ENVIRONMENT MAJOR - WATER ENVIRONMENTS AND ECOSYSTEMS (B.SC. (AG.ENV.SC.)) (63 CREDITS)

Offered by: Bieler School of Environment
Degree: Bachelor of Science (Agricultural and Environmental Sciences)
Program credit weight: 63

Program Description

The Major Environment - Water Environments and Ecosystems program is an introduction to the atmospheric processes as well as the anthropogenic processes that shape our water environments, and the interconnectedness between these environments and natural and human-built ecosystems. The program includes two streams in which to specialize: the Biological Stream focuses on the ecological facet of the water environment and the mechanisms regulating the different forms of life in water bodies; and the Physical Stream focuses on the physical facet of the water environment, and the transport and transformation mechanisms of water on the planet, from rivers to the ocean and atmosphere.

Program Requirements

Note: Students are required to take a maximum of 30 credits at the 200 level and a minimum of 12 credits at the 400 level or higher in this program. This includes required and complementary courses.

Required Courses (21 credits)

Expand allContract all

Course	Title	Credits
ATOC 215	Oceans, Weather and Climate.	3
ENVR 200	The Global Environment.	3
ENVR 201	Society, Environment and Sustainability.	3
ENVR 202	The Evolving Earth.	3
ENVR 203	Knowledge, Ethics and Environment.	3
ENVR 301	Environmental Research Design.	3
ENVR 400	Environmental Thought.	3

Complementary Courses (42 credits)

Senior Research Project

3 credits from:

Expand allContract all

Course	Title	Credits
AEBI 427	Barbados Interdisciplinary Project.[1]	6
ENVR 401	Environmental Research.	3
ENVR 451	Research in Panama.	6
FSCI 444	Barbados Research Project.	6
GEOG 451	Research in Society and Development in Africa.[1]	3

[1] 3 credits will be applied to the program; extra credits will count as electives.

Hydrology and Ecology

3 credits from:

Expand allContract all

Course	Title	Credits
BREE 217	Hydrology and Water Resources.	3
GEOG 322	Environmental Hydrology.	3

3 credits from:

Expand allContract all

Course	Title	Credits
BIOL 308	Ecological Dynamics.	3
ENVB 305	Population and Community Ecology.	3

Statistics

3 credits from:

Expand allContract all

Course	Title	Credits
AEMA 310	Statistical Methods 1.	3
GEOG 202	Statistics and Spatial Analysis.	3
MATH 203	Principles of Statistics 1.	3

Note: Credit for statistics courses is subject to certain restrictions. Student in the Faculty of Science should consult "Course Overlap" information in the "Course Requirements" section of the Catalogue for the Faculty of Science.

Field Course

3 credits from:

Expand allContract all

Course	Title	Credits
BIOL 331	Ecology/Behaviour Field Course.	3
BIOL 334D1	Applied Tropical Ecology.	1.5
BIOL 334D2	Applied Tropical Ecology.	1.5
BIOL 335	Marine Mammals.	3
BIOL 343	Biodiversity in the Caribean.	3
GEOG 495	Field Studies - Physical Geography.	3
WILD 401	Fisheries and Wildlife Management.	3

27 credits from one of the following two streams:

Biological Stream

Social Sciences and Policy

3-6 credits from:

Expand allContract all

Course	Title	Credits
AGEC 333	Resource Economics.	3
ANSC 555	The Use and Welfare of Animals.	3
ANTH 339	Ecological Anthropology.	3
ANTH 418	Environment and Development.	3
COMS 360	Environmental Communication.	3
ECON 225	Economics of the Environment.	3
ECON 326	Ecological Economics.	3
ENVR 421	Montreal: Environmental History and Sustainability.	3
ENVB 437	Assessing Environmental Impact.	3
ENVR 422	Montreal Urban Sustainability Analysis.	3
GEOG 302	Environmental Management 1.	3
GEOG 340	Sustainability in the Caribbean.	3
GEOG 404	Environmental Management 2.	3
GEOG 498	Humans in Tropical Environments.	3
GEOG 530	Global Land and Water Resources.	3
HIST 510	Environmental History of Latin America (Field).	3
POLI 345	International Organizations.	3
POLI 350	Global Environmental Politics.	3
WCOM 314	Communicating Science.	3
WILD 421	Wildlife Conservation.	3

Water Environments and Habitats

12-15 credits from:

Expand allContract all

Course	Title	Credits
BIOL 310	Biodiversity and Ecosystems.	3
BIOL 342	Global Change Biology of Aquatic Ecosystems.	3
BIOL 432	Limnology.	3
BIOL 441	Biological Oceanography.	3
BIOL 465	Conservation Biology.	3
BIOL 540	Ecology of Species Invasions.[1]	3
BIOL 553	Neotropical Environments.	3
BREE 533	Water Quality Management.	3
ENVB 210	The Biophysical Environment.[1]	3
ENVB 410	Ecosystem Ecology.	3
ENVB 500	Advanced Topics in Ecotoxicology.	3
ENVR 540	Ecology of Species Invasions.[1]	3
GEOG 470	Wetlands.	3
GEOG 305	Soils and Environment.[1]	3
MICR 331	Microbial Ecology.	3
NRSC 333	Pollution and Bioremediation.	3
PARA 410	Environment and Infection.	3
SOIL 535	Soil Ecology.	3
WILD 302	Fish Ecology.	3

[1] You may take only one of: BIOL 540 or ENVR 540; ENVB 210 or GEOG 305

Surface and Atmospheric Processes

6-9 credits from:

Expand allContract all

Course	Title	Credits
ATOC 214	Introduction: Physics of the Atmosphere.	3
ATOC 219	Introduction to Atmospheric Chemistry.[1]	3
ATOC 341	Caribbean Climate and Weather.	3
BIOL 515	Advances in Aquatic Ecology.	3
BREE 509	Hydrologic Systems and Modelling.	3
CHEM 219	Introduction to Atmospheric Chemistry.[1]	3
CHEM 267	Introductory Chemical Analysis.	3
ENVB 529	GIS for Natural Resource Management.[1]	3
ENVB 530	Advanced GIS for Natural Resource Management.	3
EPSC 220	Principles of Geochemistry.	3
EPSC 325	Environmental Geochemistry.	3
EPSC 519	Isotopes in Earth and Environmental Science.	3
EPSC 522	Advanced Environmental Hydrology.[1]	3
GEOG 201	Introductory Geo-Information Science.[1]	3
GEOG 308	Remote Sensing for Earth Observation.	3
GEOG 505	Global Biogeochemistry.	3
GEOG 506	Advanced Geographic Information Science.	3
GEOG 522	Advanced Environmental Hydrology.[1]	3
GEOG 550	Historical Ecology Techniques.	3

[1] You may take only one of: ATOC 219 or CHEM 219; ENVB 529 or GEOG 201; EPSC 522 or GEOG 522.

Physical Stream

Atmosphere and Thermodynamics

6 credits from:

Expand allContract all

Course	Title	Credits
ATOC 214	Introduction: Physics of the Atmosphere.	3
ATOC 315	Thermodynamics and Convection.	3

Advanced Hydrology

3 credits from:

Expand allContract all

Course	Title	Credits
BREE 509	Hydrologic Systems and Modelling.	3
BREE 533	Water Quality Management.	3
EPSC 522	Advanced Environmental Hydrology.	3
EPSC 549	Hydrogeology.	3
GEOG 522	Advanced Environmental Hydrology.	3

Intermediate Calculus

3 credits from:

Expand allContract all

Course	Title	Credits
AEMA 202	Intermediate Calculus.	3
MATH 222	Calculus 3.	3

Engineering/Mathematics/Hydrology

6-9 credits from:

Expand allContract all

Course	Title	Credits
AEMA 305	Differential Equations.[1]	3
ATOC 309	Weather Radars and Satellites.	3
BREE 416	Engineering for Land Development.	3
BREE 420	Engineering for Sustainability.	3
BREE 506	Advances in Drainage Management.[1]	3
BREE 509	Hydrologic Systems and Modelling.	3
BREE 510	Watershed Systems Management.	3
BREE 533	Water Quality Management.	3
CIVE 323	Hydrology and Water Resources.	3
ENVB 210	The Biophysical Environment.[1]	3
ENVB 529	GIS for Natural Resource Management.[1]	3
ENVB 530	Advanced GIS for Natural Resource Management.[1]	3
EPSC 522	Advanced Environmental Hydrology.[1]	3
EPSC 549	Hydrogeology.	3
GEOG 201	Introductory Geo-Information Science.[1]	3
GEOG 305	Soils and Environment.[1]	3
GEOG 308	Remote Sensing for Earth Observation.	3
GEOG 314	Geospatial Analysis.	3
GEOG 506	Advanced Geographic Information Science.[1]	3
GEOG 522	Advanced Environmental Hydrology.[1]	3
MATH 315	Ordinary Differential Equations.	3
SOIL 315	Soil Nutrient Management.[1]	3

[1] You may take only one of: ENVB 529 or GEOG 201; ENVB 530 or GEOG 506; ENVB 210 or GEOG 305; AEMA 305 or MATH 315; EPSC 522 or GEOG 522.

Marine and Freshwater Biology

6-9 credits from:

Expand allContract all

Course	Title	Credits
BIOL 310	Biodiversity and Ecosystems.	3
BIOL 342	Global Change Biology of Aquatic Ecosystems.	3
BIOL 432	Limnology.	3
BIOL 441	Biological Oceanography.	3
BIOL 465	Conservation Biology.	3
BIOL 553	Neotropical Environments.	3
ENVB 410	Ecosystem Ecology.	3
GEOG 470	Wetlands.	3
GEOG 505	Global Biogeochemistry.	3
GEOG 530	Global Land and Water Resources.	3
WILD 302	Fish Ecology.	3
WILD 421	Wildlife Conservation.	3