



University of Pretoria Yearbook 2017

BScHons Applied Science Geotechnics (12243005)

Duration of study 1 year

Total credits 128

Programme information

The BScHons (Applied Science) degree is conferred by the following academic departments:

- Chemical Engineering
- Civil Engineering
- Industrial and Systems Engineering
- Materials Science and Metallurgical Engineering
- Mechanical and Aeronautical Engineering
- Mining Engineering

Any specific module is offered on the condition that a minimum number of students are registered for the module, as determined by the head of department and the Dean. Students must consult the relevant head of department in order to compile a meaningful programme, as well as on the syllabi of the modules. The relevant departmental postgraduate brochures must also be consulted.

Admission requirements

An appropriate bachelor's degree, a BTech degree or equivalent qualification.

Other programme-specific information

The remainder of the credits to be chosen from the modules prescribed for the BEngHons (Geotechnical Engineering) programme, as approved by the head of department, and after completion of the appropriate modules as listed.

The modules CPB 410, CBI 410 and CSS 420 do not form part of the postgraduate block presentations. Individual arrangements have to be made with the relevant lecturer regarding attendance of lectures, study material, tests and assignments.



Curriculum: Final year

Minimum credits: 128

Core modules

Basic statistical methods 797 (SHC 797)

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|-------------------------------|--------------------------------|
| Module credits | 24.00 |
| Prerequisites | No prerequisites. |
| Contact time | 40 Contact hours |
| Language of tuition | Module is presented in English |
| Academic organisation | Civil Eng |
| Period of presentation | Year |

Module content

Basic mathematical methods. Algebra. Matrices and matrix algebra. Series expansions. Differentiation and integration. Probability theory. Graphic analysis. Discrete and continuous probability distributions. Moments and expectation. Statistical sampling and experimental design. Parameter estimation. Confidence intervals. Hypothesis testing. Regression analysis.

Analytical soil mechanics 787 (SGS 787)

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|-------------------------------|--------------------------------|
| Module credits | 24.00 |
| Prerequisites | No prerequisites. |
| Contact time | 20 Contact hours |
| Language of tuition | Module is presented in English |
| Academic organisation | Civil Eng |
| Period of presentation | Year |

Module content

A research term paper will be prepared.

Solution of confined and unconfined seepage problems using the methods of fragments, finite differences and finite elements. Numerical solutions of consolidation problems and secondary compression. Slope stability analysis methods. The point estimate method. Monte Carlo simulation.

Theoretical soil mechanics 788 (SGS 788)

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|------------------------------|--------------------------------|
| Module credits | 24.00 |
| Prerequisites | No prerequisites. |
| Contact time | 20 Contact hours |
| Language of tuition | Module is presented in English |
| Academic organisation | Civil Eng |



Period of presentation Year

Module content

A research term paper will be prepared.

Introduction to critical state soil mechanics. Stress and strain invariants. Stress paths. State boundary surfaces including Roscoe and Hvorslev surfaces. Cam clay model. Application of geotechnical constitutive models in finite element analysis.

Specialised geotechnical testing 789 (SGS 789)

Module credits 24.00

Prerequisites No prerequisites.

Contact time 32 Contact hours

Language of tuition Module is presented in English

Academic organisation Civil Eng

Period of presentation Year

Module content

A research term paper will be prepared.

Test procedures and interpretation of; Standard Penetration Test (SPT), Cone Penetration Test (CPT), Piezocone (CPTU) and seismic methods. Theory, application and interpretation of advanced geotechnical laboratory tests. Laboratory Instrumentation and calibration. Stress and strain conditions for laboratory tests. Triaxial stress space, stress paths. Triaxial tests, direct shear tests, oedometer test and Rowe cell test.

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.