

BACHELOR OF BUILDING SCIENCE

Qualification code: BPBS21 – NQF Level 7 (410 credits)

SAQA ID: 111127, CHE NUMBER: H/H16/E144CAN

Campus where offered: Pretoria Campus

Please note that this programme will not be offered in 2020.

REMARKS

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

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

Admission requirement(s):

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

Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **28**.

• **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 endorsement, or an equivalent qualification, with an achievement level of at least 4 for English (home language or first additional language), 4 for Mathematics or Technical Mathematics, and 4 for Physical Sciences or Technical Sciences.

Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **28** (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 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 60% (APS of 5) Mathematics and Science, and 60% (APS of 5) for any other three compulsory vocational subjects.

Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **28** (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.



Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least 28.

Recommended subject(s):

None.

- **APPLICANTS WITH A N6 CERTIFICATE IN A RELATED ENGINEERING FIELD AS PUBLISHED IN REPORT 191: N6:**

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).

- **APPLICANTS WITH QUALIFICATIONS ON THE HIGHER EDUCATION QUALIFICATION SUB-FRAMEWORK (HEQSF) OFFERED BY UNIVERSITIES OF TECHNOLOGY:**

- Diploma in Building (NQF Level 6 - 360 credits): with an average of at least 60% for the qualification.
- National Diploma: Building (NQF Level 6 - 3,000 credits): with an average of at least 60% for the qualification.

- 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.

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

See Chapter 30 of Students' Rules and Regulations.

- d. *Intake for the qualification:*

January only.

- e. *Minimum duration:*

Three years.

- f. *Presentation:*

Day classes.

- g. *Exclusion and readmission:*

See Chapter 2 of Students' Rules and Regulations.

CURRICULUM

FIRST YEAR

| CODE | MODULE | NQF-L | CREDIT | PREREQUISITE MODULE(S) |
|---------|---------------------------|-------|--------|------------------------|
| CMN105B | Construction Management I | (5) | (24) | |
| CTY105B | Construction Technology I | (5) | (24) | |



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|---------|-------------------------------------|-----|------|--|
| INL125C | Information Literacy (block module) | (5) | (1) | |
| LFS125X | Life Skills (block module) | (5) | (2) | |
| QSU105B | Quantity Surveying I | (5) | (24) | |

FIRST SEMESTER

| | | | | |
|---------|----------------------------|-----|------|--|
| COS105X | Communication Skills | (5) | (6) | |
| ECA115D | Economics IA | (5) | (12) | |
| MST115B | Mathematics and Statistics | (5) | (12) | |

SECOND SEMESTER

| | | | | |
|---------|------------------------------|-----|------|--------------|
| ACN115B | Applied Construction Science | (5) | (12) | |
| CPL105X | Computer Literacy | (5) | (5) | |
| ECB115D | Economics IB | (5) | (12) | Economics IA |

TOTAL CREDITS FOR THE FIRST YEAR: **134**

SECOND YEAR

| CODE | MODULE | NQF-L | CREDIT | PREREQUISITE MODULE(S) |
|---------|----------------------------|-------|--------|------------------------------|
| CMN206B | Construction Management II | (6) | (24) | Construction Management I |
| CTY206B | Construction Technology II | (6) | (24) | Construction Technology I |
| QSU206B | Quantity Surveying II | (6) | (24) | Quantity Surveying I |
| STA206B | Structural Analysis I | (6) | (24) | Applied Construction Science |

FIRST SEMESTER

| | | | | |
|---------|---|-----|------|--|
| ICM216B | Introduction to Commercial and Mercantile Law | (6) | (12) | |
| SSU216B | Site Surveying | (6) | (12) | |

SECOND SEMESTER

| | | | | |
|---------|-------------------------|-----|------|--|
| CSA216B | Construction Accounting | (6) | (12) | |
| REU216B | Real Estate Studies | (6) | (12) | |

TOTAL CREDITS FOR THE SECOND YEAR: **144**

THIRD YEAR

| CODE | MODULE | NQF-L | CREDIT | PREREQUISITE MODULE(S) |
|------|--------|-------|--------|------------------------|
|------|--------|-------|--------|------------------------|

Students choose between one of the following options:

Option 1: Construction Management

| | | | | |
|---------|-----------------------------|-----|------|------------------------------|
| CNM307B | Construction Management III | (7) | (24) | Construction Management II |
| CTY307B | Construction Technology III | (7) | (24) | Construction Technology II |
| PRD307B | Price Determination | (7) | (24) | Economics IA Economics IB |
| STA307B | Structural Analysis II | (7) | (24) | Structural Analysis I |

FIRST SEMESTER

| | | | | |
|---------|------------------|-----|------|---|
| CNW317B | Construction Law | (7) | (12) | Introduction to Commercial and Mercantile Law |
|---------|------------------|-----|------|---|



HAP317B Health and Safety Management (7) (12)

SECOND SEMESTER

CNP317B Construction Management (7) (12)
Project

CNP317R Construction Management (7) (0)
Project (re-registration) (first-
semester module)

Option 2: Quantity Surveying

CEC307B Construction Economics (7) (24)

CTY307B Construction Technology III (7) (24)

PRD307B Price Determination (7) (24)

QSU307B Quantity Surveying III (7) (24)

Construction Technology II
Economics IA
Economics IB
Quantity Surveying II

FIRST SEMESTER

CNW317B Construction Law (7) (12)

FCP317B Facilities Management (7) (12)

Introduction to Commercial and
Mercantile Law

SECOND SEMESTER

QSR317B Quantity Surveying Project (7) (12)

QSR317R Quantity Surveying Project (7) (0)
(re-registration) (first-semester
module)

TOTAL CREDITS FOR THE THIRD YEAR: **132**

TOTAL CREDITS FOR THE QUALIFICATION: **410**

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 CONSTRUCTION SCIENCE (ACN115B)

1 X 3-HOUR PAPER

(Module custodian: Department of Building Sciences)

Reading skills; listening skills; writing skills; presentation skills; research report, citation and referencing. (Total tuition time: ± 120 hours)

C

COMMUNICATION SKILLS (COS105X)

1 X 2-HOUR PAPER

(Module custodian: Department of Applied Languages)

To identify and apply basic competencies related to communicating in a technical or engineering environment. These competencies include presenting technical information to a variety of audiences, preparing technical reports, participating constructively in formal meetings and preparing a variety of business and technical documents. (Total tuition time: ± 40 hours)



COMPUTER LITERACY (CPL105X)**CONTINUOUS ASSESSMENT****(Module custodian: End User Computing Unit)**

Students have to acquire foundational knowledge in Computing Fundamentals, essential digital skills in key applications based on Ms Office Suite (i.e. MS Word, MS Excel, MS PowerPoint, MS Visio Professional and MS Access) and network basics (i.e. MS Outlook and Internet). A complete syllabus and module outlines are described in the study guide. Students will do online exams that are mapped with SAQA and IC3 Essential Skills for Digital Literacy (International Certification). (Total tuition time: not available)

CONSTRUCTION ACCOUNTING (CSA216B)**1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Introduction to accounting and the conceptual framework with the accounting equation, the accounting cycle: transactions, source documents, journals, ledgers, the accounting system leading to the trial balance with adjustments, end of year closing procedures and financial statements for financial accounting, cash and bank reconciliation, partnerships and companies, budgets and statement of cash flows for management accounting and taxation. (Total tuition time: ± 120 hours)

CONSTRUCTION ECONOMICS (CEC307B)**1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Introduction to construction economics, property economics and sustainability, basic principles of property investment and finance in South Africa, principles of feasibility studies and undertaking of financial feasibility studies for built environment projects, strategic planning of built environment projects, value and risk management, whole life costing and cost benefit analysis. (Total tuition time: ± 240 hours)

CONSTRUCTION LAW (CNW317B)**1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Definition and sources of construction law, legislation impacting on the construction industry, standard contracts in the construction industry, detailed interpretation of clauses in the Joint Building Contract Commission (JBCC), contractual procedures under the JBCC contract, dispute resolution under JBCC contract. (Total tuition time: ± 120 hours)

CONSTRUCTION MANAGEMENT I (CMN105B)**1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Introduction to environmental management, geographical knowledge, soils and geological formations, ecological systems, climatological systems, pollution management, waste management, sustainability in general and implications for the construction industry, legislation and policy on the environment. (Total tuition time: ± 240 hours)

CONSTRUCTION MANAGEMENT II (CMN206B)**1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Introduction to management and management functions, the built environment and stakeholders, introduction to the construction site, material management, plant and machinery management, subcontractor and personnel management, information management, productivity and work study and site management health and safety. (Total tuition time: ± 240 hours)

CONSTRUCTION MANAGEMENT III (CMN307B)**1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Introduction to construction project management, financial planning and control, planning techniques, personnel and administration management, communication management, risk management, quality management, procurement management, contract strategies and management. (Total tuition time: ± 240 hours)

CONSTRUCTION MANAGEMENT PROJECT (CNP317B/R)**PROJECT ASSESSMENT****(Module custodian: Department of Building Sciences)**

Introduction to research methods, planning and scheduling, method statements and quality management, procurement and resource management including stakeholder management, health and safety as well as risk management and close out report. (Total tuition time: ± 120 hours)



CONSTRUCTION TECHNOLOGY I (CTY105B)**1 X 4-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Site establishment, basic types of scaffolding, substructure and setting out, concrete and suspended timber floor construction, superstructure, finishes, roofs, building services, OHS, basic various construction machinery and equipment, building regulations, draughtsmanship and basic drawing skills, interpretation of drawings, isometric drawings, orthographic drawings, perspective drawings, CAD principles and drawing software and model building. (Total tuition time: ± 240 hours)

CONSTRUCTION TECHNOLOGY II (CTY206B)**1 X 4-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Earthworks, concrete, formwork and reinforcement, brickwork and plasterwork, setting out of stairs, metalwork and structural steelwork, carpentry and joinery, plumbing and drainage (including rainwater goods, flashings and sanitary fittings). (Total tuition time: ± 240 hours)

CONSTRUCTION TECHNOLOGY III (CTY307B)**1 X 4-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Site works (layout, temporary electricity, shoring, demolition, contaminated land remediation), plant and equipment (builder's plant, small tools, earth moving and excavation plant, transportation, mixers, advanced access systems), substructure (groundwater, deep excavations, shafts, tunnels, specialist piling, basements, underpinning), portal frames (theory, concrete portal frames, steel portal frames, timber portal frames), fire protection (problem of fire, structural fire protection, means of fire escape), claddings (panels, composite systems, jointing, mastics, sealants, gaskets, curtain walling, rain screen cladding, structural glass cladding, sustainable, energy efficiency, rainwater harvesting), formwork (patent formwork, finishes), pre-stressed concrete (principles, applications, systems), industrial buildings (factory roofs, walls, wind pressures, driving rain, partitions, doors, ceilings, painting, decorating), stairs (concrete, metal, glass, mechanical) and external works (roads, paving, slabs). (Total tuition time: ± 240 hours)

E**ECONOMICS IA (ECA115D)****1 X 3-HOUR PAPER****(Module custodian: Department of Economics)**

Demonstration of the basic questions economics attempts to address and highlights all about in the field of economics, Graphs in economics, economic problem, the basic theory of demand and supply, elasticity, production and organisation, consumer theory, choice and preferences, firms output and costs and perfect competitive markets. (Total tuition time: ± 120 hours)

ECONOMICS IB (ECB115D)**1 X 3-HOUR PAPER****(Module custodian: Department of Economics)**

Measuring GDP and economic growth, economic growth, monitoring jobs and inflation, inflation, unemployment and the business cycle, money, the price level and inflation, the exchange rates and the balance of payments, fiscal policy and monetary policy. (Total tuition time: ± 120 hours)

F**FACILITIES MANAGEMENT (FCP317B)****1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Basic principles of property law in South Africa, basic principles of property valuation in South Africa, facilities management, property maintenance management and life cycle costing. (Total tuition time: ± 120 hours)

H**HEALTH AND SAFETY MANAGEMENT (HAP317B)****1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Fundamentals of health and safety, legal requirements of health and safety, the safety policy, risk assessment, health and safety plan and training, construction environment and hazards. (Total tuition time: ± 120 hours)



I**INFORMATION LITERACY (INL125C)****CONTINUOUS ASSESSMENT***(Module custodian: Directorate of Library and Information Services)*

Introduction of information literacy. Development of a search strategy and application of a search string to search engines and academic databases. Evaluation of information sources. Ethical and legal use of information. (Total tuition time: ± 10 hours)

INTRODUCTION TO COMMERCIAL AND MERCANTILE LAW (ICM216B)**1 X 3-HOUR PAPER***(Module custodian: Department of Building Sciences)*

The South African Legal System, including reference to courts, sources of law, a description of the main divisions of law and officers of the courts, the company law, the law of partnerships, payment instruments, insolvency and insurance, contract law, delict law and basic law of evidence. (Total tuition time: ± 120 hours)

L**LIFE SKILLS (LFS125X)****CONTINUOUS ASSESSMENT***(Module custodian: Directorate of Student Development and Support)*

Academic, personal and socio-emotional skills development for students in higher education. Personal and social dimensions address: Effective planning and self-management (goal setting and time management); Adjusting to university life (student life, diversity and change); Intra- and interpersonal skills development (conflict management, self-esteem, relationship management); Effective living (healthy living, HIV education, substance abuse). Academic dimension addresses: Academic skills for university (e.g. critical thinking, creativity, managing assignments and assessments). (Total tuition time: ± 20 hours)

M**MATHEMATICS AND STATISTICS (MST115B)****1 X 3-HOUR PAPER***(Module custodian: Department of Building Sciences)*

Basic mensuration mathematics, basic arithmetic, basic algebra, basic trigonometry, basic geometry, introduction to vector algebra, introduction differentiation and integration, presentation of statistical data and introduction to probability. (Total tuition time: ± 120 hours)

P**PRICE DETERMINATION (PRD307B)****1 X 3-HOUR PAPER***(Module custodian: Department of Building Sciences)*

The cost of labour and plant, the hourly rate for labour and plant, excavation, filling, underpinning and shoring, brickwork, blockwork, concrete, reinforced concrete and formwork, roof covering and waterproofing, carpentry and joinery, partitions and drywalls, structural steel and metalwork, plumbing installation and drainage, finishes to walls, floors, decorative paper and painting, glazing, electrical and mechanical installations, pricing of preliminaries, tendering and tendering strategies. (Total tuition time: ± 240 hours)

Q**QUANTITY SURVEYING I (QSU105B)****1 X 4-HOUR PAPER***(Module custodian: Department of Building Sciences)*

Goal setting and time management; change and personal adjustment; study skills; intra- and interpersonal skills. (Total tuition time: ± 20 hours)

QUANTITY SURVEYING II (QSU206B)**1 X 4-HOUR PAPER***(Module custodian: Department of Building Sciences)*

Measurement of alterations, measurement of plumbing and drainage services, measurement of electrical and mechanical service, measurement of site works, compiling of price determination documentation and introduction to computerised quantity surveying. (Total tuition time: ± 240 hours)



QUANTITY SURVEYING III (QSU307B)**1 X 4-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Measurement of bulk earthworks, measurement of concrete structures, measurement of structural steel structures, measurement of piling, measurement of anchoring and lateral support, professional quantity surveying practice and computerised quantity surveying. (Total tuition time: ± 240 hours)

QUANTITY SURVEYING PROJECT (QSR317B/R)**PROJECT ASSESSMENT****(Module custodian: Department of Building Sciences)**

Introduction to research methods, cost estimation and measurement of the project, preparation of the bill of quantities and pricing, preparation of procurement, adjudication of tender and appointment of a suitable contractor, contract administration and preparation of final accounts. (Total tuition time: ± 120 hours)

R**REAL ESTATE STUDIES (REU216B)****1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

The basic principles of urban land economics and property development, the theory and practice of housing development and management, and local authority land use management. (Total tuition time: ± 120 hours)

S**SITE SURVEYING (SSU216B)****1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Spatial surveying and methods of measurement; scale drawings; preparation of contours and use of laser equipment; survey of existing buildings; practical work that involves setting out of sites and buildings by levelling and tachometry, determining contours and heights by means of levelling instruments, theodolite and Dumpy level and Geographic Information System (GIS) mapping. (Total tuition time: ± 120 hours)

STRUCTURAL ANALYSIS I (STA206B)**1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Unit of measurement, laws of motion, forces and moment of forces, simple rigid body of equilibriums problems, centres of gravity and centroids, stress-strain and elasticity, simple beam designs and beam reactions. (Total tuition time: ± 240 hours)

STRUCTURAL ANALYSIS II (STA307B)**1 X 3-HOUR PAPER****(Module custodian: Department of Building Sciences)**

Sectional properties of different structural elements, reactions, shear forces on cantilever beams, elastic theory of beams, equilibrium in structural elements, deflections of simply supported beams, analysis stresses on structural bases, analysis of retaining walls, pre-stressed concrete, determinacy of structures, structural analysis of parabolic and circular arches, introduction to struts, and solving problems using Euler, Rankine and Perry Robertson theories. (Total tuition time: ± 240 hours)

