

BACCALAUREUS TECHNOLOGIAE: ENGINEERING: CIVIL: WATER ENGINEERING

Qualification code: BTCW02 - NQF Level 7

Campus where offered: Pretoria Campus

Important notification to new applicants:

Students who intend to enrol for this qualification should take note that no new applications will be accepted as from 2020. Potential students are advised to consult the University's website for possible new qualifications which are aligned with the newly-implemented Higher Education Qualification Sub-Framework.

REMARKS

a. *Admission requirement(s):*

- A National Diploma: Engineering: Civil or a NQF Level 6 (old NQF and the new HEQSF) qualification in Civil Engineering (or a closely related field), obtained from an accredited South African university. Preference will be given to candidates with an average of 60% or more.
- Candidates who do not meet the 60% requirement will be evaluated by the Department and may be requested to provide a portfolio of relevant work experience (excluding P1 and P2) in order to be considered for selection.
- Apart from meeting the above requirements, a candidate must have obtained a minimum of 60% in Water Engineering II and III.

National Diploma students at TUT who are busy with their final semester (P2) and do not have more than one theoretical subject outstanding may also apply for admission and may be considered, based on the average of their completed theoretical subjects, but admission will be subject to the successful completion of the National Diploma and the Faculty's Student Enrolment Plan (SEP).

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations.

b. *Selection criteria:*

Due to capacity constraints, candidates will be selected based on academic performance and/or work experience. Selection will be done after the closing date for applications. Please note that meeting the minimum requirements does not guarantee admission.

c. *Minimum duration:*

One year.

d. *Presentation:*

Block-mode classes. Subjects are offered over a period of two years. Classes and assessments may take place on Friday afternoons and/or Saturdays.

e. *Intake for the qualification:*

January and July.

f. *Exclusion and readmission:*

See Chapter 2 of Students' Rules and Regulations.

g. *Recognition of Prior Learning (RPL), equivalence and status:*

See Chapter 30 of Students' Rules and Regulations.

h. *Subject selection:*

To obtain the qualification, students must pass all eight subjects as stipulated in the curriculum. Subjects are offered as determined by the Head of the Department.



- i. **Accreditation by professional body:**
This qualification has been accredited by the Engineering Council of South Africa (ECSA).
- j. **Subject credits:**
Subject credits are shown in brackets after each subject.

CURRICULUM

Please note:

Students must pass eight subjects. A minimum of five compulsory subjects in their particular field of specialisation should be taken, with the balance made up of subjects offered in the other fields of specialisation. Optional/elective subjects taken from the other fields must be closely related/relevant to the qualification. Subjects are offered as determined by the Head of the Department. The total credits of the Level IV subjects may not be less than 0,500.

Students who register for the subject Construction Materials Technology IV are not permitted to register for Asphalt Technology IV or Concrete Technology IV.

ATTENDANCE

CODE	SUBJECT	CREDIT
FIRST SEMESTER (2019)		
WTT401T	Water Treatment Technology IV	(0,125)
WWT401T	Wastewater Treatment Technology IV	(0,125)
SECOND SEMESTER (2019)		
PDE401T	Principles of Dam Engineering IV	(0,125)
RDA401T	Reticulation Design and Management IV	(0,125)
FIRST SEMESTER (2020)		
HDL401T	Hydraulics IV	(0,125)
HYD401T	Hydrology IV	(0,125)
SECOND SEMESTER (2020)		
HGE301B	Hydrogeology III	(0,125)
IRR401T	Irrigation IV	(0,125)
TOTAL CREDITS FOR THE QUALIFICATION:		1,000

SUBJECT INFORMATION (OVERVIEW OF SYLLABUS)

The syllabus content is subject to change to accommodate industry changes. Please note that a more detailed syllabus is available at the Department or in the study guide that is applicable to a particular subject. On 8 August 2018, the syllabus content was defined as follows:

H

HYDRAULICS IV (HDL401T)

1 X 3-HOUR PAPER (OPEN BOOK)

(Subject custodian: Department of Civil Engineering)

Hydrodynamics, hydraulic machinery (pumps, turbines, etc.), hydraulic models. Open-channel hydraulics, fluvial hydraulics, wave hydraulics. (Total tuition time: ± 32 hours)



HYDROGEOLOGY III (HGE301B)**1 X 3-HOUR PAPER****(Subject custodian: Department of Civil Engineering)**

Basic concepts, the principles of groundwater hydraulics. Pumping tests and the measurement of spring and river flow. Groundwater replenishment and the rudiments of determining groundwater reserves. Hydrochemistry, water quality requirements and an introduction to the quality of South African groundwater. The water-bearing properties of South African rock groups. Geological and geophysical investigations for borehole siting. (Total tuition time: ± 32 hours)

HYDROLOGY IV (HYD401T)**1 X 3-HOUR PAPER (OPEN BOOK)****(Subject custodian: Department of Civil Engineering)**

Introduction to meteorology, groundwater, surface water, water resources analysis, South African hydrology. (Total tuition time: ± 32 hours)

I**IRRIGATION IV (IRR401T)****1 X 3-HOUR PAPER (OPEN BOOK)****(Subject custodian: Department of Civil Engineering)**

Soil, water and plant irrigation, types of systems. Irrigation scheduling, irrigation design (feasibility studies), irrigation in South Africa, environmental impact of irrigation, design project. (Total tuition time: ± 32 hours)

P**PRINCIPLES OF DAM ENGINEERING IV (PDE401T)****1 X 3-HOUR PAPER (OPEN BOOK)****(Subject custodian: Department of Civil Engineering)**

Geological and foundation considerations, design principles, dam safety, seepage, grouting and drainage, project. (Total tuition time: ± 32 hours)

R**RETICULATION DESIGN AND MANAGEMENT IV (RDA401T)****1 X 3-HOUR PAPER (OPEN BOOK)****(Subject custodian: Department of Civil Engineering)**

This subject covers water, wastewater and stormwater reticulation systems: hydraulic principles, design parameters, ancillary works, pumping installations, system operation, water management, waste management, environmental aspects. Design project(s). (Total tuition time: ± 32 hours)

W**WASTEWATER TREATMENT TECHNOLOGY IV (WWT401T)****1 X 3-HOUR PAPER (OPEN BOOK)****(Subject custodian: Department of Civil Engineering)**

Wastewater properties, treatment processes, treatment plant design, environmental factors, plant operation and management. Design project. (Total tuition time: ± 32 hours)

WATER TREATMENT TECHNOLOGY IV (WTT401T)**1 X 3-HOUR PAPER (OPEN BOOK)****(Subject custodian: Department of Civil Engineering)**

Properties of water, treatment processes, treatment site design, recalculation, re-use, recovery and conservation of water and environmental factors. (Total tuition time: ± 32 hours)

