

## DIPLOMA IN BUILDING

Qualification code: DBSC17 - NQF Level 6 (360 credits)

SAQA ID: 96922, CHE NUMBER: H16/10744/HEQSF

Campus where offered:

Pretoria Campus

### REMARKS

a. *Admission requirement(s) and selection criteria:*

• **APPLICANTS WITH A SENIOR CERTIFICATE OBTAINED BEFORE 2008:**

**Admission requirement(s):**

A Senior Certificate or an equivalent qualification, with a C symbol at Standard Grade or a D symbol at Higher Grade for English, and D symbols at Standard Grade or E symbols at Higher Grade for Mathematics and Physical Science.

**Selection criteria:**

**For 2020:** To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **25**.

**As from 2021:** To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **26**.

• **APPLICANTS WITH A NATIONAL SENIOR CERTIFICATE OBTAINED IN OR AFTER 2008:**

**Admission requirement(s):**

A National Senior Certificate or an equivalent qualification, with a bachelor's degree or a diploma endorsement, issued by the Council for Quality Assurance in General and Further Education and Training (Umalusi), with at least a 50% (APS of 4) for English (home language or first additional language), 3 for Mathematics or Technical Mathematics, and 3 Physical Sciences or Technical Sciences.

**Selection criteria:**

**For 2020:** To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **25** (excluding Life Orientation).

**As from 2021:** To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **26** (excluding Life Orientation).

• **APPLICANTS WITH A NATIONAL CERTIFICATE (VOCATIONAL) AT NQF LEVEL 4:**

**Admission requirement(s):**

A National Certificate (Vocational) at NQF Level 4, with a bachelor's degree or a diploma endorsement, issued by the Council for Quality Assurance in General and Further Education and Training (Umalusi), with at least a 50% (APS of 4) for English, 50% for Life Orientation (excluded for APS calculation), and 50% (APS of 4) for Mathematics and Science, and 50% (APS of 4) for any other two compulsory vocational subjects.

**Selection criteria:**

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **23** (excluding Life Orientation).

• **APPLICANTS WITH A NATIONAL N CERTIFICATE/NATIONAL SENIOR CERTIFICATE AS PUBLISHED IN REPORT 191: N3 (NQF LEVEL 4):**

**Admission requirement(s):**

A National Senior Certificate or a National N Certificate with languages as published in Report 191: N3 (NQF Level 4) issued by both the Department of Higher Education and Training (DHET) and the Council for Quality Assurance in General and Further Education and Training (Umalusi), with at least 50% for English, Mathematics N3, Engineering Sciences N3 and any other two additional subjects.



**Recommended subject(s):**

None.

- **APPLICANTS WITH A N4 CERTIFICATE IN A RELATED ENGINEERING FIELD AS PUBLISHED IN REPORT 191: N4:**

**Admission requirement(s):**

A N6 Certificate in a related Engineering field as published in Report 191: N6 issued by both the Department of Higher Education and Training (DHET) and the Council for Quality Assurance in General and Further Education and Training (Umalusi), with an average of at least 60% for the qualification, and successful completion of an English Language Proficiency Assessment (done by the University).

- b. *Assessment Procedure:*

No further assessment will be done (except for candidates with a N4 Certificate). Applicants who achieve the minimum APS will be considered until the programme complement is full. All completed applications received within the published due dates will be ranked. After consideration of the Departmental Student Enrolment Plan, only the top ranking applicants will be selected. Once a programme is full, a waiting list will be in place to provide an opportunity for applicants to fill places of those who did not register on time. Applicants will be informed of their status per official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, [www.tut.ac.za](http://www.tut.ac.za).

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

See Chapter 30 of Students' Rules and Regulations.

- d. *Intake for this qualification:*

January only.

- e. *Presentation:*

Day classes.

- f. *Minimum duration:*

Three years.

- g. *Exclusion and readmission:*

See Chapter 2 of Students' Rules and Regulations.

- h. *Waiving of prerequisite modules:*

Prerequisites will only be waived in highly exceptional cases, based on a motivation by the Head of the Department and approved by the Executive Dean.

- i. *Work-Integrated Learning I and II:*

Students are required to provide acceptable proof of employment before registration. See Chapter 5 of Students' Rules and Regulations.

## CURRICULUM

### FIRST YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
ABC105D	Applied Building Science I	(5)	(20)	
CMN105D	Construction Management I	(5)	(20)	
COA105D	Computer Applications I	(5)	(10)	
CMC105D	Communication I	(5)	(10)	
CTY105D	Construction Technology I	(5)	(20)	
QSU105D	Quantity Surveying I	(5)	(20)	
SSU105D	Site Surveying I	(5)	(20)	
TOTAL CREDITS FOR THE FIRST YEAR:			<b>120</b>	



## SECOND YEAR

Re-registration modules are offered in both semesters.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CMN206D	Construction Management II	(6)	(20)	Construction Management I
CMN216R	Construction Management II (re-registration) (semester module)	(6)	(0)	
CTY205D	Construction Technology II	(5)	(20)	Construction Technology I
CTY215R	Construction Technology II (re-registration) (semester module)	(5)	(0)	
QSU206D	Quantity Surveying II	(6)	(20)	Quantity Surveying I
QSU216R	Quantity Surveying II (re-registration) (semester module)	(6)	(0)	

### FIRST OR SECOND SEMESTER

Students must compile and maintain a logbook of work completed, which must be certified by the supervisor at the place of employment.

EXP115D	Work-Integrated Learning I	(5)	(30)	
EXP216D	Work-Integrated Learning II	(6)	(30)	Work-Integrated Learning I
TOTAL CREDITS FOR THE SECOND YEAR:			<b>120</b>	

### THIRD YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CMN306D	Construction Management III	(6)	(20)	Construction Management II
CSA306D	Construction Accounting III	(6)	(20)	Construction Management II
CTY306D	Construction Technology III	(6)	(20)	Construction Technology II
PAY306D	Price Analysis and Estimating III	(6)	(20)	Quantity Surveying II
QSU306D	Quantity Surveying III	(6)	(20)	Quantity Surveying II
SEK306D	Structures and Concrete III	(6)	(20)	Applied Building Science I
TOTAL CREDITS FOR THE THIRD YEAR:			<b>120</b>	
TOTAL CREDITS FOR THE QUALIFICATION:			<b>360</b>	

## MODULE 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 module. On 01 October 2019, the syllabus content was defined as follows:

### A

#### APPLIED BUILDING SCIENCE I (ABC105D) (Module custodian: Department of Physics)

1 X 3-HOUR PAPER

Basic mathematics. Basic algebra, geometry, mensuration, trigonometry, calculus. Basic applied mechanics as applied to concrete, steel and timber constructions in the building industry. Expansion and contraction. Convection, conduction and radiation of heat in buildings. Heat energy and units of measurement. Thermal conductivity and resistance. Sound: sound propagation and units of measurement, sound insulation, sound reflection, reverberation and acoustics. Reticulation and electricity consumption. Definition of basic electricity terms. Direct and indirect current. Serial and parallel circuits. Three-phase supply lines and power consumption of household appliances, pumps and lifts. Lighting in buildings: light propagation, photometry, basic units of measurement in lighting, artificial light. Basic concepts of hydrology. Pressure in liquids. Hydraulic jacks. Flow of liquid through pipes. Different types of pumps. Basic probability and statistics. (Total tuition time: ± 180 hours)



**COMMUNICATION I (CMC105D)****CONTINUOUS ASSESSMENT****(Module custodian: Department of Applied Languages)**

Communication theory, non-verbal communication (body language). Oral presentations, interviews, developing leadership and participation skills. Technical reports and correspondence. (Total tuition time:  $\pm$  180 hours)

**COMPUTER APPLICATIONS I (COA105D)****CONTINUOUS ASSESSMENT****(Module custodian: Department of End User Computing Unit)**

Components of a microcomputer system, engineering applications of software. Managing personal computers. Introduction to computers. Basics of operating systems. Application programs, such as word-processing and spreadsheet programs. (Total tuition time:  $\pm$  180 hours)

**CONSTRUCTION ACCOUNTING III (CSA306D)****1 X 3-HOUR PAPER****(Module custodian: Department of Accounting)**

The purpose of accounting. Records and first entries. Transactions up to trial balance of business and banking transactions. Closing entries up to balance sheet. Contract, sole owners, partnership, limited company and close corporation accounts. Application of a construction accounting computer program. (Total tuition time:  $\pm$  180 hours)

**CONSTRUCTION MANAGEMENT I (CMN105D)****1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Organisations involved in the building industry. Parties involved in the construction process. Construction undertakings and their organisational structures. Obtaining contracts. Introduction to site administration and cost control. Site meetings. Management functions and components: productivity and work study. Introduction to project planning. Introduction to personnel management. Subcontractors. Principles and applications of microeconomics. Scarcity, choice, elasticity utility and demand efficiency and equity, production and costs, price determination under different market structures: perfect competition, imperfect competition as well as monopoly. (Total tuition time:  $\pm$  180 hours)

**CONSTRUCTION MANAGEMENT II (CMN206D, CMN216R)****PROJECT ASSESSMENT****(Module custodian: Department of Building Sciences)**

Introduction to Contract Law and the JBCC Minor Works contract. Projects based on relevant and appropriate site operations, which cover as many of the following topics as possible: legislation and company policy, communication in the micro-environment on the site, coordination of subcontractors, application of management functions and procedures, collection and application of information on plant, drawing up applications of bar charts, labour schedules, material schedules, plant-use schedules, plant maintenance schedules, networks, simple work study exercises. Application of the procurement and completion of materials for a building site. Application of the procurement and completion of materials for a building site. Principles and applications of macroeconomics. Measuring macroeconomic performance, simple Keynesian model, money and banking, fiscal and monetary policy, exchange rates and the balance of payments and introduction to international trade. Introduction to Building Information Modeling (BIM). BIM and the client. BIM in project management. Construction sequencing. Conflict, interference and collision detection. Facilities management. Faster and more effective processes. Controlled whole-life costs and environmental data. Lifecycle data. (Total tuition time: not available)

**CONSTRUCTION MANAGEMENT III (CMN306D)****1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

JBCC documentation. Construction management. Policy and planning. Pre-tender planning. Contract planning. Planning techniques. Network techniques, resource scheduling and optimum cost analysis. Bar charts. Line of balance techniques. Financial reporting and control. Perspectives on estimating, valuations, cost assessment, cost control and production control. Office and site administration and documentation. Applicable clauses from the standard contract for private work. Quality control. Labour relations and labour legislation. Industrial psychology. Human resource management. Occupational safety, health and welfare. Public relations. Introduction to law of contracts. Principles of construction law. Sale agreements and building contracts. Insolvency law. Insurance law. Dispute resolution. Tender conditions and adjudications. (Total tuition time:  $\pm$  180 hours)



**CONSTRUCTION TECHNOLOGY I (CTY105D)****1 X 4-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Draughtmanship and interpretation of drawings. Substructure and setting out of different types of foundations. Superstructure, i.e. walls, windows, doors. Concrete and timber suspension floors with stairs and railing. Roof construction and coverings. Electrical and plumbing services. Carpentry items, i.e. built-in cupboards, skirtings and ironmongery on fillings. Finishes on walls, floors and ceilings. Materials and properties in the building industry. (Total tuition time: ± 180 hours)

**CONSTRUCTION TECHNOLOGY II (CTY205D, CTY215R)****PROJECT ASSESSMENT****(Module custodian: Department of Building Sciences)**

Projects based on form-work materials and re-use factors. Precast concrete beams and floors. Metal doors and windows. Timber doors and windows. Glass properties. Prefabricated timber trusses. Roof coverings, eaves, flashings and rainwater goods. Dormer windows and use of attic space in roofs. Fireplaces. Fixing methods, fastenings and adhesives. Floor, wall and ceiling finishes. Drainage and plumbing detail. Paint to metal, plaster and timber. Industrial buildings. (Total tuition time: not available)

**CONSTRUCTION TECHNOLOGY III (CTY306D)****1 X 4-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Framed and load-bearing, multi-floor concepts. Use of shoring and strutting for lateral support of adjacent property. Types of soils. Testing of ground pressure resistance. Types of excavations. Keeping excavations free from water. Planking and strutting in excavations. Foundations: piles, raft foundations. Basements: wall construction and waterproofing. Form work and concrete: in situ concrete, pre-stress and after-stress concrete. Steel structures. Cladding of buildings. Installation of services such as air-conditioning, lifts, escalators, fire fittings and inspection trap doors. Special finishes on walls, ceilings and floors. (Total tuition time: ± 180 hours)

**P****PRICE ANALYSIS AND ESTIMATING III (PAY306D)****1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Specification of items for analysis of unit rates in bills of quantities. Different methods of estimating. Factors which could influence the estimate. Cost calculation. Compiling unit rates. Material, labour, overheads and profit. Waste and storage of material. Analysis of costs of mechanical equipment. Subcontractors and suppliers. Analysis of unit rates. Pricing of specialist items. Provisional sums and prime cost items. Pricing of model preliminaries according to a standard system. Drawing up of unit rates for composite items such as additions and renovations. (Total tuition time: ± 180 hours)

**Q****QUANTITY SURVEYING I (QSU105D)****1 X 4-HOUR PAPER (PRESCRIBED OPEN BOOK)****(Module custodian: Department of Building Sciences)**

Introduction to the principles, processes and methods of measurement and documentation of builders' work. Drawing up of bills of quantities. Drawing up a list of dimensions. Calculation of quantities. Measurement and description of the following elements of a single-storey building: foundations, including site clearance and simple demolitions, superstructure brickwork, solid floor construction, roofs, finishes, comprising plaster, paint and tiling on walls, conventional floors and plastered and boarded ceilings on brandering. Stock steel, timber and aluminium windows. Stock flush and hard-wood doors, including timber and metal frames. Adjustments for windows, doors and plain openings. Working up by squaring, abstracting and billing. (Total tuition time: ± 180 hours)

**QUANTITY SURVEYING II (QSU206D, QSU216R)****PROJECT ASSESSMENT****(Module custodian: Department of Building Sciences)**

Projects based on load-bearing structures, including measuring, abstracting and billing with full descriptions and specifications. Reference to manufacturer catalogues and the ASAQS Model Preambles regarding the following: precast and pre-stressed concrete beams and floors, standard metal doors and windows, standard timber doors and windows, glass, prefabricated timber trusses, roof coverings, eaves, flashing and rainwater goods, floor, wall and ceiling finishes, drainage and plumbing detail, paint. The above projects should be augmented with the following systems when compiling a bill of quantities: traditional method x, computerised method, the use of the model preambles and x preliminaries. The appointment of the members of the professional team and their fee scales. The use of standard forms for certificates. BIM in quantity surveying. BIM and cost estimating. (Total tuition time: not available)



**QUANTITY SURVEYING III (QSU306D)****1 X 4-HOUR PAPER (PRESCRIBED OPEN BOOK)****(Module custodian: Department of Building Sciences)**

Measurement and description of the following elements of multi-storey buildings: bulk earthworks and site clearance, load-bearing and framed concrete and brick structures, flat roofs, waterproofing to concrete roofs, sheet-metal covering and boarded roofs. Staircases, including balustrade walls, balustrading and finishes. Structural steelwork. Finishes, comprising facings, in-situ terrazzo, patent plaster finishes, more complex tiling, panelling, other non-standard finishes and suspended ceilings. Purpose-made timber and aluminium windows and doors, including sidelights, fanlights and adjustments. Joinery fittings. Plumbing and drainage complete. Prime cost and provisional sums, payment certificates, including final account adjustments and builders' work regarding specialist installations. Practical working up and drawing up of bills of quantities, complete with trade preambles. (Total tuition time: ± 180 hours)

**S****SITE SURVEYING I (SSU105D)****1 X 3-HOUR PAPER****(Module custodian: Department of Geomatics)**

Introduction to surveying. Methods of measuring with a tape. Interpretation and layout of scale model drawings. Contouring and the use of laser equipment. Surveys of existing buildings. Practical application by setting out sites and buildings by means of levelling and elementary tachometry. Setting out and determining contours. Determining of heights of benchmarks by means of levelling instruments. (Total tuition time: not available)

**STRUCTURES AND CONCRETE III (SEK306D)****1 X 3-HOUR PAPER****(Module custodian: Department of Civil Engineering)**

Elementary structural analysis, calculation of sectional properties, shear force and bending moment diagrams of simple supported beams with dead loads, as well as the design of beams in timber and steel. Reinforced concrete column design, steel columns. Earth pressures and foundations. Concrete: properties of concrete, mix design, batching, mixing, transporting, placing, compaction and curing of concrete, ready-mixed concrete, concrete pumping, quality control, special techniques, repair of concrete and cost analysis. (Total tuition time: not available)

**W****WORK-INTEGRATED LEARNING I (EXP115D)****WORK-INTEGRATED LEARNING****WORK-INTEGRATED LEARNING II (EXP216D)****WORK-INTEGRATED LEARNING****(Module custodian: Department of Building Sciences)**

Students are required to work for six months with approved employers who are –

- building contractors (preferably with MBA or BIA);
- registered quantity surveyors; or
- other employers approved by the Department of Building Sciences as being able to provide students with suitable Work-Integrated Learning.

Students should be given a broad introduction to the building industry and gain as much experience in the Build Industry as possible. (Total tuition time: six months)

