

## ADVANCED CERTIFICATE IN WATER TREATMENT

Qualification code: ACWT21- NQF Level 6 (120 credits)

SAQA ID: 109959, CHE NUMBER: H/H16/E111CAN

Campus where offered:

Arcadia Campus

### REMARKS

a. *Admission requirement(s):*

A Higher Certificate in Water Treatment, **or** an equivalent qualification at NQF Level 5 with a minimum of 120 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. Applicants will be evaluated based on the marks obtained in the previous qualification and/or work experience.

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 the qualification:*

January only.

e. *Presentation:*

Block-mode classes offered over a period of two years.

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.

### CURRICULUM

#### FIRST YEAR

CODE	MODULE	NQF-L	CREDIT
WAN106A	Water Analysis I	(6)	(21)
WCH106A	Water Chemistry I	(6)	(21)
WPM106A	Water Plant Management I	(6)	(18)
TOTAL CREDITS FOR THE FIRST YEAR:			<b>60</b>

#### SECOND YEAR

CODE	MODULE	NQF-L	CREDIT
WAO106A	Water Operations I	(6)	(12)
WLG106A	Water Legislation	(6)	(12)



WTR106A	Water Treatment II	(6)	(18)
WWT106A	Wastewater Treatment II	(6)	(18)
TOTAL CREDITS FOR THE SECOND YEAR:		<b>60</b>	
TOTAL CREDITS FOR THE QUALIFICATION:		<b>120</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. At time of publication, the syllabus content was defined as follows:

### W

#### **WASTEWATER TREATMENT II (WWT106A) 1 X 3-HOUR PAPER**

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

Characteristics of nutrients in domestic wastewater, advanced wastewater treatment processes: biological nutrient removal including nitrification, denitrification and enhanced phosphate removal and chemical phosphate removal, tertiary wastewater treatment including wetland treatment, sludge treatment processes including: thickening, stabilisation, conditioning and dewatering. Sludge management and utilisation. (Total tuition time: ± 180 hours)

#### **WATER ANALYSIS I (WAN106A) PRACTICAL EVALUATION**

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

Application of the following methods on potable water, wastewater, industrial effluents and mine water samples: preparation and standardisation of solutions, physical parameters, titrimetric analysis, gravimetric analysis, colorimetric analysis and chemical dosages. (Total tuition time: ± 210 hours)

#### **WATER CHEMISTRY I (WCH106A) 1 X 3-HOUR PAPER**

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

Introduction: Chemical equations, type of chemical reactions, calculations from chemical reaction equations, solutions and concentrations, chemical equilibrium and thermodynamics, factors affecting chemical equilibrium. Acid/base equilibria. Solubility equilibria. Oxidation-reduction equilibria. General principles of the chemical water analysis: sample preparation, titrimetric, gravimetric, turbidity, conductivity, pH, colour, tastes and odours. (Total tuition time: ± 120 hours)

#### **WATER LEGISLATION (WLG106A) 1 X 3-HOUR PAPER**

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

Introduction and background to legislation. National Water Act, 1998 (Act No. 36 of 1998). Water Services Act, 1997 (Act No. 108 of 1997). Blue and green drop certification. Water safety and wastewater risk abatement plan. (Total tuition time: ± 120 hours)

#### **WATER OPERATIONS I (WAO106A) 1 X 3-HOUR PAPER**

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

Water treatment plant safety; sampling and monitoring of unit processes; chemical handling and dosing; efficiency of each unit operation/process and compliance of effluent/product water with standards. Estimation of treatment costs. (Total tuition time: ± 120 hours)

#### **WATER PLANT MANAGEMENT I (WPM106A) 1 X 3-HOUR PAPER**

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

Principles of general management, human resource management, employment relations and labour legislation, managing people and teams. Operations management. Inventory management, Safety management. Budgeting (types of budgets, drafting an annual budget, the use of budgeting to control costs). (Total tuition time: ± 180 hours)

**WATER TREATMENT II (WTR106A)**

**1 X 3-HOUR PAPER**

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

Water stabilisation, Water softening. Desalination. Ion exchange. Iron and manganese removal. Fluoridation and Defluoridation. Water treatment residues. Water storage. Quality control in distribution systems (Theoretical conditions for complete attainment of water quality control, causes of poor water quality in distribution systems, operation and maintenance practices). (Total tuition time: ± 180 hours)

