University of Pretoria Yearbook 2018

BScHons Engineering and Environmental Geology Engineering Geology (02240375)

Minimum duration of study	1 year
Total credits	135

Programme information

Renewal of registration

i. Subject to exceptions approved by the Dean, on the recommendation of the head of department, and in the case of distance education where the Dean formulates the stipulations that will apply, a student may not sit for an examination for the honours degree more than twice in the same module.
ii. A student for an honours degree must complete his or her study, in the case of full-time students, within two years and, in the case of after-hours students, within three years of first registering for the degree and, in the case of distance education students, within the period stipulated by the Dean. Under special circumstances, the Dean, on the recommendation of the head of department, may give approval for a limited extension of this period.

In calculating marks, General Regulation G.12.2 applies.

Apart from the prescribed coursework, a research project is an integral part of the study.

Admission requirements

A BSc degree in Geology or Environmental and Engineering Geology with an average of 60% for all the modules in applied geology at second-year and third-year level. These modules must include soil mechanics, rock mechanics, engineering geology and hydrogeology. In the selection procedure the candidate's complete undergraduate academic record will be considered. The positions available are limited to 15 and candidates who have progressed faster through their undergraduate degree will take preference. Outside applicants and those with unusual degree structures may be admitted after perusal of their academic records and at the discretion of the head of department.

Pass with distinction

The BScHons degree is awarded with distinction to a candidate who obtains a weighted average of at least 75% in all the prescribed modules and a minimum of 65% in any one module.

Curriculum: Final year

Minimum credits: 135

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Core credits: 117

Elective credits: 18

Core modules

Site investigation project 713 (GTX 713)

Module credits	30.00
Prerequisites	GLY 363/GLY 364 or TDH
Contact time	1 lecture per week for 11 wks, 13 practicals per week (11 weeks)
Language of tuition	Module is presented in English
Department	Geology
Period of presentation	Year

Module content

Field work which includes mapping, soil and rock description, joint surveys, borehole testing, water sampling, interpretation of laboratory test results and compilation of site investigation reports. Larger projects of at least two months of fieldwork and report writing which involves surface and underground studies, mapping, drill core logging, discontinuity surveys, rock mass classification, stability analyses, interpretation of laboratory tests or pollution studies including water and/or soil sampling, interpretation of laboratory tests, development of a rehabilitation plan or groundwater model and compilation of a report. Compulsory attendance at conferences, short courses, specialist lectures, visits to construction sites and fields excursions.

Engineering geology of South Africa 714 (GTX 714)

Module credits	15.00
Prerequisites	SGM 311 or TDH
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

Overview of site investigation phases; site investigation techniques; soil profiling and rock core description. Literature study and compilation of reports on the stratigraphy of South African rock types and engineering problems of rocks and soils within different stratigraphic units and climatic regions.

Environmental management and risk assessment 716 (GTX 716)

Module credits	15.00

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

Principles of integrated environmental management; environmental impact assessment; environmental management systems (ISO 14000 series); water resource management; environmental legislation; site investigation guidelines; natural hazard risk assessment; seismicity; project management and professional business practice.Geological models and software.

Construction materials 721 (GTX 721)

Module credits	15.00
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

Requirements for and use of concrete aggregates, road and dam construction materials; site investigation and site development methods; quality control.

Rock engineering 722 (GTX 722)

Module credits	15.00
Prerequisites	GLY 364 or TDH
Contact time	2 lectures per week for 3 weeks, 2 practicals per week (3 weeks)
Language of tuition	Module is presented in English
Department	Geology
Period of presentation	Year

Module content

Mapping, description (core logging and discontinuity surveys) and classification of rock masses; engineering properties of rock masses including deformability, shear strength of discontinuities, in situ strength and permeability of rock masses; effects, theoretical derivation and practical measurements of in situ stresses.

Engineering applications 723 (GTX 723)

Module credits	15.00
Prerequisites	GTX 722

Contact time	2 lectures per week for 3 weeks, 2 practicals per week (3 weeks)
Language of tuition	Module is presented in English
Department	Geology
Period of presentation	Year

Module content

The influence of geology on construction projects with specific reference to the requirements of dams, tunnels, slopes, waste disposal and urban development.

Fluid mechanics in geological media 725 (GTX 725)

Module credits	15.00
Prerequisites	GLY 363 and GLY 265
Contact time	2 lectures per week for 3 weeks, 2 practicals per week (3 weeks)
Language of tuition	Module is presented in English
Department	Geology
Period of presentation	Year

Module content

Statics and dynamics of fluids, including water, aqueous phase liquids (saline water), non-aqueous phase liquids (petroleum hydrocarbons), gases (atmospheric air) and man-made fluids (gout) through natural and man-made porous media (eg soil, rock, concrete). Single phase flow and multiphase flow; saturated and unsaturated flow. Quantification of hydrological parameters. South African hydrostratigraphy. Drainage and dewatering.

Elective modules

Environmental geochemistry 715 (GTX 715)

Module credits	15.00
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

Principles of low temperature geochemistry; geochemistry and origin of acid mine water; acid-mineral reactions; industrial effluents, remediation methods, waste disposal, environmental sampling and data analysis; geochemical modelling.

Rock and soil improvement 726 (GTX 726)

Module credits	15.00
Prerequisites	GLY 264 or TDH

Contact time	2 lectures per week for 3 weeks, 2 practicals per week (3 weeks)
Language of tuition	Module is presented in English
Department	Geology
Period of presentation	Year

Module content

Grouting materials and procedures; rock and soil support and stabilisation; rock and soil compaction; geofabrics; water seepage and drainage methods.

The information published here is subject to change and may be amended after the publication of this information. The General Regulations (G Regulations) apply to all faculties of the University of Pretoria. It is expected of students to familiarise themselves well with these regulations as well as with the information contained in the General Rules section. Ignorance concerning these regulations and rules will not be accepted as an excuse for any transgression.