

# BACCALAUREUS TECHNOLOGIAE: COMPUTER SYSTEMS

## Qualification code: BTCY95 - NQF Level 7

Campus where offered: Soshanguve South 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: Computer Systems or an equivalent qualification from a South African university.
- Holders of any other equivalent South African or international qualification may also be considered, but will have to apply about six months in advance for the recognition of such qualifications. Candidates will be required to submit an equivalent of their qualifications by the South African Qualifications Authority (SAQA). The Faculty reserves the right to assess these qualifications and the applicant's suitability/competence for admission to the programme. Proof of English proficiency may be required.
- b. *Selection criteria:*  
Applications are subject to selection.
- c. *Minimum duration:*  
One year.
- d. *Presentation:*  
Day classes offered on Saturdays over a period of one and a half years (please see Rule 8.4.1 of the Students' Rules and Regulations for information on duration).
- 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. *Re-registration:*  
A student may re-register for the subject Project IV only with the permission of the Head of the Department. The purpose of the re-registration is to provide students with an opportunity to complete the Project only, and not to redo it, should they fail the subject.
- i. *Subject credits:*  
Subject credits are shown in brackets after each subject.

## CURRICULUM

### FIRST OR SECOND SEMESTER

CODE	SUBJECT	CREDIT
DBP401T	Database Programming IV	(0,100)
FUM101T	Functional Management	(0,100)
HWD401T	Hardware Design IV	(0,100)



IPR410B	Industrial Project IV (year subject)	(0,200)
IPR411R	Industrial Project IV (re-registration)	(0,000)
NTP401T	New Technology Programming IV (first semester subject)	(0,100)

**plus four of the following subjects. All subjects are offered as determined by the Head of the Department:**

DBA401T	Database Administration IV (second semester subject)	(0,100)
DPC401T	Digital Process Control IV	(0,100)
MMA401T	Mathematical Applications IV	(0,100)
NSY401T	Network Systems IV (second semester subject)	(0,100)
SWS401T	Software Systems IV	(0,100)
TOTAL CREDITS FOR THE QUALIFICATION:		<b>1,000</b>

## 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 23 August 2017, the syllabus content was defined as follows:

### D

#### **DATABASE ADMINISTRATION IV (DBA401T) 1 X 3-HOUR PAPER** (Subject custodian: Department of Computer Science)

An introduction to the management of database systems. Problems in current database administration, as well as possible solutions to those problems, are discussed. The subject focuses on the design of data structures and storage techniques, tuning, distributed systems, database administration and support tools. (Total tuition time: ± 40 hours)

#### **DATABASE PROGRAMMING IV (DBP401T) 1 X 4-HOUR COMPUTER-BASED** (Subject custodian: Department of Computer Science)

The focus is on PL/SQL programming using Oracle 10g/11g as a tool, the content includes PL/SQL architecture, and PL/SQL nested control structures, PL/SQL iterative structures, records, exception handling, PL/SQL tables, explicit cursors, PL/SQL procedures and functions. (Total tuition time: ± 40 hours)

#### **DIGITAL PROCESS CONTROL IV (DPC401T) 1 X 3-HOUR PAPER** (Subject custodian: Department of Computer Systems Engineering)

Review of PLC concepts and design techniques. Advanced PLC methods with applications in process control system design. (Total tuition time: ± 20 hours)

### F

#### **FUNCTIONAL MANAGEMENT (FUM101T) 1 X 3-HOUR PAPER** (Subject custodian: Department of Informatics)

This subject provides concepts and frameworks for understanding the potential impact of Information Technology (IT) on business strategy and performance. The subject focuses on the implications of increased digitisation for defining business strategies and operating models, and explores the roles of both general managers and IT executives in using IT to achieve operational excellence and business agility. On successful completion of this subject, the student will be able to develop an IT Strategy for a digital enterprise; evaluate how IT will shape future businesses and the contribution of enterprise architecture; evaluate the risk and benefits of digitised processes and compare strategically whether to perform those processes internally or externally; assess the impact of globalisation; motivate why some firms are better able to convert their IT investments into business value; and implement steps to ensure effective IT decision making. (Total tuition time: ± 54 hours)



**H****HARDWARE DESIGN IV (HWD401T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Computer Systems Engineering)**

An introduction to the methodology of computer hardware design. The problems of current computer hardware design, as well as possible solutions to these problems, are discussed. The focal points are embedded design, PC design and interfacing, the design of logic devices and the use of software support tools for design. (Total tuition time: ± 20 hours)

**I****INDUSTRIAL PROJECT IV (IPR410B, IPR411R)****CONTINUOUS ASSESSMENT****(Subject custodian: Department of Computer Systems Engineering)**

The first month's contact hours are dedicated to principles of research. Subsequent sessions are followed by the planning, design and implementation of an industrial-related project in which the knowledge acquired in other subjects is applied. (Total tuition time: ± 100 hours).

**M****MATHEMATICAL APPLICATIONS IV (MMA401T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Mathematics and Statistics)**

Advanced mathematical concepts are used in complex analysis and transforms. Complex variables. Complex differentiation. Complex integration. Z-transforms. Complex Fourier series. Fourier transforms. Solution of the wave equations. Matrix analysis (single-input-single-output systems). (Total tuition time: ± 70 hours)

**N****NETWORK SYSTEMS IV (NSY401T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Information Technology)**

Wireless networks, which include spread-spectrum analyses, roaming and hand-over. (Total tuition time: ± 36 hours)

**NEW TECHNOLOGY PROGRAMMING IV (NTP401T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Computer Science)**

AIM/PURPOSE: To expose students to a programming paradigm not covered by typical application design strategies. OBJECTIVES: The student must be able to identify mobile agents from similar technologies, create a mobile agent solution, understand the privacy and security concerns related to mobile agents and theorise on improvements which can be brought to bear on this paradigm. KEY TOPICS: Software agents, Intelligent Agents, AI, Relocatable code, RPC's, RMI's, Process Migration, Execution environments, Killer Apps. (Total tuition time: ± 40 hours)

**S****SOFTWARE SYSTEMS IV (SWS401T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Computer Science)**

The subject focuses on the techniques for maintenance, software configuration management, and software engineering process and software quality. (Total tuition time: ± 40 hours)

