

Bioengineering Curriculum - Stream 3 (Biomedical, Diagnostics and High Throughput Screening Engineering)

2017 cohort Non-CEGEP Entry

1st Semester (Fall)		15 credits	Prerequisites/Co-requisites
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
2nd Semester (Winter)		18 credits	Prerequisites/Co-requisites
BIOL 112	Cell and Molecular Biology	3	-
CHEM 120	General Chemistry 2	4	-
CS	Complementary Studies - Group B (HSSML)	3	-
MATH 141	Calculus 2	4	P - MATH 140
PHYS 142	Electromagnetism and Optics	4	P - PHYS 131 / C - MATH 141
3rd Semester (Fall)		17 credits	Prerequisites/Co-requisites
BIEN 200	Introduction to Bioengineering	2	P - Permission of Instructor
BIOL 200	Molecular Biology	3	P - BIOL 112 / C - CHEM 212
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	P - MATH 262
MECH 210	Mechanics 1	2	-
4th Semester (Winter)		12 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
BIOC 212	Molecular Mechanisms of Cell Function	3	P - BIOL 200
COMP 208	Computers in Engineering	3	P - MATH 140, MATH 141
FACC 250	Responsibilities of the Professional Engineer	0	P - FACC 100 or BREE 250
5th Semester (Fall)		14 credits	Prerequisites/Co-requisites
BIEN 290	Bioengineering Measurement Laboratory	4	P - BIEN 200
BIEN 310	Introduction to Biomolecular Engineering (TC STREAM 3)	3	P - BIEN 200 or Permission of Instructor
BIEN 350	Biosignals, Systems and Control	4	P - MATH 263 or Permission of Instructor
CHEM 267	Introductory Chemical Analysis (TC STREAM 3)	3	P - CHEM 110 and CHEM 120, or equivalent
6th Semester (Winter)		12 credits	Prerequisites/Co-requisites
BIEN 360	Physical Chemistry in Bioengineering	3	P - BIEN 300
CCOM 206	Communication in Engineering	3	-
CS	Complementary Studies - Group A (Impact)	3	-
MATH 264	Advanced Calculus for Engineers	3	P - MATH 262 or MATH 151 or MATH 152/ C - MATH 263
7th Semester (Fall)		15 credits	Prerequisites/Co-requisites
BIEN 314	Transport Phenomena in Biological Systems 1	3	P - BIEN 200, MATH 263, BIEN 300 or permission of instructor
BIEN 410	Computational Methods in Biomolecular Engineering (TC STREAM 3)	3	P - BIEN 310 and CHEM 120, or Permission of Instructor
CHEM 367	Instrumental Analysis 1 (TC STREAM 3)	3	P - CHEM 267
CIVE 281	Analytical Mechanics	3	C - MATH 262, MATH 263
FACC 300	Engineering Economy	3	-
8th Semester (Winter)		15 credits	Prerequisites/Co-requisites
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 3)	3	P - BIEN 350 or Permission of Instructor
BIEN 530	Imaging and Bioanalytical Instrumentation (TC STREAM 3)	3	P - 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
9th Semester (Fall)		12 credits	Prerequisites/Co-requisites
BIEN 420	High Throughput Bioanalytical Devices (TC STREAM 3)	3	P - Permission of Instructor
BIEN 470 D1	Bioengineering Design Project	3	P - BIEN 390
BIEN 560	Biosensors (TC STREAM 3)	3	P - Permission of Instructor
ECSE 415	Intro to Computer Vision (TC STREAM 3)	3	*P - ECSE 304 or ECSE 306 or Permission of Instructor
10th Semester (Winter)		12 credits	Prerequisites/Co-requisites
BIEN 470 D2	Bioengineering Design Project	3	P - BIEN 390
BIEN 471	Bioengineering Research Project	2	P - BIEN 390
BIEN 540	Information Storage and Processing in Biological Systems (TC STREAM 3)	3	P - Permission of Instructor
CS	Complementary Studies - Group B (HSSML)	3	-
FACC 400	Engineering Professional Practice	1	P - FACC 100, FACC 250, and 60 program credits
TOTAL:		142	

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 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.
Updated: 2019-12-17