

HIGHER CERTIFICATE IN CONSTRUCTION ENGINEERING

Qualification code: HCCM18, HCCW18 - NQF Level 5 (140 credits)

SAQA ID: 97887, CHE NUMBER: H/H16/E034CAN

Campus where offered:

Pretoria Campus

REMARKS

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

• **FOR APPLICANTS WHO OBTAINED A SENIOR CERTIFICATE BEFORE 2008:**

Admission requirement(s):

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

Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **20**.

Recommended subject(s):

None.

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

Admission requirement(s):

A National Senior Certificate or an equivalent qualification, with a higher certificate endorsement, or an equivalent qualification, with an achievement level of at least 4 for English (home language or first additional language) and Mathematics or Technical Mathematics, and at least a 3 for Physical Sciences or Technical Sciences.

Applicants who do not meet the requirements for Mathematics, Physical Sciences, or any of the two additional subjects may enroll for these subjects at any Technical and Vocational Education and Training (TVET) College (see National N Certificate requirements), and if these are successfully passed at a performance level of at least 50%, they may re-apply for admission to the University.

Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **20**.

Recommended subject(s):

Civil Technology and Engineering Graphics and Design.

• **FOR APPLICANTS WHO OBTAINED A QUALIFICATION FROM TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET) COLLEGES (PREVIOUSLY KNOWN AS FET COLLEGES):**

Applicants with a National Certificate (Vocational) at NQF Level 4:

Admission requirement(s):

A National Certificate (Vocational) at NQF Level 4 issued by the Council for Quality Assurance in General and Further Education and Training (Umalusi), with at least 50% (APS of 4) for English and Mathematics and 40% (APS of 3) for Physical Sciences.



Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **20**.

Recommended subject(s):

None.

Applicants with a National N Certificate as published in Nated 191: N3 (NQF Level 4):**Admission requirement(s):**

A National Senior Certificate and a National N Certificate as published in Nated 191: N3 (NQF Level 4) issued by both the Department of Higher Education (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 **20**.

Recommended subject(s):

None.

- b. Assessment procedure:*
All applications received by the published due dates will be ranked according to the APS achieved. After consideration of the Departmental Student Enrolment Plan (SEP), only the top performing applicants will be selected. A waiting list consisting of the remainder of the applicants will provide an opportunity for applicants to fill places created by accepted students failing to meet the enrolment dates. Applicants will be informed per official letter from the Office of the Registrar.
- c. Minimum duration:*
One year.
- d. Presentation:*
Day classes. Classes and assessments may take place on Friday afternoons and/or Saturdays.
- e. Intake for the qualification:*
January only.
- 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. Module credits:*
Module credits are shown in brackets after each module.

CURRICULUM

ATTENDANCE

CODE	MODULE	NQF-L	CREDIT
COM105X	Communication Skills	(5)	(8)
COM115C	Construction Management	(5)	(21)
CPL105X	Computer Literacy	(5)	(10)
EGC115C	Engineering Graphics	(5)	(14)
EPH115C	Engineering Physics	(5)	(14)



INL125C	Information Literacy (block module)	(5)	(1)
LFS125X	Life Skills (block module)	(5)	(2)
TMA105C	Technical Mathematics	(5)	(21)

plus one of the following options:

Option 1: Construction Material Testing (HCCM18)

FIRST SEMESTER

ENC115C	Engineering Chemistry	(5)	(7)
STC115C	Soil Technology	(5)	(14)

SECOND SEMESTER

ECB115C	Bitumen and Asphalt Technology	(5)	(14)
ECC115C	Concrete and Aggregate Technology	(5)	(14)

Option 2: Water and Wastewater Engineering Infrastructural Operations and Maintenance (HCCW18)

FIRST SEMESTER

ENC115C	Engineering Chemistry	(5)	(7)
WRO115C	Water Reticulation Operation and Maintenance	(5)	(14)

SECOND SEMESTER

WSO115C	Water System Operation and Maintenance	(5)	(14)
WWS115C	Wastewater System Operation and Maintenance	(5)	(14)

TOTAL CREDITS FOR THE QUALIFICATION: **140**

SUBJECT/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 subject. On 13 October 2017, the syllabus content was defined as follows:

B

BITUMEN AND ASPHALT TECHNOLOGY (ECB115C) 1 X 3-HOUR PAPER

(Module custodian: Department of Civil Engineering)

Bitumen and asphalt properties. Bitumen and asphalt tests and result interpretation and safety system. (Total tuition time: ± 140 hours)

C

COMMUNICATION SKILLS (COM105X) 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)

CONCRETE AND AGGREGATE TECHNOLOGY (ECC115C)**1 X 3-HOUR PAPER***(Module custodian: Department of Civil Engineering)*

Aggregate properties. Aggregate tests and result interpretation. Concrete properties. Concrete tests and result interpretation and Safety system. (Total tuition time: ± 140 hours)

CONSTRUCTION MANAGEMENT (COM115C)**1 X 3-HOUR PAPER***(Module custodian: Department of Civil Engineering)*

Basic principles of management. Organisational structures. Procurement and storage of materials, plant and equipment. Cost control of resources. Safety and occupational health in work place. Engineering ethics. Sustainable development and legal Issues in construction industry. (Total tuition time: ± 210 hours)

E**ENGINEERING CHEMISTRY (ENC115C)****1 X 3-HOUR PAPER***(Module custodian: Department of Civil Engineering)*

The language chemistry and matter. The atom. The elements and the Periodic table. Ionic and molecular compounds. Reactions in cement and concrete. Chemical tests used for testing construction materials and water. Chemical composition and chemical additives for cement, bitumen and water. (Total Tuition time: not available)

ENGINEERING GRAPHICS (EGC115C)**CONTINUOUS ASSESSMENT***(Module custodian: Department of Civil Engineering)*

Drawing apparatus, drawing basics, construction geometry, orthographic projection, sections, isometric projection, CAD fundamentals and application of CAD to building drawings. (Total tuition time: ± 140 hours)

ENGINEERING PHYSICS (EPH115C)**1 X 3-HOUR PAPER***(Module custodian: Department of Physics)*

Basic mathematics for physics. Introduction to calculus-based physics. Measurements. Kinematics in 1-D and 2-D. Forces and Newton's laws of motion. Dynamics of uniform circular motion. Work energy and power. Impulse and momentum. Rotational kinematics and dynamics. Elasticity. Static and dynamic fluids, temperature and heat. The ideal gas law and kinetic theory. Electric forces and fields. Electric potential energy and the electric potential. Electric circuits. Reflection of light: mirrors, lenses and optical instruments. (Total tuition time: ± 140 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)

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

Academic, personal and socioemotional skills development for students in higher education. Effective planning and self-management skills (Formulating a life vision (goal setting); Time management; Classroom skills (concentration, note taking and effective listening). Adjusting to university life (student life, diversity and change) Intra- and interpersonal skills development (conflict management, self-esteem). Academic skills for University (critical thinking, creativity, managing assignments and assessments. Effective living (managing diversity and change, healthy living, substance abuse). (Total tuition time: not available)



S**SOIL TECHNOLOGY (STC115C)****1 X 3-HOUR PAPER****(Module custodian: Department of Civil Engineering)**

Soil properties. Geotechnical site investigation. Soil tests and result interpretation and safety system. (Total tuition time: ± 140 hours)

T**TECHNICAL MATHEMATICS (TMA105C)****1 X 3-HOUR PAPER****(Module custodian: Department of Mathematics and Statistics)**

Matrices, engineering calculations, functions for engineers, trigonometry, geometry, vectors, Introduction to differentiation and integration, applications of differentiation and integration, data handling. (Total tuition time: not available)

W**WASTEWATER SYSTEM OPERATION AND MAINTENANCE (WWS115C)****1 X 3-HOUR PAPER****(Module custodian: Department of Civil Engineering)**

Waste collection, treatment and discharge systems. Septic tanks and pumping systems. Wastewater treatment and effluent discharge methods. Collection systems and maintenance and troubleshooting. (Total tuition time: ± 140 hours)

WATER RETICULATION OPERATION AND MAINTENANCE (WRO115C)**1 X 3-HOUR PAPER****(Module custodian: Department of Civil Engineering)**

Storage facilities. Reticulation facilities. Water quality characteristics in reticulation networks and reticulation network operation and maintenance. (Total Tuition time: not available)

WATER SYSTEM OPERATION AND MAINTENANCE (WSO115C)**1 X 3-HOUR PAPER****(Module custodian: Department of Civil Engineering)**

Water Sources and treatment. Wells. Water treatment plants and disinfection. (Total tuition time: ± 140 hours)

