

# University of Pretoria Yearbook 2021

## BScHons Applied Science Water Utilisation (12243014)

**Department** Chemical Engineering

**Minimum duration of study** 1 year

**Total credits** 128

**NQF level** 08

### Programme information

The BScHons (Applied Science) degree is conferred by the following academic departments:

- Chemical Engineering
- Civil Engineering
- Industrial and Systems Engineering
- Materials Science and Metallurgical Engineering
- Mechanical and Aeronautical Engineering
- Mining Engineering

Any specific module is offered on the condition that a minimum number of students are registered for the module, as determined by the relevant head of department and the Dean. Students must consult the relevant head of department in order to compile a meaningful programme, as well as on the syllabi of the modules. The relevant departmental postgraduate brochures must also be consulted.

### Admission requirements

1. Three-year BSc (or equivalent) degree (in Natural Sciences)  
with a cumulative weighted average of at least 60% for the degree  
and  
a full year of Mathematics, Physics and Chemistry passed at least at first-year level (modules entitled "Introductory", "Elementary" or "Basic" will not be regarded as acceptable)  
or  
relevant BTech qualification excluding the National Diploma; i.e. one offered by a department of chemical engineering at a university of technology in South Africa  
with a cumulative weighted average of at least 75% for the degree  
and  
no modules failed in the BTech degree  
or  
four-year engineering-based university degree not recognised by ECSA for registration as a professional engineer

and

a full year of Mathematics, Physics and Chemistry passed at least at first-year level (modules entitled “Introductory”, “Elementary” or “Basic” will not be regarded as acceptable)

or

BEng degree awarded by the University of Pretoria

or

relevant four-year bachelor’s degree in engineering that the Engineering Council of South Africa (ECSA) regards as acceptable for registration as a candidate engineer and for eventual registration as a professional engineer and for eventual registration as a professional engineer

2. An entrance examination may be required

3. Comprehensive intellectual CV

## Other programme-specific information

A limited number of appropriate postgraduate modules from other departments are allowed. Not all modules listed are presented each year. Please consult the departmental postgraduate brochure.

## Curriculum: Final year

Minimum credits: 128

### Core modules

#### Industrial waste engineering 787 (WAI 787)

|                        |                                  |
|------------------------|----------------------------------|
| Module credits         | 32.00                            |
| NQF Level              | 08                               |
| Prerequisites          | Admission to relevant programme. |
| Contact time           | 32 contact hours per semester    |
| Language of tuition    | Module is presented in English   |
| Department             | Chemical Engineering             |
| Period of presentation | Semester 2                       |

##### Module content

Identification of source materials, physical and chemical properties of waste. Release and transport mechanisms from source to air, groundwater, soil. Primary pathways of contaminants including sorption, volatilisation, biotic and abiotic transformations. Toxicology: absorption, distribution, biochemical transformation, and secretion of chemicals. Acute and chronic toxicity quantification and evaluation of risk. Hazard identification, exposure assessment, toxicity assessment and risk characterisation. Minimum requirements for the handling, classification and disposal of hazardous waste. Minimum requirements for waste disposal by landfill. Minimum requirements for water monitoring at waste management facilities. Recycling and resource management. Waste prevention, minimisation and optimisation.

#### Biological water treatment 787 (WBW 787)

|                        |                                  |
|------------------------|----------------------------------|
| Module credits         | 32.00                            |
| NQF Level              | 08                               |
| Prerequisites          | Admission to relevant programme. |
| Contact time           | 32 contact hours per semester    |
| Language of tuition    | Module is presented in English   |
| Department             | Chemical Engineering             |
| Period of presentation | Semester 1                       |

#### Chemical water treatment 787 (WCW 787)

|                     |                                |
|---------------------|--------------------------------|
| Module credits      | 32.00                          |
| NQF Level           | 08                             |
| Prerequisites       | No prerequisites.              |
| Contact time        | 32 contact hours per semester  |
| Language of tuition | Module is presented in English |



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|-------------------|----------------------|
| <b>Department</b> | Chemical Engineering |
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|                               |            |
|-------------------------------|------------|
| <b>Period of presentation</b> | Semester 1 |
|-------------------------------|------------|

### Water quality management and research 787 (WQB 787)

|                       |       |
|-----------------------|-------|
| <b>Module credits</b> | 32.00 |
|-----------------------|-------|

|                  |    |
|------------------|----|
| <b>NQF Level</b> | 08 |
|------------------|----|

|                     |                               |
|---------------------|-------------------------------|
| <b>Contact time</b> | 32 contact hours per semester |
|---------------------|-------------------------------|

|                            |                                |
|----------------------------|--------------------------------|
| <b>Language of tuition</b> | Module is presented in English |
|----------------------------|--------------------------------|

|                   |                      |
|-------------------|----------------------|
| <b>Department</b> | Chemical Engineering |
|-------------------|----------------------|

|                               |                          |
|-------------------------------|--------------------------|
| <b>Period of presentation</b> | Semester 1 or Semester 2 |
|-------------------------------|--------------------------|

#### Module content

Water quality parameters: physical, chemical, biological, microbiological; Units of expression; Evaluation of parameters; Methods of analysis and practical laboratory analyses; Water quality interpretation, evaluation and assessment, water quality guidelines and requirements for domestic, industrial, agricultural, ecological, recreational requirements; Limnology and water quality in rivers and lakes; Surface water modelling; Ground water quality and assessment; Regulatory aspects including all relevant legislation; Integrated environmental management, integrated pollution control; Procedures to assess effluent discharge impacts; and Water quality management, policies and procedures, role of catchment management agencies, and catchment management plans.

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The information published here is subject to change and may be amended after the publication of this information. The [General Regulations \(G Regulations\)](#) apply to all faculties of the University of Pretoria. It is expected of students to familiarise themselves well with these regulations as well as with the information contained in the [General Rules](#) section. Ignorance concerning these regulations and rules will not be accepted as an excuse for any transgression.