

# Bioengineering Curriculum - Stream 2 (Biomolecular & Cellular Engineering)

2017 cohort

CEGEP Entry

<b>1st Semester (Fall)</b>		14 credits	Prerequisites/Co-requisites
BIEN 200	<a href="#">Introduction to Bioengineering</a>	2	P - Permission of Instructor
CHEM 212	<a href="#">Introductory Organic Chemistry 1</a>	4	P - CHEM 110 / C - CHEM 120
MATH 262	<a href="#">Intermediate Calculus</a>	3	P - MATH 141, MATH 133
MATH 263	<a href="#">Ordinary Differential Equations for Engineers</a>	3	C - MATH 262
MECH 210	<a href="#">Mechanics 1</a>	2	-
<b>2nd Semester (Winter)</b>		16 credits	Prerequisites/Co-requisites
BIEN 210	<a href="#">Electrical and Optical Properties of Biological Systems</a>	3	P - BIEN 200/C- BIOL 112 or Permission of Instructor
BIEN 300	<a href="#">Thermodynamics in Bioengineering</a>	3	P - CHEM 120, MATH 262
BIOL 112	<a href="#">Cell and Molecular Biology</a>	3	-
COMP 208	<a href="#">Computers in Engineering</a>	3	P - MATH 140, MATH 141
CS	Complementary Studies - Group B (HSSML)	3	-
FACC 100	<a href="#">Introduction to the Engineering Profession</a>	1	-
<b>3rd Semester (Fall)</b>		17 credits	Prerequisites/Co-requisites
BIEN 290	<a href="#">Bioengineering Measurement Laboratory</a>	4	P - BIEN 200
BIEN 310	<a href="#">Introduction to Biomolecular Engineering (TC STREAM 2)</a>	3	P - BIEN 200 or Permission of Instructor
BIEN 350	<a href="#">Biosignals, Systems and Control</a>	4	P - MATH 263 or Permission of Instructor
BIOL 200	<a href="#">Molecular Biology</a>	3	P - BIOL 112 / C - CHEM212
MATH 264	<a href="#">Advanced Calculus for Engineers</a>	3	P - MATH 262 or MATH 151 or MATH 152 / C - MATH 263
<b>4th Semester (Winter)</b>		15 credits	Prerequisites/Co-requisites
BIEN 320	<a href="#">Molecular, Cellular and Tissue Biomechanics (TC STREAM 2)</a>	3	P - BIOL 112 and MECH 210
BIEN 360	<a href="#">Physical Chemistry in Bioengineering</a>	3	P - BIEN 300
BIOC 212	<a href="#">Molecular Mechanisms of Cell Function</a>	3	P - BIOL 200
CCOM 206	<a href="#">Communication in Engineering</a>	3	-
FACC 250	<a href="#">Responsibilities of the Professional Engineer</a>	0	P - FACC 100 or BREE 250
FACC 300	<a href="#">Engineering Economy</a>	3	-
<b>5th Semester (Fall)</b>		18 credits	Prerequisites/Co-requisites
BIEN 314	<a href="#">Transport Phenomena in Biological Systems 1</a>	3	P - BIEN 200, MATH 263, BIEN 300 or permission of instructor
BIEN 390	<a href="#">Bioengineering Laboratory</a>	3	P - BIEN 290
BIEN 410	<a href="#">Computational Methods in Biomolecular Engineering (TC STREAM 2)</a>	3	P - BIEN 310 and COMP 208 or Permission of Instructor
CIVE 281	<a href="#">Analytical Mechanics</a>	3	C - MATH 262, MATH 263
CS	Complementary Studies - Group A (Impact)	3	-
EC	Elective - 1	3	-
<b>6th Semester (Winter)</b>		15 credits	Prerequisites/Co-requisites
BIEN 330	<a href="#">Tissue Engineering and Regenerative Medicine (TC STREAM 2)</a>	3	P - BIEN 200, CHEM 212, BIOL 112 and BIOL 200 or Permission of Instructor
BIEN 340	<a href="#">Transport Phenomena in Biological Systems 2</a>	3	P - BIEN 314, BIEN 360 or permission of instructor
BIEN 590	<a href="#">Cell Culture Engineering (TC STREAM 2)</a>	3	P - Permission of Instructor
EC	Elective - 2	3	-
PHYS 319	<a href="#">Introduction to Biophysics</a>	3	P - BIOL 200; MATH 222/MATH 262; PHYS 230 and (PHYS 232 or PHYS 253), or Permission of Instructor.
<b>7th Semester (Fall)</b>		15 credits	Prerequisites/Co-requisites
BIEN 420	<a href="#">High Throughput Bioanalytical Devices (TC STREAM 2)</a>	3	P - Permission of Instructor
BIEN 470 D1	<a href="#">Bioengineering Design Project</a>	3	P - Permission of Instructor
BIEN 510	<a href="#">Engineered Nanomaterials for Biomedical Applications (TC STREAM 2)</a>	3	P - BIEN 200, CHEM 212 and BIOL 112 or Permission of Instructor
BIEN 550	<a href="#">Biomolecular Devices (TC STREAM 2)</a>	3	P - Permission of Instructor
BIEN 570	<a href="#">Active Mechanics in Biology (TC STREAM 2)</a>	3	P - Permission of Instructor
<b>8th Semester (Winter)</b>		12 credits	Prerequisites/Co-requisites
BIEN 470 D2	<a href="#">Bioengineering Design Project</a>	3	P - BIEN 390
BIEN 471	<a href="#">Bioengineering Research Project</a>	2	P - BIEN 390
BIEN 540	<a href="#">Information Storage and Processing in Biological Systems (TC STREAM 2)</a>	3	P - Permission of Instructor
EC	Elective - 3	3	-
FACC 400	<a href="#">Engineering Professional Practice</a>	1	P - FACC 100, FACC 250, and 60 program credits
<b>TOTAL:</b>		<b>122</b>	

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).

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