

Mechanical Engineering Curriculum - Fall 2023 (Stream C - Honours)

Entry into the honours program: Students must follow the regular program for at least 3 terms and can decide to switch to the honours program by term 4 or later. There is a CGPA requirement of 3.5 or higher and students must meet with the Honours Advisor.

1st Term (Fall)		16 credits	Prerequisites/Co-requisites
COMP 208	Computers in Engineering	3	C - linear algebra [MATH 133 and and MATH 141 or equivalents]
CS	Complementary Studies Group B (HSSML)*	3	-
MATH 262	Intermediate Calculus	3	P - MATH 133 or equivalent, MATH 141 or equivalent
MATH 263	Ordinary Differential Equations for Engineers	3	C - MATH 262
MECH 201	Introduction to Mechanical Engineering	2	-
MECH 210	Mechanics 1	2	P - PHYS 101 or PHYS 131 or equivalent
2nd Term (Winter)		14 credits	Prerequisites/Co-requisites
FACC 100	Introduction to the Engineering Profession	1	-
MATH 264	Advanced Calculus for Engineers	3	P - MATH 262 / C - MATH 263
MECH 220	Mechanics 2	4	P - MECH 210, MATH 262 / C - MATH 263
MECH 262	Statistics and Measurement Laboratory	3	-
MECH 290	Design Graphics for Mechanical Engineering	3	-
3rd Term (Fall)		13 credits	Prerequisites/Co-requisites
CIVE 207	Solid Mechanics	4	P - CIVE 205 or MECH 210
MATH 271	Linear Algebra and Partial Differential Equations	3	P - MATH 263, MATH 264
MECH 240	Thermodynamics 1	3	-
MECH 292	Design 1: Conceptual Design	3	P - MECH 289 or MECH 290 / P or C - CIVE 207
4th Term (Winter)		16 credits	Prerequisites/Co-requisites
WCOM 206	Communication in Engineering	3	-
FACC 250	Responsibilities of the Professional Engineer***	0	P - FACC 100 or BREE 250
MECH 309	Numerical Methods in Mechanical Engineering	3	P - MATH 263 , MATH 271 , COMP 208
MECH 321	Mechanics of Deformable Solids	3	P - CIVE 207
MECH 331	Fluid Mechanics 1	3	P - MECH 210 / C - MECH 220, MECH 240, MATH 271
MECH 419	Advanced Mechanics of Systems	4	P - MECH 220, CIVE 207, MATH 264, MATH 271
5th Term (Fall)		15 credits	Prerequisites/Co-requisites
MECH 341	Thermodynamics 2	3	P - MATH 264, MECH 240
MECH 346	Heat Transfer	3	P - MECH 240, MECH 331, MATH 271
MECH 360	Principles of Manufacturing	3	P - MECH 289 or MECH 290 / P or C - CIVE 207
MATH xxx	Math Elective	3	-
MECH xxx	Technical Complementary	3	-
6th Term (Winter)		14 credits	Prerequisites/Co-requisites
FACC 300	Engineering Economy	3	-
MECH 362	Mechanical Laboratory 1	2	P - MECH 262
MECH 383	Applied Electronics and Instrumentation	3	P - MECH 262, MATH 263
MECH 403N1	Thesis (Honours)	3	P - Minimum 60 program credits
MECH 430	Fluid Mechanics 2	3	P - MECH 240, MECH 331
7th Term (Fall)		12 credits	Prerequisites/Co-requisites
MECH 403N2	Thesis (Honours)	3	P - MECH 403N1
MECH 404	Honours Thesis 2	3	C - MECH 403
MECH 494	Honours Design Project	3	P - MECH 292
MECH xxx	Advanced Technical Complementary	3	-
8th Term (Winter)		13 credits	Prerequisites/Co-requisites
FACC 400	Engineering Professional Practice	1	P - FACC 100, FACC 250**, and 60 program credits
MECH xxx	Advanced Technical Complementary	3	-
MECH xxx	Technical Complementary	3	-
MECH xxx	Technical Complementary	3	-
CS	Complementary Studies Group A (Impact)*	3	-

Technical Complementary courses are selected from an approved list given on the next page.

*The Complementary Studies (CS) courses are Impact of Technology courses (Group A) and Humanities & Social Sciences, Management Studies and Law courses (Group B). Students must take one course (3 credits) from Group A and one course (3 credits) from Group B. The curriculum above includes suggested terms during which these courses can be taken. These must be chosen from an approved list of courses/departments, found in the program list under "Complementary Studies" in the Faculty of Engineering Undergraduate section of the *Programs, Courses and University Regulations* publication (www.mcgill.ca/study) (see your program listing in the "Browse Academic Units & Programs" section).

**FACC 250 is not yet indicated as a prerequisite in the eCalendar course information (www.mcgill.ca/study) but it will be before FACC 400 is taken.

***The placement of FACC 250 is to be confirmed. Please check the curriculum later in the year for updates.

Before Fall 2020 elective courses (EC) may be chosen from any course at the 200-level or higher in the Desautels Faculty of Management, Faculty of Agricultural and Environmental Sciences, Faculty of Arts, Faculty of Engineering, Faculty of Religious Studies, Faculty of Science, and/or Schulich School of Music.

Students are responsible for satisfying pre-/co-requisites and verifying with their department that they are meeting the requirements of their program.

Technical Complementary Courses - Mechanical Engineering

3 credits from the following Math Technical Complementary courses, or chosen with the approval of either the thesis supervisor or the coordinator of the Honours Program, when a thesis supervisor has not as yet been secured:

		Credits	Prerequisites/Co-requisites
MATH 316	Complex Variables	3	P - MATH 314 or equivalent and MATH 243
MATH 323	Probability	3	P - MATH 141 or equivalent
MATH 326	Nonlinear Dynamics and Chaos	3	P - MATH 222/262, MATH 223
MATH 327	Matrix Numerical Analysis	3	P - COMP 202, MATH 223 / 236 / 247 / 251, or instructor permission
MATH 417	Linear Optimization	3	P - COMP 202, MATH 223 / 236, MATH 314 or equivalent
MATH 478	Computational Methods in Applied Mathematics	3	P - MATH 315 or MATH 325 or MATH 263; MATH 317 or MATH 387 or COMP 350 or MECH 309; or instructor permission

Note: TC not approved: MATH 363 as of 201901, MATH381 as of 202109 MATH407 as of 20201

6 credits from the following Technical Complementary courses:

		Credits	Prerequisites/Co-requisites
MECH 513	Control Systems	3	P - MECH 412 or MECH 419
MECH 546	Finite Element Methods in Solid Mechanics	3	P - MECH 315 or MECH 419, and MECH 321, or instructor permission
MECH 562	Advanced Fluid Mechanics	3	P - MATH 271
MECH 559	Engineering Systems Optimization	3	-
or MECH 579	Multidisciplinary Design Optimization	3	P - MECH 309 or MATH 317
MECH 578	Advanced Thermodynamics	3	-

6 credits at the 300 level or higher, chosen from Mechanical Engineering courses (subject code MECH).

One of these two courses (3 credits) must be from the following Design shortlist:

		Credits	Prerequisites/Co-requisites
MECH 497	Value Engineering	3	P - MECH 393 and 45 credits completed
MECH 498	Interdisciplinary Design Project 1	3	-
MECH 499	Interdisciplinary Design Project 2	3	-
MECH 513	Control Systems	3	P - MECH 412 or MECH 419
MECH 530	Mechanics of Composite Materials	3	C - MECH 321 or equivalent or instructor permission
MECH 532	Aircraft Performance, Stability and Control	3	P - MECH 412 / MECH 419, MECH 533
MECH 535	Turbomachinery and Propulsion	3	P - MECH 331 / C - MECH 430
MECH 536	Aerospace Structures	3	P - MECH 321
MECH 543	Design with Composite Materials	3	P - MECH 530
MECH 544	Processing of Composite Materials	3	P - MECH 530
MECH 553	Design and Manufacture of Microdevices	3	P - MECH 309, MECH 321, (MECH 315 or MECH 419)
MECH 559	Engineering Systems Optimization	3	-
MECH 560	Eco-design and Product Life Cycle Assessment	3	P - MECH 360
MECH 563	Biofluids and Cardiovascular Mechanics	3	P - CHEE 314 or MECH 331
or CHEE 563	Biofluids and Cardiovascular Mechanics	3	
MECH 564	Thermal Radiation and Solar Energy Systems	3	P - MECH346, COMP 208
MECH 565	Fluid Flow and Heat Transfer Equipment	3	P - MECH 240, MECH 309, MECH 331, MECH 341, MECH 346 or instructor permission
MECH 573	Mechanics of Robotic Systems	3	P - MECH 309 or MATH-317, MECH 572

3 credits chosen from courses at the 300-level or higher (approved by the Department in the Student Handbook) in the Faculty of Engineering or MIME 260 if taken prior to entering the Honours program, or in the Faculty of Science.

LAST update: Jan. 31, 2023

For the official program listing, see the *Programs, Courses and University Regulations* publication (www.mcgill.ca/study).