

HIGHER CERTIFICATE IN RESOURCE AND WASTE MANAGEMENT

HCert (Resource and Waste Management) - NQF Level 5 (120 credits)

Qualification code: HCRW22

SAQA ID: 118277, CHE NUMBER: H/H16/E210CAN

Campus where offered:

Arcadia 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 at least an E symbol at Higher Grade or a D symbol at Standard Grade for English and Mathematics.

Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **18**.

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

Admission requirement(s):

A National Senior Certificate or an equivalent qualification, with a higher certificate endorsement, with an achievement level of at least 3 for English (home language or first additional language), and 3 for Mathematics or Technical Mathematics, or 6 for Mathematical Literacy.

Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **18** (with Mathematics or Technical Mathematics) or **21** (with Mathematical Literacy). Life Orientation is excluded from the APS calculation.

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

Admission requirement(s):

A National Certificate (Vocational) at NQF Level 4 with a higher certificate endorsement, issued by the Council for Quality Assurance in General and Further Education and Training (Umalusi), with at least 50% for English and 50% Mathematics or 70% for Mathematical Literacy, and 40% for Life Orientation (excluded for APS calculation), and 50% for any two vocational subjects.

Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **18** (with Mathematics or Technical Mathematics) or **21** (with Mathematical Literacy). Life Orientation is excluded from the APS calculation.

• **APPLICANTS WITH A NATIONAL CERTIFICATE AS PUBLISHED IN NATED 191: N3 (NQF LEVEL 4):**

Admission requirement(s):

A National Senior Certificate or 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, 50% for Mathematics N3, and any two additional N3 subjects; or any equivalent qualification at NQF Level 4.



- **APPLICANTS WITH AN N4 CERTIFICATE IN AN ENGINEERING FIELD AS PUBLISHED IN NATED 191: N4:**

Admission requirement(s):

An N4 Certificate in a related Engineering field as published in Nated 191: N4 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 N3, and with at least an average of 50% for the qualification.

b. *Selection criteria:*

Applicants who achieve the minimum APS will be invited to write an academic proficiency test and students will be selected according to the results obtained in this test.

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). 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. *Presentation:*

Day classes.

f. *Minimum duration:*

A minimum of one or two years (depending on the programme offering).

g. *Exclusion and readmission:*

See Chapter 2 of Students' Rules and Regulations.

h. *Environmental Practice and Professionalism (WIL Theory-Based)*

See Chapter 5 of Students' Rules and Regulations.

CURRICULUM

YEAR MODULES

| CODE | MODULE | NQF-L | CREDIT |
|---------|---|-------|--------|
| 11P115X | Communication for Academic Purposes (first-semester module) | (5) | (10) |
| CPL105X | Computer Literacy | (5) | (10) |
| EGS105C | Earth and General Science for Occupational Health | (5) | (12) |
| EPP105C | Environmental Practice and Professionalism (WIL Theory-Based) | (5) | (24) |
| IEW105C | Introduction to Environmental and Waste Management | (5) | (12) |
| INL125X | Information Literacy (block module) | (5) | (2) |
| INS105C | Introduction to Environmental Science | (5) | (12) |
| LFS125X | Life Skills (block module) | (5) | (2) |
| MAS105X | Mathematics and Statistics I | (5) | (12) |

plus two of the following modules:

| | | | |
|---------|---|-----|------|
| IEI501C | Introduction to Environmental Impact Management | (5) | (12) |
| IIW105C | Introduction to Industrial Waste | (5) | (12) |
| IWD105C | Introduction to Waste Diversion | (5) | (12) |
| IWI105C | Introduction to Waste Innovation | (5) | (12) |

TOTAL CREDITS FOR THE QUALIFICATION: **120**

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. At time of publication, the syllabus content was defined as follows:

C

COMMUNICATION FOR ACADEMIC PURPOSES (11P115X)

1 X 3-HOUR PAPER

(Module custodian: Office of the Executive Dean)

A workable knowledge of English is an essential skill for any graduate who is required to conduct themselves successfully in a professional working environment. This module will equip students with the competencies required to compose a selection of written texts related to communicating both internally and externally within a professional environment. In addition, the module includes strategies that are essential for the effective communication in various situations, including small groups to avoid unproductive conflict, a multicultural context, etc. (Total notional time: 100 hours)

COMPUTER LITERACY (CPL105X)

CONTINUOUS ASSESSMENT

(Module custodian: End User Computing Unit)

This module provides students with foundational knowledge in computing fundamentals, essential digital skills in key applications based on MS Office Suite and network basics (i.e. MS Outlook and Internet). Online exams are mapped with End-User Computing: SAQA 49077 (61591) Core Element as well as Internet and Computing Core Certification (IC3). (Total notional time: 100 hours)

E

EARTH AND GENERAL SCIENCE FOR OCCUPATIONAL HEALTH (EGS105C)

1 X 3-HOUR PAPER

(Module custodian: Department of Environmental, Water and Earth Sciences)

To enable the students to gain knowledge and competencies concerning the Earth as a system of interrelating subsystems such as lithosphere, atmosphere, biosphere and hydrosphere. Earth structure, plate tectonics and rock cycle, groundwater dynamics and basics of geohydrology. Prepares the student to demonstrate an understanding of waste pollution dynamics on different spheres. Qualifying students will gain an understanding of the natural interaction, mobility and transportation of waste between the different spheres of the Earth. (Total notional time: 120 hours)

ENVIRONMENTAL PRACTICE AND PROFESSIONALISM (WIL THEORY-BASED) (EPP105C)

CONTINUOUS ASSESSMENT

(Module custodian: Department of Environmental, Water and Earth Sciences)

Students are exposed to Theory and Work-based exposure to different waste facilities. Students will be hosted in different organisations relevant to waste resources and management. Students work under supervision from a workstation at the host employer's office. Responsibility, accountability, punctuality and professional work ethics are mastered in this module. Theoretically, in this module, students will continually contribute to problem-based learning, accountability and leadership qualities. Students will undertake full responsibility for their learning. On completion, the student will be able to practically apply the knowledge and skills impacted on them throughout this programme. (Total notional time: 240 hours)



INFORMATION LITERACY (INL125X)**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 notional time: 20 hours)

INTRODUCTION TO ENVIRONMENTAL AND WASTE MANAGEMENT (EW105C)**1 X 3-HOUR PAPER****(Module custodian: Department of Environmental, Water and Earth Sciences)**

The module introduces the student to the terminologies and principles of Environmental and Waste Management in terms of the following: (1) Generation of waste to treatment, transportation and waste disposal. (2) Resource management and waste hierarchy. (3) Waste classification. (4) Waste beneficiation, recycling economy and entrepreneurship. (5) Waste legislation and policies as well as the life cycle approach to resource management. This module prepares a student with fundamental waste disposal techniques and technologies, also provides fundamental procedures and protocols for health and safety, prevention and mitigation measures. Upon completion, the student will be able to apply the knowledge and skills to safely handle, treat and dispose different waste type in an environmentally sound manner. (Total notional time: 120 hours)

INTRODUCTION TO ENVIRONMENTAL IMPACT MANAGEMENT (IEI501C)**1 X 3-HOUR PAPER****(Module custodian: Department of Environmental, Water and Earth Sciences)**

This module introduces the students to environmental law, regulations and by-laws relevant to waste management. In particular, students will gain an understanding of the various compliance and enforcement strategies and measures. It will also equip the student with methodologies and important tools for sound environmental assessment, management and decision making. Students who complete the module will have an overview of the concepts, methods, issues and the various stages of the EIA process as well as gain an in-depth understanding of the evaluation and overall administration of environmental authorisations. Some case studies will be provided on environmental authorisations in the various economic sectors including infrastructure, spatial development and planning. Other topics covered are integrated environmental management, environmental governance, reporting and institutional cooperation. (Total notional time: 120 hours)

INTRODUCTION TO ENVIRONMENTAL SCIENCE (INS105C)**1 X 3-HOUR PAPER****(Module custodian: Department of Environmental, Water and Earth Sciences)**

The module provides a view on the state of the environment in South Africa, pollution, resource management and climate change mitigation. The module focuses on the inter-relationships between the physical and biological environment and resource management as well as an introduction to sustainable development and international multilateral environmental agreements including the United Nations Sustainable Development Goals (SDGs). These include the application of biological, chemical, and physical principles and the solution to the environmental problems. The student will be equipped with knowledge of sources of waste, mobility, transformations, environmental and health impacts from different environmental matrices. Upon completion, students will be able to apply basic pollution science knowledge, identify type of waste, point and non-point sources of waste pollution and their potential effects. The module prepares a student to apply knowledge and skills in the industrial processes, particularly resulting waste. (Total notional time: 120 hours)

INTRODUCTION TO INDUSTRIAL WASTE (IIW105C)**1 X 3-HOUR PAPER****(Module custodian: Department of Environmental, Water and Earth Sciences)**

This module provides students with the background and introduction to industrial processes such as oil and gas, medical, mining, energy production, chemical synthesis and manufacturing of products; and their waste generating activities and impacts on the local and global environment and how those impacts can be mitigated or eradicated. This module intends to equip students with the necessary knowledge and skills on the ever-changing industrial processes. (Total notional time: 120 hours)



INTRODUCTION TO WASTE DIVERSION (IWD105C)**1 X 3-HOUR PAPER*****(Module custodian: Department of Environmental, Water and Earth Sciences)***

This module introduces the student to the methodologies, policies, practices, systems and technologies associated with waste diversion. The module deals with the intergovernmental policies and legal requirements from the various spheres of government responsible for waste: (1) Collection, storage, transportation and disposal. (2) Reduction and prevention, reuse, recycle, recover, treatment and disposal and 3) general and hazardous waste classification. (4) Transformation of waste into resources for economic production. The student will gain an in-depth knowledge in the aspects of waste separation at source, waste minimisation, sorting, waste beneficiation and the major ways of recycling waste including methods of evaluating the effectiveness of waste reduction, monitoring and assessment. Various case studies will be discussed on effective waste diversion techniques and technologies. (Total notional time: 120 hours)

INTRODUCTION TO WASTE INNOVATION (IWI105C)**1 X 3-HOUR PAPER*****(Module custodian: Department of Environmental, Water and Earth Sciences)***

Waste to Energy and Waste Derived Fuels; Waste beneficiation; Circular economy; Life cycle approaches to waste reduction; Product design, single use and end of life theories; Green economy and smart cities; Development on alternatives to plastic; Extended Producer Responsibility; Modern Landfill Design and Operations Management; Principles of green chemistry; e-Waste Management; and Digital waste sorting, tracking and destruction certification. (Total notional time: 120 hours)

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

Personal, socio-emotional and academic skills development for students in higher education. This module includes 1. Intra- and interpersonal skills (e.g. emotional intelligence, relationships, and conflict management); 2. General study skills (e.g. time management, goal setting, learning styles); 3. Health and wellness (e.g. HIV/AIDS, GBV issues, substance abuse); 4. Student life and adjustment (e.g. identity development, adjusting to a higher education environment); and 5. Financial management. (Total notional time: 20 hours)

M**MATHEMATICS AND STATISTICS I (MAS105X)****1 X 3-HOUR PAPER*****(Module custodian: Department of Mathematics and Statistics)***

Numerical computations, mensuration, equations, functions, descriptive statistics, linear regression and curve fitting. (Total notional time: 120 hours)

