



# University of Pretoria Yearbook 2024

## BScHons (Applied Science) *Geotechnics* (12243005)

**Department** Civil Engineering

**Minimum duration of study** 1 year

**Total credits** 128

**NQF level** 08

### 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 relevant 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

1. Three-year BSc (or equivalent) degree (in Natural Sciences) with a cumulative weighted average of at least 60% for the degree  
or  
relevant BTech qualification excluding the National Diploma; i.e. one offered by a department of civil engineering at a university of technology in South Africa with a cumulative weighted average of at least 75% for the degree  
and  
no modules failed in the BTech degree  
or  
four-year engineering-based university degree not recognised by ECSA for registration as a professional engineer
2. An entrance examination may be required
3. Comprehensive intellectual CV



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## 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.

## Examinations and pass requirements

Refer also to G18 and G26.

- i. The examination in each module for which a student is registered, takes place during the normal examination period after the conclusion of lectures (i.e. October/November or May/June).
- ii. G18(1) applies with the understanding that under exceptional circumstances an extension of a maximum of three years may be approved: provided that the Dean, on recommendation of the relevant head of department, may approve a stipulated limited extension of this period.
- iii. A student must obtain at least 50% in an examination for each module where no semester or year mark is required. A module may only be repeated once.
- iv. In modules where semester or year marks are awarded, a minimum examination mark of 40% and a final mark of 50% is required.
- v. No supplementary or special examinations are granted at postgraduate level.

## Pass with distinction

A student passes with distinction if he or she obtains a weighted average of at least 75% (not rounded) in the first 128 credits for which he or she has registered (excluding modules which were discontinued timeously). The degree is not awarded with distinction if a student fails any one module (excluding modules which were discontinued timeously). The degree must be completed within the prescribed study period.



## Curriculum: Final year

**Minimum credits: 128**

SHC 797 must be passed before other modules are registered.

### Core modules

#### Analytical soil mechanics 787 (SGS 787)

<b>Module credits</b>	24.00
<b>NQF Level</b>	08
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	20 Contact hours
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Civil Engineering
<b>Period of presentation</b>	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)

<b>Module credits</b>	24.00
<b>NQF Level</b>	08
<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	20 Contact hours
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Civil Engineering
<b>Period of presentation</b>	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)

<b>Module credits</b>	24.00
<b>NQF Level</b>	08



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<b>Prerequisites</b>	No prerequisites.
<b>Contact time</b>	32 Contact hours
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Civil Engineering
<b>Period of presentation</b>	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.

### Civil research 780 (SSC 780)

<b>Module credits</b>	32.00
<b>NQF Level</b>	08
<b>Contact time</b>	8 contact hours per year
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Civil Engineering
<b>Period of presentation</b>	Year

#### Module content

\*This is a compulsory module.

The course will require all honours students to conduct research in an appropriate field of civil engineering, linked to the main discipline in which the student specializes for their honours degree.

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#### General Academic Regulations and Student Rules

The [General Academic Regulations \(G Regulations\)](#) and [General Student Rules](#) apply to all faculties and registered students of the University, as well as all prospective students who have accepted an offer of a place at the University of Pretoria. On registering for a programme, the student bears the responsibility of ensuring that they familiarise themselves with the General Academic Regulations applicable to their registration, as well as the relevant faculty-specific and programme-specific regulations and information as stipulated in the relevant yearbook. Ignorance concerning these regulations will not be accepted as an excuse for any transgression, or basis for an exception to any of the aforementioned regulations. The G Regulations are updated annually and may be amended after the publication of this information.

#### Regulations, degree requirements and information

The faculty regulations, information on and requirements for the degrees published here are subject to change and may be amended after the publication of this information.



### **University of Pretoria Programme Qualification Mix (PQM) verification project**

The higher education sector has undergone an extensive alignment to the Higher Education Qualification Sub-Framework (HEQSF) across all institutions in South Africa. In order to comply with the HEQSF, all institutions are legally required to participate in a national initiative led by regulatory bodies such as the Department of Higher Education and Training (DHET), the Council on Higher Education (CHE), and the South African Qualifications Authority (SAQA). The University of Pretoria is presently engaged in an ongoing effort to align its qualifications and programmes with the HEQSF criteria. Current and prospective students should take note that changes to UP qualification and programme names, may occur as a result of the HEQSF initiative. Students are advised to contact their faculties if they have any questions.