

# Mechanical Engineering Curriculum - Fall 2021 (Stream B)

Non-CEGEP Entry

| 1st Term (Fall)   |   | 18 credits | Prerequisites/Co-requisites  |
|-------------------|---|------------|--|
| CHEM 110          | General Chemistry 1                               | 4          | P - College level mathematics and 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 - Calculus course [MATH 140]   |
| CS                | Complementary Studies Group B (HSSML) - 1*        | 3          | -  |
| 2nd Term (Winter) |   | 18 credits | Prerequisites/Co-requisites  |
| CHEM 120          | General Chemistry 2                               | 4          | P - College level mathematics and 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 (Impact)*           | 3          | -  |
| CS                | Complementary Studies Group B (HSSML) - 2*        | 3          | -  |
| 3rd Term (Fall)   |   | 16 credits | Prerequisites/Co-requisites  |
| COMP 208          | Computers in Engineering                          | 3          | P - differential and integral calculus [MATH 140 and MATH 141] / C - linear algebra [MATH 133] |
| 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          | -  |
| 4th Term (Winter) |   | 17 credits | Prerequisites/Co-requisites  |
| 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   |
| 5th Term (Fall)   |   | 18 credits | Prerequisites/Co-requisites  |
| 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   |
| 6th Term (Winter) |   | 18 credits | Prerequisites/Co-requisites  |
| CCOM 206          | Communication in Engineering                      | 3          | -  |
| MIME 260          | Materials Science and Engineering                 | 3          | -  |
| MECH 292          | Design 1: Conceptual Design                       | 3          | P - MECH 289 or MECH 290 / P or C - CIVE 207   |
| 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 260 or 360, MECH 292, MECH 314, MIME 260         |
| 7th Term (Fall)   |   | 19 credits | Prerequisites/Co-requisites  |
| 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 260 / 360, MECH 292, MECH 314, MECH 393, MIME 260                           |
| MECH xxx          | Technical Complementary                           | 3          | -  |
| 8th Term (Winter) |   | 18 credits | Prerequisites/Co-requisites  |
| 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 or MATH 317, 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 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 two courses (6 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](http://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](http://www.mcgill.ca/study)) but it will be before FACC 400 is taken. 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

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 chosen 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 529    | Discrete Manufacturing Systems               | 3       | P - Permission of instructor   |
| 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 541    | Kinematic Synthesis                          | 3       | P - MECH 309 or MATH 317   |
| 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 557    | Mechatronic Design                           | 3       | P - ECSE 461, MECH 383, MECH 412 / 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 565    | Fluid Flow and Heat Transfer Equipment       | 3       | P - MECH 240, MECH 309 or MATH 317, MECH 331, MECH 341, MECH 346 or permission of the instructor |
| MECH 573    | Mechanics of Robotic Systems                 | 3       | P - MECH 309 or MATH 317, MECH 572   |
| MECH 577    | Optimum Design                               | 3       | P - MECH 309 or MATH 317   |

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.

**Last update: Feb. 15, 2021**

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