

# BACCALAUREUS TECHNOLOGIAE: ENGINEERING: CIVIL: STRUCTURAL ENGINEERING

Qualification code: BTSQ02 - 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 Reinforced Concrete and Masonry Design III, Structural Analyses II and III, Structural Steel and Timber Design 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. *Accreditation by professional body:*

This qualification has been accredited by the Engineering Council of South Africa (ECSA).



- i. *Subject credits:*  
Subject credits are shown in brackets after each subject.

## CURRICULUM

### **Please note:**

Students must take a minimum of five core subjects, namely Reinforced Concrete Design IV, Foundation Engineering IV, Structural Analysis IV, Theory of Structures IV, and Structural Steel Design IV, with the balance made up of subjects offered in the other fields of specialisation. Subjects are offered as determined by the Head of the Department.

For ease of professional registration as a Professional Structural Engineering Technologist, it is strongly recommended that the students take all eight of the mandatory subjects from the field of Structural Engineering.

Please note that if students register for the subject Construction Materials Technology IV, they are not permitted to register for Asphalt Technology IV or Concrete Technology IV.

## ATTENDANCE

CODE	SUBJECT	CREDIT
<b>FIRST SEMESTER (2019)</b>		
SAS401T	Structural Analysis IV	(0,125)
TSC411T	Theory of Structures IV	(0,125)
<b>SECOND SEMESTER (2019)</b>		
SSE401T	Structural Steel Design IV	(0,125)
STM401T	Structural Masonry Design IV	(0,125)
<b>FIRST SEMESTER (2020)</b>		
RCD401T	Reinforced Concrete Design IV	(0,125)
STD401T	Structural Timber Design IV	(0,125)
<b>SECOND SEMESTER (2020)</b>		
FDE401T	Foundation Engineering IV	(0,125)
PCG401T	Pre-Stressed Concrete Design IV	(0,125)
TOTAL CREDITS FOR THE QUALIFICATION:		<b>1,000</b>

## 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:

### F

**FOUNDATION ENGINEERING IV (FDE401T)** **1 X 3-HOUR PAPER (OPEN BOOK)**  
*(Subject custodian: Department of Civil Engineering)*  
 Shallow and deep foundation design, lateral earth support. (Total tuition time: ± 32 hours)



**P**

**PRE-STRESSED CONCRETE DESIGN IV (PCG401T)** **1 X 4-HOUR PAPER (OPEN BOOK)**  
(*Subject custodian: Department of Civil Engineering*)  
Design of pre-stressed concrete structures and computer applications. (Total tuition time: ± 32 hours)

**R**

**REINFORCED CONCRETE DESIGN IV (RCD401T)** **1 X 4-HOUR PAPER (OPEN BOOK)**  
(*Subject custodian: Department of Civil Engineering*)  
Design of reinforced concrete structures, computer applications. (Total tuition time: ± 32 hours)

**S**

**STRUCTURAL ANALYSIS IV (SAS401T)** **1 X 4-HOUR PAPER**  
(*Subject custodian: Department of Civil Engineering*)  
Space frames/influence lines of statically indeterminate structures; yield line analysis of slabs, finite element analysis; arches: two pinned and fixed; beam column analogy. (Total tuition time: ± 32 hours)

**STRUCTURAL MASONRY DESIGN IV (STM401T)** **1 X 4-HOUR PAPER (OPEN BOOK)**  
(*Subject custodian: Department of Civil Engineering*)  
Design of unreinforced and reinforced structural masonry structures. Detailing. (Total tuition time: ± 32 hours)

**STRUCTURAL STEEL DESIGN IV (SSE401T)** **1 X 4-HOUR PAPER (OPEN BOOK)**  
(*Subject custodian: Department of Civil Engineering*)  
Design of structural steel structures, computer applications. (Total tuition time: ± 32 hours)

**STRUCTURAL TIMBER DESIGN IV (STD401T)** **1 X 4-HOUR PAPER (OPEN BOOK)**  
(*Subject custodian: Department of Civil Engineering*)  
Design of timber structures. Computer applications. (Total tuition time: ± 32 hours)

**T**

**THEORY OF STRUCTURES IV (TSC411T)** **1 X 4-HOUR PAPER**  
(*Subject custodian: Department of Civil Engineering*)  
Advanced structural analysis methods: stiffness method and flexibility method. Beams on elastic foundations. Matrix stiffness method. (Total tuition time: ± 32 hours)

