University of Pretoria Yearbook 2022

BScHons *Geology* (02240142)

Department	Geology
Minimum duration of study	1 year
Total credits	135
NQF level	08

Admission requirements

1. BSc (Geology) degree (or equivalent) **or** relevant bachelor's degree
2. A weighted average of at least 60% for the geology modules at third-year level

Curriculum: Final year

Minimum credits: 135

Core modules

Petrology and geochemistry 701 (GLY 701)

Module credits	20.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	2 lectures per week, 2 practicals per week
Language of tuition	Module is presented in English
Department	Geology
Period of presentation	Year

Module content

Interpretation and application of advanced petrogenetic tools: the Rb/Sr and Sm/Nd isotopic systems, quantitative interpretation of binary and ternary phase diagrams, Harker type diagrams, assimilation-fractional crystallisation – partial melting. Geothermometers and geobarometers, PT-t loops. Abundance of elements in the crust, crust-forming models. Hydrous geochemistry. Recognition of geochemical anomalies. Analytical methods and the treatment of geochemical data. A one-week field trip to the Bushveld Complex.

Crustal evolution 704 (GLY 704)

Module credits	20.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	2 lectures per week, 2 practicals per week
Language of tuition	Module is presented in English
Department	Geology
Period of presentation	Year

Module content

Precambrian crustal evolution. Precambrian plate tectonics. Precambrian evolution of the African plate (Eburnean, Kibaran and Pan-African events). Phanerozoic evolution to the African plate; global examples of tectonics as a continental crustal source. Determination of deformational history of crustal rocks; determination of palaeostress conditions in ancient crustal rocks. Practical experience of structural analysis and determination of deformational history. A one-week field trip to a tectonically complex area.

Mapping camp 707 (GLY 707)

Module credits	10.00
NQF Level	08

Prerequisites	No prerequisites.
Contact time	2 practicals per week
Language of tuition	Module is presented in English
Department	Geology
Period of presentation	Year

Module content

Mapping and analysis of a geologically complex area using different techniques.

Honours project 710 (GLY 710)

Module credits	35.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	5 practical sessions per week
Language of tuition	Module is presented in English
Department	Geology
Period of presentation	Year

Module content

Independent acquisition of geological field and/or laboratory data, treatment and interpretation thereof, and writing of an honours essay.

Economic geology 713 (GLY 713)

Module credits	20.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	2 lectures per week, 2 practicals per week
Language of tuition	Module is presented in English
Department	Geology
Period of presentation	Year

Module content

Basic remote sensing methods and their applications to geology; basic geophysical and geochemical exploration techniques; exploration target generation - philosophies and methods; professional geological practice; the SAMREC and similar codes; geologists in the business environment; case studies. Practical component (runs parallel to theory above) encompasses ore-microscopy; ore mineral identification; ore textures; analysis of ore assemblages; instrumental techniques applied to ores. Various short field trips to both opencast and underground mines.

Modern analytical methods and sampling theory 715 (GLY 715)

Module credits	20.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	2 lectures per week, 2 practicals per week
Language of tuition	Module is presented in English
Department	Geology
Period of presentation	Year

Module content

Modern analytical methods, including X-ray Diffraction (XRD), X-ray Fluorescence (XRF), inductively coupled mass spectrometry (ICP-MS), methods of isotopic analysis, and electron beam methods (EPMA, SEM, CT). An introductory statistical course in sampling methods, treatment of data, statistical validity, and basic geostatistics.

Trends in geoscience 716 (GLY 716)

Module credits	10.00
NQF Level	08
Prerequisites	No prerequisites.
Contact time	2 lectures per week, 2 practicals per week
Language of tuition	Module is presented in English
Department	Geology
Period of presentation	Year

Module content

The field of Geology is rapidly evolving both in terms of industry requirements and the type of science done. This module includes short courses offered by staff and industry on a variety of topics, as well as a weekly departmental seminar on current research in the department. The content of this module is expected to vary year by year according to availability of internal and external lecturers.