

# Bioengineering Curriculum - Fall 2020

## Stream 1 - Biological Materials and Mechanics

CEGEP Entry

1st Term (Fall)		14 credits	Prerequisites/Co-requisites
BIEN 200	Introduction to Bioengineering	2	-
CHEM 212	Introductory Organic Chemistry 1	4	P - CHEM 110 / C - CHEM 120
MATH 262	Intermediate Calculus	3	P - MATH 133, MATH 141
MATH 263	Ordinary Differential Equations for Engineers	3	C - MATH 262
MECH 210	Mechanics 1	2	P - PHYS 101 or PHYS 131 or equivalent
2nd Term (Winter)		16 credits	Prerequisites/Co-requisites
BIEN 210	Electrical and Optical Properties of Biological Systems	3	P - BIEN 200 / C - BIOL 112
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 141 / C - MATH 133
FACC 100	Introduction to the Engineering Profession	1	-
MATH 203	Principles of Statistics 1	3	-
3rd Term (Fall)		17 credits	Prerequisites/Co-requisites
BIEN 219	Introduction to Physical Biology of the Cell	4	P - BIOL 112 / C - CHEM 212
BIEN 290	Bioengineering Measurement Laboratory	3	P - BIEN 200, MATH 203, PHYS 142
BIEN 350	Biosignals, Systems and Control	4	P - MATH 263 or permission of instructor
CS	Complimentary Studies - Group B (HSSML)	3	-
MIME 261	Structure of Materials (TC Stream 1 List A)	3	-
4th Term (Winter)		15 credits	Prerequisites/Co-requisites
BIEN 320	Molecular, Cellular and Tissue Biomechanics (TC Stream 1 List A)	3	P - BIOL 112, MECH 210
BIEN 360	Physical Chemistry in Bioengineering	3	P - BIEN 300
BIEN 390	Bioengineering Laboratory	3	P - BIEN 290
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 Term (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
CCOM 206	Communication in Engineering	3	-
CIVE 207	Solid Mechanics (TC Stream 1 List A)	4	P - CIVE 205 or MECH 210
CIVE 281	Analytical Mechanics	3	C - MATH 262, MATH 263
TC Stream 1	Stream 1 Technical Complementary from List B	3	-
6th Term (Winter)		15 credits	Prerequisites/Co-requisites
BIEN 340	Transport Phenomena in Biological Systems 2	3	P - BIEN 314 and BIEN 360 or permission of instructor
EC	Elective - 1	3	-
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
TC Stream 1	Stream 1 Technical Complementary from List B	3	-
TC Stream 1	Stream 1 Technical Complementary from List B	3	-
7th Term (Fall)		15 credits	Prerequisites/Co-requisites
BIEN 420	Design of Biodevices for Diagnostics and Screening	3	P - BIEN 340, BIEN 390
BIEN 470D1	Bioengineering Design Project	3	P - BIEN 390
BIEN 560	Design of Biosensors	3	P - Permission of instructor
BIEN 570	Active Mechanics in Biology (TC Stream 1 List A)	3	P - Permission of instructor
EC	Elective - 2	3	-
8th Term (Winter)		15 credits	Prerequisites/Co-requisites
BIEN 470D2	Bioengineering Design Project	3	P - BIEN 390
BIEN 471	Bioengineering Research Project	2	P - Permission of instructor
EC	Elective - 3	3	-
CS	Complementary Studies Group A (Impact)*	3	-
FACC 400	Engineering Professional Practice	1	P - FACC 100, FACC 250, and 60 program credits
TC Stream 1	Stream 1 Technical Complementary from List B	3	-

**123 Credits**

\*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](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.

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.

Students are responsible for satisfying pre-/co-requisites and verifying with their department that they are meeting the requirements of their program.

