

# University of Pretoria Yearbook 2021

## BEngHons Water Utilisation Engineering (12240103)

**Department** Chemical Engineering

**Minimum duration of study** 1 year

**Total credits** 128

**NQF level** 08

### Programme information

The curriculum is determined in consultation with the relevant heads of departments. A student is required to pass modules to the value of at least 128 credits.

The degree is awarded on the basis of examinations only.

### Admission requirements

1. 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
2. An entrance examination may be required
3. Comprehensive intellectual CV

### Other programme-specific information

A limited number of appropriate modules from other departments and from other divisions of Chemical Engineering are allowed.

Not all modules listed are presented each year. Please consult the departmental postgraduate brochure.

### Examinations and pass requirements

- i. The examination in each module for which a student is registered, takes place during the normal examination period after the conclusion of lectures (i.e. October/November or May/June).
- ii. A student registered for the honours degree must complete his or her studies within two years (full-time), or within three years (part-time) after first registration for the degree: Provided that the Dean, on recommendation of the relevant head of department, may approve a stipulated limited extension of this period.
- iii. A student must obtain at least 50% in an examination for each module where no semester or year mark is required. A module may only be repeated once.

- iv. In modules where semester or year marks are awarded, a minimum examination mark of 40% and a final mark of 50% is required.
- v. No supplementary or special examinations are granted at postgraduate level.

## Pass with distinction

A student passes with distinction if he or she obtains a weighted average of at least 75% in the first 128 credits for which he or she has registered (excluding modules which were discontinued timeously). The degree is not awarded with distinction if a student fails any one module (excluding modules which were discontinued timeously).



## Curriculum: Final year

Minimum credits: 128

### Core modules

#### Principles of environmental engineering 780 (CEM 780)

|                        |                                  |
|------------------------|----------------------------------|
| 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                       |

##### Module content

Engineering principles for environmental preservation and management, pollution control, life-cycle assessment, interactions in the macro and micro-environments, global and ecological systems, social-economic factors in environmental systems, predictive models for the current and future environment, environmental engineering as the driver of economic systems.

#### Industrial waste engineering 780 (WAI 780)

|                        |                                  |
|------------------------|----------------------------------|
| 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 or 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 780 (WBW 780)

|                |       |
|----------------|-------|
| Module credits | 32.00 |
|----------------|-------|



|                               |                                  |
|-------------------------------|----------------------------------|
| <b>NQF Level</b>              | 08                               |
| <b>Prerequisites</b>          | Admission to relevant programme. |
| <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                       |

### **Chemical water treatment 780 (WCW 780)**

|                               |                                  |
|-------------------------------|----------------------------------|
| <b>Module credits</b>         | 32.00                            |
| <b>NQF Level</b>              | 08                               |
| <b>Prerequisites</b>          | Admission to relevant programme. |
| <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                       |

### **Water quality management and research 780 (WQB 780)**

|                               |                                  |
|-------------------------------|----------------------------------|
| <b>Module credits</b>         | 32.00                            |
| <b>NQF Level</b>              | 08                               |
| <b>Prerequisites</b>          | Admission to relevant programme. |
| <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         |

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.