

# Materials Engineering Curriculum - Fall 2012

## Non-CEGEP Entry

<b>1st Semester (Fall)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
CHEM 110	General Chemistry 1	4	-
FACC 100	Introduction to the Engineering Profession	1	-
MATH 133	Linear Algebra and Geometry	3	-
MATH 140	Calculus 1	3	-
PHYS 131	Mechanics and Waves	4	C - MATH 140
<b>2nd Semester (Winter)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
CHEM 120	General Chemistry 2	4	-
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 Semester (Fall)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
CCOM 206	Communication in Engineering	3	-
MATH 262	Intermediate Calculus	3	P - MATH 141, MATH 133
MECH 289	Design Graphics	3	-
MIME 250	Introduction to Extractive Metallurgy	3	C - MIME 202
MIME 261	Structure of Materials	3	-
<b>4th Semester (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 Semester (Summer)</b>		<b>3 credits</b>	<b>Prerequisites/Co-requisites</b>
MATH 263	Ordinary Differential Equations for Engineers	3	C - MATH 262
<b>6th Semester (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, MATH 141
ECSE 461	Electric Machinery	3	-
MIME 356	Heat, Mass and Fluid Flow	4	P - MIME 212, MATH 263
MIME 360	Phase Transformations: Solids	3	P - MIME 260 or MIME 261 / C - MIME 212
<b>7th Semester (Winter)</b>		<b>2 credits</b>	<b>Prerequisites/Co-requisites</b>
MIME 280	Industrial Training 1	2	P - 40 program credits
<b>8th Semester (Summer)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
FACC 300	Engineering Economy	3	-
MIME 317	Analytical and Characterization Techniques	3	P - MIME 261
MIME 345	Applications of Polymers	3	P - MIME 261
MIME 350	Extractive Metallurgical Engineering	3	P - MIME 200 or MIME 250, MIME 212
CS	Complementary Studies Group A (Impact)	3	-
<b>9th Semester (Fall)</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 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
<b>10th Semester (Winter)</b>		<b>15 credits</b>	<b>Prerequisites/Co-requisites</b>
MIME 467	Electronic Properties of Materials	3	P - MIME 261, MATH 263, MATH 264
MIME 442	Analysis, Modelling and Optimization in Mineral Processing	3	P - MIME 341
MIME 455	Advanced Process Engineering	3	P - MIME 356
MIME xxx	Technical Complementary	3	-
MIME xxx	Technical Complementary	3	-
<b>11th Semester (Summer)</b>		<b>2 credits</b>	<b>Prerequisites/Co-requisites</b>
MIME 380	Industrial Training 2	2	P - MIME 280
<b>12th Semester (Fall)</b>		<b>2 credits</b>	<b>Prerequisites/Co-requisites</b>
MIME 480	Industrial Training 3	2	P - MIME 380
<b>13th Semester (Winter)</b>		<b>17 credits</b>	<b>Prerequisites/Co-requisites</b>
FACC 400	Engineering Professional Practice	1	P - FACC 100, 60 program credits
MIME 452	Process and Materials Design	4	-
MIME 456	Steelmaking and Steel Processing	3	P - MIME 360 / C - MIME 455
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). These must be chosen from an approved list of courses/departments, found in the program list under "Complementary Studies" in the Programs, Courses and University Regulations Calendar ([www.mcgill.ca/study](http://www.mcgill.ca/study)).

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

9 - 12 credits from the following:

		<b>Credits</b>	<b>Prerequisites/Co-requisites</b>
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 470	Engineering Biomaterials	3	P - MIME 261
MIME 512	Corrosion and Degradation of Materials	3	P - MIME 261 and MIME 352
MIME 515	Material Surfaces: A Biomimetic Approach	3	P - (CHEM 233 and MIME 261 and MIME 317) or
or CHEE 515	Material Surfaces: A Biomimetic Approach	3	(CHEE 310 and CHEE 380)
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 552	Environmental Controls in Metallurgical Plants	3	P - MIME 341, MIME 350, MIME 352
MIME 556	Sustainable Materials Processing	3	P - Permission of instructor
MIME 558	Engineering Nanomaterials	3	P - MIME 260 or MIME 261, MIME 362
MIME 559	Aluminum Physical Metallurgy	3	P - MIME 360, MIME 362
MIME 560	Joining Processes	3	P - MIME 250, MIME 360
MIME 561	Advanced Materials Design	3	P - MIME 362
MIME 563	Hot Deformation of Metals	3	P - MIME 360, MIME 362
MIME 564	X-ray Diffraction Analysis of Materials	3	P - MIME 317
MIME 565	Aerospace Metallic-Materials and Manufacturing Processes	3	P - MIME 260 or MIME 261
MIME 566	Texture, Structure & Properties of Polycrystalline Materials	3	P - MIME 317
MIME 568	Topics in Advanced Materials	3	P - MIME 362
MIME 569	Electron Beam Analysis of Materials	3	P - MIME 317
MIME 571	Surface Engineering	3	P - MIME 362
MIME 572	Computational Thermodynamics	3	P - MIME 212

0 - 3 credits from the following:

		<b>Credits</b>	<b>Prerequisites/Co-requisites</b>
BMDE 504	Biomaterials and Bioperformance	3	Restriction: Year 3 students
CHEM 574	Introductory Polymer Chemistry	3	P - CHEM 233
CHEM 585	Colloid Chemistry	3	P - CHEM 345, MATH 233, MATH 315, PHYS 241, PHYS 242
PHYS 558	Solid State Physics	3	Restriction: Year 3 students

**Updated: June 18, 2012**