Bioengineering Curriculum - Stream 1 (Biological Materials & Mechanics)

2018 cohort **CEGEP Entry**

1st Semester (Fall)		14 credits	Prerequisites/Co-requisites
BIEN 200	Introduction to Bioengineering	2	P - Permission of Instructor
CHEM 212	Introductory Organic Chemistry 1	4	P - CHEM 110 / C - CHEM 120
MATH 262	Intermediate Calculus	3	P - MATH 141, MATH 133
MATH 263	Ordinary Differential Equations for Engineers	3	C - MATH 262
MECH 210	Mechanics 1	2	-
2nd Semester (Winter)		16 credits	Prerequisites/Co-requisites
BIEN 210	Electrical and Optical Properties of Biological Systems	3	P - BIEN 200/C- BIOL 112 or Permission of Instructor
BIEN 300	Thermodynamics in Bioengineering	3	P - CHEM 120, MATH 262
BIOL 112	Cell and Molecular Biology	3	-
COMP 208	Computers in Engineering	3	P - MATH 140, MATH 141
CS	Complementary Studies - Group B (HSSML)	3	-
FACC 100	Introduction to the Engineering Profession	1	-
3rd Semester (Fall)		17 credits	Prerequisites/Co-requisites
BIEN 290	Bioengineering Measurement Laboratory	4	P - BIEN 200
BIEN 350	Biosignals, Systems and Control	4	P - MATH 263 or Permission of Instructor
BIOL 200	Molecular Biology	3	P - BIOL 112 / C - CHEM212
CCOM 206	Communication in Engineering	3	-
MIME 261	Structure of Materials (TC STREAM 1)	3	-
4th Semester (Winter)		15 credits	Prerequisites/Co-requisites
BIEN 320	Molecular, Cellular, and Tissue Biomechanics (TC STREAM 1)	3	P - BIOL 112, MECH 210
BIEN 360	Physical Chemistry in Bioengineering	3	P - BIEN 300
BIOC 212	Molecular Mechanisms of Cell Function	3	P - BIOL 200
FACC 250	Responsibilities of the Professional Engineer	0	P - FACC 100 or BREE 250
FACC 300	Engineering Economy	3	-
MATH 264	Advanced Calculus for Engineers	3	P - MATH 262 or MATH 151 or MATH 152 / C - MATH 263
5th Semester (Fall)		16 credits	Prerequisites/Co-requisites
BIEN 314	Transport Phenomena in Biological Systems 1	3	P - BIEN 200, MATH 263, BIEN 300 or permission of instructor
CIVE 207	Solid Mechanics (TC STREAM 1)	4	P - CIVE 205 or MECH 210
CIVE 281	Analytical Mechanics	3	C - MATH 262, MATH 263
EC	Elective - 1	3	-
MIME 470	Engineering Biomaterials (TC STREAM 1)	3	P - MIME 261 or Permission of Instructor
6th Semester (Winter)		15 credits	Prerequisites/Co-requisites
BIEN 330	Tissue Engineering & Regenerative Medicine (TC STREAM 1)	3	P - BIEN 200, CHEM 212, BIOL 112 and BIOL 200 or Permission of Instructor
BIEN 340	Transport Phenomena in Biological Systems 2	3	P - BIEN 314, BIEN 360 or permission of instructor
BIEN 390	Bioengineering Laboratory	3	P - BIEN 290
BIEN 462	Engineering Principles in Physiological Systems (TC STREAM 1)	3	P - BIEN 350 or Permission of Instructor
PHYS 319	Introduction to Biophysics	3	P - BIOL 200; MATH 222/MATH 262; PHYS 230 and (PHYS 232 or PHYS 253), or Permission of Instructor.
7th Semester (Fall)		15 credits	Prerequisites/Co-requisites
BIEN 470 D1	Bioengineering Design Project	3	P - Permission of Instructor
BIEN 510	Engineered Nanomaterials for Biomedical Applications (TC STREAM 1)	3	P - BIEN 200, CHEM 212 and BIOL 112 or Permission of Instructor
BIEN 570	Active Mechanics in Biology (TC STREAM 1)	3	P - Permission of Instructor
EC	Elective - 2	3	-
MECH 547	Mechanics of Biological Materials (TC STREAM 1)	3	P - MECH 210, MIME 260 or MIME 261, or Permission of Instructor
8th Semester (Winter)		15 credits	Prerequisites/Co-requisites
BIEN 470 D2	Bioengineering Design Project	3	P - BIEN 390
BIEN 471	Bioengineering Research Project	2	P - BIEN 390
CHEE 563	Biofluids and Cardiovacular Mechanics (TC STREAM 1)	3	P - CHEE 314 or MECH 331 or Permission of Instructor
CS	Complementary Studies - Group A (Impact)	3	-
EC	Elective - 3	3	-
FACC 400	Engineering Professional Practice	1	P - FACC 100, FACC 250, and 60 program credits
	TOTAL:	**123**	

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

Elective courses (EC) can be chosen from any course at the 200-level or higher offered by the University, subject to permission of the offering department.
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