BACHELOR OF ENGINEERING IN BIORESOURCE ENGINEERING - B.ENG. (BIORESOURCE) (OVERVIEW)

Bioresource Engineering is a unique branch of engineering encompassing biological, agricultural, food, environmental and ecological engineering disciplines, as well as many traditional engineering fields; its focus is the application of professional engineering skills to biological systems. The fundamental basis of Bioresource Engineering is the transdisciplinary interaction between engineering science and design with biological, physical, chemical, and other natural sciences. Bioresource engineers strive to design and implement solutions for sustainability and the well-being of society while maintaining the high quality of the environment for generations to come.

The Bioresource Engineering program is accredited by the Canadian Engineering Accreditation Board, as are most B.Eng. programs offered by departments in the Faculty of Engineering. Therefore, completing the Bachelor of Engineering (Bioresource) program fulfills academic eligibility requirements for registration as a professional engineer in any province in Canada and some international jurisdictions. The Bachelor of Engineering (Bioresource) **Professional Agrology Option** qualifies graduates to apply for registration with the *Ordre des agronomes du Québec* and similar licensing bodies in other provinces, in addition to professional engineering licensure.

Complementary courses in the Bioresource Engineering curriculum are organized so that students can follow one of three non-restrictive streams: Bio-Environmental Engineering, Bio-Production Engineering, and Bio-Process Engineering.

Students who follow the **Bio-Environmental Engineering** stream will learn to be responsible stewards of the environment and natural resources. This stream includes the study of soil and water quality management and conservation, organic waste treatment, urban and rural ecology, sustainability engineering, biodiversity preservation, climate change adaptation, and many other related topics.

Students who follow the **Bio-Production Engineering** stream use natural sciences and engineering skills to design systems and machines to produce crops, animals, animal products, and other types of biomass. Students learn about the design of machines and structures, different production systems and technologies, instrumentation and control, geospatial data management, precision agriculture, and emerging intelligent bio-production concepts.

Through the **Bio-Process Engineering** stream, students apply engineering principles to transform agricultural commodities and biomass into food, fiber, fuel, and biochemical products. Topics include the engineering of foods and food processes, physical properties of biological materials, post-harvest technology, fermentation and bioprocessing, managing organic residues, biotechnology, designing machinery for bioprocessing, etc.

In addition, students may choose to follow the Bioresource Engineering **Professional Agrology** as well as the Bioresource Engineering **Honors** Program. Multiple minors are also available. For details related to curriculum options and to select the most suitable stream, please refer to the departmental website.

Most Bioresource Engineering courses are taught on McGill University's Macdonald Campus. However, students spend one term on McGill University's Downtown Campus, primarily taking courses from the Faculty of Engineering. While working towards a B.Eng. (Bioresource) degree, students can also complete additional requirements for minor programs to develop expertise in other areas of study. Some minor programs that might interest Bioresource Engineering students include Agribusiness Entrepreneurship, Agricultural Production, Biomedical Engineering, Biotechnology, Computer Science, Construction Engineering and Management, Environmental Engineering, and Technological Entrepreneurship.

Notes: All required and complementary courses must be passed with a minimum grade of C. B.Eng. (Bioresource) programs have a minimum residency requirement stipulating that 50% of total credits must be completed at McGill University. The program's total of 143 credit hours includes those associated with the Foundation Year (U0) courses (30 credit hours). All required courses must be taken at McGill University. Exceptional substitutions for required courses other than the capstone design sequence (BREE 490/495) must be pre-approved by an Academic Program Advisor and accepted by the Committee on Academic Standing.

See Bachelor of Engineering (Bioresource) – B.Eng.(Bioresource) for a complete list of B.Eng.(Bioresource) programs.