

# BACCALAUREUS TECHNOLOGIAE: ENGINEERING: METALLURGY

## Qualification code: BTMY02 - NQF Level 7

Campus where offered: Pretoria 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: Engineering: Metallurgy (with Hydrometallurgy or Mineral Processing) or a NQF Level 6 (old NQF and the new HEQF) qualification in Metallurgical Engineering or closely related field, obtained from an accredited South African university.

Preference will be given to candidates with an average of 60% or more. Candidates who do not meet the 60% requirement will be evaluated by the Department and may be requested to provide a portfolio of relevant work experience (excluding P1 and P2) in order to be considered for selection. National Diploma students at TUT who are busy with their final semester (P2) and do not have more than one theoretical subject outstanding may also apply for admission and may be considered based on the average of their completed theoretical subjects, but admission will be subject to the successful completion of the National Diploma and the Faculty's Student Enrolment Plan (SEP).

Holders of any other equivalent South African or international qualifications may also be considered, but will have to apply at least six months in advance for the recognition of such qualifications. Candidates will be required to submit an evaluation of their qualifications by the South African Qualifications Authority (SAQA) with their application forms for admission. The University and/or Faculty reserves the right to assess these qualifications and the applicant's suitability and/or competence for admission to the programme. Depending on the nature of such an equivalent qualification, the completion of certain additional subjects may be required. Proof of English proficiency may be required.

b. *Selection criteria:*

Due to capacity constraints, candidates will be selected based on academic performance and/or work experience. Selection will be done after the closing date for applications. Please note that meeting the minimum requirements does not guarantee admission.

c. *Minimum duration:*

One year.

d. *Presentation:*

Evening classes. Classes and assessments may take place on Friday afternoons and/or Saturdays.

e. *Intake for the qualification:*

January only.

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 practicals. Students must pass the practical component of a subject to be admitted to the examination.



- i. *Personal protective equipment:*  
Students are required to wear laboratory coats and other applicable protective gear during practicals. Students must purchase their own safety equipment and clothing.
  - j. *Textbooks:*  
Additional textbooks and other educational material will be required.
  - k. *Subject credits:*  
Subject credits are shown in brackets after each subject.
- Key to asterisk:  
\* Information does not correspond to information in Report 151.  
(Deviations approved by the Senate in May 2007.)

## CURRICULUM

### ATTENDANCE

CODE	SUBJECT	CREDIT
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#### FIRST SEMESTER

PJM400T	Project: Metallurgy IV (year subject)	(0,250)
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**plus three\* of the following subjects (second-semester subjects included):**

ANP401T	Applied Mineral Processing IV	(0,250)
ENF401T	Extraction of Non-Ferrous Metals IV	(0,250)

#### SECOND SEMESTER

FAT411T	Ferro-Alloy Technology IV	(0,250)
MGH301T	Metallurgical Thermodynamics III*	(0,250)

TOTAL CREDITS FOR THE QUALIFICATION: **1,000**

## SUBJECT/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 subject. On 13 October 2017, the syllabus content was defined as follows:

### A

#### APPLIED MINERAL PROCESSING IV (ANP401T)

#### CONTINUOUS ASSESSMENT

*(Subject custodian: Department of Chemical, Metallurgical and Materials Engineering)*

Project that consists of a mineral processing plant design. Cost estimation. Metallurgical plant commissioning. (Total tuition time: ± 60 hours)

### E

#### EXTRACTION OF NON-FERROUS METALS IV (ENF401T)

#### 1 X 3-HOUR PAPER

*(Subject custodian: Department of Chemical, Metallurgical and Materials Engineering)*

Extraction of PGMs, extraction reaction kinetics and thermodynamics. Extraction of vanadium, uranium, titanium and nickel by using both pyro- and hydro-metallurgy. Applied thermodynamics. Pyro-metallurgy. Hydro-metallurgy. Electro-metallurgy. Project. (Total tuition time: ± 60 hours)



**F****FERRO-ALLOY TECHNOLOGY IV (FAT411T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Chemical, Metallurgical and Materials Engineering)**

Pyro-metallurgy. Stainless steel production. Non-ferrous metals. Mathematical modelling. (Total tuition time: ± 60 hours)

**M****METALLURGICAL THERMODYNAMICS III (MGH301T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Chemical, Metallurgical and Materials Engineering)**

Application of the thermodynamics laws to metallurgical processes including extraction and refining of metals, electrochemistry, interfacial phenomena, and corrosion. Topics will include, review of thermodynamics laws and functions, free energy and phase equilibria, solution thermodynamics, kinetics of metallurgical reaction systems. (Total tuition time: ± 60 hours)

**P****PROJECT: METALLURGY IV (PJM400T)****PROJECT ASSESSMENT****(Subject custodian: Department of Chemical, Metallurgical and Materials Engineering)**

Students must undertake an experimental examination of an approved physical or extractive metallurgical topic. It must consist of a literature study, planning and execution of experimental work, the interpretation of results and an oral, as well as a written, report. (Total tuition time: ± 60 hours)

