Automation [3-2-0] *APSC_O 177*	**COSC_O 310** Software Engineering [3-2-0] *COSC_O 222, third-year standing*	Year 4 of 5
	ENGR_O 359 Microcomputer Engineering [3-2*-0] *APSC_O 255*	**ENGR_O 362** Digital Signal Processing I [3-0-1] *APSC_O 270*	
	ENGR_O 360 Engineering Probability and Statistics [3-0-1] *APSC_O 248*	**COSC_O 315** Introduction to Operating Systems [3-2-0] *COSC_O 221, 222*	
	Humanities Elective	*Design / Technical Elective*	
	Design / Technical Elective	*Design / Technical Elective*	
	CMPE_O 485 Introduction to Quantum Computing [3-0-0] *ENGR_O 350, 360*	**ENGR_O 413** Law and Ethics for Engineers [3-0-0] *Third-year standing*	Year 5 of 5
	Design / Technical Elective	*Design / Technical Elective*	
	Design / Technical Elective	*Design / Technical Elective*	
	ENGR_O 499 Engineering Capstone Design Project [2-3-0; 0-6-0] *Fourth-year standing*		

[1] COSC_O 111 can be substituted for APSC_O 177. Either will fulfill the APSC_O 177 program requirement.

Fourth Year Guide 2025W

Electrical Engineering Fourth-Year Curriculum

CMPE_O 485 Introduction to Quantum Computing (Term 1) *ENGR_O 350, 360*	3 credits
ENGR_O 413 Law and Ethics for Engineers (Term 2) *Third-year standing*	3 credits
ENGR_O 499 Engineering Capstone Design Project (Terms 1 & 2) *Fourth-year standing*	6 credits
Humanities elective	3 credits
Design Electives[2]	12 credits
Technical Electives[3]	9 credits

[2] Design electives are chosen from an approved list of Design Electives that will be provided later.

[3] Technical electives are chosen from an approved list of Technical Electives that will be provided later.

Humanities Elective

List of accepted humanities elective topics can be found here: https://engineering.ok.ubc.ca/student-resources/engineering-academic-services-undergraduate-students/navigate-your-degree/humanities-electives/

Design and Technical Electives

- **Design Elective (DE):** A design elective has at least 50% design content that meets requirements established by the Canadian Engineering Accreditation Board (CEAB). Design electives are taught by specific faculty who are licensed as Professional Engineers (P.Eng) in Canada.
- **Technical Elective (TE):** A course that has less than 50% design content and focuses on specialized knowledge related to engineering.
- Students must take at least four design electives (12 credits).
- Students must take a total 21 credits (seven courses) of design and technical electives. Design electives can also count towards technical electives but the converse is not true – technical electives cannot replace design electives.
- Courses are subject to minimum and maximum enrolments. The School of Engineering reserves the right to cancel a course if the minimum enrolment is not met. If a course is cancelled, you will be notified by email. Check the UBC course schedule to see the course availability.
- Depending on the level of engineering design and the assigned instructor, the classification of a course as either a design elective or technical elective may change.
- Course descriptions including required prerequisites are found in the UBC Academic Calendar: https://okanagan.calendar.ubc.ca/course-descriptions-0

Many required courses for program completion may not be offered until 2026W (4th year). The earliest students can expect to graduate from this program is June 2027.

The full list of elective choices available to computer engineering students will not be finalized until the first cohort is moving into fourth year (2026W) but some courses have been approved as Design and Technical electives if taken in 2025W:

Approved Computer Engineering Design Electives (DE)

Term 1

CMPE_O 410 Network Security and Encryption
[3-0-0] *Fourth-year standing*

Term 2

ENGR_O 400 Applied Machine Vision for Engineers
[3-0-0] *Fourth-year standing*

ENGR_O 407 Inclusive Design [3-2-0] Third-year standing* ***Offered Summer 2025*** *as a* ***Design Elective***

Approved Computer Engineering Technical Electives (TE)

- Computer Engineering students may substitute up to 2 technical electives with approved alternate electives.
- All of the Approved Computer Engineering Design Electives can be credited as technical electives.

Term 1

ENGR_O 418 Applied Machine Learning for Engineers
[3-0-0] *Fourth-year standing*

Term 2

CMPE 401 Deep Learning for Engineers
[3-0-0] *Fourth-year standing*

ENGR_O 453 Internet of Things
[3-2*-0] *APSC_O 254*

Alternative Electives (AE)

All of the Approved Electrical Design Electives can be credited as technical electives. Any design electives taken over and above those required will count towards the requirement of technical electives. Technical electives cannot be used as design electives.

Up to **two** technical electives (6 credits) can be replaced with:

1. Graduate 500-level courses from within the School of Engineering. For courses cross-listed as undergraduate (400 level) and graduate (500 level) courses, you must register in the undergraduate version. To be considered, you must have completed at least half of required 300- and 400- level courses (at least 36 credits) with a minimum average of 80% in those courses, completed all prerequisites, and obtained permission from the course instructor. If you meet the criteria, you must complete the Registration Waiver Request to be registered in a graduate course. Graduate courses being offered are listed as APSC_O 5XX and ENGR_O 5XX courses on the course schedule.
2. Any other UBCO APSC_O, CMPE_O, ENGR_O, or MANF_O 300- or 400-level courses, although registration in such courses is subject to prerequisite requirements (or prerequisite waiver approval via the Registration Waiver Request if the prerequisite requirements are not met).
3. External (non-APSC_O /CMPE_O/ENGR_O/MANF_O) courses. If you would like to request permission to take a course outside of SOE as an alternative elective that does not appear on this list, please contact soe.academicservices@ubc.ca and include a course syllabus. It will be reviewed by the Computer Engineering Program Chair. If you are missing the course's prerequisite(s), you need to complete the registration waiver process for the external course's instructor/department. The School of Engineering cannot register you in external courses.

For inquiries regarding registration or academic advising, contact an Academic and Career Advisor

Computer Engineering Program Chair: Dr. Thomas Johnson: thomas.johnson@ubc.ca