University of Pretoria Yearbook 2020

BScHons Applied Science Transportation Planning (12243009)

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

- Any one of the following:
  - a three-year BSc degree (in natural sciences) (or equivalent) with a weighted average of at least 60%;
  - an appropriate BTech qualification, i.e. one offered by a department of civil engineering at a university of technology in South Africa, with a weighted average of at least 75% and no modules failed in the BTech, excluding the National Diploma;
  - a four-year engineering-based university degree not recognised by ECSA for registration as a professional engineer.
- The departmental Postgraduate Committee reserves the right to make a thorough assessment of the applicant's academic transcript and CV, and to decide if the applicant is suitable for postgraduate studies. This assessment may include an oral or written entrance examination.

Other programme-specific information

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

Curriculum: Final year

Minimum credits: 128

Core modules

Basic pavements and transportation 787 (SGM 787)

Module credits	24.00
Prerequisites	No prerequisites.
Contact time	40 Contact hours
Language of tuition	Module is presented in English
Department	Civil Engineering
Period of presentation	Year

Module content

Pavements: The geological cycle and origin of road building materials, soil testing and classification systems, compaction, stabilization, bitumen, introduction to pavements, principles of pavement design and management. Transportation: Introduction to traffic analysis techniques, capacity and level of service concepts, traffic signal design, road geometric design, transport demand models and road safety engineering.

Basic statistical methods 797 (SHC 797)

Module credits	24.00
Prerequisites	No prerequisites.
Contact time	40 Contact hours
Language of tuition	Module is presented in English
Department	Civil Engineering
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.

Civil research 780 (SSC 780)

Module credits	32.00
Contact time	8 contact hours per year
Language of tuition	Module is presented in English
Department	Civil Engineering
Period of presentation	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.

Elective modules

Pavement design 793 (SGC 793)

Module credits	24.00
Prerequisites	No prerequisites.
Contact time	40 Contact hours
Language of tuition	Module is presented in English
Department	Civil Engineering
Period of presentation	Year

Module content

A research term paper will be prepared.

Design philosophy in First and Third World environments; characterising and use of pavement materials; drainage; systems approach to layout, geometric and pavement design; stresses and strains in pavements; mechanistic design methods and elasto-plastic behaviour; economic analysis; designing pavements for streets, gravel and paved roads, runways, and industrial areas. Report writing.

Infrastructure management 790 (SSI 790)

Module credits	24.00
Prerequisites	No prerequisites.
Contact time	40 Contact hours
Language of tuition	Module is presented in English
Department	Civil Engineering
Period of presentation	Year

Module content

A research term paper will be prepared.

This module will cover the following topics: Asset Management principles, Maintenance Management principles, Maintenance strategies and philosophies, Condition based Maintenance, Reliability Centred Maintenance (RCM), Resource Management, Maintenance Management Systems, Total Productive Maintenance (TPM) and Risk Management. Maintenance management of the following disciplines will be studied in detail: Road infrastructure, Railway infrastructure, Airport infrastructure, Buildings and other structures, Water resources and water supply.

Transportation studies 790 (SVC 790)

Module credits	24.00
Prerequisites	No prerequisites.

Contact time	40 Contact hours
Language of tuition	Module is presented in English
Department	Civil Engineering
Period of presentation	Year

Module content

A research term paper will be prepared.

Basic transportation relationships, land use, data collection and surveys. Four step transportation model, trip generation, trip distribution, modal split, trip assignment, advanced modelling approaches. Introduction to discrete choice models, econometrics, and stated preference analysis. Role of transport modelling in developmental context.

Transportation special 791 (SVC 791)

Module credits	24.00
Prerequisites	No prerequisites.
Contact time	40 Contact hours
Language of tuition	Module is presented in English
Department	Civil Engineering
Period of presentation	Year

Module content

A research term paper will be prepared.

Basic transportation relationships, land use, data collection and surveys. Four step transportation model, trip generation, trip distribution, modal split, trip assignment, advanced modelling approaches. Introduction to discrete choice models, econometrics, and stated preference analysis. Role of transport modelling in developmental context.

Traffic engineering 792 (SVC 792)

Module credits	24.00
Prerequisites	No prerequisites.
Contact time	40 Contact hours
Language of tuition	Module is presented in English
Department	Civil Engineering
Period of presentation	Year

Module content

A research term paper will be prepared.

Part 1: Traffic flow theory: Traffic and vehicle characteristics. Traffic flow studies. Traffic interactions. Traffic flow analysis and queuing theory. Traffic flow models. Traffic control theory. Part 2: Traffic studies and facility design: Transportation and land use. Traffic impact studies. Site planning and design. Determination of demand. Traffic control investigations. Intersection design. Internal circulation. Parking areas.

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.