

## BACCALAUREUS TECHNOLOGIAE: CHEMISTRY

Qualification code: BTCH02 - NQF Level 7

Campus where offered: Arcadia Campus

### Important notification to new applicants:

Students who intend to enrol for this qualification should take note that no new applications will be accepted as from 2020. Potential students are advised to consult the University's website for possible new qualifications which are aligned with the newly-implemented Higher Education Qualification Sub-Framework.

### REMARKS

- a. *Admission requirement(s):*  
A National Diploma: Analytical Chemistry with Physics II and Mathematics II or an NQF Level 6 bachelor's degree in Chemistry from a South African university.  
  
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:*  
Selection is based on a written assessment administered by the departmental selection committee.
- c. *Minimum duration:*  
One year.
- d. *Presentation:*  
Day and block-based classes offered over a period of two years.
- e. *Intake for the qualification:*  
January and July.
- f. *Exclusion and readmission:*  
See Chapter 2 of Students' Rules and Regulations.
- g. *Recognition of Prior Learning (RPL), equivalence and status:*  
See Chapter 30 of Students' Rules and Regulations.
- h. *Practicals:*  
It is compulsory for students to attend 100% of the practical classes. Students must pass the practical component of a subject to be admitted to the examination.
- i. *Textbooks:*  
Textbooks and other educational material will be required.
- j. *Personal protective equipment:*  
Specific safety wear is compulsory (where applicable), and students must purchase it themselves.
- k. *Subject credits:*  
Subject credits are shown in brackets after each subject.

### CURRICULUM

#### FIRST SEMESTER

CODE	SUBJECT	CREDIT
ANC411T	Analytical Chemistry IV	(0,200)



CPJ401T	Chemistry Project IV (offered in both semesters)	(0,200)
CPJ401R	Chemistry Project IV (re-registration) (offered in both semesters)	(0,000)
OCH421T	Organic Chemistry IV	(0,200)
TOTAL CREDITS FOR THE SEMESTER:		0,600

## SECOND SEMESTER

CODE	SUBJECT	CREDIT
ICH421T	Inorganic Chemistry IV	(0,200)
PCB421T	Physical Chemistry IV	(0,200)
TOTAL CREDITS FOR THE SEMESTER:		0,400
TOTAL CREDITS FOR THE QUALIFICATION:		1,000

## SUBJECT 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 subject. On 01 August 2018, the syllabus content was defined as follows:

### A

#### **ANALYTICAL CHEMISTRY IV (ANC411T)**

**2 X 3-HOUR PAPER**

*(Subject custodian: Department of Chemistry)*

Advanced atomic spectroscopic techniques. Instrumentation, applications and quantitative analysis of: Atomic absorption spectrometry: X-ray fluorescence (XRF) and electrothermal atomisation (ETAAS). Atomic emission spectrometry: inductively coupled plasma (ICP) atomic emission spectrometry (AES) and ICP-mass spectrometry (MS). Specialised sample introduction, advanced background correction, applications and quantitative analysis. Molecular spectroscopy: UV-Vis and IR spectroscopy. Chromatography: HPLC, HPLC-MS, GC, GC-MS. Electroanalysis: voltammetry, ASV. Thermal analysis: DSC and DTA. Automated analysis: flow injection analysis. Practical: experimental techniques related to the theory. (Total tuition time: ± 128 hours)

### C

#### **CHEMISTRY PROJECT IV (CPJ401T/R)**

**PROJECT ASSESSMENT**

*(Subject custodian: Department of Chemistry)*

This project should be conducted with the cooperation of the student's employer (or a suitable alternative, in the case of private students). The project must, as far as possible, be of an applied nature. Introduction to research methodology. (Total tuition time: Determined per individual - Research)

### I

#### **INORGANIC CHEMISTRY IV (ICH421T)**

**1 X 3-HOUR PAPER**

*(Subject custodian: Department of Chemistry)*

Molecular symmetry. Ligand substitution reactions. Molecular orbital theory of diatomic and polyatomic molecules. Electron absorption spectroscopy. Organometallic chemistry. Homogeneous catalysis. Fischer-Tropsch synthesis. Practical: experiments related to the theory. (Total tuition time: ± 128 hours)

### O

#### **ORGANIC CHEMISTRY IV (OCH421T)**

**1 X 3-HOUR PAPER**

*(Subject custodian: Department of Chemistry)*

Introduction to spectroscopic methods of analyses and structure elucidation of organic molecules (UV, IR, MS, H-NMR, C-NMR), synthetic organic chemistry (addition, elimination and substitution reactions), industrial organic chemistry polymer chemistry. Practical organic chemistry. (Total tuition time: ± 128 hours)



**PHYSICAL CHEMISTRY IV (PCB421T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Chemistry)**

Thermodynamics. Electrochemistry, electrostatics, Butler-Volmer equation, corrosion, Tafel plots, Pourbaix diagrams. Surface chemistry. Kinetics. Practical: experiments related to the theory. (Total tuition time: ± 128 hours)

