

# Materials Engineering Curriculum - Fall 2025

Non-CEGEP Entry

<b>1st Term (Fall)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
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]
<b>2nd Term (Winter)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
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 B (HSSML) - 1*	3	-
<b>3rd Term (Fall)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
WCOM 206	Communication in Engineering	3	-
MATH 262	Intermediate Calculus	3	P - MATH 133, MATH 141
MECH 289	Design Graphics	3	-
MIME 250	Introduction to Extractive Metallurgy	3	C - WCOM 206
MIME 261	Structure of Materials	3	-
<b>4th Term (Winter)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
CHEM 233	Topics in Physical Chemistry	3	-
CIVE 205	Statics	3	-
MIME 209	Mathematical Applications	3	-
MIME 212	Engineering Thermodynamics	3	-
MIME 341	Introduction to Mineral Processing	3	P - MIME 200 or MIME 250
<b>5th Term (Summer)</b>		<b>3 credits</b>	<b>Prerequisites/Co-requisites</b>
MATH 263	Ordinary Differential Equations for Engineers	3	C - MATH 262
<b>6th Term (Fall)</b>		<b>17 credits</b>	<b>Prerequisites/Co-requisites</b>
CIVE 207	Solid Mechanics	4	P - CIVE 205 or MECH 210
COMP 208	Computers in Engineering	3	P - MATH 140 and MATH 141 / C - MATH 133
FACC 250	Responsibilities of the Professional Engineer	0	P - FACC 100 or BREE 250
MIME 317	Analytical and Characterization Techniques	3	P - MIME 261
MIME 356	Heat, Mass and Fluid Flow	4	P - MIME 212
MIME 360	Phase Transformations: Solids	3	P - MIME 260 or MIME 261 / P or C - MIME 212
<b>7th Term (Winter)</b>		<b>2 credits</b>	<b>Prerequisites/Co-requisites</b>
MIME 280	Industrial Training 1	2	P - 40 program credits
<b>8th Term (Summer)</b>		<b>12 credits</b>	<b>Prerequisites/Co-requisites</b>
FACC 300	Engineering Economy	3	-
MIME 345	Applications of Polymers	3	P - MIME 261 or instructor permission
MIME 350	Extractive Metallurgical Engineering	3	P - MIME 200 or MIME 250, MIME 212
MIME 467	Electronic Properties of Materials	3	P - MIME 261, MATH 263
<b>9th Term (Fall)</b>		<b>18 credits</b>	<b>Prerequisites/Co-requisites</b>
ECSE 209	Electrotechnology	3	P - PHYS 142
MIME 352	Hydrochemical Processing	3	P - CHEM 233, MIME 200 or MIME 250, MIME 212, MIME 356
MIME 362	Mechanical Properties	3	P - MIME 360
MIME 465	Metallic and Ceramic Powders Processing	3	P - MIME 360
MIME 470	Engineering Biomaterials	3	P - MIME 261
MIME xxx	Technical Complementary	3	-
<b>10th Term (Winter)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
MATH 264	Advanced Calculus for Engineers	3	P - MATH 262 / C - MATH 263
MIME 311	Modelling and Automatic Control	3	P - MIME 356
MIME 455	Advanced Process Engineering	3	P - MIME 356
MIME xxx	Technical Complementary	3	-
CS	Complementary Studies Group A (Impact)*	3	-
<b>11th Term (Summer)</b>		<b>2 credits</b>	<b>Prerequisites/Co-requisites</b>
MIME 380	Industrial Training 2	2	P - MIME 280
<b>12th Term (Fall)</b>		<b>2 credits</b>	<b>Prerequisites/Co-requisites</b>
MIME 480	Industrial Training 3	2	P - MIME 380
<b>13th Term (Winter)</b>		<b>17 credits</b>	<b>Prerequisites/Co-requisites</b>
FACC 400	Engineering Professional Practice	1	P - FACC 100, FACC 250**, and 60 program credits
MIME 452	Process and Materials Design	4	P - MIME 311, MIME 341, MIME 352, MIME 362, FACC 300, CCOM 206
MIME 473	Introduction to Computational Materials Design	3	P - MIME 209 and MIME 261, or permission of instructor
MIME xxx	Technical Complementary	3	-
MIME xxx	Technical Complementary	3	-
CS	Complementary Studies Group B (HSSML) - 2*	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 (<https://coursecatalogue.mcgill.ca/en/>).

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 - Materials Engineering

6 - 9 credits from the following:

		Credits	Prerequisites/Co-requisites
CIVE 512	Advanced Civil Engineering Materials	3	P - CIVE 202
MECH 530	Mechanics of Composite Materials	3	P - MECH 321
MIME 410	Research Project	3	P - Recommendation of instructor
MIME 442	Analysis, Modelling and Optimization in Mineral Processing	3	P - MIME 341
MIME 512	Corrosion and Degradation of Materials	3	P - MIME 261 and MIME 352 or permission of instructor
MIME 515	Material Surfaces: A Biomimetic Approach	3	P - (CHEE 310, CHEE 380) or (CHEM 233, MIME 261, MIME 317) or permission of instructor
or CHEE 515	Material Surfaces: A Biomimetic Approach	3	
MIME 526	Mineral Economics	3	P - Permission of instructor; background in economics required
MIME 542	Transmission Electron Microscopy	3	P - Permission of instructor
MIME 544	Analysis: Mineral Processing Systems 1	3	P - MIME 341
MIME 545	Analysis: Mineral Processing Systems 2	3	P - MIME 341
MIME 551	Electrochemical Processing	3	P - MIME 352
MIME 556	Sustainable Materials Processing	3	P - Permission of instructor
MIME 558	Engineering Nanomaterials	3	P - (MIME 260 or MIME 261) and MIME 362 or equivalent, or instructor permission
MIME 559	Aluminum Physical Metallurgy	3	P - MIME 360 and MIME 362 or instructor permission
MIME 560	Joining Processes	3	P - MIME 250, MIME 360
MIME 561	Advanced Materials Design	3	P - MIME 362 or equivalent
MIME 563	Hot Deformation of Metals	3	P - MIME 360, MIME 362
MIME 565	Aerospace Metallic-Materials and Manufacturing Processes	3	P - MIME 260 or MIME 261 or instructor permission
MIME 568	Topics in Advanced Materials	3	P - MIME 362 or equivalent
MIME 569	Electron Beam Analysis of Materials	3	P - MIME 317
MIME 570	Micro- and Nano-Fabrication Fundamentals	3	P - MIME 467 or ECSE 330 or equivalent, or permission of instructor
MIME 571	Surface Engineering	3	P - MIME 362
MIME 572	Computational Thermodynamics	3	P - MIME 212 or equivalent
MIME 574	Battery Materials Engineering	3	P - MIME 212 and MIME 317, or permission of instructor
MIME 580	Additive Manufacturing Using Metallic and Ceramic Materials	3	P - MIME 465 or instructor permission
MIME 456	Steelmaking and Steel Processing	3	P - MIME 360 / P or C - MIME 455

0 - 3 credits from courses outside of the Department of Mining and Materials Engineering, subject to departmental approval and approval of course instructor/host department.

BIEN 510	Engineered Nanomaterials for Biomedical Applications	3	P - BIEN 200, CHEM 212, and BIOL 112, or permission of instructor
BIEN 530	Imaging and Bioanalytical Instrumentation	3	P - Permission of instructor
BMDE 504	Biomaterials and Bioperformance	3	Graduate and final-year undergraduate students from physical, biological and medical science, and engineering.
BMDE 508	Introduction to Micro and Nano-Bioengineering	3	P - Permission of instructor
CHEE 541	Electrochemical Engineering	3	P - CHEE 310 or permission of instructor.
CHEE 584	Polymer Processing	3	C - CHEE 315 or MIME 356 or equivalent. Restriction: Not open to students who have taken CHEE 684
CHEM 429	Chemistry of Energy Generation, Storage and Utilization	3	P - CHEM 212; CHEM 223 and CHEM 243; or CHEM 213 and CHEM 273; or CHEM 204 or CHEM 203; or permission of instructor Restriction: Not open to students who have taken CHEM 319.
CHEM 531	Inorganic Chemistry of Materials	3	P - CHEM 381
CHEM 574	Introductory Polymer Chemistry	3	P - Prerequisites: CHEM 223 and CHEM 243 or CHEM 213 and CHEM 273, or CHEM 233 (for engineering students only), or permission of the instructor. Restriction(s): Not open to students who have taken CHEM 455 or CHEM 674.
CHEM 585	Colloid Chemistry	3	P - CHEM 345, MATH 233 and MATH 315, PHYS 241 and PHYS 242. Students who haven't taken CHEM 223 and CHEM 243 must have taken CHEM 273 or permission of instructor
CIVE 521	Nanomaterials and the Aquatic Environment	3	P - CHEE 315 or CIVE 225 or MIME 356 or equivalent; CHEE 310 or CIVE 430 or CHEM 233 or equivalent; or permission of instructor. Restriction: Not open to students who have taken CHEE 521
CIVE 570	Solar Driven Environmental Processes and Technologies	3	P - CIVE 225 and CIVE 290, or permission of the instructor
EPSC 549	Hydrogeology	3	P - permission of the instructor
FACC 500	Technology Business Plan Design	3	P - FACC 300 or permission of instructor
FACC 501	Technology Business Plan Project	3	P - FACC 300 or permission of instructor Restrictions: Not open to students who have taken FACC 480. Recommended to be taken in combination with FACC 500
MIME 514	Sustainability Analysis of Mining Systems	3	P - FACC 300 and MIME 341, or permission of the instructor
PHYS 534	Nanoscience and technology	3	P - Restriction: U3 or graduate students in Physics, Chemistry, or Engineering, or permission of the instructor.
PHYS 558	Solid State Physics	3	Restriction: U3 Honours students, graduate students, or permission of the instructor
SEAD 515	Climate Change Adaptation and Engineering Infrastructure	3	Restricted to students registered in the Faculty of Engineering (including the School of Architecture and the School of Urban Planning).
SEAD 520	Life Cycle-Based Environmental Footprinting	3	Restricted to students registered in the Faculty of Engineering (including the School of Architecture and the School of Urban Planning).

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For the official program listing, see <https://coursecatalogue.mcgill.ca/en/>