

BIORESOURCE ENGINEERING - PROFESSIONAL AGROLOGY (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; Professional Agrology 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, fibre, 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. This program qualifies graduates to apply for registration in the Ordre des agronomes du Québec and similar licensing bodies in other provinces in addition to the professional engineer licensing.

Required Courses (65 credits)

Expand allContract all

Course	Title	Credits
AEMA 202	Intermediate Calculus.	3
AEMA 305	Differential Equations.	3
AGRI 330	Agricultural Legislation.	1
AGRI 430	Professional Practice in Agrology.	2
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 (48 credits)

48 credits of the complementary courses selected as follows:

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

Group 1 - Biology

6 credits selected from:

Expand allContract all

Course	Title	Credits
AEBI 210	Organisms 1.	3
AEBI 211	Organisms 2.	3
LSCI 202	Molecular Cell Biology.	3
LSCI 204	Genetics.	3
LSCI 211	Biochemistry 1.	3
LSCI 230	Introductory Microbiology.	3

Group 2 - Agricultural Sciences

6 credits selected from:

Expand allContract all

Course	Title	Credits
ANSC 250	Introduction to Livestock Management	3
ANSC 433	Animal Nutrition and Metabolism.	3
ANSC 458	Advanced Livestock Management	3
PLNT 302	Forage Crops and Pastures.	3
PLNT 200	Introduction to Crop Science	3
PLNT 307	Agroecology of Vegetables and Fruits.	3

PLNT 312	Urban Horticulture.	3
PLNT 322	Greenhouse Management.	3
PLNT 430	Pesticides in Agriculture.	3

Set C - Social Sciences

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.

Set D - Engineering

27 credits from Group 1, Group 2, and Group 3.

Minimum of 6 credits from each of Group 1, Group 2 and Group 3 with the option (and approval of the Academic Adviser) of taking 6 credits from courses offered in the Faculty of Engineering.

Group 1 - Soil and Water

Expand allContract all

Course	Title	Credits
BREE 214	Geomatics.	3
BREE 217	Hydrology and Water Resources.	3
BREE 322	Management of Organic Residue	3
BREE 329	Precision Agriculture.	3
BREE 416	Engineering for Land Development.	3
BREE 502	Drainage/Irrigation Engineering.	3
BREE 509	Hydrologic Systems and Modelling.	3
BREE 510	Watershed Systems Management.	3
BREE 518	Ecological Engineering.	3
BREE 529	GIS for Natural Resource Management.	3
BREE 533	Water Quality Management.	3

Group 2 - Food Processing

Expand allContract all

Course	Title	Credits
BREE 325	Food Process Engineering.	3
BREE 519	Advanced Food Engineering.	3
BREE 520	Food, Fibre and Fuel Elements.	3
BREE 530	Fermentation Engineering.	3
BREE 531	Post-Harvest Drying.	3
BREE 532	Post-Harvest Storage.	3
BREE 535	Food Safety Engineering.	3

Group 3 - Other Engineering

Expand allContract all

Course	Title	Credits
BREE 314	Agri-Food Buildings.	3
BREE 403	Biological Material Properties.	3
BREE 412	Machinery Systems Engineering.	3
BREE 419	Structural Design.	3
BREE 497	Bioresource Engineering Project.	3
BREE 501	Simulation and Modelling.	3
BREE 505	Life Cycle Assessment for Sustainable Agrifood Systems.	3
BREE 522	Bio-Based Polymers.	3