Bioengineering Curriculum - Stream 2 (Biomolecular & Cellular Engineering)

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	Complimentary Studies - Group B (HSSML) - 1	3	-
MATH 141			

5th Semester (Fall)	16 credits	Prerequisites/Co-requisites
BIEN 290	Bioengineering Measurement Laboratory	4	P - BIEN 200, PHYS 142
CIVE 281	Analytical Mechanics	3	C - MATH 262, MATH 263
MATH 264	Advanced Calculus for Engineers	3	P - MATH 262 / C - MATH 263
TC STREAM 2 (BIEN 310)	Introduction to Biomolecular Engineering	3	P - Permission of Instructor
TC STREAM 2 (BIEN 320)	Molecular, Cellular and Tissue Biomechanics	3	P - Permission of Instructor
6th Semester (Winter)		12 credits	Prerequisites/Co-requisites
CHEE 310	Physical Chemistry for Engineers	3	P - CHEE 220 or MIME 212 or BREE 301
CCOM 206	Communication in Engineering	3	-
CS	Complimentary Studies - Group B (Humanities)	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
7th Semester (Fall)		12 credits	Prerequisites/Co-requisites
BIEN 390	Bioengineering Laboratory	3	P - BIEN 290
TC STREAM 2 (BIOC 311)	Metabolic Biochemistry	3	*P - BIOL 200, BIOL 201 or BIOC 212, CHEM 222
TC STREAM 2 (CHEE 370)	Elements of Biotechnology	3	-
TC STREAM 2 (CHEE 390)	Computational Methods in Chemical Engineering	3	*P - CHEE 204, COMP 208, MATH 263
8th Semester (Winter)		12 credits	Prerequisites/Co-requisites
BIEN 340	Transport Processes in Biological Systems	3	P - Permission of Instructor
CS	Complimentary Studies - Group A (Impact)	3	-
FACC 300		3	-
TC STREAM 2 (BIEN 330)	Introduction to Tissue Engineering	3	P - Permission of Instructor
9th Semester (Fall)		15 credits	Prerequisites/Co-requisites
BIEN 470	Bioengineering Design Project (first half)	3	P - BIEN 390

Technical Complementary Courses - Bioengineering

		Credits	Prerequisites/Co-requisites
BIEN 310	Introduction to Biomolecular Engineering	3	P - Permission of Instructor
BIEN 320	Molecular, Cellular, and Tissue Biomechanics	3	P - Permission of Instructor
BIEN 330	Introduction to Tissue Engineering	3	P - Permission of Instructor
BIEN 550	Biomolecular Devices	3	P - Permission of Instructor
BIEN 570	Active Mechanics in Biology	3	P - Permission of Instructor
BIOC 311	Metabolic Biochemistry	3	*BIOL 200, BIOL 201 or BIOC 212, CHEM 222
BMDE 509	Quantitative Analysis and Modelling of Cellular Processes	3	P - Permission of Instructor
CHEE 370	Elements of Biotechnology	3	-
CHEE 390	Computational Methods in Chemical Engineering	3	*CHEE 204, COMP 208, MATH 263
CIVE 557	Microbiology for Environmental Engineering	3	P - Permission of Instructor
CIVE 558	Biomolecular Techniques for Environmental Engineering	3	P - CIVE 225 or Permission of Instructor
PHYS 534	Nanoscience and Nanotechnology	3	-

*Prequisites waved for Bioengineering students

**Prerequisites replaced with BIEN 350 and BIEN 462, and MATH 223 waved for Bioengineering students

Last update: July 2016