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

EGPY-P-BSH

Subject: Administered by the School of Environmental Studies in partnership with the Department of Geography.
Plan: Consists of 99.00 units as described below.
Program: The Plan, with sufficient electives to total 120.00 units, will lead to a Bachelor of Science (Honours) Degree.

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	6.00
– 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		
Elective Courses		21.00
Total Units		**120.00**

4. Substitutions

A. ENSC 502 may be substituted for requirement **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. 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 in the Faculty of Engineering and Applied Science.

Earth System Science Course Lists

The following lists 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.

EGPY_Options_A

Code	Title	Units
Options in the Earth System Science Plan, List A		
GPHY 304	Northern and Arctic Environments	3.00
GPHY 305	Applied Cold Regions Science	3.00
GPHY 306	Natural Environmental Change	3.00
GPHY 311	Biogeochemical Processes	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
GPHY 413	Water, Energy and Carbon Cycling in the Biosphere	3.00
GPHY 417	Land-Use Change in the Earth System	3.00

EGPY_Options_B

Code	Title	Units
Options in the Earth Systems Science Plan, List B		
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

ENSC_Specialization_Options_A

Code	Title	Units
Options in the Environmental Science Specialization Plans, List A		
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_Humanities

Code	Title	Units
Environmental Science/Studies Interdisciplinary Humanities Options		
CLST 214	Ancient Science	3.00
DEVS 220	Introduction to Indigenous Studies	3.00
DEVS 221	Indigenous Studies II - Resistance and Resurgence	3.00
PHIL 203	Science and Society	3.00
PHIL 293	Humans and the Natural World	3.00
PHIL 310	Development Ethics	3.00
PHIL 493	Ethics and the Environment	3.00
RELS 235	Religion and Environment	3.00

ENSC_Interdisciplinary_SocSci/Huma

Code	Title	Units
Environmental Science/Studies Interdisciplinary and Social Science and Humanities Options		
CHEE 342	Environmental Biotechnology	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
ENSC 200	Environmental History	3.00

ENSC 290	Introduction to Ecological Economics	3.00
ENSC 301	Environmental Assessment	3.00
ENSC 305	Social Environments	3.00
ENSC 307	Marine Environmental Issues	3.00
ENSC 310	Environmental Policy	3.00
ENSC 311	Applied 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 391	Practical Applications in Sustainability	3.00
ENSC 407	Global Water Issues	3.00
ENSC 420	Gender and Environments	3.00
ENSC 482	Special Topics in Environmental Studies	3.00
ENSC 483	Special Topics in Environmental Studies II	3.00
GPHY 336	Geography, the Environment and Human Health	3.00
GPHY 339	Medical Geography	3.00
PHIL 203	Science and Society	3.00
PHIL 293	Humans and the Natural World	3.00
PHIL 310	Development Ethics	3.00
PHIL 493	Ethics and the Environment	3.00
RELS 235	Religion and Environment	3.00