BIORESOURCE ENGINEERING MAJOR (B.ENG. (BIORESOURCE)) (113 CREDITS)

Offered by: Bioresource Engineering (Faculty of Agricultural and Environmental Sciences)
Degree: Bachelor of Engineering (Bioresource)
Program credit weight: 113

Program Description

The B.Eng.(Bioresource); Major in Bioresource Engineering program focuses on biological, agricultural, food, environmental areas, and applying professional engineering skills to biological systems. The design and implementation of technology for the creation of bio-based products, including food, fiber, fuel, and biomaterials, while sustaining a healthful environment. Graduates of this program are eligible for registration as professional engineers in any province across Canada, as well as in some international jurisdictions.

Note: For information about Fall 2025 and Winter 2026 course offerings, please check back on May 8, 2025. Until then, the "Terms offered" field will appear blank for most courses while the class schedule is being finalized.

Required Courses (62 credits)

Expand allContract all

Course	Title	Credits
AEMA 202	Intermediate Calculus.	3
AEMA 305	Differential Equations.	3
BREE 205	Engineering Design 1.	3
BREE 210	Mechanical Analysis and Design.	3
BREE 216	Bioresource Engineering Materials.	3
BREE 252	Computing for Engineers.	3
BREE 301	Biothermodynamics.	3
BREE 305	Fluid Mechanics.	3
BREE 312	Electric Circuits and Machines.	3
BREE 319	Engineering Mathematics.	3
BREE 327	Bio-Environmental Engineering.	3
BREE 341	Mechanics of Materials.	3
BREE 415	Design of Machines and Structural Elements .	3
BREE 420	Engineering for Sustainability.	3
BREE 451	Undergraduate Seminar 1 - Oral Presentation.	1
BREE 452	Undergraduate Seminar 2 Poster Presentation.	1
BREE 453	Undergraduate Seminar 3 - Scientific Writing.	1
BREE 485	Senior Undergraduate Seminar.	1
BREE 490	Engineering Design 2.	3
BREE 495	Engineering Design 3.	3
BREE 504	Instrumentation and Control.	3
FACC 250	Responsibilities of the Professional Engineer.	0
FACC 300	Engineering Economy.	3
FACC 400	Engineering Professional Practice.	1
MECH 289	Design Graphics.	3

Complementary Courses (51 credits)

Set A

3 credits selected from:

Expand allContract all

Course	Title	Credits
AEMA 310	Statistical Methods 1.	3
CIVE 302	Probabilistic Systems.	3

3 credits selected from:

Expand allContract all

Course	Title	Credits
CHEE 315	Heat and Mass Transfer.	3
MECH 346	Heat Transfer.	3

Set B - Natural Sciences and Mathematics

Minimum of 3 credits selected from:

Expand allContract all

Course	Title	Credits
AEBI 210	Organisms 1.	3
AEBI 211	Organisms 2.	3
ENVB 210	The Biophysical Environment.	3
ENVB 305	Population and Community Ecology.	3
LSCI 202	Molecular Cell Biology.	3
LSCI 211	Biochemistry 1.	3
LSCI 230	Introductory Microbiology.	3
MICR 331	Microbial Ecology.	3

With 6 credits chosen in consultation with the Academic Adviser.

Set C - Social Sciences

Minimum of 3 credits selected from:

Expand allContract all

Course	Title	Credits
ENVR 201	Society, Environment and Sustainability.	3
ENVR 203	Knowledge, Ethics and Environment.	3
SEAD 530	Economics for Sustainability in Engineering and Design.	3
SOCI 235	Technology and Society.	3

Note: ENVR courses have limited enrolment.

Plus 6 credits of Social Sciences, Management Studies, Humanities, or Law courses at the U1 undergraduate level or higher with approval of the Academic Adviser.

Note: these 6 credits may include one 3-credit language course other than the student's normal spoken languages.

Set D - Engineering

27 credits from the following list, with the option (and approval of the Academic Adviser) of taking a maximum of 6 credits from other courses offered in the Faculty of Engineering:

Expand allContract all

Course	Title	Credits
BREE 214	Geomatics.	3
BREE 217	Hydrology and Water Resources.	3
BREE 314	Agri-Food Buildings.	3
BREE 322	Organic Waste Management.	3
BREE 325	Food Process Engineering.	3
BREE 329	Precision Agriculture.	3
BREE 403	Biological Material Properties.	3
BREE 412	Machinery Systems Engineering.	3
BREE 416	Engineering for Land Development.	3
BREE 419	Structural Design.	3
BREE 497	Bioresource Engineering Project.	3
BREE 501	Simulation and Modelling.	3
BREE 502	Drainage/Irrigation Engineering.	3
BREE 505	Life Cycle Assessment for Sustainable Agrifood Systems .	3
BREE 509	Hydrologic Systems and Modelling.	3
BREE 510	Watershed Systems Management.	3
BREE 518	Ecological Engineering.	3
BREE 519	Advanced Food Engineering.	3
BREE 520	Food, Fibre and Fuel Elements.	3
BREE 522	Bio-Based Polymers.	3
BREE 529	GIS for Natural Resource Management.	3
BREE 530	Fermentation Engineering.	3
BREE 531	Post-Harvest Drying.	3
BREE 532	Post-Harvest Storage.	3
BREE 533	Water Quality Management.	3
BREE 535	Food Safety Engineering.	3