



Course Planning and Registration Guide

2019W Version 1.0

2014W Mechanical Engineering Course Planning and Registration Guide
Note that this document is a guide only. The Calendar is the official statement of curriculum requirements, and takes precedence in the event of a discrepancy.

General Program (Non Co-op)

2014W Third Year

Term 1		Term 2	
MECH 360	3	MECH 305	6
MECH 375	3	MECH 358	3
MECH 325	4	MECH 380	3
MECH 326	3	C. STUD	3
MECH 328	3	C. STUD	3
MECH 368	3		
	19		18

Registration Instructions

STT: MEGA, MEG1 or MEGO
Register for a MECH 358 lab
Add 2 complementary studies courses to term 2 – one humanities, one Impact of Technology on Society

Anticipated
2015W Fourth Year
SUBJECT TO CHANGE

Term 1		Term 2	
EECE 365	3	APSC 450	2
MECH 327	3	MECH 431	3
MECH 329	3	MECH 457 (year-long course)	3
MECH 392	2	MECH 466	4
MECH 457 (year-long course)	3	T. ELEC	3
MECH 463	4	T. ELEC	3
T. ELEC	3		
	21		18

Your option/stream

Whether you are on a Co-op schedule or not (this doesn't necessarily correspond to being in co-op)

What year you will be in

What courses you will take

How to register for it

What you will take next year (anticipated)

See errata on page 2.

Errata

- Technical Elective list updated - 08/05/2019

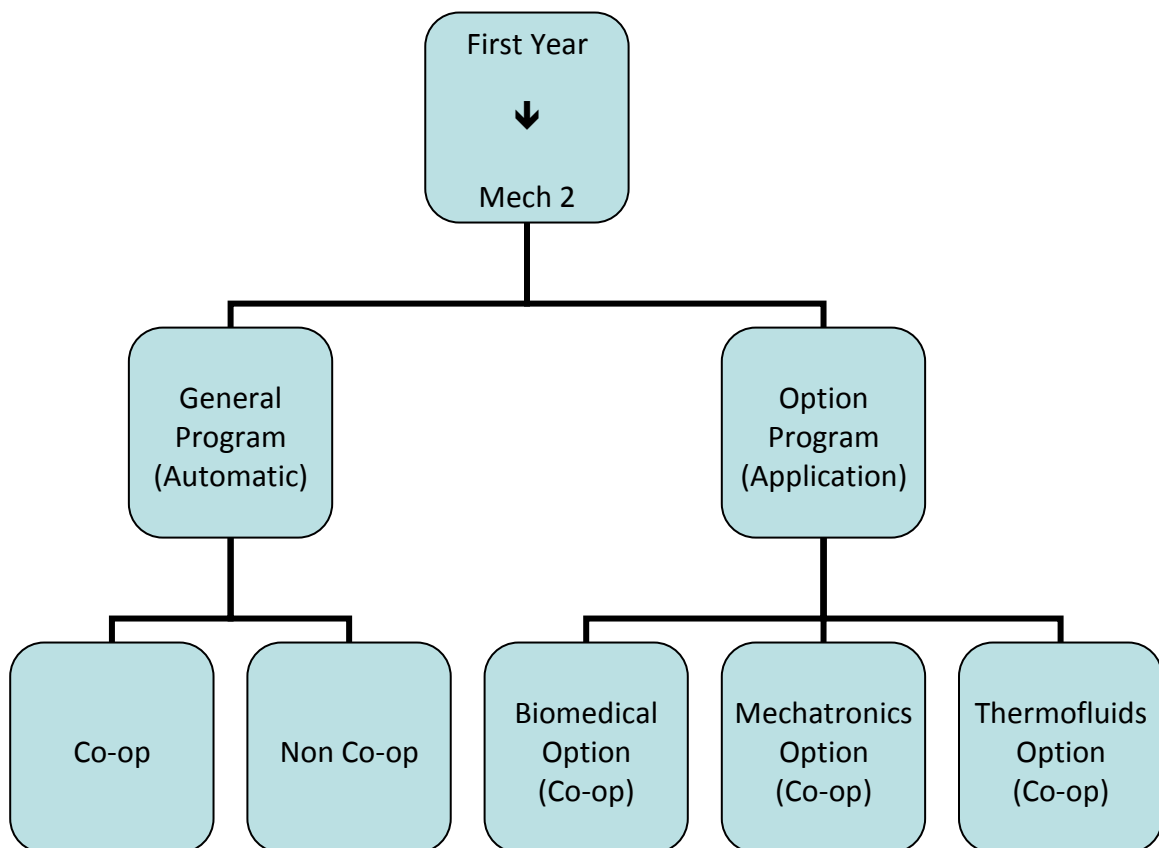
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Standard Degree Paths

In mechanical engineering, students are able to stay in the general stream with or without participating in the Co-op program, or choose one of three options with Co-op. The diagram below depicts the many options available.

If you follow one of these options, as outlined in the book, the Mech department will have scheduled the courses in such a way that you will graduate on time, without course conflicts, provided you pass all of your courses. If you go off-cycle, you are responsible for ensuring you have the necessary pre-requisites and you may end up with a course conflict.



Review your Graduation Requirements – Degree Navigator

The easiest way to review what courses you need to graduate is to log in to Degree Navigator and use the default session selection (directions are at <http://students.engineering.ubc.ca/how-use-degree-navigator>).

If the curriculum you see doesn't look quite right, please contact students@mech.ubc.ca and we will verify that your default session is correct.

Once you know what courses you are required to take, it is important to realize you won't necessarily take them in the order presented in the Calendar.

Because we can only offer most courses once a year, and due to the complexity of pre-requisites, you usually have to mix up the third and fourth year courses to make your schedule work. The Department creates recommended course order schedules for the following student streams:

- General stream (Non Co-op)
- General stream with Co-op
- General stream – extended degree
- Biomedical stream with Co-op
- Mechatronics stream with Co-op
- Thermofluids stream with Co-op

If you deviate from these streams, you are responsible for ensuring you meet pre-requisite requirements, and we can't guarantee that your courses won't conflict with each other.

Effect of Co-op on Courses – “Co-op” vs. “Non Co-op” Course Orders

You need to arrange your courses in the right order to ensure you meet pre-requisites. If you simply mash third year co-op and third-and-a-half year co-op together, you won't meet your pre-requisites and you may find yourself unregistered from courses.

“Co-op” Schedule – Third year is taken T2 / T1

Term 1	Term 2	Summer
2	2	Co-op
Co-op	3	Co-op
3.5	Co-op	Co-op
4	4	

“Non Co-op” Schedule – Third year is taken T1 / T2

Term 1	Term 2	Summer
2	2	Off
3	3	Off
4	4	

Term 1	Term 2	Summer
2	2	Co-op
Co-op	Co-op	Co-op
3	3	Co-op
4	4	

Term 1	Term 2	Summer
2	2	Co-op
3	3	Co-op
Co-op	Co-op	Co-op
4	4	

Take the STTs in numeric sequence – you can't take 3.5 until you have finished 3, and you can only take one STT per year.

How to Register for Courses

- 1) Register online via the SSC.
- 2) Problems registering? Try the troubleshooting section below.
- 3) Continued issues with MECH-coded courses? Email students@mech.ubc.ca and request assistance. Don't forget to include your student number and the other information we need to understand the problem. Please also check the pre-requisite information on the following page.
- 4) Continued issues with other courses? Unfortunately, we aren't able to help with courses outside our jurisdiction. Please talk to the Department offering the course directly (see the back of this booklet), or complete a formal add/drop request (<http://students.engineering.ubc.ca/forms>) and submit it directly to them (or Engineering Student Services for APSC-coded classes).

Registration Troubleshooting

Before contacting the Mech Student Services Office for assistance, please check that you have:

- Paid your registration deposit
- Ensured that you have met the LPI / English / MECH 226/227 requirements
 - You must complete the LPI prior to promotion to second year, your first year English requirement prior to promotion to third year, and your MECH 226/227 requirement prior to promotion to fourth year.
- Registered in a Standard Time Table (STT)
 - You can't register in individual courses without registering in a STT first.
 - If your STT is full, pick the next nearest timetable and add/drop from there to match the registration guide.
- Ensured that you do not have any conflicts with other courses
- Tried registering for the course on your own
 - We use "Restricted" seats rather than general seats for our courses, but seeing the word "restricted" does not necessarily mean you can't take the course. Always attempt to register prior to requesting assistance.

Due to rules about classroom assignments and minimum course sizes, students are required to complete their registration for both academic terms by August 1st.

After August 1st:

- * **Courses with low enrollment may be cancelled;**
- * **It may not be possible for us to accommodate registration requests.**

Enforcement of Pre-Requisites

Pre-requisites based on failures or deficiencies in Mech 2 are strongly enforced to ensure consistency and fairness to all students. Please do not ask for an exception – they were considered very carefully before being put into place.

Mech 2 Pre-requisite Enforcements		
Failed or Deficient Subject Area	You May Not Take (Enforced Prerequisite)	We Recommend Not Taking (Unenforced)
Dynamics	Core: MECH 463, MECH 466 Option/Elective: MECH 366, MECH 435	
Solid Mech	Core: MECH 305/6, MECH 326, MECH 329, MECH 360, MECH 392, MECH 463	
Electrical	Core: MECH 368, MECH 466 Option/Elective: MECH 366	
Materials	Core: MECH 326, MECH 329, MECH 392 Option/Elective: MECH 366	
DE Math (255)	Core: MECH 358, MECH 360, MECH 463, MECH 466. Option/Elective: MECH 366	MECH 375
Fluids	Core: MECH 305, MECH 380 Option/Elective: MECH 366, MECH 386, MECH 433	MECH 375
Thermo	Core: MECH 305/6, MECH 326, MECH 327, MECH 375	MECH 366, MECH 380
Vector Calc Math (253)	Core: MECH 358, MECH 463	

For all other pre-requisite issues, you must contact the instructor of the course (please cc students@mech.ubc.ca). The Professor will consider requests on a case-by-case basis, and may contact you if he or she has questions about your preparation. Once he or she has considered your request, he or she will inform you and the Department via email. If your request is approved, the Department will register you in the course.

A professor has no obligation to accept a prerequisite waiver request. There is no appeal against his or her decision.

You are advised to make requests as early as possible, as it may take a week or more to process your request. You may make requests prior to your registration opening, although you will not be registered until after that date has passed. Please state your registration opening date in your email when making an early request.

Registration Guides

How to use these guides:

Find the correct stream, and the correct year level.

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General Program (Non Co-op)

2014W Third Year

Term 1		Term 2	
MECH 360	3	MECH 305	6
MECH 375	3	MECH 358	3
MECH 325	4	MECH 380	3
MECH 326	3	C. STUD	3
MECH 328	3	C. STUD	3
MECH 368	3		
	19		18

Registration Instructions

STT: MEGA, MEGI or MEGO
 Register for a MECH 358 lab
 Add 2 complementary studies courses to term 2 – one humanities, one Impact of Technology on Society

Anticipated
2015W Fourth Year
SUBJECT TO CHANGE

Term 1		Term 2	
EECE 365	3	APSC 450	2
MECH 327	3	MECH 431	3
MECH 329	3	MECH 457 (year-long course)	3
MECH 392	2	MECH 466	4
MECH 457 (year-long course)	3	T. ELEC	3
MECH 463	4	T. ELEC	3
T. ELEC	3		
	21		18

Your option/stream
Whether you are on a Co-op schedule or not (this doesn't necessarily correspond to being in co-op)
What year you will be in
What courses you will take
How to register for it
What you will take next year (anticipated)

Brief course descriptions are available in the official UBC Calendar. Past syllabi can be found on the Department website.

Registration Guide Abbreviations

STT – Standard Timetable

C.STUD – Complementary Studies (additional information on page 21)

T.ELEC – Technical Elective (additional information on page 25)

General Program (Non Co-op)

2019W Third Year

Term 1		Term 2	
MECH 360	3	MECH 305	6
MECH 375	3	MECH 358	3
MECH 325	4	MECH 380	3
MECH 326	3	C. STUD	3
MECH 328	3	C. STUD	3
MECH 368	3		
	19		18
Registration Instructions			
STT: MEGA, MEGY, or MEGO Register for a MECH 305 and 358 lab Add 2 complementary studies courses to term 2 – one humanities, one Impact of Technology on Society			

Anticipated			
2020W Fourth Year			
SUBJECT TO CHANGE			
Term 1		Term 2	
ELEC 344	3	APSC 450	2
MECH 327	3	MECH 431	3
MECH 329	3	MECH 457 (year-long course)	3
MECH 392	2	MECH 466	4
MECH 457 (year-long course)	3	T. ELEC	3
MECH 463	4	T. ELEC	3
T. ELEC	3		
	21		18

General Program (Non Co-op)

2019W Fourth Year

Term 1		Term 2	
ELEC 344	3	APSC 450	2
MECH 327	3	MECH 431	3
MECH 329	3	MECH 457 (year-long course)	3
MECH 392	2	MECH 466	4
MECH 457 (year-long course)	3	T. ELEC	3
MECH 463	4	T. ELEC	3
T. ELEC	3		
	21		18
Registration Instructions			
STT: MERI Register for a ELEC 344 lab and tutorial and a MECH 466 lab Add one Technical Elective to Term 1 and 2 Technical Electives to Term 2			

General Program (Non Co-op) Extended

2019W Third Year

Term 1		Term 2	
MECH 360	3	MECH 305	6
MECH 325	4	MECH 358	3
MECH 326	3	MECH 380	3
MECH 328	3	MECH 375	3
MECH 368	3		
	16		15
Registration Instructions			
STT: MEGA, MEGY, or MEGO Switch MECH 375 from T1 to T2 Register for a MECH 305 and 358 lab			

Anticipated			
2020W Fourth Year			
SUBJECT TO CHANGE			
Term 1		Term 2	
ELEC 344	3	APSC 450	2
MECH 327	3	MECH 431	3
MECH 329	3	MECH 457 (year-long course)	3
MECH 457 (year-long course)	3	MECH 466	4
MECH 463	4	T. ELEC	3
	16		15

Anticipated			
2021W Extension Term			
SUBJECT TO CHANGE			
Term 1		Term 2	
MECH 392	2		
T. ELEC	3		
T. ELEC	3		
C. STUD	3		
C. STUD	3		
	14		

General Program (Non Co-op) Extended

2019W Fourth Year

Term 1		Term 2	
ELEC 344	3	APSC 450	2
MECH 327	3	MECH 431	3
MECH 329	3	MECH 457 (year-long course)	3
MECH 457 (year-long course)	3	MECH 466	4
MECH 463	4	T. ELEC	3
	16		15
Registration Instructions			
STT: MERI Drop MECH 392 Register for a ELEC 344 lab and tutorial and a MECH 466 lab Add one Technical Elective to Term 2			

Anticipated 2020W Extension Term *SUBJECT TO CHANGE*			
Term 1		Term 2	
MECH 392	2		
T. ELEC	3		
T. ELEC	3		
C. STUD	3		
C. STUD	3		
	14		

General Program with Co-op

2019W Third Year

Term 1		Term 2	
Co-op		MECH 305	6
		MECH 358	3
		MECH 360	3
		MECH 375	3
		MECH 380	3
			18
Registration Instructions			
STT: MEGU Register for a MECH 305 and 358 lab			

Anticipated			
2020W Third and a Half Year			
SUBJECT TO CHANGE			
Term 1		Term 2	
MECH 325	4	Co-op	
MECH 326	3		
MECH 327	3		
MECH 328	3		
MECH 368	3		
MECH 392	2		
	18		

Anticipated			
2021W Fourth Year			
SUBJECT TO CHANGE			
Term 1		Term 2	
APSC 450	2	MECH 431	3
MECH 329	3	MECH 457 (year-long course)	3
MECH 457 (year-long course)	3	MECH 466	4
MECH 463	4	T. ELEC	3
ELEC 344	3	T. ELEC	3
C. STUD	3	C. STUD	3
T. ELEC	3		
	21		19

General Program with Co-op

2019W Third and a Half Year

Term 1			Term 2	
MECH 325	4		Co-op	
MECH 326	3			
MECH 327	3			
MECH 328	3			
MECH 368	3			
MECH 392	2			
	18			
Registration Instructions				
STT: Choose MEND, MENO, or MENT				

Anticipated				
2020W Fourth Year				
SUBJECT TO CHANGE				
Term 1			Term 2	
APSC 450	2		MECH 431	3
MECH 329	3		MECH 457 (year-long course)	3
MECH 457 (year-long course)	3		MECH 466	4
MECH 463	4		T. ELEC	3
ELEC 344	3		T. ELEC	3
C. STUD	3		C. STUD	3
T. ELEC	3			
	21			19

General Program with Co-op

2019W Fourth Year

Term 1			Term 2	
APSC 450	2		MECH 431	3
MECH 329	3		MECH 457 (year-long course)	3
MECH 457 (year-long course)	3		MECH 466	4
MECH 463	4		T. ELEC	3
ELEC 344	3		T. ELEC	3
C. STUD	3		C. STUD	3
T. ELEC	3			
	21			19
Registration Instructions				
STT: MERU Register for a MECH 466 lab Register for a ELEC 344 lab and tutorial Register for five elective courses: three technical electives, one impact of technology, and one humanities.				

Biomedical Option

2019W Third Year (with Co-op)

Term 1		Term 2	
Co-op		MECH 305	6
		MECH 360	3
		MECH 358	3
		MECH 375	3
		MECH 380	3
			18
Registration Instructions			
STT: MEGS Register for a MECH 305 and 358 lab			

Anticipated			
2020W Third and a Half Year			
SUBJECT TO CHANGE			
Term 1		Term 2	
BMEG 410	3	Co-op	
MECH 325	4		
MECH 326	3		
MECH 328	3		
MECH 368	3		
MECH 463	4		
	20		

Anticipated			
2021W Fourth Year			
SUBJECT TO CHANGE			
Term 1		Term 2	
APSC 450	2	MECH 431	3
BMEG 456	3	MECH 439	1
MECH 459 (year-long course)	3	MECH 459 (year-long course)	3
ELEC 344	3	MECH 466	4
C. STUD	3	MTRL 495	3
T. ELEC	3	T. ELEC	3
T. ELEC	3	C. STUD	3
	20		20

Biomedical Option

2019W Third and a Half Year (with Co-op)

Term 1			Term 2	
BMEG 410	3		Co-op	
MECH 325	4			
MECH 326	3			
MECH 328	3			
MECH 368	3			
MECH 463	4			
	20			
Registration Instructions				
STT: MELS				

Anticipated				
2020W Fourth Year				
SUBJECT TO CHANGE				
Term 1			Term 2	
APSC 450	2		MECH 431	3
BMEG 456	3		MECH 439	1
MECH 459 (year-long course)	3		MECH 459 (year-long course)	3
ELEC 344	3		MECH 466	4
C. STUD	3		MTRL 495	3
T. ELEC	3		T. ELEC	3
T. ELEC	3		C. STUD	3
	20			20

Biomedical Option

2019W Fourth Year (with Co-op)

Term 1		Term 2	
APSC 450	2	MECH 431	3
BMEG 456	3	MECH 439	1
MECH 459 (year-long course)	3	MECH 459 (year-long course)	3
ELEC 344	3	MECH 466	4
C. STUD	3	MTRL 495	3
T. ELEC	3	T. ELEC	3
T. ELEC	3	C. STUD	3
	20		20
Registration Instructions			
STT: METO Register for a ELEC 344 lab and tutorial Register for a MECH 466 lab Add 3 Technical Electives Add one Impact of Technology on Society course and one Humanities course.			

Mechatronics Option

2019W Third Year (with Co-op)

Term 1		Term 2	
Co-op		CPEN 312	3
		ELEC 302	3
		ELEC 343	3
		MECH 306	4
		MECH 360	3
		MECH 375	3
			19
Registration Instructions			
STT: Choose MEMO or MEMT Register for a MECH 306 lab			

Anticipated			
2020W Third and a Half Year			
SUBJECT TO CHANGE			
Term 1		Term 2	
CPSC 259	4	Co-op	
MECH 325	4		
MECH 328	3		
MECH 366	3		
MECH 463	4		
MECH 392	2		
	20		

Anticipated			
2021W Fourth Year			
SUBJECT TO CHANGE			
Term 1		Term 2	
CPEN 333	3	APSC 450	2
MECH 420	3	MECH 421	4
MECH 423	4	MECH 431	3
MECH 458 (year-long course)	3	MECH 458 (year-long course)	3
MECH 467	4	T. ELEC	3
C. STUD	3	C. STUD	3
	20		18

Mechatronics Option

2019W Third and a Half Year (with Co-op)

Term 1			Term 2	
CPSC 259	4		Co-op	
MECH 325	4			
MECH 328	3			
MECH 366	3			
MECH 463	4			
MECH 392	2			
	20			
Registration Instructions				
STT: Choose MEPA or MEPO Register for MECH 366 lab				

Anticipated				
2020W Fourth Year				
SUBJECT TO CHANGE				
Term 1			Term 2	
CPEN 333	3		APSC 450	2
MECH 420	3		MECH 421	4
MECH 423	4		MECH 431	3
MECH 458 (year-long course)	3		MECH 458 (year-long course)	3
MECH 467	4		T. ELEC	3
C. STUD	3		C. STUD	3
	20			

Mechatronics Option

2019W Fourth Year (with Co-op)

Term 1		Term 2	
CPEN 333	3	APSC 450	2
MECH 420	3	MECH 421	4
MECH 423	4	MECH 431	3
MECH 458 (year-long course)	3	MECH 458 (year-long course)	3
MECH 467	4	T. ELEC	3
C. STUD	3	C. STUD	3
	20		18
Registration Instructions			
STT: MESH Register in a CPEN 333 lab Register in a MECH 420 lab Register in a MECH 421 lab Register in one Technical Elective Register in one Impact of Technology on Society course and one Humanities course.			

Thermofluids Option

2019W Third Year (with Co-op)

Term 1		Term 2	
Co-op		MECH 305	6
		MECH 358	3
		MECH 360	3
		MECH 375	3
		MECH 380	3
			18
Registration Instructions			
STT: MEGS			
Register for a MECH 305 and 358 lab			

Anticipated			
2020W Third and a Half Year			
SUBJECT TO CHANGE			
Term 1		Term 2	
MECH 325	4	Co-op	
MECH 327	3		
MECH 328	3		
MECH 386	3		
C. STUD	3		
C. STUD	3		
	19		

Anticipated			
2021W Fourth Year			
SUBJECT TO CHANGE			
Term 1		Term 2	
MECH 454 (year-long course)	3	APSC 450	2
MECH 463	4	MECH 431	3
MECH 479	3	MECH 454 (year-long course)	3
MECH 489	4	MECH 466	4
ELEC 344	3	T. ELEC	3
T. ELEC	3	T. ELEC	3
	20		18

Thermofluids Option

2019W Third and a Half Year (with Co-op)

Term 1			Term 2	
MECH 325	4		Co-op	
MECH 327	3			
MECH 328	3			
MECH 386	3			
C. STUD	3			
C. STUD	3			
	19			
Registration Instructions				
STT: MEPI				
Add one Impact of Technology on Society course and one Humanities course				

Anticipated				
2020W Fourth Year				
SUBJECT TO CHANGE				
Term 1			Term 2	
MECH 454 (year-long course)	3		APSC 450	2
MECH 463	4		MECH 431	3
MECH 479	3		MECH 454 (year-long course)	3
MECH 489	4		MECH 466	4
ELEC 344	3		T. ELEC	3
T. ELEC	3		T. ELEC	3
	20			18

Thermofluids Option

2019W Fourth Year (with Co-op)

Term 1		Term 2	
MECH 454 (year-long course)	3	APSC 450	2
MECH 463	4	MECH 431	3
MECH 479	3	MECH 454 (year-long course)	3
MECH 489	4	MECH 466	4
ELEC 344	3	T. ELEC	3
T. ELEC	3	T. ELEC	3
	20		18
Registration Instructions			
STT: META Register for an ELEC 344 lab and tutorial Register for a MECH 466 lab Add three Technical Electives			

Electives

The following sections provide information on complementary studies electives, technical electives, and electives for specialized options.

Complementary Studies Elective Requirements *Note: Complementary studies requirements are governed by Engineering Student Services. This page is for your general information, and to help you interpret the Calendar listing (<http://www.students.ubc.ca/calendar/index.cfm?tree=12,195,272,30>). In case of discrepancies, the Calendar listing takes precedence.*

Students require a total of 20 complementary credits to graduate. Three courses (8 credits) are already in your core curriculum (MECH 226/227, APSC 450, and MECH 431). The remaining 12 credits are taken as follows:

1. APSC 176, ENGL 112, or another first year English course (typ. taken in first year).
2. **An Impact of Technology on Society course.** Acceptable courses can be found on the following link: <http://students.engineering.ubc.ca/degree-requirements>
Note that not all courses are offered all years, and we have no control over what courses will be offered. Students may seek approval from the Engineering Student Services Office for other courses that address the impact of technology on society as the central course theme.
3. A humanities or social sciences elective (typically taken in first year). This elective must deal with central issues, methodologies, and thought processes of the humanities and social sciences. Most courses from the Faculty of Arts are acceptable apart from courses that are scientific or performance based (ex. dramatic arts). Some other exceptions include ARCL 140, CLST 301, PHIL 125, PHIL 220 and PSYC 218. To ensure a course is eligible, please consult ESS. Courses that teach language skills are also not accepted UNLESS your Impact of Technology on Society course is from the Faculty of Arts.
4. **A second humanities or social sciences elective** OR a language skills course. If you took a six credit Impact of Technology on Society or humanities course, you do not need to take this fourth course.

Most students need one impact of technology course and one humanities or language elective to complete their requirements. Everyone needs at least 20 total credits.

Examples of Fulfilling Complementary Studies Elective Requirements

Below are examples of ways to meet your requirements.

Example 1: You took APSC 176 in first year, which satisfied your English requirement (#1). You have selected APSC 261 as your Impact of Technology on Society course (#2). APSC 261 is not in the Faculty of Arts, so you must take a humanities course that is NOT a language for requirement #3 (eg, PHIL 101, ECON 101, or an English literature class (eg, ENGL 110)). To satisfy requirement #4, you may choose either another humanities course, or you may select a language skills course (eg, FREN 101).

Example 2: You took ENGL 112 in first year, which satisfied your English requirement (#1). You also choose to take PHIL 435A as an Impact of Technology on Society course (#2), which is in the Faculty of Arts. You may take all six of your credits from #3 and #4 from any combination of humanities and language courses.

FAQ

1. Do ECON courses count towards my humanities requirement?

Yes. ECON courses may be used towards requirements #3 and #4. Note that ECON 310 and 311 (or 101 and 102) are part of the Minor in Commerce, so students interested in the Minor may wish to select those courses.

2. Do COMM courses count towards my humanities requirement?

No. COMM courses are not in the Faculty of Arts and are considered technical in nature. In some circumstances, however, one COMM course may be used as an Outside Technical Elective (see section 7) towards your technical elective requirements. *Please note that only three credits of Outside Technical Electives may be used towards your degree requirements.*

Examples of Humanities Courses

The examples below are not an exhaustive list – just some common choices:

- ECON 310, 311
- ANTH 100, 103
- ENGL 110
- HIST 104, 105
- LASO 204
- LING 100, 101
- PHIL 101, 102
- POLI 100, 101
- PSYC 101, 102, 208

Technical Elective Requirements

The number of required technical electives varies among the four different mechanical engineering streams. The requirements for each stream are provided below.

General Program requirements

Started MECH 2	Total Credits	General A	General A or B or Outside Technical Elective
2010W or later	9	6	3

Biomedical Option requirements

Started MECH 2	Total Credits	Biomedical A	Biomedical A or B	Biomedical A or B, or General A or B, or Outside Technical Elective
2010W or later	9	3	3	3

Mechatronics Option requirements

Started 4 th year	Total Credits	Mechatronics
2016W – 2017W	6	6
2018W or later	3	3

Thermofluids Option requirements

Started MECH 2	Total Credits	Thermofluids A	General A or B, or Outside Technical Elective
2010W or later	9	6	3

Camosun Bridge requirements

Students transferring from the Camosun Bridge Program must meet the above credit requirements, **but cannot receive credit toward their degree for non-engineering science courses.**

Specifically, **students cannot use the following courses** towards their technical elective requirements:

- APSC 440, APSC 461, MATH 300, MATH 400, MECH 496, any COMM courses

All Camosun Bridge students must choose their technical electives from those checked off under the Camosun column on the technical elective table. Students wishing to take courses not included in this column must receive express written permission from the Associate Head for Teaching. Such permission will only be granted for engineering science courses. Should students have any questions, please consult the Mech Student Services office.

Outside Technical Elective Regulations

**Note: This option does not apply to Camosun Bridge students*

An outside course is any course not on the applicable technical elective list. Students are occasionally granted special permission to take an outside course as a technical elective. Such courses should be 300-level or higher, from the Faculty of Applied Science, Science or Commerce, and of relevance to Mechanical Engineering.

Only three credits of outside technical electives can be used towards your degree, unless specific permission for specific courses is granted by the appropriate advisor, and that permission is recorded in your Degree Navigator report.

To obtain credit for an outside course, you must email students@mech.ubc.ca with the following information:

- Your name, student number
- The course number, title and Calendar description
- The course syllabus (either a link to an online version, or a .txt, .rtf, .doc or .pdf attachment)
- Confirmation that the course will not conflict with any other courses you are taking
- A list of any other outside electives you have taken, are taking or are hoping to take
- The reason(s) you would like to take the course

MECH Student Services will forward your request to the appropriate advisor. If your advisor gives approval we will inform you and update your Degree Navigator report.

FAQ: How do we pick which technical electives are offered?

We decide which technical electives to offer in a given year based on three factors:

- 1) The general level of interest of students as determined by the third year student survey;
- 2) The availability of a professor or person from industry with the appropriate background;
- 3) Historical registration levels.

In addition, many of the courses are offered every year because they are required for an Option.

2020S Technical Elective List

Course Number	Description	General A	General B	Biomedical A	Biomedical B	Thermofluids A	Mechatronics	Camosun
APSC 461	Global Engineering Leadership	✓	✓				✓	

2019W Term 1 Technical Elective List

Course Number	Description	General A	General B	Biomedical A	Biomedical B	Thermofluids A	Mechatronics	Camosun
MECH 386	Industrial Fluid Mechanics	✓	✓			N/A Core	✓	✓
MECH 410D	Special Topics: Engineering Dynamics	✓	✓				✓	✓
MECH 435	Orthopaedic Biomechanics	✓	✓	✓	✓		✓	✓
MECH 436	Fundamentals of Injury Biomechanics	✓	✓	✓	✓		✓	✓
MECH 470	Energy Conversion Systems	✓	✓			✓	✓	✓
MECH 479	Computational Fluid Dynamics	✓	✓			N/A Core	✓	✓
MECH 481	Aerodynamics of Aircraft I	✓	✓			✓	✓	✓
MECH 485	Aircraft Design: Structures	✓	✓			✓	✓	✓
MECH 488	Introduction to Ship Hydrodynamics	✓	✓			✓	✓	✓
MECH 489	Experimental Thermofluids	✓	✓			N/A Core	✓	✓
MECH 493	Introduction to Academic Research (Term 1-2)	✓	✓				✓	
MECH 502	Fluid Mechanics	✓	✓			✓	✓	✓

The lists below and to the left represent our best guess at what may be offered this year – read the titles carefully. Please register by August 1 or classes with low registration may be canceled. The courses on the SSC will represent the most up-to-date course listing.

See page 25 for how many electives you need from each column. Availability of electives is subject to securing a qualified instructor.

2019W Term 2 Technical Elective List

Course Number	Description	General A	General B	Biomedical A	Biomedical B	Thermofluids A	Mechatronics	Comsun
MECH 410A	Pulp & Paper Technology	✓	✓			✓	✓	✓
MECH 433	Biofluids	✓	✓	✓	✓	✓	✓	✓
MECH 445	Fuel Cell Systems	✓	✓			✓	✓	✓
MECH 460	Advanced Mechanics of Materials	✓	✓				✓	✓
MECH 462	Finite Element Analysis	✓	✓				✓	✓
MECH 464	Industrial Robotics	✓	✓				✓	✓
MECH 468	Modern Control Engineering	✓	✓				✓	✓
MECH 469	Dynamic System Modeling	✓	✓				✓	✓
MECH 473	Heating, Ventilation and Air Conditioning	✓	✓			✓	✓	✓
MECH 478	Internal Combustion Engines	✓	✓			✓	✓	✓
MECH 484	Aircraft Design: Aerodynamics	✓	✓			✓	✓	✓
MECH 491	Computer-Aided Manufacturing	✓	✓				✓	✓
MECH 493	Introduction to Academic Research (Term 1-2)	✓	✓				✓	
MECH 495	Industrial Engineering	✓	✓				✓	✓
MECH 496	Engineering Management	✓	✓				✓	

These tables cover the Technical Electives we anticipate offering for 2019W, and are subject to change based on the availability of professors and other factors. Different courses that qualify as technical electives may be offered in different years. Any course that appears on the approved list in the year it was taken will count.

* Note that any course that is core for your program cannot be double-counted as a technical elective.

May or May not be Offered in Either Term – Outside Electives

Course Number	Description	General A	General B	Biomedical A	Biomedical B	Thermofluids A	Mechatronics	Comsun
APSC 440	New Product Development	✓	✓					
BIOC 300	Principles of Biochemistry		✓					
BIOC 301	Biochemistry Laboratory		✓					
BIOC 302	General Biochemistry		✓					
CEEN 501	Thermal Energy Systems					✓		✓
CHBE 355	Kinetics and Reactor Design					✓		✓
CHBE 477	Fuel Cell and Electrochemical Engineering					✓		✓
CHBE 483	Energy Engineering					✓		✓
CHBE 484	Green Engineering Principles and Applications for Process Industries					✓		✓
CHBE 485	Air Pollution Prevention and Control					✓		✓
COMM 329	Principles of Organizational Behavior		✓				✓	
COMM 457	Fundamentals of Financial Accounting		✓				✓	
COMM 458	Fundamentals of Managerial Accounting		✓				✓	
COMM 465	Marketing Management		✓				✓	
COMM 473	Business Finance		✓				✓	
IGEN 450	Pipeline Engineering I	✓	✓					✓
IGEN 451	Pipeline Engineering II	✓	✓					✓
IGEN 452	Pipeline Design	✓	✓					✓
IGEN 453	Pipelines, Society and the Environment		✓					✓
MATH 300	Introduction to Complex Variables	✓	✓				✓	
MATH 400	Applied Partial Differential Equations	✓	✓				✓	
MINE 482	Maintenance Engineering	✓	✓				✓	✓
MTRL 494	Composite Materials	✓	✓				✓	✓
MTRL 495	Biomaterials	✓	✓	N/A Core	N/A Core		✓	✓

Course Number	Description	General A	General B	Biomedical A	Biomedical B	Thermofluids A	Mechatronics	Camosun
MTRL 496	Biomimetic Materials Processing				✓			✓
PHYS 404	Introduction to Medical Physics				✓			
PHYS 405	Radiation Biophysics				✓			
PHYS 438	Zoological Physics				✓			

Many of these non-MECH courses may not be offered each year and may have prerequisite requirements that you do not meet - contact the course instructor to see if your preparation is appropriate. Although Mech approves these towards your degree requirements, there is no requirement on the departments offering the course to make space available in it.

Note that courses may not be "double counted" in meeting these requirements, particularly for those pursuing a Minor in Honours Mathematics.

APSC 486: New Venture Design

APSC 486 is an interdisciplinary (Engineering – Commerce) project course that has the primary goal of providing students of both faculties with knowledge and practical experience related to the formation of an entrepreneurial enterprise based on the development of a new product or process.

APSC 486 may be taken as a technical elective with the following provisions:

- General students may use it to cover 3 credits of General A and 3 Credits of General B technical elective
- Biomedical and Thermofluids students may use it to cover 3 credits of General B technical elective. The remaining 3 credits will not be used towards your degree.
- Mechatronics students may use it to cover their technical elective requirements. You may have 3 surplus credits – talk to Mech Student Services for confirmation.

Students are now eligible to combine APSC 486 and MECH 45X (Capstone Design Project) by using the same project as the basis for both courses. By doing this, your total credit load for the combined course (APSC 496D) will be 9 credits (you will receive 6 credits towards the MECH 45X requirement and 3 as a General B technical elective). MECH students who enroll in this 9 credit combined course will be co-supervised both by APSC 486 instructors and one of the MECH 45X instructors. The project will primarily follow the APSC 486 curriculum, but students will also work out a plan with their MECH 45X instructor to satisfy some of the key design requirements of MECH 45X. Students are expected to attend all MECH 45X classroom and presentation sessions. For more details, please contact Dr. Antony Hodgson (ahodgson@mech.ubc.ca; Office: EDC 234).

Reasons to Consider a Lighter Course Load, and How to Schedule It

A Message from Dr. Schajer:

When and Why You Should Plan a Lighter Course Load

It's true - engineering studies are demanding and time-intensive. The onward flow of coursework can seem relentless and never-ending. It then becomes easy to slip into "survival mode," where learning takes a back seat

and one's only interest is to make it through alive to the end of term. Clearly, this approach is neither an effective way to get a good education, nor to maintain your mental and physical health.

Like other students, your wish is to have a constructive and happy university experience. You would like to be able to look back at your time at UBC with satisfaction and fond feeling. Certainly, you don't want to remember it as a place of mental stress and extended sleep deprivation.

If your studies are getting a bit stressful, you should consider extending your study time by one or two terms. You will be in good company; about one third of Mech students extend their studies beyond the nominal four-year timeframe. If you already have one or more failed or marginal courses, don't just consider a study time extension, firmly decide on it. Failed courses have a tendency to snowball when a repeated course is added to an already full subsequent term.

Extending your study time enables you can break out of this vicious cycle. You can escape from "survival mode" and actually start to enjoy your studies and get a deeper personal development from them. And don't be afraid to spend the extra time. After graduation, you will have 30-40 years of working life ahead of you, and a reduction by half a year will not hurt your career at all. To the contrary, having a more effective and happier education will significantly raise the quality of both your work and home life.

How You Plan a Lighter Course Load

You do not need special permission to extend your study time. If you wish, you may find it helpful to discuss your thoughts with an Undergraduate Adviser. Mech 2 has a fixed timetable arrangement, so the most convenient time to start extending your studies is at the start of Year 3. During the prior summer, plan all five of your remaining terms in detail. Rearrange your courses from four terms of 6 courses each to five terms of 5 courses each. Pay attention to prerequisites and which courses need remain grouped together.

Please see the section *Practical advice for planning a lighter course load* below for a list of considerations you should take into account while planning your remaining terms.

The most important thing to note is that YOU are responsible for controlling your timetable. You want to be sure that you have all your course requirements covered, and that all courses will fit into your timetables. You do not want to face the unhappy possibility of reaching your last term and finding out that you will have to remain an extra year just to make up one loose missing course.

Extension by one term gives you an extra summer for an additional period of work experience or for travel. You may choose to extend this time by a further four months and use Term 2 as your "extra" term. This would be a good choice if you have an alternative use for the Term 1 time and there are Term 2 Technical Elective courses that you would like to take.

Good luck with your studies. May they provide a strong foundation for your future endeavors, and be a source of satisfaction and happy memories.

Dr. Gary Schajer

Practical Advice for Planning a Lighter Course Load

Mechanical Engineering at UBC is a very demanding program, and for some students the workload is overwhelming. A potential solution to this is planning a lighter course load, and completing your degree in five years rather than four. If you are thinking of doing so, here are some things to consider:

1. For the most part, individual courses are offered in either Term 1 or Term 2. Check the current year's course offerings -- if a core course is in one term this year, it will only ever be offered in that term unless curriculum changes are made. This does not hold true for electives.
2. **If you are trying to lighten a term, always remove the complementary studies or technical elective courses first.** You are far more likely to have scheduling issues when you move core courses, and technical electives are the most useful when taken towards the end of your degree.
3. Never, ever drop MECH 360. It's the prerequisite for everything. (Okay, not really – but close. Take it at your first opportunity). Make sure you take MECH 375 early enough you can still take MECH 327.
4. If you are a Co-op student, try to avoid removing courses from your first academic term back from coop in third year (i.e. avoid moving the courses MECH 305, MECH 360, MECH 358, MECH 375, and MECH 380 that begin in January). If you need to lighten this term, speak to an advisor first.
5. You must take MECH 325, 326 and 328 all in the same term (unless you are in Thermofluids, in which case you must include 327 instead of 326).
6. If you are a general stream Co-op student, move either MECH 368 or MECH 392 to your extra term if you wish to lighten your second term of third year.
7. Make sure you complete Mech 328 before your fourth year, and recall that 454/7/8/9 are full-year project courses (i.e. you must be in school Sept-April).
8. Watch out for prerequisites and corequisites (check the Calendar). In particular:
 - The third year design courses: 360 is a corequisite for 325 & 326, and (325 + one of 326, 327) is a corequisite for 328.
 - MECH 375 is a prerequisite for MECH 327.
 - MECH 466 should be taken later in your degree as MECH 463 is its prerequisite.
 - MECH 305 is the lab for MECH 360, 375, and 380. Although they are not official prerequisites, they are very helpful for MECH 305.
9. Make sure you check your plan against any minimum credit load requirements you are subject to (student loans, scholarship eligibility (typ. 27 credits), housing, medical insurance, etc.).
10. If you are on co-op, ensure your new schedule will meet the Co-op regulations. Talk to Ash or Daria if you have questions.

Plot your courses out ahead of time, keeping the above in mind. Remember that even if courses will be offered, there is no guarantee that they won't conflict with each other.

Course times will vary from year to year, and the Faculty of Applied Science does not allow course conflicts.

Courses that would be taken at the same time by a major "stream" of students (eg, each STT) won't conflict, so try to group your courses so they more or less conform to a standard stream.

The curriculum, particularly in Mech, is somewhat fluid, so check for changes frequently, and be prepared to adapt.

After you do your own research, book an appointment with MECH advisor (see the back of this book) to review it. If you are on Co-op, you should also consult with a co-op coordinator.

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First Year Advising and Registration External to Mechanical

First year curriculum, transfer credits, Complementary Studies courses

Engineering Student Services

KAIS 1100

604-822-6556

Via the “Contact Us” webform on www.engineering.ubc.ca

Book an appointment time in person or via phone.

ELEC courses

Please submit a request here:

https://ubc.ca1.qualtrics.com/jfe/form/SV_8ctQzXHSpEed63r

MATH courses

Math asks that you continue to try registering online, or email ugradchair@math.ubc.ca.

CIVL courses

Complete the online course registration form:

<https://www.civil.ubc.ca/webform/course-request-registration-form>

Other out-of-department courses

Contact the Department offering the course for instructions.

People Here to Help

	Antony Hodgson ahodgson@mech.ubc.ca	Ryozo Nagamune nagamune@mech.ubc.ca	Tom Oxland toxland@icord.org	Pat Kirchen pkirchen@mech.ubc.ca	Heather Gerrits heather@mech.ubc.ca	Sarah Clayton students@mech.ubc.ca
Course Planning / Schedule Changes					x	x
Graduation Checks					x	x
Requests for Letters (not including references)					x	x
Personal Advising					x	x
Difficulties During Term					x	x
Career & Academic Plans	x	Mechatronics x	Biomedical x	Thermofluids x		
General Group Technical Elective Approvals	x					
Exchange Advising (+ Approvals)					x (+)	x (+)
Biomedical Option Advising & TE Approvals					x (+)	x (+)
Mechatronics Option Advising & TE Approvals					x (+)	x (+)
Thermofluids Option Advising & TE Approvals					x (+)	x (+)
Training in Mental Health issues					x	

Any of the advisors listed above are happy to talk to any student who wishes to see them, regardless of what area they specialize in. We encourage all students to speak to whomever they feel most comfortable approaching, particularly for personal matters. The advising team works together to ensure that every student receives the support they want or need. We can also refer you to other services on campus, ranging from the writing centre, to counseling services, to access and diversity.