

ADVANCED DIPLOMA IN WATER SCIENCE AND TECHNOLOGY

Qualification code: ADWS20 - NQF Level 7 (120 credits)

SAQA ID: 109015, CHE NUMBER: H/H16/E066CAN

Campus where offered:

Arcadia Campus

REMARKS

- a. *Admission requirement(s):*
A National Diploma: Water Care, **or** Diploma in Water Science and Technology, **or** a relevant bachelor's degree, **or** an equivalent qualification at NQF Level 6 with minimum of 360 credits.

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:*
Admission is subject to selection. Prospective students will be evaluated based on the marks obtained in the previous qualification and/or work experience.

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). 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 and block-mode classes. Please note that only day classes will be offered in 2021.
- f. *Minimum duration:*
One year.
- g. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations.

CURRICULUM

ATTENDANCE

CODE	MODULE	NQF-L	CREDIT
PIU107V	Integrated Urban/Rural Water and Sanitation Research Project III	(7)	(21)

FIRST SEMESTER

DWS117V	Decentralised Water and Sanitation III	(7)	(9)
RWS117V	Introduction to Research	(7)	(12)
WTR117V	Advanced Water Treatment III	(7)	(15)

plus one of the following options:

Option 1 (Management)

WRM117V	Water Resource Management II	(7)	(12)
WUM117V	Water Utility Management II	(7)	(12)

Option 2 (Analytical)

WAN107V	Water Analyses III (year module)	(7)	(12)
WCH117V	Water Chemistry III	(7)	(12)

SECOND SEMESTER

GIW117V	Geographic Information System I	(7)	(12)
WWT117V	Advanced Wastewater Treatment III	(7)	(15)

plus one of the following modules:

LBG117V	Laboratory Management II	(7)	(12)
WCD117V	Water Distribution and Wastewater Collection III	(7)	(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:

A

ADVANCED WASTEWATER TREATMENT III (WWT117V) 1 X 3-HOUR PAPER *(Module custodian: Department of Environmental, Water and Earth Sciences)*

Management strategies for pollution prevention and waste minimisation; Wastewater treatment processes applicable to industrial effluents including: flow equalisation, neutralisation, oil removal, metal removal, biological treatment processes; Application of wastewater treatment technologies to industrial effluents; and Sludge handling. (Total tuition time: ± 45 hours)

ADVANCED WATER TREATMENT III (WTR117V) 1 X 3-HOUR PAPER *(Module custodian: Department of Environmental, Water and Earth Sciences)*

Understanding of different treatment methods used to treat water and wastewater, which include flocculation, flotation, sedimentation, adsorption, ion exchange, reverse osmosis, gas transfer, advanced disinfection techniques membrane technology and chemical precipitation. (Total tuition time: ± 64 hours)

D

DECENTRALISED WATER AND SANITATION III (DWS117V) 1 X 3-HOUR PAPER *(Module custodian: Department of Environmental, Water and Earth Sciences)*

Introduction to decentralised water use, Water supply systems, Sanitation systems and Management aspect of DWSS. (Total tuition time: ± 54 hours)

G

GEOGRAPHIC INFORMATION SYSTEM I (GIW117V) 1 X 3-HOUR PAPER *(Module custodian: Department of Environmental, Water and Earth Sciences)*

Introduction to GIS, data management and processing systems, data input and preparation, coordinate systems, map projections and Spatial data models. (Total tuition time: ± 40 hours)

I**INTEGRATED URBAN/RURAL WATER AND SANITATION
RESEARCH PROJECT III (PIU107V)****PROJECT ASSESSMENT****(Module custodian: Department of Environmental, Water and Earth Sciences)**

Compiling an integrated urban/rural masterplan for water supply and sanitation. Introduction, preparation of Masterplan for Water Supply and Sanitation, technical report, presentation. (Total tuition time: not available)

INTRODUCTION TO RESEARCH (RWS117V)**CONTINUOUS ASSESSMENT****(Module custodian: Department of Environmental, Water and Earth Sciences)**

Demonstrate detailed knowledge of and to evaluate the key terms, concepts, facts, principles, rules and theories of: literature review, research competencies, scientific writing skills and communication. (Total tuition time: ± 52 hours)

L**LABORATORY MANAGEMENT II (LBG117V)****1 X 3-HOUR PAPER****(Module custodian: Department of Environmental, Water and Earth Sciences)**

General laboratory management (with emphasis on management of laboratory resources, safety and productivity, problem solving and decision making); Laboratory personnel management (documentation and personnel management); Laboratory financial management (financial management to control laboratory costs); Quality and productivity (quality management systems, continuous quality improvement, evaluation of quality management system and customer satisfaction). (Total tuition time: ± 40 hours)

W**WATER ANALYSIS III (WAN107V)****CONTINUOUS ASSESSMENT****(Module custodian: Department of Environmental, Water and Earth Sciences)**

Application of the following methods on potable water and wastewater, industrial effluents and mine water samples: Atomic Spectroscopy, Chromatographic and Electrophoretic Methods, Water Softening, Breakpoint Chlorination, Biological Oxygen Demand (BOD), Introduction to Molecular Biology, Molecular Laboratory Techniques. (Total tuition time: ± 73 hours)

WATER CHEMISTRY III (WCH117V)**1 X 3-HOUR PAPER****(Module custodian: Department of Environmental, Water and Earth Sciences)**

Atomic and Molecular Spectroscopy: Atomic Absorption Spectroscopy (AAS), Flame Photometer, Ultraviolet-Visible (UV) and Infrared Spectrophotometry, Fourier Transform Infrared (FTIR) Spectroscopy, Chromatographic and Electrophoretic Methods, Selecting an Analytical Method and Checking the Correctness of Analysis Results. (Total tuition time: ± 45 hours)

WATER DISTRIBUTION AND WASTEWATER COLLECTION III (WCD117V)**1 X 3-HOUR PAPER****(Module custodian: Department of Environmental, Water and Earth Sciences)**

Knowledge regarding the general principles and practices of water distribution and wastewater collection. The module focuses on understanding the hydraulics of water distribution and wastewater collection networks operation, maintenance, and designing of distribution systems/wastewater collection networks. (Total tuition time: ± 34 hours)

WATER RESOURCES MANAGEMENT II (WRM117V)**1 X 3-HOUR PAPER****(Module custodian: Department of Environmental, Water and Earth Sciences)**

Policy, legislation and institutional framework; Evaluation of regional institutions; Environmental sustainability and water resources management; Framework for mainstreaming the Environment in Water Resources Management; Water quality management and pollution control; and Water and economy. (Total tuition time: ± 36 hours)

WATER UTILITY MANAGEMENT II (WUM117V)**1 X 3-HOUR PAPER****(Module custodian: Department of Environmental, Water and Earth Sciences)**

Maintenance management. Principles of Total Quality Management. Principles of Project Management. Ethics for professionals. Cost recovery. (Total tuition time: ± 42 hours)

