

## M.Sc. Applied - Bioresource Engineering - Environmental Engineering Option Program Information Sheet

### Typical Program Sequence (45 credits)

Fall	Winter	Summer	Fall 2	Winter 2
Min. 12 credits*	Min. 12 credits*	Optional	Min. 12 credits*	Optional - Remaining Credits
~4 courses from course list including:  -CHEE 591 (3) -CIVE 615 (3) - statistics or data analysis course if possible or CIVE 555 can be taken in winter term	~4 courses from course list including CIVE 555 (3) or other statistics or data analysis course if not already taken in fall	OFF -Scheduled Break (no courses)  OR  BREE 671 (6) Project 1	~4 courses from course list including BREE 533 (3)	BREE 671 (6) Project 1 (if not already taken previously)  AND/OR  Any Remaining courses/credits

\***International students** are obliged to register for a minimum of 12 credits per term (full-time status) to fulfill their study permit obligations. The exceptions can be a "scheduled break" in the summer term, and the last term of the program when they may be registered for fewer than 12 credits.

### Course Requirements

**Research Project:** Students must first complete two terms of lectured coursework before registering for the project. Students will normally will aim to do their M.Sc.A. Project or Internship in the Summer semester, but other semesters are possible as well. **Summer term registration opens in MARCH.**

**Certain courses have a pre-requisite or require permission of the instructor in order to register.** You can e-mail the instructor directly to request a permit to register for the course on Minerva, stating 1) the reason you would like to take the course, and 2) proof of any required pre-requisites. You also need to provide your name, McGill ID, and the name of the program you are in (M.Sc.A. Bioresource Engineering - Environmental Engineering) and the Faculty in some cases, if the course is in another faculty. Contact information for faculty and staff can generally be found here:

<https://www.mcgill.ca/directory/staff/>

**Important to consider when choosing a course: It is strongly recommended you e-mail the course instructor to confirm that you have the appropriate background to succeed in a course.** You should confirm the course requirements before registering for a course. **McGill Graduate**

**Grading Policy:** The minimum passing grade for a graduate student is **B- or 65%**. **McGill Graduate Failure Policy (link below):** After a second course failure a student will be withdrawn from the university.

**Failure Policy:** [https://www.mcgill.ca/study/university\\_regulations\\_and\\_resources/graduate/gps\\_gi\\_failure\\_policy](https://www.mcgill.ca/study/university_regulations_and_resources/graduate/gps_gi_failure_policy)

**This list is subject to change as course offerings at McGill are updated each year.** Note that many courses are given by departments on the downtown campus and some courses may have a lab component. Please note that the availability of courses varies every year: Some are only offered bi-yearly and others may not be offered for other reasons. You are encouraged to explore the McGill course catalogue. Note you may not take a course whose timetable overlaps with that of another. Timetables change each year so you may be able to take different courses, depending on the year.

**If a course is full:** you may also try contacting the instructor to see if there are any extra spaces possible, particularly if it is required for your program.

**The approval of your Program Advisor is required for:**

- 1) Elective courses not found in the lists below
- 2) Any proposed alternatives to complementary courses in the program

**To explore other course possibilities,** please browse through the course listings (link below) or search within Minerva's registration menu (advanced filters) in related Departments and verify permissions and pre-requisites. ALL COURSES MUST BE 500-level or higher. It's also possible to take a course in another Quebec university (link below) or another university in Canada.

**McGill Course Calendar Search:** <https://www.mcgill.ca/study/courses/search>

**Inter-University Transfer (other Quebec universities):** <https://www.mcgill.ca/transfercredit/iut>

<b>Research Project (6 credits)</b>		
BREE 671 (6) Project 1		
<b>Required Courses (9 credits)</b>		
BREE 533 (3) Water Quality Management		
CHEE 591 (3) Environmental Bioremediation		
CIVE 615 (3) Environmental Engineering Seminar		
<b>Complementary Courses* (19 credits)</b>		
<i>*As some courses may not be offered in a particular year, some approved alternatives have been included.</i>		
<b>Data Analysis Course (3 credits from the following):</b>		
AEMA 610 (3) Statistical Methods 2	<i>alternative</i>	
AEMA 611 (3) Experimental Designs 1		
CIVE 555 (3) Environmental Data Analysis		
CIVE 609 (4) Risk Engineering	<i>alternative</i>	
ENVB 506 (3) Quantitative Methods: Ecology	<i>alternative</i>	
PSYC 650 (3) Advanced Statistics 1		
<b>Toxicology Course (3 credits from the following):</b>		
ENVB 500 (3) Advanced Topics in Ecotoxicology	<i>alternative</i>	
OCCH 612 (3) Principles of Toxicology		
OCCH 616 (3) Occupational Hygiene		
<b>Water Pollution Engineering Course (4 credits from the following):</b>		
CIVE 574 (3) Fluid Mechanics of Water Pollution	<i>alternative</i>	
CIVE 651 (4) Theory: Water/Wastewater Treatment		
CIVE 652 (4) Bioprocesses for Wastewater Resource Recovery		
CIVE 660 (4) Chem.&Phys. Treatment of Waters		
CIVE 677 (4) Water-Energy Sustainability*	<i>alternative</i>	
<i>* cannot be used to fulfill more than one section in program requirements</i>		
<b>Air Pollution Engineering Course (3 credits from the following):</b>		
ATOC 512 (3) Atmospheric and Oceanic Dynamics	<i>alternative</i>	
ATOC 519 (3) Advances in Chemistry of Atmosphere	<i>alternative</i>	
<del>CHEE 592 (3) Industrial Air Pollution Control</del>	<i>Course retired 2023</i>	
MECH 534 (3) Air Pollution Engineering		
CIVE 561 (3) Greenhouse Gas Emissions	<i>alternative</i>	
<i>or an approved 500-, 600-, or 700-level alternative course.</i>		
<b>Environmental Impact Course (3 credits from the following):</b>		
CIVE 677 (4) Water-Energy Sustainability*	<i>alternative</i>	
GEOG 514 (3) Climate Change Vulnerability and Adaptation	<i>alternative</i>	
GEOG 530 (3) Global Land and Water Resources	<i>alternative</i>	
GEOG 601 (3) Advanced Environmental System Modelling	<i>replaces GEOG 501</i>	
GEOG 551 (3) Environmental Decisions		
IGFS 611 (3) Advanced Issues on Development, Food, and Agriculture	<i>alternative</i>	
MECH 560 (3) Eco-design and Product Life Cycle Assessment	<i>alternative</i>	
NRSC 612 (3) Environmental Assessment and Sustainable Development	<i>alternative</i>	
<i>or an approved 500-, 600-, or 700-level alternative course.</i>		
<i>* cannot be used to fulfill more than one section in program requirements</i>		
<b>Environmental Policy Course (3 credits from the following):</b>		
GEOG 515 (3) Contemporary Dilemmas of Environment	<i>alternative</i>	
ECON 511 (3) Energy, Economy, & Environment	<i>pre-requisites</i>	
SEAD 515 (3) Climate Change Adaptation and Engineering Infrastructure	<i>alternative</i>	<a href="#">SEAD course reg. instructions</a>
SEAD 530 (3) Economics for Sustainability in Engineering and Design	<i>alternative</i>	<a href="#">SEAD course reg. instructions</a>
URBP 506 (3) Environmental Policy and Planning		
<i>or an approved 500-, 600-, or 700-level alternative course.</i>		

**Electives: Further complementary courses (balance of coursework to meet the 45-credit program requirement) (11 credits):**

Remaining Engineering or Non-Engineering courses from an approved list of courses, at the 500, 600, or 700 level, from the Faculty of Engineering, Faculty of Agricultural and Environmental Sciences, Faculty of Law, Faculty of Religious Studies, Desautels Faculty of Management, and Departments of Atmospheric and Oceanic Sciences, Biology, Chemistry, Earth and Planetary Sciences, Economics, Epidemiology and Biostatistics, Geography, Occupational Health, Political Science, Sociology, and the McGill School of Environment.

**List of Approved Elective (Remaining Complementary) Courses.** In addition to the below, any course from the Complementary list above may be used as an elective. Ensure that your background meets the requirements of the course. Permission from course instructor may be required; email instructor. **If you want to take a course NOT on the approved list, you must email your Program Advisor to ask for permission to apply it to your program.**

BREE 510 (3) Watershed Systems Management	
BREE 518 (3) Ecological Engineering	
BREE 529 / ENVB 529 (3) GIS for Natural Resource Management	
BREE 608 (3) Special Topics - Independent Project	
BREE 672 (6) Research Project 2	see your Advisor
CIVE 520 (3) Groundwater Hydrology	
CIVE 521 (3) Nanomaterials and the Aquatic Environment	
CIVE 550 (3) Water Resources Management	
CIVE 557 (3) Microbiology for Environmental Engineering	
EPSC 549 (3) Hydrogeology	
MIME 556 (3) Sustainable Materials Processing.	
NRSC 670 (3) Principles of Environmental Health Science 1	
NRSC 671 (3) Principles of Environmental Health Science 2	(pre-req NRSC 670)
OCCH 605 (6) Physical Health Hazards	NOTE this is 6 credits
OCCH 608 (3) Biological Hazards	
PARA 515 (3) Water, Health, and Sanitation	
SEAD 510 (4) Energy Analysis	<a href="#">SEAD course reg. instructions</a>
SEAD 520 (3) Life Cycle-Based Environmental Footprinting	<a href="#">SEAD course reg. instructions</a>
SEAD 540 (3) Industrial Ecology and Systems.	<a href="#">SEAD course reg. instructions</a>
SEAD 550 (3) Decision-Making for Sustainability in Engineering and Design	<a href="#">SEAD course reg. instructions</a>

**Example of a non-conflicting combination of required, complementary, and elective courses from Fall 2022 and Winter 2023. Other combinations possible.**

**Env Eng Fall 2022 - Sample Schedule - 15 credits**

BREE 533 (3) Water Quality Management	Required
CHEE 591 (3) Environmental Bioremediation	Required
CIVE 615 (3) Environmental Engr. Seminar	Required
OCCH 612 (3) Principles of Toxicology <b>OR</b> GEOG 515 (3) Contemporary Dilemmas of De	Toxicology <b>OR</b> Env. Policy
GEOG 514 (3) Climate Change Vulnerability and Adaptation	Env. Impact

**Env Eng Winter 2023 - Sample Schedule - 16 credits**

CIVE 555 (3) Environmental Data Analysis	Statistics
CIVE 660 (4) Chem.&Phys. Treatment of Waters	Water Pollution
SEAD 520 (3) Life Cycle-Based Environmental Footprinting	Elective
SEAD 530 (3) Economics for Sustainability in Engineering and Design	Elective or Env. Policy
NRSC 612 (3) Environmental Assessment and Sustainable Development	Elective

Project and remaining lectured courses can be taken in subsequent terms, i.e., summer/fall or fall/winter as decided by the student.