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 1415th 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
Introduction to Biomolecular Engineering	3	P - Permission of Instructor
Molecular, Cellular, and Tissue Biomechanics	3	P - Permission of Instructor
Introduction to Tissue Engineering	3	P - Permission of Instructor
Biomolecular Devices	3	P - Permission of Instructor
Active Mechanics in Biology	3	P - Permission of Instructor
Metabolic Biochemistry-	3	*BIOL 200, BIOL 201 or BIOC 212, CHEM 222
Quantitative Analysis and Modelling of Cellular Processes	3	P - Permission of Instructor
Elements of Biotechnology	3	-
Computational Methods in Chemical Engineering	3	*CHEE 204, COMP 208, MATH 263
Microbiology for Environmental Engineering	3	P - Permission of Instructor
Biomolecular Techniques for Environmental Engineering	3	P - CIVE 225 or Permission of Instructor
Nanoscience and Nanotechnology	3	-
	Molecular, Cellular, and Tissue Biomechanics Introduction to Tissue Engineering Biomolecular Devices Active Mechanics in Biology Metabolic Biochemistry- Quantitative Analysis and Modelling of Cellular Processes Elements of Biotechnology Computational Methods in Chemical Engineering Microbiology for Environmental Engineering Biomolecular Techniques for Environmental Engineering	Introduction to Biomolecular Engineering Molecular, Cellular, and Tissue Biomechanics Introduction to Tissue Engineering Biomolecular Devices Active Mechanics in Biology Metabolic Biochemistry- Quantitative Analysis and Modelling of Cellular Processes Elements of Biotechnology Computational Methods in Chemical Engineering Microbiology for Environmental Engineering Biomolecular Techniques for Environmental Engineering 3

^{*}Prequisites waved for Bioengineering students

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