

# GEOLOGICAL SCIENCES – SPECIALIZATION (SCIENCE) – BACHELOR OF SCIENCE (HONOURS)

## GEOL-P-BSH

**Subject:** Administered by the Department of Geological Sciences and Geological Engineering.

**Plan:** Consists of 96.00 units as described below.

**Program:** The Plan, together with sufficient electives to total 120.00 units, will lead to a Bachelor of Science (Honours) Degree.

Code	Title	Units
<b>1. Core</b>		
<b>A. Complete the following:</b>		
GEOL 104	The Dynamic Earth	3.00
GEOL 107	History of Life	3.00
<b>B. Complete the following:</b>		
CHEM 112	General Chemistry	6.00
<b>C. Complete 6.00 units from the following: 6.00</b>		
MATH 120	Differential and Integral Calculus	
MATH 121	Differential and Integral Calculus	
MATH 123	Differential and Integral Calculus I & MATH 124 and Differential and Integral Calculus II	
<b>D. Complete 6.00 units from the following: 6.00</b>		
PHYS 104	Fundamental Physics	
PHYS 106	General Physics	
PHYS 115	Introduction to Physics I	
PHYS 116	and Introduction to Physics II	
PHYS 118	Basic Physics	
<b>E. Complete the following:</b>		
GEOL 200	Oceanography	3.00
GEOL 221	Geological Field Methods	3.00
GEOL 232	Mineralogy	3.00
GEOL 235	Igneous and Metamorphic Petrology	3.00
GEOL 238	Sedimentology and Stratigraphy	3.00
GEOL 249	Geophysical Characterization of the Earth	3.00
<b>F. Complete 3.00 units from the following: 3.00</b>		
BIOL 243	Introduction to Statistics	
STAM 200	Introduction to Statistics	
STAT 263	Introduction to Statistics	
<b>G. Complete the following:</b>		
GEOL 300	Geological Field School	3.00
GEOL 301	Field Studies in Geology I or GEOL 302 Problems in Sedimentary Geology	1.50
GEOL 321	Structural Geology	3.00

GEOL 333	Terrain Evaluation	3.00
GEOL 337	Paleontology	3.00
GEOL 365	Geochemical Characterization of Earth Processes	3.00

## H. Complete the following:

GEOL 400	Advanced Geological Sciences Field School	3.00
GEOL 401	Field Studies in Geology II or GEOL 402 Problems in North American Geology	1.50
GEOL 488	Geology of North America	3.00

## 2. Option

### A. Complete 6.00 units from the following: 6.00

BIOL 102	Fundamentals of Biology: Molecular and Cell Biology	
BIOL 103	Fundamentals of Biology: Organisms to Ecosystems	
BIOL 110	Human Genetics and Evolution	
BIOL 111	Ecology and the Environment	
MATH 110	Linear Algebra	
MATH 111	Linear Algebra	
MATH 112	Introduction to Linear Algebra	

### B. Complete 9.00 units from the following: 9.00

GEOL at any level

### C. Complete 3.00 units from the following: 3.00

GEOL 368	Carbonate Sedimentology	
GEOL 463	Spatial Information Management in the Geosciences	

### D. Complete 3.00 units from the following: 3.00

GEOL 362	Petrology Applied to Ore Deposit	
GEOL 452	Instrumental Techniques Applied to Geochemical Studies	
GEOL 475	Exploration and Environmental Geochemistry	

## – COMPLEMENTARY COURSES –

### E. Complete 6.00 units from the following: 6.00

BIOL at the 200-level or above		
CHEM at the 200-level or above		
CISC at the 200-level or above		
CISC 101	Introduction to Computer Programming	
CISC 121	Introduction to Computing Science I	
CISC 124	Introduction to Computing Science II	
DEVS 220	Introduction to Indigenous Studies	
GPHY_Physical at the 200-level or above		



GPHY_Tech/Methods at the 200-level or above	
MATH at the 200-level or above	
PHYS at the 200-level or above	
STAT at the 200-level or above	
WRIT 120	Fundamentals of Effective Writing
WRIT 125	Fundamentals of Academic Essay Writing
WRIT 175	Effective Writing II
<b>Electives</b>	
Elective Courses	24.00
<b>Total Units</b>	<b>120.00</b>

### 3. Notes

A. 100- through 300-level geology courses within the core are prerequisites for most 300- and 400-level courses, and should normally be completed before the end of the third year of study.

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 in the Faculty of Engineering and Applied Science.

### Geological Sciences Course List

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.

#### GPHY\_Physical

Code	Title	Units
<b>Physical Geography</b>		
GPHY 102	Physical Geography and Natural Resources	3.00
GPHY 203	Water Resources and Management	3.00
GPHY 204	Forests as a Global Resource	3.00
GPHY 207	Principles Of Biogeography	3.00
GPHY 208	Surface Processes, Landforms, and Soils	3.00
GPHY 209	Weather and Climate	3.00
GPHY 304	Northern and Arctic Environments	3.00
GPHY 306	Natural Environmental Change	3.00
GPHY 309	Field School in Geography	3.00
GPHY 310	Landscape Ecology	3.00
GPHY 311	Biogeochemical Processes	3.00
GPHY 312	Watershed Hydrology	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 319	Contemporary Energy Resources	3.00
GPHY 371	Special Topics in Earth System Science	3.00
GPHY 413	Water, Energy and Carbon Cycling in the Biosphere	3.00
GPHY 415	Advanced Analysis of Earth Surface Processes	6.00
GPHY 417	Land-Use Change in the Earth System	3.00
GPHY 501	Special Studies in Geography	3.00
GPHY 502	Research and Thesis in Geography I	3.00
GPHY 503	Research and Thesis in Geography II	6.00

#### GPHY\_Tech/Methods

Code	Title	Units
<b>Techniques, Research Methods and Geographic Information Science</b>		
GPHY 105	The Digital Earth: Geospatial Data and Earth Observation	3.00
GPHY 215	Field Studies in Physical Geography	3.00
GPHY 240	Introduction to Qualitative Methods in Geography	3.00
GPHY 242	Remote Sensing I: Remote Sensing of the Environment	3.00
GPHY 243	Geographic Information Science	3.00
GPHY 247	Introduction to Statistics	3.00
GPHY 315	Advanced Field Measurements and Their Analysis	3.00
GPHY 341	Photogrammetry	3.00
GPHY 342	Remote Sensing II: Digital Image Processing	3.00
GPHY 343	Applications for Geospatial Technology for Business	3.00
GPHY 344	Cartography and Computer Aided Design	3.00
GPHY 345	Spatial Analysis	3.00
GPHY 346	GIS and Modelling for Environmental Applications	3.00
GPHY 347	Multivariate and Spatial Statistics	3.00
GPHY 348	Application Design and Customization in GIS	3.00
GPHY 349	GIScience and Public Health	3.00
GPHY 372	Special Topics in Geographic Information Science	3.00
GPHY 501	Special Studies in Geography	3.00



GPHY 502	Research and Thesis in Geography I	3.00
GPHY 503	Research and Thesis Geography II	6.00