

EARTH SYSTEM SCIENCE – SPECIALIZATION (SCIENCE) – BACHELOR OF SCIENCE (HONOURS)

Subject: Administered by the School of Environmental Studies in partnership with the Department of Geography and Planning.

Plan: Consists of 96.00 units as described below.

Plan Code: EGPY-S

Program: The Plan, alone, or in combination with a Minor in another subject, and with sufficient electives to total 120.00 units, will lead to a Bachelor of Science (Honours) Degree.

Note: Requirements for this program have been modified. Please consult the 2024-2025 (<https://queensu-ca-public.courseleaf.com/archive/>) *Calendar* for the previous requirements.

Code	Title	Units
1. Core		
– CORE SCIENCE –		
A. Complete 3.00 units from the following:		3.00
BIOL 103	Fundamentals of Biology: Organisms to Ecosystems	
BIOL 111	Ecology and the Environment	
B. Complete 6.00 units from the following:		6.00
GPHY 101	Human Geography	
	or BADR 100 Thinking Locally	
and		
GPHY 102	Physical Geography and Natural Resources	
C. Complete the following:		
GEOL 200	Oceanography	3.00
– CORE EARTH SYSTEM SCIENCE –		
D. Complete the following:		
GPHY 207	Principles of Biogeography	3.00
GPHY 208	Surface Processes, Landforms, and Soils	3.00
GPHY 209	Weather and Climate	3.00
GPHY 247	Introduction to Statistics	3.00
E. Complete 3.00 units from the following:		3.00
GPHY 227	Cities: Geography, Planning, and Urban Life	
GPHY 228	Geographies of the Global Political Economy	
GPHY 229	Place, Space, Culture, and Social Life	
F. Complete 3.00 units from the following:		3.00
GPHY 242	Remote Sensing I: Remote Sensing of the Environment	
GPHY 243	Geographic Information Science	

GPHY 342	Remote Sensing II: Digital Image Processing	
G. Complete the following:		
GPHY 415	Advanced Analysis of Earth Surface Processes	3.00
– CORE SOCIAL SCIENCES AND HUMANITIES –		
H. Complete the following:		
ENSC 103	Environment and Sustainability	3.00
I. Complete the following:		
ENSC 230	Principles of Sustainability	3.00
ENSC 330	Applications of Sustainability	3.00
J. Complete 6.00 units from the following:		6.00
ENSC 430	Honours Projects in Environmental Sustainability	
ENSC 501	Independent Environmental Study	
2. Option		
A. Complete 3.00 units from the following:		3.00
GEOL at any level		
B. Complete 6.00 units from the following course list:		6.00
ENSC_Specialization_Options_A		
C. Complete 3.00 units from the following course list:		3.00
ENSC_Interdisciplinary_SocSci/Huma		
D. Complete 3.00 units from the following course list:		3.00
ENSC_Interdisciplinary_Humanities		
E. Complete 15.00 units from the following course list:		15.00
EGPY_Options_A		
F. Complete 6.00 units from the following course list:		6.00
EGPY_Options_B		
3. Supporting		
A. Complete 6.00 units from the following:		6.00
CHEM at the 100-level or above		
PHYS at the 100-level or above		
B. Complete 6.00 units from the following:		6.00
MATH at the 100-level or above		
STAT at the 100-level or above		
Electives and/or Other Plan Requirements		24.00
Total Units		120.00



4. Substitutions

A. ENSC 502/12.0 may be substituted for Core **1.J.** and a further 6.00 units in electives and/or Plan requirements as approved by the Chair of Undergraduate Studies.

B. Courses as approved by the Chair of Undergraduate Studies may be substituted for those in Option **2.E.**, above.

5. Notes

A. This Plan may not be combined with an Environmental Studies Minor (ENVS-Y) or a Geography Minor (GPHY-Z). Please refer to Academic Program Regulation 3 (<https://arts-science/academic-programs/>) for further information.

B. A maximum of 6.00 units from courses offered by other Faculties and Schools may be counted toward the program and/or Plan requirements. This includes courses in BMED, COMM, GLPH, HSCI, LAW, NURS, and courses offered by Smith Engineering.

Earth System Science Course Lists

The following lists may contain courses offered through other Departments. In accordance with Academic Regulation **2.6** (Access to Classes), students do not have enrolment priority in all of these courses. Access to these courses may only be made available during the Open Enrolment period, and then only if space permits.

ENSC_Specialization_Options_A

Code	Title	Units
BIOL 102	Fundamentals of Biology: Molecular and Cell Biology	3.00
BIOL 103	Fundamentals of Biology: Organisms to Ecosystems	3.00
BIOL 335	Limnology and Aquatic Ecology	3.00
ENSC 301	Environmental Assessment	3.00
ENSC 320	Wildlife Issues in a Changing World	3.00
GPHY 318	Advanced Biogeography	3.00

ENSC_Interdisciplinary_SocSci/Huma

Code	Title	Units
BLCK 320	Black Studies in Transnational Contexts	3.00
CLST 214	Ancient Science	3.00
DEVS 220	Introduction to Indigenous Studies	3.00
DEVS 221	Indigenous Studies II - Resistance and Resurgence	3.00
DEVS 250	Environmental Transformations	3.00
ECON 290	Environmental Economics and Assessment	3.00
ENGL 113	Reading for the Planet	3.00

ENGL 218	Introduction to Indigenous Literatures in Canada	3.00
ENGL 276	Literature and the Environment	3.00
ENSC 200	Environmental History	3.00
ENSC 245	Consuming the Environment	3.00
ENSC 290	Introduction to Ecological Economics	3.00
ENSC 301	Environmental Assessment	3.00
ENSC 307	Marine Environmental Issues	3.00
ENSC 310	Environmental Policy	3.00
ENSC 315	Sustainable Food Systems	3.00
ENSC 320	Wildlife Issues in a Changing World	3.00
ENSC 321	Environmental Justice in Global Context	3.00
ENSC 407	Global Water Resources: Challenges and Opportunities	3.00
ENSC 445	Waste Flows: Environmental Studies of Waste	3.00
ENSC 482	Special Topics in Environmental Studies	3.00
GNDS 212	Racism, Colonialism, and Resistance	3.00
GPHY 101	Human Geography	3.00
GPHY 319	Contemporary Energy Resources	3.00
GPHY 320	Energy and Society	3.00
GPHY 336	Geography, the Environment, and Human Health	3.00
GPHY 365	Geography, Development, and Environment in the 'Third World'	3.00
HLTH 235	Food Systems	3.00
INDG 101	Indigenous Knowledges and Perspectives	3.00
INDG 302	Indigenous Theories and Methodologies: Learning through Indigenous Worldviews	3.00
INDG 308	Learning from the Land	3.00
PHIL 203	Science and Society	3.00
PHIL 293	Humans and the Natural World	3.00
PHIL 493	Ethics and the Environment	3.00
RELS 235	Religion and Environment	3.00

ENSC_Interdisciplinary_Humanities

Code	Title	Units
CLST 214	Ancient Science	3.00
DEVS 220	Introduction to Indigenous Studies	3.00
DEVS 221	Indigenous Studies II - Resistance and Resurgence	3.00
ENGL 113	Reading for the Planet	3.00
ENGL 218	Introduction to Indigenous Literatures in Canada	3.00
ENGL 276	Literature and the Environment	3.00
INDG 101	Indigenous Knowledges and Perspectives	3.00
PHIL 203	Science and Society	3.00

PHIL 293	Humans and the Natural World	3.00
PHIL 493	Ethics and the Environment	3.00
RELS 235	Religion and Environment	3.00

EGPY_Options_A

Code	Title	Units
GPHY 304	Northern and Arctic Environments	3.00
GPHY 305	Applied Cold Regions Science	3.00
GPHY 312	Watershed Hydrology	3.00
GPHY 313	Glacier Processes and Dynamics	3.00
GPHY 314	Climate Change	3.00
GPHY 315	Advanced Field Measurements and Their Analysis	3.00
GPHY 317	Soil, Environment, and Society	3.00
GPHY 318	Advanced Biogeography	3.00

EGPY_Options_B

Code	Title	Units
BIOL 300	Ecology	3.00
BIOL 335	Limnology and Aquatic Ecology	3.00
CHEM 211	Main Group Chemistry	3.00
CHEM 212	Principles of Chemical Reactivity	3.00
CHEM 213	Introduction to Chemical Analysis	3.00
CHEM 221	Material, Solutions, and Interfaces	3.00
CHEM 223	Organic Reactions	3.00
CHEM 281	General Organic Chemistry I (with Virtual Laboratory)	3.00
CHEM 282	General Organic Chemistry II	3.00
CHEM 326	Environmental and Green Chemistry	3.00
GEOL 232	Mineralogy	3.00
GEOL 238	Sedimentology and Stratigraphy	3.00
GEOL 333	Terrain Evaluation	3.00
GEOL 343	Hydrogeology	3.00
GEOL 365	Geochemical Characterization of Earth Processes	3.00
GEOL 475	Exploration and Environmental Geochemistry	3.00
MICR 221	Fundamental Microbiology	3.00