

# Bioengineering Curriculum - Stream 1 (Biological Materials & Mechanics)

2017 cohort

Non-CEGEP Entry

<b>1st Semester (Fall)</b>		15 credits	Prerequisites/Co-requisites
CHEM 110	<a href="#">General Chemistry 1</a>	4	-
FACC 100	<a href="#">Introduction to the Engineering Profession</a>	1	-
MATH 133	<a href="#">Linear Algebra and Geometry</a>	3	-
MATH 140	<a href="#">Calculus 1</a>	3	-
PHYS 131	<a href="#">Mechanics and Waves</a>	4	C - MATH 140
<b>2nd Semester (Winter)</b>		18 credits	Prerequisites/Co-requisites
BIOL 112	<a href="#">Cell and Molecular Biology</a>	3	-
CHEM 120	<a href="#">General Chemistry 2</a>	4	-
CS	Complementary Studies - Group B (HSSML)	3	-
MATH 141	<a href="#">Calculus 2</a>	4	P - MATH 140
PHYS 142	<a href="#">Electromagnetism and Optics</a>	4	P - PHYS 131 / C - MATH 141
<b>3rd Semester (Fall)</b>		17 credits	Prerequisites/Co-requisites
BIEN 200	<a href="#">Introduction to Bioengineering</a>	2	P - Permission of Instructor
BIOL 200	<a href="#">Molecular Biology</a>	3	P - BIOL 112 / C - CHEM212
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	P - PHYS 101 or PHYS 131
<b>4th Semester (Winter)</b>		12 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
BIOC 212	<a href="#">Molecular Mechanisms of Cell Function</a>	3	P - BIOL 200
COMP 208	<a href="#">Computers in Engineering</a>	3	P - MATH 140, MATH 141
FACC 250	<a href="#">Responsibilities of the Professional Engineer</a>	0	P - FACC 100 or BREE 250
<b>5th Semester (Fall)</b>		14 credits	Prerequisites/Co-requisites
BIEN 290	<a href="#">Bioengineering Measurement Laboratory</a>	4	P - BIEN 200
BIEN 350	<a href="#">Biosignals, Systems and Control</a>	4	P - MATH 263 or Permission of Instructor
CCOM 206	<a href="#">Communication in Engineering</a>	3	-
MIME 261	<a href="#">Structure of Materials (TC STREAM 1)</a>	3	-
<b>6th Semester (Winter)</b>		12 credits	Prerequisites/Co-requisites
BIEN 320	<a href="#">Molecular, Cellular, and Tissue Biomechanics (TC STREAM 1)</a>	3	P - BIOL 112, MECH 210
BIEN 360	<a href="#">Physical Chemistry in Bioengineering</a>	3	P - BIEN 300
FACC 300	<a href="#">Engineering Economy</a>	3	-
MATH 264	<a href="#">Advanced Calculus for Engineers</a>	3	P - MATH 262 or MATH 151 or MATH 152 / C - MATH 263
<b>7th Semester (Fall)</b>		13 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
CIVE 207	<a href="#">Solid Mechanics (TC STREAM 1)</a>	4	P - CIVE 205 or MECH 210
CIVE 281	<a href="#">Analytical Mechanics</a>	3	C - MATH 262, MATH 263
MIME 470	<a href="#">Engineering Biomaterials (TC STREAM 1)</a>	3	P - MIME 261 or Permission of Instructor
<b>8th Semester (Winter)</b>		15 credits	Prerequisites/Co-requisites
BIEN 330	<a href="#">Tissue Engineering &amp; Regenerative Medicine (TC STREAM 1)</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 390	<a href="#">Bioengineering Laboratory</a>	3	P - BIEN 290
BIEN 462	<a href="#">Engineering Principles in Physiological Systems (TC STREAM 1)</a>	3	P - BIEN 350 or Permission of Instructor
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>9th Semester (Fall)</b>		15 credits	Prerequisites/Co-requisites
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 1)</a>	3	P - BIEN 200, CHEM 212 and BIOL 112 or Permission of Instructor
BIEN 570	<a href="#">Active Mechanics in Biology (TC STREAM 1)</a>	3	P - Permission of Instructor
CS	Complementary Studies - Group B (HSSML)	3	-
MECH 547	<a href="#">Mechanics of Biological Materials (TC STREAM 1)</a>	3	P - MECH 210, MIME 260 or MIME 261, or Permission of Instructor
<b>10th 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
CHEE 563	<a href="#">Biofluids and Cardiovascular Mechanics (TC STREAM 1)</a>	3	P - CHEE 314 or MECH 331 or Permission of Instructor
CS	Complementary Studies - Group A (Impact)	3	-
FACC 400	<a href="#">Engineering Professional Practice</a>	1	P - FACC 100 or BREE 205, and 60 program credits
<b>TOTAL:</b>		<b>143</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

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