

Department of Mechanical Engineering  
Faculty of Engineering  
McGill University

# **UNDERGRADUATE STUDENT HANDBOOK**

**2024-2025**

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## Preamble

This handbook seeks to inform, guide, and assist undergraduate students in the Department of Mechanical Engineering at McGill University. Throughout this document, “you” refers to undergraduate students in our department.

The official list of programs, policies, rules, regulations, and syllabus is available on the [University eCalendar](#). The eCalendar is frequently updated and revised; please make sure to consult the latest version.

You can access the full range of academic opportunities available at the university by seeking guidance, advice, and help from the staff. Please be proactive in seeking meetings with advisers and professors to ensure that you receive the advice needed to meet your academic goals. It should be noted that, while advisers are there to provide students with guidance, students are ultimately responsible for meeting all the requirements of their degree. It is your responsibility to learn the rules and regulations of the University.

### Academic Integrity

McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures. For more information, see [www.mcgill.ca/students/srr/honest/](http://www.mcgill.ca/students/srr/honest/).

(approved by Senate on 29 January 2003)

To ensure that all students are aware of, and understand, the expectations of academic integrity that are placed on them, all students must complete a mandatory Academic Integrity Tutorial by the end of their first semester enrolled at McGill University. The Academic Integrity Tutorial is available online on [myCourses](#) as course AAAA 100.

### Chair of the Department

Professor [Rosaire Mongrain](#)

ENGMD 270

[rosaire.mongrain@mcgill.ca](mailto:rosaire.mongrain@mcgill.ca)

## Academic Advisers

### Department of Mechanical Engineering

#### Professor Tim Lee

Associate Chair (Undergraduate Student Affairs)  
ENGMC 211

[ugradchair.mecheng@mcgill.ca](mailto:ugradchair.mecheng@mcgill.ca) or [tim.lee@mcgill.ca](mailto:tim.lee@mcgill.ca)

#### Tina Panaritis

Undergraduate Student Affairs Coordinator  
ENGMD 270

(514) 398-6296

[ugrad.mecheng@mcgill.ca](mailto:ugrad.mecheng@mcgill.ca)

#### Professor Tim Lee

Academic Adviser for U0 students  
Coordinator for Design Concentration  
Adviser for Exchange and Transfer credits  
ENGMC 211

[tim.lee@mcgill.ca](mailto:tim.lee@mcgill.ca)

#### Professor Larry Lessard

Academic Adviser for U1 students  
ENGMD 362

[larry.lessard@mcgill.ca](mailto:larry.lessard@mcgill.ca)

#### Professor James Forbes

Academic Adviser for U2 students  
ENGMD 150

[james.richard.forbes@mcgill.ca](mailto:james.richard.forbes@mcgill.ca)

#### Professor Changhong Cao

Academic Adviser for U3/U4 students  
ENGMD 372

[changhong.cao@mcgill.ca](mailto:changhong.cao@mcgill.ca)

#### Professor Evgeny Timofeev

Honours Program Coordinator  
ENGMC 121

[evgeny.timofeev@mcgill.ca](mailto:evgeny.timofeev@mcgill.ca)

### Faculty of Engineering

McGill Engineering Student Centre (MESC)

Student Affairs Office (SAO)

Advising and Peer Tutoring Services

Engineering Career Center (ECC)

Room 22, Frank Dawson Adams Bldg.

[www.mcgill.ca/engineering/students/undergraduate/mesc](http://www.mcgill.ca/engineering/students/undergraduate/mesc)

#### Lesley Morin

Faculty Adviser for Mechanical Engineering

(Advance credits for pre-engineering courses; Non-technical complementary courses)

[lesley.morin@mcgill.ca](mailto:lesley.morin@mcgill.ca)

## Streams

When students enter the undergraduate program in Mechanical Engineering, they are assigned to one of the following two streams:

**Stream A: CEGEP-entry (students from Quebec)**

**Stream B: non-CEGEP-entry (out-of-province and international students)**

The third stream (**Stream C**) is for students who choose to transfer to the **Honours Program**<sup>1</sup>.

The degree requirements are different for each of the three streams.

## Sample Curriculum

The Appendix contains the sample curriculum to complete the program in eight semesters. Follow the sample curriculum to the extent possible. If it becomes necessary to deviate from the sample curriculum, then consult an Academic Adviser to formulate a personalized curriculum. Reasons for deviation include the following: (i) Advanced credits (Stream B students), (ii) internship or exchange program; (iii) switching to the Honour's program; (iv) adding a Minor or Concentration; and (v) choosing to extend the program by one or two semesters.

## Credit Limit

Each student can register for a maximum of 18 credits per semester.

## Time for Graduation

Stream A students can graduate in eight semesters by taking an average of 15 credits per semester.

Stream B students can graduate in eight semesters only by taking an average of 18 credits per semester.

Stream B students have the option of taking a lighter load (for example, 15 credits per semester) and extending the time to graduation by one or two semesters.

## Registration

You can register for courses using the online Minerva system. Under exceptional circumstances, it may be necessary to fill out a [Course Authorization Form](#).

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<sup>1</sup> Specific details of the Honours Program can be found in a dedicated Handbook (<https://www.mcgill.ca/mecheng/files/mecheng/honoursprogramhandbook2024-2025.pdf>)

## Technical complementary courses

All students are required to take **three** Technical Complementary (TC) Courses. For convenience of classification, the three courses are referred to as TC1, TC2, and TC3. The three courses can be taken in any order (or even concurrently) as long as all pre-requisites are satisfied.

1) **TC1** must be any one of the **Design Intensive Technical Complementary Courses** listed below:

CHEE 563 <sup>2</sup>	Biofluids and Cardiovascular Mechanics
MECH 497 <sup>3</sup>	Value Engineering
MECH 498 <sup>4</sup>	Interdisciplinary Design Project I
MECH 499 <sup>4</sup>	Interdisciplinary Design Project II
MECH 513	Control Systems
MECH 530	Mechanics of Composite Materials
MECH 532	Aircraft Performance, Stability and Control
MECH 535	Turbomachinery and Propulsion
MECH 536	Aircraft Structures
MECH 543	Design with Composite Materials
MECH 544	Processing of Composite Materials
MECH 553	Design and Manufacturing of Microdevices (retired)
MECH 559	Engineering Systems Optimization
MECH 560	Eco-design and Product Life Cycle Assessment
MECH 563 <sup>1</sup>	Biofluids and Cardiovascular Mechanics
MECH 564	Thermal Radiation and Solar Energy Systems
MECH 565	Fluid Flow and Heat Transfer Equipment (retired S2023)
MECH 573	Mechanics of Robotic Systems

2) **TC2** must be a 3-credit course, at the 300-level or higher, offered by the Department of Mechanical Engineering (subject code MECH).

3) **TC3** must be a 3-credit course at the 300-level or higher. Subject to departmental approval, the course can be from the Faculty of Engineering (including MECH courses) or from the Faculty of Science (including MATH courses).

Approval is based on two factors: (i) the course must have sufficient technical content; and (ii) the content must not overlap significantly with any required core course. Listed below are a selection of courses that have been accepted, or not accepted, in the past. If you are considering a course that is not on the list, then please [contact](#) the Associate Chair to check whether it can be accepted as TC3.

### AERO – Institute for Aerospace Engineering (MIAE)

Accepted	AERO 401	Introduction to Aerospace Eng.
Not Accepted	AERO 410	Aerospace Design and Certification

### ARCH – ARCHITECTURE

Accepted	ARCH 377	Energy, Environment and Buildings
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### ATOC – ATMOSPHERIC & OCEANIC SCIENCES

Accepted	ATOC 330	Physical Meteorology
	ATOC 568	Ocean Physics

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<sup>2</sup>Select either CHEE 563 or MECH 563, but not both.

<sup>3</sup>Honours students taking MECH 497 Course instructor approval required. Students doing Design concentration have priority for MECH497.

<sup>4</sup>prerequisite or corequisite MECH 393.

<b>BIEN – BIOENGINEERING</b>		
Accepted	BIEN 310	Introduction to Biomolecular Engineering
	BIEN 320	Molecular, Cellular, and Tissue Biomechanics
	BIEN 340	Transport Processes in Biological Systems
	BIEN 510	Applications of Nanoparticles in the Biomedical Sciences
	BIEN 520	High Throughput Bioanalytical Devices
	BIEN 530	Imaging and Bioanalytical Instrumentation
	BIEN 550	Biomolecular Devices
<b>BIOL – BIOLOGY</b>		
Accepted	BIOL 309	Mathematical Models in Biology
<b>BMDE – BIOMEDICAL ENGINEERING</b>		
Accepted	BMDE 501	Selected topics in Biomedical Engineering
	BMDE 503	Biomedical Instrumentation
	BMDE 504	Biomaterials and Bioperformance
	BMDE 505	Cell and Tissue Engineering
	BMDE 508	Intro to Micro and Nano-Bioengineering
	BMDE 512	Finite-Element Modeling in Biomedical Engineering
<b>BREE – BIORESOURCE ENGINEERING</b>		
Accepted	BREE 314	Agri-Food Buildings
<b>CHEE – CHEMICAL ENGINEERING</b>		
Accepted	CHEE 400	Principle of Energy Conversion
	CHEE 484	Materials Engineering
<b>CIVE – CIVIL ENGINEERING</b>		
Accepted	CIVE 319	Transport Engineering
Not Accepted	CIVE324	Sustainable Project Management
	CIVE 433	Urban Planning & Development
	CIVE 561	Urban Activity, Air Pollution and Health
<b>COMP – COMPUTER SCIENCE</b>		
Accepted	COMP 302	Programing Languages and Paradigms
	COMP 303	Software Design
	COMP 310	Computer Systems and Organization
	COMP 417	Introduction to Robotics and Intelligent Systems
	COMP 424	Artificial Intelligence
	COMP 535	Computer Networks 1
	COMP 551	Applied Machine Learning
	COMP 557	Fundamentals of Computer Graphics
	COMP 559	Fundamentals of Computer Animation
<b>ECSE – ELECTRICAL ENGINEERING</b>		
Accepted	ECSE 305	Probability & Random Signals 1
	ECSE 321	Introduction to Software
	ECSE 414	Intro to Telecom Networks
	ECSE 424	Human– Computer Interaction
<b>ENVR – SCHOOL OF ENVIRONMENT</b>		
Accepted	ENVR 301	Environmental Research Design

EPSC – EARTH & PLANETARY SCIENCES

Accepted	EPSC 303	Structural Geology
	EPSC 312	Spectroscopy of Minerals (no longer offered starting F2023)
	EPSC 320	Elementary Earth Physics
	EPSC 330	Earthquakes and Earth Structures (no longer offered starting F2023)
	EPSC 549	Hydrogeology
	EPSC 350	Tectonics (requires prerequisite EPSC320)

EXMD – EXPERIMENTAL MEDICINE (administered by the Faculty of Science)

Accepted	EXMD 509	Gastrointestinal Physiology and Pathology
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FACC – FACULTY OF ENGINEERING

Not Accepted	FACC 500	Technology Business Plan Design
	FACC 501	Technology Business Plan Project

GEOG – GEOGRAPHY

Accepted	GEOG 322	Environmental Hydrology
Not Accepted	GEOG 305	Soils and Environment
	GEOG 309	Geography of Canada
	GEOG 315	Urban Transportation
	GEOG 390	Managing Field Research
	GEOG 408	Geography of Development
	GEOG 490	Independent Studies

MATH – MATHEMATICS & STATISTICS

Accepted	MATH 323	Probability Theory
	MATH 329	Theory of Interest
	MATH 340	Discrete Mathematics
	MATH 348	Topics in Geometry
	MATH 356	Probability
	MATH 363	Discrete Mathematics
	MATH 381	Complex Variables
	MATH 417	Mathematical Programming
	MATH 478	Computational Methods in Applied Mathematics
Not Accepted	MATH 315	Ordinary Diff Equations (overlap with MATH 263)
	MATH 318	Mathematical Logic
	MATH 324	Statistics (overlap with MECH 262)
	MATH 338	History Philosophy of Math

MIME – MINING & MATERIALS ENGINEERING<sup>5</sup>

Accepted	MIME 320	Extraction of Energy Resources
	MIME 341	Intro to Mineral Processing
	MIME 345	Applications of Polymers
	MIME 565	Aerospace Metallic-Materials and Manuf. Processes

MGSC – MANAGEMENT SCIENCE

*Not Accepted as of Fall 2020	MGSC 401	Statistical Foundations of Data Analytics
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<sup>5</sup>MIME 260-Materials Science and Engineering is accepted **only** for students who registered in MIME 260 prior to the Honours Program as a TC3.



PHYS – PHYSICS

Accepted	PHYS 319	Introduction to Biophysics
	PHYS 333	Thermal and Statistical Physics
	PHYS 340	Majors Electricity and Magnetism
	PHYS 350	Electromagnetism
	PHYS 446	Majors Quantum Physics
	PHYS 514	General Relativity
	PHYS 512	Computational Physics with Applications
	PHYS 521	Astrophysics
	PHYS 534	Nanoscience and Nanotechnology
	PHYS 551	Quantum Theory
	PHYS 567	Particle Physics
	PHYS 580	Introduction to String Theory
Not Accepted	PHYS 328	Electronics (overlap with MECH 383)

PSYC – PSYCHOLOGY

Accepted	PSYC 305	Statistics for Experimental Design
	PSYC 311	Human Cognition and the Brain
	PSYC 315	Computational Psychology
	PSYC 342	Hormones and Behavior
Not Accepted	PSYC 302	Psychology of Pain
	PSYC 304	Child Development
	PSYC 310	Human Intelligence

POLI – The Political Science Department is in the Faculty of Arts; thus, Not Accepted.

SEAD – SUSTAINABILITY IN ENGINEERING AND DESIGN

Accepted	SEAD 510	Energy Analysis
	SEAD 515	Climate Change Adaptation and Engineering Infrastructure
	SEAD 520	Life Cycle-Based Environmental Footprinting
	SEAD 540	Industrial Ecology and Systems
	SEAD 550	Decision-Making for Sustainability in Design and Engineering

URBP – URBAN PLANNING

Accepted	URBP 506	Environmental Policy and Planning
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## Non-technical complementary courses

**GROUP A:** Impact of Technology on Society

**GROUP B:** Humanities and Social Science, Management Studies, and Law (HSSML)

**Stream A:** Students must take **one** course from GROUP A and one course from GROUP B.

**Stream B:** Students must take **one** course from GROUP A and **two** courses from GROUP B.

**Exception:** If you were granted transfer credits labelled 1XX when you entered the program, then the 1xx course can count towards one GROUP B course. The 1XX course cannot be used to satisfy the GROUP A requirement.

### GROUP A: Impact of Technology on Society

Any one of the 3-credit courses listed below:

ANTH 212	Anthropology of Development
BTEC 502	Biotechnology Ethics and Society
CIVE 469	Infrastructure and Society
ECON 225	Economics of the Environment
ECON 347	Economics of Climate Change
ENVR 201	Society, and Environment and Sustainability
GEOG 200	Geographical Perspectives: World Environmental Problems
GEOG 203	Environmental Systems
GEOG 205	Global Change: Past, Present and Future
GEOG 302	Environmental Management 1
MGPO 440	Strategies for Sustainability
MIME 308	Social Impact of Technology
PHIL 343	Biomedical Ethics
RELG 270	Religious Ethics and the Environment
SOCI 235	Technology and Society
SOCI 312	Sociology of Work and Industry
URBP 201	Planning the 21st Century City

### GROUP B: Humanities and Social Sciences, Management Studies and Law (HSSML)<sup>6</sup>

Any 3-credit course at the 200-level or higher in the following departments:

Anthropology (ANTH)  
Economics (any 200 or 300-level course, excluding ECON 227 and ECON 337)  
History (HIST)  
Philosophy (excluding PHIL 210 and PHIL 310)  
Political Science (POLI)  
Psychology (excluding PSYC 204 and PSYC 305, but including PSYC 100)  
Religious Studies (RELG)  
Sociology (excluding SOCI 350)

OR

Any of the 3-credit courses listed below:

ARCH 528	History of Housing
BUSA 465 <sup>7</sup>	Technological Entrepreneurship
CLAS 203	Greek Mythology

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<sup>6</sup>Students who entered the program in **Fall 2017 (or later)** are not permitted to take language courses to satisfy the Group B requirement. If you entered the program **before September 2017**, and wish to take a language course, then please contact the Engineering Student Center (FDA 22) to check for approval.

<sup>7</sup>Management courses have limited enrolment. Check the [registration dates](#).

ENVR 203	Knowledge, Ethics and Environment
ENVR 400	Environmental Thought
FACC 220	Law for Architects and Engineers
FACC 500	Technology Business Plan Design
FACC 501	Technology Business Plan Project
HISP 225	Hispanic Civilization 1
HISP 226	Hispanic Civilization 2
INDR 294 <sup>6</sup>	Introduction to Labour-Management Relations
INTG 201 <sup>6</sup>	Integrated Management Essentials 1
INTG 202 <sup>6</sup>	Integrated Management Essentials 2
MATH 338	History and Philosophy of Mathematics
MGCR 222 <sup>6</sup>	Introduction to Organizational Behaviour
MGCR 352 <sup>6</sup>	Marketing Management 1
ORGB 321 <sup>6</sup>	Leadership
ORGB 423 <sup>6</sup>	Human Resources Management

## Elective Courses for CEGEP-Entry Students<sup>8</sup>

Stream A (CEGEP-entry) students must take two elective courses (designated as EC1 and EC2) for a total of six credits. Both courses must be at the 200-level or higher from any of the faculties or schools listed below:

Desautels Faculty of Management  
Faculty of Agricultural and Environmental Sciences  
Faculty of Arts  
Faculty of Engineering Faculty of Religious Studies Faculty of Science  
Schulich School of Music

### General Interest Science courses

The following courses are accepted as Electives (EC1 & EC2) because they were formerly 200-level courses before a recent change of designation.

ANAT 182	Astrobiology (formerly ANAT 205)	<small>Not open to students who have taken (or currently taking) EPSC 182</small>
ATOC 181	Introduction to Atmospheric Science (formerly ATOC 210)	
ATOC 182	Introduction to Oceanic Sciences (formerly ATOC 220)	
ATOC 183	Climate and Climate Change (formerly ATOC 230)	
ATOC 184	Science of Storms (formerly ATOC 240)	
ATOC 185	Natural Disasters (formerly ATOC 250)	
EPSC 180	The Terrestrial Planets (formerly EPSC 200)	
EPSC 181	Environmental Geology (formerly EPSC 243)	
EPSC 185	Natural Disasters (formerly EPSC 250)	
EPSC 186	Astrobiology (formerly EPSC 205)	<small>Not open to students who have taken (or currently taking) EPSC 182, ANAT 182, or PHYS 186</small>
PHYS 180	Space, Time & Matter (formerly PHYS 200)	
PHYS 181	Everyday Physics (formerly PHYS 202)	
PHYS 182	Our Evolving Universe (formerly PHYS 205)	
PHYS 183	The Milky Way Inside and Out (formerly PHYS 206)	
PHYS 184	Energy and the Environment (formerly PHYS 228)	
PHYS 186	Astrobiology (formerly EPSC 205)	<small>Not open to students who have taken (or currently taking) EPSC 182, ANAT 182, or EPSC 186</small>

Note: The following courses are not accepted as elective courses:

CHEM 181	The World of Chemistry: Food
CHEM 182	The World of Chemistry: Technology
CHEM 183	The World of Chemistry: Drugs

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<sup>8</sup> CEGEP students who entered in Fall 2020 (or later) are not required to register in Elective courses (EC1 and EC2).

## Academic Policies<sup>9</sup>

This section lists the policies of the Department of Mechanical Engineering that are related to registration, graduation, and other academic issues. Violation of the rules can have significant consequences (including a delay in graduation); *ignorance of rules will not be accepted as an excuse*. You are strongly advised to meet an Academic Adviser at the beginning of each academic year.

### Pre-Requisites and Co-Requisites

Students are not allowed to register for any core course without having completed the necessary pre-requisites. Co-requisites, if any, must also be satisfied. Completion of a course means that the student has obtained a grade of C or better. Grades of D, F, or a deferred grade (e.g., missed the final exam and has an L or LE grade) mean that the course has not been completed; therefore, the student cannot take the next course in a pre-requisite sequence.

For *elective* courses: students can register without the necessary pre-requisites if permitted by the instructor. Permission is granted only in rare cases based on the academic record of the student.

During the month of May each year, students typically register for courses for the forthcoming Fall and Winter terms. However, if a student fails to complete a Fall semester course, and if that course is a pre-requisite for a Winter term core course, then the student *must drop* the Winter term course.

### Course Conflicts

It is a university rule that students are not allowed to register in courses that conflict. Students are not permitted to register for courses with time conflicts in the department of Mechanical Engineering. This regulation applies to both lectures and tutorials. Thus, students are not allowed to register for two courses even if the conflict is only with the tutorial of one course and with the lecture (or tutorial) of the other course. Please note that the online system (Minerva) does not consistently flag conflicts; therefore, it is necessary to check your schedule carefully. (The only exceptions to this rule are: (i) MECH 497–Value Engineering, and (ii) certain MATH courses where the tutorials are clearly identified as “optional”.)

### Grades and Program Requirements

Students must obtain a grade of C or better in all core courses. Core courses include all required courses (departmental and non-departmental) and all technical complementary courses. (See the “Note for Engineering” in the section on “Grades and GPA” in the [eCalendar](#).) The satisfactory/unsatisfactory option is available for non-technical complementary courses, subject to certain [conditions](#).

### Degree Evaluation and Applying to Graduate

As you approach the final year of the program, it is necessary to prepare for graduation.

- 1) Start by using the Minerva Degree Evaluation tool. Although far from perfect, it is a place to start. This tool usually indicates some false problems; for example, it does not recognize a technical complementary course taken outside our department.
- 2) Print out the curriculum for your stream and check off all completed courses one-by-one.
- 3) Consult the Undergraduate Student Affairs Coordinator or an Academic Adviser to ensure that you are on track to satisfy all program requirements.

**In the final semester, you must apply to Graduate.** (Please consult the Apply to Graduate section of the [eCalendar](#) for details, procedures, and deadlines.)

## Courses with Laboratory Components

- 1) The laboratory component is mandatory for courses that contain such components. Failure to complete the laboratory component could result in a K (incomplete) grade, even if the student has earned sufficient marks in the non-laboratory components for a passing grade. The K grade will be removed after the student has successfully completed all required lab components.
- 2) If you are re-taking a course, you can request the Instructor for an exemption from repeating the laboratories if these have been successfully completed in the previous attempt. Instructors have the discretionary authority to grant an exemption for the laboratory component only.<sup>9</sup>

## Taking Courses outside McGill University

All core courses must be completed at McGill University. (The only exception is for students taking part in Exchange Programs.) For elective courses, permission is granted to take courses outside the university, and then only under exceptional circumstances (for example, as part of an official Study-Away program).

Special consideration is given to students who obtain a D or F grade in a core course in their *final semester*. [Contact](#) the Associate Chair for permission if you wish to take an equivalent course in a different department and/or university. The course must be equivalent in terms of credit, content, and Accreditation Units (AU). If the course does not satisfy AU requirements, it may be necessary to take an extra technical-complementary course to make up for the deficit.

## IUT (Inter-University transfer)

**Courses taken as an IUT need to be submitted through the [Course Equivalency Database](#)**

When you apply for a course through IUT, you must indicate how you will use the course towards your program. Generally, students are not permitted to take courses at another University and have it transferred back as EXTRA at McGill.

A student applying for an IUT should have a **valid reason (if the course is offered at McGill during the term in which they are requesting an IUT-the student should prioritize taking the course at McGill)** student must indicate why they want to take a specific course at another Quebec University. Generally, students apply for IUT's in the summer terms, and should only be requesting to take the following courses:

- Freshman (Year 0) courses
- Complementary Studies courses (Impact of Technology (Group A) or Humanities and Social Sciences, Management Studies and Law courses (Group B))
- Mechanical Elective courses (for students from a CEGEP background before Fall 2020)
- Computer or Software Engineering Natural Science Complementary Courses (for students from a CEGEP background)
- Minor courses: Up to 6 credits of courses taken toward a minor can be taken outside McGill, provided that the course is being used only toward the minor or is being used toward both the minor and the Complementary Studies / Elective requirement.

If you are interested in the course at Poly technique, you might be able to register as an independent/visiting/special student. For more information about that, please contact Polytechnique.

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<sup>9</sup>Policy confirmed by the Departmental Academic Committee, December 2018.

## Minor in Mechanical Engineering

[Engineering Minor Programs on eCalendar](#)

[Minor Form](#)

### Concentrations (15 credits)

Design

[Aeronautical no longer available, students can do an AERO Minor](#)

9 credits of the Concentration could count towards both the Technical complementary requirements for the major and the concentration.

### [Extra Courses](#)

#### Upper Limit on Credits

You can register for a maximum of 18 credits per semester. This limit is strictly enforced. Exemptions are considered only for students in the graduating semester and only for MECH 362 (because of the distributed nature of this course). In addition, Stream B students can request to take 19 credits in the seventh semester if you have followed the curriculum exactly for the first six semesters. Academic performance (CGPA) will be considered.

#### Supplemental Exams

Supplemental exams are not offered for courses administered by the Faculty of Engineering. Engineering students may be eligible to write a supplemental exam in certain courses administered by the Faculty of Arts and the Faculty of Science. Students are responsible for verifying if a [supplemental exam](#) is being offered and for applying online for the exam.

#### Exam Review

In accordance with the Charter of Student Rights, and subject to the conditions stated therein, students have the right to consult any written submission for which they have received a mark. To consult Final Exams after the grades have been announced, please fill out the “Request to Review Final Exam” form (available in ENGMD 270). The Exam Review is only to view exams. There is no possibility of changing the grade.

#### Reassessment of a Final Exam (also known as Reread)

If you want to have the final exam regraded then complete the [Reassessment of Final Exam form](#).

#### Deferred Exams

Deferred exams for courses administered by the Faculty of Engineering are offered during the final examination period the next time the course is given (excluding summer term).

This means, you will write a Fall deferred exam in Winter if it is offered.

This also means, the course instructor may be different then when you first took the course. **The format of the deferred final exam will not necessarily be identical to the original final exam you were expected to write.** You are responsible for contacting the professor of the course you are to write the deferred exam should you require information about the deferred exam format, and accessing notes through MyCourses.

You cannot move on to the next level course while having a deferral in a prerequisite. 4000 Characters is the maximum you can write in your deferral request, please limit your words to simply explain the reason – and briefly how it has affected you.

If it is a first request in your entire degree, no supporting documentation is required, however, any future requests will require supporting documentation.

If it is NOT your first application to defer a final exam at McGill, **your application also requires supporting documentation** that is sufficient, complete, and valid to support your request.

You must submit electronic supporting documents that cover the date of the missed exam and the nature of illness to [deferralexam.engineering@mcgill.ca](mailto:deferralexam.engineering@mcgill.ca) deadline within one week of the missed exam. You will find additional requirements for particular documents on the faculty's website at <https://www.mcgill.ca/engineering/students/undergraduate/courses-registration/exams-assessment/deferred-exams>. It is your responsibility to ensure you have read and followed the instructions for completing your request which is accessible through the link.

Application and document submission deadlines vary across faculties. As a student in the Faculty of Engineering, you are to follow the deferral deadlines and policy for the Faculty of Engineering found on this link: <http://www.mcgill.ca/engineering/current-students/undergraduate/courses-registration/exams-assessment/deferrals>.

For any further questions communicate with at [deferralexam.engineering@mcgill.ca](mailto:deferralexam.engineering@mcgill.ca)



## MECH 362 - Mechanical Laboratory (Mech Labs)

This course (2 credits) consists of a set of experiments that support and complement the theory covered in the following four courses: MECH 240-Thermodynamics, MECH 315-Mechanics 3 (Vibrations), MECH 331-Fluid Mechanics I, and MECH 346-Heat Transfer. Students should sign up in teams of two to perform experiments in one or more topic, in the term following the completion of one or more of the above courses.

### FREQUENTLY ASKED QUESTIONS

#### Where are the Mech Labs located?

Mech Labs are located in Room MD 51 (ground floor of the Macdonald Engineering Building).

#### What is the weekly Mech Labs schedule?

Mech Labs can be scheduled between 1:30 and 5:30 p.m., three days a week from Tuesday to Thursday. The Mech Lab schedule will indicate the time slot and the lab assigned for each team to attend and complete their lab.

#### What if I have a conflict with Mech Lab times?

Mech Labs can only be scheduled between 1:30 p.m. and 5:30 p.m. three days a week from Tuesday to Thursday. If you have a conflict with all these times, please plan to sign up in the following term(s).

#### What are the topics covered in Mech Lab experiments?

Mech Labs consist of a set of experiments covering four main topics: Thermodynamics, Fluids, Heat Transfer, and Vibrations. Each team of two students will have to complete a total of eight labs (that is, two labs per topic) to complete the MECH 362 course requirements.

#### When can I sign-up for a certain Mech Lab topic?

You can sign-up for a certain lab topic *after* completing the pre-requisite course as listed below:

Lab Topics	Pre-requisite courses
Thermodynamics Labs	MECH 240-Thermodynamics I
Fluids Labs	MECH 331-Fluid Mechanics
Heat Transfer Labs	MECH 346-Heat Transfer
Vibration Labs	MECH 315-Mechanics 3

Typically, each team can sign-up for one topic per semester (that is, two labs per semester). Thus, MECH 362 should be completed over several semesters. Two topics (four labs) also are permitted in any one semester.

#### What is the Correct Time to Register for MECH 362 on Minerva? **[VERY IMPORTANT]**

*There is a crucial difference between signing-up and registering.* You can sign-up (without registration on Minerva) to do Mech Lab topics after completing the pre-requisite course(s). You should register for MECH 362 on Minerva ONLY if you are signing up for the eighth and final set of labs in that semester. If you are not completing all the requirements for MECH 362 during that semester, then please do not register on Minerva.

#### What is the procedure to sign-up for Mech Lab topics?

- During the first week of each semester (Fall and Winter), you will receive a Mech Lab sign-up invitation, along with a sign-up Excel sheet and instructions.
- Students should sign-up in teams of two. Both team members should sign up for the same Mech Lab topic(s). In addition, the schedules of both members must overlap to find common times to do their Mech Labs.
- You and your partner should fill and submit *one* sign-up Excel sheet by following the signing up procedure indicated in the last section of the sign-up Excel sheet.
- If you cannot find a team partner, you may submit your form by leaving the partner section blank. We will try to team you up with another student.
- All completed sign-up Excel sheets should be [emailed](#) before the deadline.

**How can I obtain the Mech Lab manual?**

The updated lab manual of each experiment is available on [myCourses](#). Hardcopies of manuals are no longer printed and distributed.

**How can I get my Mech Lab schedule?**

The schedule will be posted during the second week of the semester on [myCourses](#).

**How is the course grade determined?**

The final course grade will be determined from the average of the grades for the eight labs.

**What about the final exam?**

There is no final exam for MECH 362.

**What is the best procedure to prepare for my Mech Labs?**

In general, each Mech Lab experiment should be performed in two steps. The first is to prepare a pre-laboratory preliminary report and Excel sheet. These documents should be submitted through the assignment section on [myCourses](#), 24 hours before the scheduled Mech Lab experiment. The second step is to submit your final lab report and Excel sheet one week after completing the scheduled experiment. The [myCourses](#) website provides important details, and best practices and guidelines, to prepare the pre-laboratory preliminary reports and the final lab reports.

Here is an example of how to complete MECH 362 for students:

- Complete the thermodynamic course (MECH 240) in Fall 2022 => complete the thermo lab in Winter 2023 (No Minerva registration)
- Complete the Fluid course (MECH 331) in Winter 2023 => complete the fluids lab in Fall 2023 (No Minerva registration)
- Complete the heat transfer course (MECH 346) in Fall 2022 => complete the heat transfer lab in Winter 2023 (No Minerva registration)
- Complete the heat vibration course (MECH 315 or 419) in Winter 2023 => complete the vibration lab in Fall 2023 and register for MECH 362 on Minerva in the same semester (Fall 2023)

Students should complete Mech labs over 3-4 semesters and they are allowed to register in the semester while they are doing their last lab topic

## Internships

Going on an internship (registered for FACC 200, FACC 201, FACC 202, FACC 210, FACC 211, or FACC 212) is permitted by the department, but be advised that if you do a fall or winter term internship, you will be going off stream. This might delay your graduation. It is advised that if you plan to do a winter internship, you take MECH393 before going on the internship, so that when you return, you can complete your MECH 463 Capstone in the following fall term.

Students would be permitted to take up to one academic course (a maximum of 4-credits) while on an approved internship. This arrangement would be subject to the following criteria:

1. *You must have a 3.0 GPA to make this request*
2. *You must inform the course instructor/professor that you will be on a full-time internship while pursuing this course and obtain their written permission to do so*
3. *You must inform your employer/internship supervisor that you intend on pursuing a course while under their employ and obtain their written permission to do so*

Please note that the following courses are project based or one-year courses and **not allowed** to do with an internship: MECH 463, MECH 494, MECH 497, MECH 498, and MECH 499

## Exchange Programs

Exchange Programs can offer valuable experience and enrich your undergraduate education. You must have a 3.0 CGPA to apply on Exchange. Only one exchange is allowed to each student. However, careful planning is needed to avoid a major disruption of your academic progress. Consult the [Department Exchange Adviser](#) and create a personalized curriculum before starting the exchange.

After finalizing the choice of the host university, select a maximum of 8 courses using the Course Equivalency System then book a mandatory appointment with the [Department Exchange Adviser](#), the name of the adviser is listed on page 4 of this Handbook to receive approval for the courses to be taken abroad even if the courses have been previously approved in the Course Equivalency database.

In many universities, courses satisfy credit requirements but fall short of the equivalent Accreditation Units (AU) required at McGill University. Additional Technical Complementary courses may be needed to make up for the deficit in AU.

Students who want to go on exchange in January 2023 (or later) will need to apply the following rules for the Exchange program.

- The following CORE courses will NOT be granted on exchange even if they are in the Course Equivalency System:

MATH 271 (3 CREDITS)

MECH 240 (3 CREDITS)

MECH 220 (4 CREDITS)

MECH 315 (4 CREDITS)

MECH 419 (4 CREDITS)

MECH 463 D1 (3 CREDITS)

MECH 463 D2 (3 CREDITS)

- Technical Complementary Courses

On exchange during term 4 or 5 only permitted to take one Technical complementary (TC) per semester abroad approved by the Department Exchange adviser.

On exchange in term 6, permitted to take two Technical Complementary (TC) courses per semester abroad approved by the Department Exchange adviser.

The Design-Intensive Technical Complementary Course (also known as TC1) cannot be taken on Exchange.

- Faculty or Minor Courses

General Complementary Courses: CS-Group A and CS-Group B, FACC300 approved by the ENG Faculty

Minor Courses approved by the Minor Adviser

## Trouble Shooting Guide

### Should I take FACC 250?

FACC 250 is required only for students who started the program in Fall 2017 or later.

### I am not following the sample curriculum and course sequence for my stream. Is this a problem?

If you do not follow the sample curriculum and course sequence, you may encounter problems with pre-requisites and time conflicts while registering for courses. In turn, this may delay your graduation.

A good example is MECH 463: Mechanical Engineering Project. This course spans two semesters and can only be started in the Fall term. The pre-requisites for MECH 463 include the following courses:

WCOM 206	Communication in Engineering
MECH 360	Principles of Manufacturing
MECH 292	Design 1: Conceptual Design
MECH 314	Dynamics of Mechanisms
MECH 393	Design 2: Machine Element Design
MIME 260	Materials Science and Engineering

**Even if only one pre-requisite is missing, it may lead to a delay of graduation by a year.**

### Have I received Advanced Credits?

Check your transcript on Minerva. If an Advanced Credit has been granted, then it will appear on your transcript.

### I cannot register because the course is filled to capacity.

Most core courses are offered in both semesters. Please attempt to rearrange your schedule to stay on track for graduation. For assistance, consult the Undergraduate Student Affairs Coordinator in ENGMD 270.

### I want to take a core course, but I have not completed a pre-requisite.

Permission cannot be granted. No exceptions, even if the student has taken the pre-requisite and obtained D, F, J or L grade.

### I want to take a Technical Complementary Course, but I have not completed a pre-requisite.

Contact the Course Instructor for permission. If permission is granted, then it will be possible to register for the course.

### I want to add a Minor or Concentration.

Please refer to the appropriate section in the [eCalendar](#). Complete the [Course Authorization Form](#), obtain all necessary signatures, and submit the form to MESC.

### I want to take MATH317 instead of MECH309.

MATH317 is not available to MECH ENG students since the Fall of 2015, therefore, you are not allowed to replace MECH309 with MATH317.

## Graduation Prizes and Medals

### **MCGILL/ÉCOLE POLYTECHNIQUE MEMORIAL PRIZE**

Established in 1990 by the McGill Engineering community in commemoration of the 14 women who lost their lives as a result of the massacre aimed at women engineering students that took place on December 6th, 1989, at École Polytechnique. Two prizes are awarded annually: one to a graduating student at any degree level at École Polytechnique and one to a graduating student at any degree level at McGill University. The award recognizes contributions to making engineering a profession open to the talents of all men and women. If you are interested in applying for this prize, please [email](#) the Associate Chair.

All eligible students are automatically considered for the prizes and medals listed below. A separate application is not required.

### **DEAN'S HONOUR LIST and DISTINCTION**

(Based on CGPA)

### **DAVID E. AND RONNIE SCHOUELA PRIZE**

Founded in 1980 by their cousins in memory of David, B.Eng. (Mechanical Engineering, Honours Program) 1975, and Ronnie Schouela. Awarded for the best final thesis in the Honours Program in Mechanical Engineering.

### **HARRY PEARCE PRIZE**

Established in memory of Harry Pearce, a paraplegic for 6 years, in recognition of four devoted McGill engineering students who designed and constructed an elevator to enable Mr. Pearce to have access to the outside world. Awarded the student group in good academic standing who have, through their project in their final year design course in Mechanical Engineering, helped handicapped people.

### **CSME Gold Medal**

Established by the Canadian Society for Mechanical Engineering (CSME). Awarded to an outstanding graduating student in Mechanical Engineering.

### **PROFESSOR JULES W. STACHIEWICZ MEMORIAL PRIZE**

Established by his relatives, colleagues, and friends in memory of the late Professor Jules W. Stachiewicz, former Chair of the Department of Mechanical Engineering. Awarded annually to a graduating student who has shown exceptional qualities of leadership, dedication, and engineering promise in the design courses of the Mechanical Engineering program.

### **BRITISH ASSOCIATION MEDALS**

Founded by the British Association for the Advancement of Science in commemoration of its meeting held in Montreal in 1884. Awarded to the student taking the highest position in the final examinations.

### **ERNEST BROWN GOLD MEDAL**

Established in 1952 by Mrs. Ernest Brown in memory of her husband who served as the Dean of the Faculty of Engineering from 1930 to 1942. Awarded to the student in the graduating class in any of the Departments of Engineering showing the highest ability throughout the undergraduate course. While academic standing is of primary importance, account is also taken of qualities of leadership and ability to work with others.

### **CHARLES MICHAEL MORSSSEN GOLD MEDAL**

Established in 1957 by Mrs. C. Michael Morssen in memory of her husband, Charles Michael Morssen, a benefactor of the Faculty of Engineering for many years. Awarded to a student of high academic standing, and exceptional engineering promise in the graduating class in any of the Departments of Engineering.

## Appendix

The following pages contain Sample Curriculum and Course Sequences. The reader should be aware of the following comments used in the remainder:

\*The Complementary Studies (CS) courses are Impact of Technology courses (Group A) and Humanities & Social Sciences, Management Studies and Law courses (Group B) detailed above. Students must take one course (3 credits) from Group A and one course (3 credits) from Group B. The curriculum 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](#) (see your program listing in the "Browse Academic Units & Programs" section).

\*\*FACC 250 is a prerequisite in the [eCalendar](#) course information before FACC 400 is taken.

*Elective courses (EC1 and EC2) are no longer a requirement as of Fall 2020 for all new incoming CEGEP students.*

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.

ECSE 461 is not offered in the fall term as Fall 2022.

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

For the official program listing, see the [Programs, Courses and University Regulations publication](#).

## Stream A-Option 1

<b>1st Term (Fall)</b>		<b>13 credits</b>	<b>Prerequisites/Co-requisites</b>
COMP 208	Computers in Engineering	3	C - MATH 133 and MATH 141
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
<b>2nd Term (Winter)</b>		<b>14 credits</b>	<b>Prerequisites/Co-requisites</b>
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	C - MATH 263
MECH 290	Design Graphics for Mechanical Engineering	3	-
<b>3rd Term (Fall)</b>		<b>13 credits</b>	<b>Prerequisites/Co-requisites</b>
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 292	Design 1: Conceptual Design	3	-
MIME 260	Material Science and Engineering	3	-
<b>4th Term (Winter)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
FACC 250	Responsibilities of the Professional Engineer	0	P - FACC 100 or BREE 250
WCOM 206	Communication in Engineering	3	-
MECH 240	Thermodynamics 1	3	-
MECH 309	Numerical Methods in Mechanical Engineering	3	P - MATH 263, MATH 271, COMP 208
MECH 314	Dynamics of Mechanisms	3	P - MECH 220
MECH 331	Fluid Mechanics 1	3	P - MECH 210 / P or C - MECH 220, MECH 240, MATH 271
<b>5th Term (Fall)</b>		<b>16 credits</b>	<b>Prerequisites/Co-requisites</b>
MECH 315	Mechanics 3	4	P - MECH 220, MATH 271 / P or C - CIVE 207
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
MECH 393	Design 2: Machine Element Design	3	P - MECH 289 or 290, CIVE 207 / P or C - MECH 360, MECH 292, MECH 314, MIME 260
<b>6th Term (Winter)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
FACC 300	Engineering Economy	3	-
ECSE 461	Electric Machinery	3	-
MECH 321	Mechanics of Deformable Solids	3	P - CIVE 207
MECH 383	Applied Electronics and Instrumentation	3	P - MECH 262, MATH 263
MECH 430	Fluid Mechanics 2	3	P - MECH 240, MECH 331
<b>7th Term (Fall)</b>		<b>14 credits</b>	<b>Prerequisites/Co-requisites</b>
MECH 362	Mechanical Laboratory 1	2	P - MECH 262
MECH 412	System Dynamics and Control	3	P - MECH 309, MECH 315 / P or C - MECH 331
MECH 463D1	Design 3: Mechanical Engineering Project	3	P - CCOM 206 or EDEC 206, MECH 360, MECH 292, MECH 314, MECH 393, MIME 260
MECH xxx	Technical Complementary	3	-
CS	Complementary Studies Group A*	3	-
<b>8th Term (Winter)</b>		<b>13 credits</b>	<b>Prerequisites/Co-requisites</b>
FACC 400	Engineering Professional Practice	1	P - FACC 100, FACC 250**, and 60 program credits
MECH 463D2	Design 3: Mechanical Engineering Project	3	P - MECH 463D1
MECH xxx	Technical Complementary	3	-
MECH xxx	Technical Complementary	3	-
CS	Complementary Studies Group B*	3	-



### Technical Complementary Courses

Six credits at the 300-level or higher, chosen from Mechanical Engineering courses (subject code MECH). One of these two courses (3 credits) must be chosen from the following Design list:

		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
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/CHEE 563	Biofluids and Cardiovascular Mechanics	3	P - CHEE 314 or MECH 331
MECH 564	Thermal Radiation and Solar Energy Systems	3	P - MECH 346, COMP 208
MECH 565	Fluid Flow and Heat Transfer Equipment (retired)	3	P - MECH 240, MECH 309, MECH 331, MECH 341
MECH 573	Mechanics of Robotic Systems	3	P - MECH 309, MECH 572

One course (3 credits), subject to Departmental approval, at the 300-level or higher from the Faculty of Engineering (including MECH courses) or from courses in the Faculty of Science, including MATH courses approved in the Student handbook.

## Stream A-Option 2

<b>1st Term (Fall)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
COMP 208	Computers in Engineering	3	C - MATH 133 and MATH 141
FACC 100	Introduction to the Engineering Profession	1	-
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 290	Design Graphics for Mechanical Engineering	3	-
<b>2nd Term (Winter)</b>		<b>14 credits</b>	<b>Prerequisites/Co-requisites</b>
WCOM 206	Communication in Engineering	3	-
MATH 264	Advanced Calculus for Engineers	3	P - MATH 262 / C - MATH 263
MECH 210	Mechanics 1	2	P - PHYS 101 or PHYS 131 or equivalent
MECH 262	Statistics and Measurement Laboratory	3	C - MATH 263
MIME 260	Materials Science and Engineering	3	-
<b>3rd Term (Fall)</b>		<b>14 credits</b>	<b>Prerequisites/Co-requisites</b>
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 220	Mechanics 2	4	P - MECH 210, MATH 262 / C - MATH 263
MECH 240	Thermodynamics 1	3	-
<b>4th Term (Winter)</b>		<b>13 credits</b>	<b>Prerequisites/Co-requisites</b>
FACC 250	Responsibilities of the Professional Engineer	0	P - FACC 100 or BREE 250
MECH 292	Design 1: Conceptual Design	3	-
MECH 315	Mechanics 3	4	P - MECH 220, MATH 271 / P or C - CIVE 207
MECH 341	Thermodynamics 2	3	P - MATH 264, MECH 240
MECH 360	Principles of Manufacturing	3	P - MECH 289 or MECH 290 / P or C - CIVE 207
<b>5th Term (Fall)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
MECH 309	Numerical Methods in Mechanical Engineering	3	P - COMP 208, MATH 263, MATH 271
MECH 314	Dynamics of Mechanisms	3	P - MECH 220
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 383	Applied Electronics and Instrumentation	3	P - MECH 262, MATH 263
<b>6th Term (Winter)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
ECSE 461	Electric Machinery	3	-
FACC 300	Engineering Economy	3	-
MECH 346	Heat Transfer	3	P - MECH 240, MECH 331, MATH 271
MECH 393	Design 2: Machine Element Design	3	P - MECH 289 or 290, CIVE 207 / P or C - MECH 360, MECH 292, MECH 314, MIME 260
MECH 412	System Dynamics and Control	3	P - MECH 309, MECH 315 / P or C - MECH 331
<b>7th Term (Fall)</b>		<b>14 credits</b>	<b>Prerequisites/Co-requisites</b>
MECH 362	Mechanical Laboratory 1	2	P - MECH 262
MECH 430	Fluid Mechanics 2	3	P - MECH 240, MECH 331
MECH 463D1	Design 3: Mechanical Engineering Project	3	P - WCOM 206 or EDEC 206, MECH 360, MECH 292, MECH 314, MECH 393, MIME 260
MECH xxx	Technical Complementary	3	-
CS	Complementary Studies Group A*	3	-
<b>8th Term (Winter)</b>		<b>13 credits</b>	<b>Prerequisites/Co-requisites</b>
FACC 400	Engineering Professional Practice	1	P - FACC 100, FACC 250**, and 60 program credits
MECH 463D2	Design 3: Mechanical Engineering Project	3	P - MECH 463D1
MECH xxx	Technical Complementary	3	-
MECH xxx	Technical Complementary	3	-
CS	Complementary Studies Group B*	3	-

### Technical Complementary Courses

Six credits at the 300-level or higher, chosen from Mechanical Engineering courses (subject code MECH). One of these two courses (3 credits) must be chosen from the following Design list:

		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
MECH 532	Aircraft Performance, Stability and Control	3	P - MECH 412 / MECH 419, MECH 533
MECH 535	Turbomachinery and Propulsion	3	P - MECH 331
MECH 536	Aircraft 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	-
MECH 559	Engineering Systems Optimization	3	-
MECH 560	Eco-design and Product Life Cycle Assessment	3	P - MECH 360
MECH 563/CHEE 563	Biofluids and Cardiovascular Mechanics	3	P - CHEE 314 or MECH 331
MECH 564	Thermal Radiation and Solar Energy Systems	3	P - MECH 346, COMP 208
MECH 565	Fluid Flow and Heat Transfer Equipment (retired)	3	P - MECH 240, MECH 309, MECH 331, MECH 341, MECH 346 or permission of the instructor
MECH 573	Mechanics of Robotic Systems	3	P - MECH 309, MECH 572

One course (3 credits), subject to Departmental approval, at the 300-level or higher from the Faculty of Engineering (including MECH courses) or from courses in the Faculty of Science, including MATH courses approved in the Student Handbook.

## Stream B

<b>1st Term (Fall)</b>		<b>18 credits</b>	<b>Prerequisites/Co-requisites</b>
CHEM 110	General Chemistry 1	4	P - College level mathematics/physics or permission of instructor
FACC 100	Introduction to the Engineering Profession	1	-
MATH 133	Linear Algebra and Geometry	3	P - A course in functions
MATH 140	Calculus 1	3	P - High school calculus
PHYS 131	Mechanics and Waves	4	C - MATH 140
CS	Complementary Studies Group B - 1*	3	-
<b>2nd Term (Winter)</b>		<b>18 credits</b>	<b>Prerequisites/Co-requisites</b>
CHEM 120	General Chemistry 2	4	P - College level mathematics/physics or permission of instructor
MATH 141	Calculus 2	4	P - MATH 140
PHYS 142	Electromagnetism and Optics	4	P - PHYS 131 / C - MATH 141
CS	Complementary Studies Group A*	3	-
CS	Complementary Studies Group B - 2*	3	-
<b>3rd Term (Fall)</b>		<b>16 credits</b>	<b>Prerequisites/Co-requisites</b>
COMP 208	Computers in Engineering	3	C - MATH 133 and MATH 141
FACC 300	Engineering Economy	3	-
MATH 262	Intermediate Calculus	3	P - MATH 133, MATH 141
MECH 201	Introduction to Mechanical Engineering	2	-
MECH 210	Mechanics 1	2	P - PHYS 101 or PHYS 131 or equivalent
MECH 290	Design Graphics for Mechanical Engineering	3	-
<b>4th Term (Winter)</b>		<b>17 credits</b>	<b>Prerequisites/Co-requisites</b>
CIVE 207	Solid Mechanics	4	P - CIVE 205 or MECH 210
FACC 250	Responsibilities of the Professional Engineer	0	P - FACC 100 or BREE 250
MATH 263	Ordinary Differential Equations for Engineers	3	C - MATH 262
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	C - MATH 263
<b>5th Term (Fall)</b>		<b>18 credits</b>	<b>Prerequisites/Co-requisites</b>
MATH 271	Linear Algebra and Partial Differential Equations	3	P - MATH 263, MATH 264
MECH 240	Thermodynamics 1	3	-
MECH 314	Dynamics of Mechanisms	3	P - MECH 220
MECH 321	Mechanics of Deformable Solids	3	P - CIVE 207
MECH 331	Fluid Mechanics 1	3	P - MECH 210 / P or C - MECH 220, MECH 240, MATH 271
MECH 360	Principles of Manufacturing	3	P - MECH 289 or MECH 290 / P or C - CIVE 207
<b>6th Term (Winter)</b>		<b>18 credits</b>	<b>Prerequisites/Co-requisites</b>
WCOM 206	Communication in Engineering	3	-
MECH 292	Design 1: Conceptual Design	3	-
MECH 309	Numerical Methods in Mechanical Engineering	3	P - MATH 263, MATH 271, COMP 208
MECH 341	Thermodynamics 2	3	P - MATH 264, MECH 240
MECH 393	Design 2: Machine Element Design	3	P - MECH 289 or 290, CIVE 207 / P or C - MECH 360, MECH 292, MECH 314, MIME 260
MIME 260	Materials Science and Engineering	3	-
<b>7th Term (Fall)</b>		<b>19 credits</b>	<b>Prerequisites/Co-requisites</b>
MECH 315	Mechanics 3	4	P - MECH 220, MATH 271 / P or C - CIVE 207
MECH 346	Heat Transfer	3	P - MECH 240, MECH 331, MATH 271
MECH 383	Applied Electronics and Instrumentation	3	P - MECH 262, MATH 263
MECH 430	Fluid Mechanics 2	3	P - MECH 240, MECH 331
MECH 463D1	Design 3: Mechanical Engineering Project	3	P - CCOM 206, MECH 360, MECH 292, MECH 314, MECH 393, MIME 260
MECH xxx	Technical Complementary	3	-
<b>8th Term (Winter)</b>		<b>18 credits</b>	<b>Prerequisites/Co-requisites</b>
ECSE 461	Electric Machinery	3	-
FACC 400	Engineering Professional Practice	1	P - FACC 100, FACC 250**, and 60 program credits
MECH 362	Mechanical Laboratory 1	2	P - MECH 262
MECH 412	System Dynamics and Control	3	P - MECH 309, MECH 315 / P or C - MECH 331
MECH 463D2	Design 3: Mechanical Engineering Project	3	P - MECH 463D1
MECH xxx	Technical Complementary	3	-
MECH xxx	Technical Complementary	3	-

### Technical Complementary Courses

Six credits at the 300-level or higher, chosen from Mechanical Engineering courses (subject code MECH). One of these two courses (3 credits) must be chosen from the following Design list:

		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/CHEE 563	Biofluids and Cardiovascular Mechanics	3	P - CHEE 314 or MECH 331
MECH 564	Thermal Radiation and Solar Energy Systems	3	P - MECH 346, COMP 208
MECH 565	Fluid Flow and Heat Transfer Equipment (retired)	3	P - MECH 240, MECH 309, MECH 331, MECH 341, MECH 346 or permission of the instructor
MECH 573	Mechanics of Robotic Systems	3	P - MECH 309, MECH 572

One course (3 credits), subject to Departmental approval, at the 300-level or higher from the Faculty of Engineering (including MECH courses) or from courses in the Faculty of Science, including MATH courses approved in the Student Handbook.

## Stream C (Honours Program)

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 Adviser Professor Evgeny Timofeev (evgeny.timofeev@mcgill.ca).

<b>1<sup>st</sup> Term (Fall)</b>		<b>16 credits</b>	<b>Prerequisites/Co-requisites</b>
COMP 208	Computers in Engineering	3	C - MATH 133 and MATH 141
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
CS	Complementary Studies Group B*	3	-
<b>2<sup>nd</sup> Term (Winter)</b>		<b>14 credits</b>	<b>Prerequisites/Co-requisites</b>
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	-
<b>3<sup>rd</sup> Term (Fall)</b>		<b>13 credits</b>	<b>Prerequisites/Co-requisites</b>
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	-
<b>4<sup>th</sup> Term (Winter)</b>		<b>16 credits</b>	<b>Prerequisites/Co-requisites</b>
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
<b>5<sup>th</sup> Term (Fall)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
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	-
<b>6<sup>th</sup> Term (Winter)</b>		<b>14 credits</b>	<b>Prerequisites/Co-requisites</b>
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
<b>7<sup>th</sup> Term (Fall)</b>		<b>12 credits</b>	<b>Prerequisites/Co-requisites</b>
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	-
<b>8<sup>th</sup> Term (Winter)</b>		<b>13 credits</b>	<b>Prerequisites/Co-requisites</b>
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*	3	-

## Technical Complementary Courses

Three credits from the following, chosen with the approval of either the thesis supervisor or the coordinator of the Honours Program, when a thesis supervisor has not 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 387 or COMP 350 or MECH 309; or permission of the instructor

Note: The following MATH courses are no longer approved: Math 363 Winter 2019, MATH381, MATH407 Fall 2022.

Six credits from the following list:

		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
MECH 578	Advanced Thermodynamics	3	-

Six 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 list:

		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/CHEE 563	Biofluids and Cardiovascular Mechanics	3	P - CHEE 314 or MECH 331
MECH 564	Thermal Radiation and Solar Energy Systems	3	P - MECH 346, COMP 208
MECH 565	Fluid Flow and Heat Transfer Equipment (retired)	3	P - MECH 240, MECH 309, MECH 331, MECH 341, MECH 346 or permission of the instructor
MECH 573	Mechanics of Robotic Systems	3	P - MECH 309, MECH 572

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