

## NATIONAL DIPLOMA: INFORMATION TECHNOLOGY (Extended curriculum programme with foundation provision) Qualification code: NDITF1 - NQF Level 6

This is not the name of the qualification which will be awarded at the end of a student's studies. The qualification which will be issued will show a field of specialisation and it will be awarded at completion of 3,000 credits.

|                             |   |
|-----------------------------|---|
| Campus where offered:       | Soshanguve South Campus (day classes offered during the week and on Saturdays)<br>eMalahleni Campus - only for applicants who will slot in with the first year of the National Diploma: Information Technology (Field of specialisation: Software Development) (day classes offered during the week and on Saturdays)<br>Polokwane Campus - only for applicants who will slot in with the first year of the National Diploma: Information Technology (Field of specialisation: Software Development) (day classes offered during the week and on Saturdays) |
| Last year of new intake:    | 2019  |
| Teach-out (phase-out) date: | 31 December 2022  |

Students registered for this qualification should complete their studies according to the teach-out date prescribed for the qualification, subject to the stipulations of Regulation 3.1.11 and 3.1.13 in the Students' Rules and Regulations.

Information on phased-out programmes can be obtained from the TUT website, [www.tut.ac.za](http://www.tut.ac.za).

### CURRICULUM

Consult the 2019 Faculty Prospectus for the full contents of the qualification.

#### FIRST YEAR

| CODE                              | SUBJECT  | CREDIT       | PREREQUISITE SUBJECT(S) |
|-----------------------------------|--|--------------|-------------------------|
| <b>FIRST SEMESTER</b>             |  |              |                         |
| FPALS01                           | Foundation Academic and Language Skills                | (0,125)      |                         |
| FPITM01                           | Foundation ICT Mathematical Skills                     | (0,125)      |                         |
| TOTAL CREDITS FOR THE SEMESTER:   |  | 0,250        |                         |
| <b>SECOND SEMESTER</b>            |  |              |                         |
| FPIDS01                           | Foundation Information and Software Development Skills | (0,125)      |                         |
| FPPRS01                           | Foundation Presentation and Reporting Skills           | (0,125)      |                         |
| TOTAL CREDITS FOR THE SEMESTER:   |  | 0,250        |                         |
| TOTAL CREDITS FOR THE FIRST YEAR: |  | <b>0,500</b> |                         |

#### SECOND YEAR

After completion of all first-year subjects.

| CODE                  | SUBJECT                   | CREDIT  | PREREQUISITE SUBJECT(S) |
|-----------------------|---------------------------|---------|-------------------------|
| <b>FIRST SEMESTER</b> |                           |         |                         |
| CFS10AT               | Computing Fundamentals IA | (0,062) |                         |



|         |                         |         |
|---------|-------------------------|---------|
| CGS10AT | Computing Systems IA    | (0,062) |
| CMK10AT | Computing Skills IA     | (0,063) |
| DSO17AT | Development Software IA | (0,063) |

TOTAL CREDITS FOR THE SEMESTER: 0,250

## SECOND SEMESTER

|         |                           |         |                         |
|---------|---------------------------|---------|-------------------------|
| CFS10BT | Computing Fundamentals IB | (0,062) |                         |
| CGS10BT | Computing Systems IB      | (0,062) |                         |
| CMK10BT | Computing Skills IB       | (0,063) |                         |
| DSO17BT | Development Software IB   | (0,063) | Development Software IA |

TOTAL CREDITS FOR THE SEMESTER: 0,250

TOTAL CREDITS FOR THE SECOND YEAR: **0,500**

## THIRD AND FOURTH YEARS

**A Student will register for any of the following fields of specialisation (see applicable departments):**

- National Diploma: Information Technology: Business Applications
- National Diploma: Information Technology: Communication Networks
- National Diploma: Information Technology: Intelligent Industrial Systems
- National Diploma: Information Technology: Multimedia
- National Diploma: Information Technology: Software Development
- National Diploma: Information Technology: Support Services
- National Diploma: Information Technology: Technical Applications (for repeaters only)
- National Diploma: Information Technology: Web and Application Development (for repeaters only)

TOTAL CREDITS FOR THE THIRD AND FOURTH YEARS: **2,000**

TOTAL CREDITS FOR THE QUALIFICATION: **3,000**

## 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. At time of publication, the syllabus content was defined as follows:

### C

**COMPUTING FUNDAMENTALS IA (CFS10AT) 1 X 3-HOUR PAPER**  
*(Subject custodian: End User Computing Unit)*

The student is introduced to the fundamentals of computers and information systems, computer organisation and data processing. (Total tuition time: ± 90 hours)

**COMPUTING FUNDAMENTALS IB (CFS10BT) 1 X 3-HOUR PAPER**  
*(Subject custodian: End User Computing Unit)*

The basic concepts of system development, data management, management information systems, ethics, privacy and security, purchasing and maintaining microcomputers, number systems and binary logic. (Total tuition time: ± 54 hours)



**COMPUTING SKILLS IA (CMK10AT)****1 X 3-HOUR PAPER****(Subject custodian: Department of Informatics)**

This subject aims to equip the student with fundamentals of IT Soft skills for both the ICT industry and other working environments upon which a successful career can be built. In addition, it will also improve the student's relation and interaction abilities needed within the dynamic ICT industry. The student who successfully completes this subject must identify and implement various thinking skills and learning styles, state the legal and cultural sensitivity issues of IT, identify and explain the variety of soft skills including study skills and strategies, research, presentation as well as communication skills, and identify and explain interpersonal skills in relation to character, time management and team building dynamics and conflict resolution. (Total tuition time: ± 60 hours)

**COMPUTING SKILLS IB (CMK10BT)****1 X 3-HOUR PAPER****(Subject custodian: Department of Informatics)**

The aim of this subject is to extend the skills in CMK10 AT so as to improve on student's relations and interaction capabilities that will be applicable within the dynamic ICT industry and the external environment. The student who successfully completes this subject must describe, distinguish and portray changes in terms of personality profiles, emotional intelligence, self-management, stress management and relationship management; identify and apply the notion of team dynamics; deal with conflict and understand the dynamics behind change; report on effective correspondence; produce meeting documents; conduct meetings; and demonstrate the required communication skills to develop interpersonal business relationships through by means of group work. (Total tuition time: ± 60 hours)

**COMPUTING SYSTEMS IA (CGS10AT)****1 X 3-HOUR PAPER****(Subject custodian: Department of Computer Systems Engineering)**

Introduction to hardware, operating systems, motherboards, processors, memory, hard drives, installing and supporting I/O devices, multimedia devices and mass storage, PC maintenance and troubleshooting strategies, and installing and maintenance of Windows. (Total tuition time: ± 54 hours)

**COMPUTING SYSTEMS IB (CGS10BT)****1 X 3-HOUR PAPER****(Subject custodian: Department of Information Technology)**

Provides the foundation of data communications and local area management, OSI model and/or TCP/IP protocol stack model, data transmission principles, media, major protocols, topologies, routing methods, introduction to networking principles and network operating system fundamentals. (Total tuition time: ± 54 hours)

**D****DEVELOPMENT SOFTWARE IA (DSO17AT)****1 X 4-HOUR COMPUTER-BASED****(Subject custodian: Department of Computer Science)**

Aim: To learn to solve problems using the basic programming principles, and then practically apply that knowledge in C++. Objectives: To enable the student to understand problems and know how to solve them by using a computer; understand the general concepts and arithmetic used in programming, sequence, selection and iteration control structures and a variety of built-in data types, including strings. The students are exposed to the concept of event-driven programming in a visual programming environment focusing on the development of graphical user interfaces to solve real-life practical programming problems. (Total tuition time: ± 72 hours)

**DEVELOPMENT SOFTWARE IB (DSO17BT)****1 X 4-HOUR COMPUTER-BASED****(Subject custodian: Department of Computer Science)**

Aim: To expand on the already mastered knowledge obtained in Development Software IA. Objectives: To broaden the programming skills base of the student by adding the following topics: write an algorithm and applying it in VB.NET/C++ using functions and sub-procedures, and write an algorithm containing one-dimensional arrays. String manipulation will be continued as well as a brief introduction to text file processing. (Total tuition time: ± 72 hours)



**FOUNDATION ACADEMIC AND LANGUAGE SKILLS (FPALS01) 1 X 3-HOUR PAPER**  
**(Subject custodian: ICT First Years' and Foundation Unit)**

Aim/Purpose: To provide a sound foundation for, and to enhance basic language proficiency and academic skills necessary for reading, writing and studying in an ICT environment. Objectives: Analyse, adjust and improve study skills. Apply research skills in assignments. Interpret and reflect on all available and relevant resource material in proper English. Communicate in a comprehensible and clear manner in both a general and subject-specific manner showing cultural sensitivity. Demonstrate intermediate-level proficiency in oral and written English. Key topics: Managing adjustment problems: student life, coping with diversity and change, time management, setting goals and note taking, summarising techniques, English vocabulary and grammar, reading and writing skills. (Total tuition time: ± 84 hours)

**FOUNDATIONAL ICT MATHEMATICAL SKILLS (FPITM01) 1 X 3-HOUR PAPER**  
**(Subject custodian: ICT First Years' and Foundation Unit)**

Aim/Purpose: The focus of the subject is to ensure students have the necessary mathematical and numeracy skills needed for ICT. Students will also be introduced to abstract logical reasoning and computational thinking skills. These skills are further developed through practical exercises relating to various day-to-day problem-solving activities. Objectives: To develop the problem solving skills as well as the computational thinking skills of the student and therefore prepare the student for the programming subjects to follow. Key topics: The number system and basic arithmetic; introduction to algebra: expressions and equations; fractions and decimals, algebraic fractions; percentages; ratio and rate; perimeter, area and volume; measuring systems and units; time, distance and speed; Cartesian plane and coordinates; algebraic functions; matrices. (Total tuition time: ± 96 hours)

**FOUNDATION INFORMATION AND SOFTWARE DEVELOPMENT SKILLS (FPIDS01) 1 X 3-HOUR PAPER**

**(Subject custodian: ICT First Years' and Foundation Unit)**

Aim/Purpose: To prepare students for computer programming by developing logical, critical and lateral thinking skills. Objectives: To develop the students' logical thinking and problem-solving skills as preparation for programming. Abstract logical reasoning and computational thinking skills will therefore be used to solve problems. Key topics: Brain teasers as introduction to problem-solving; analysis and solving of word problems; solving of various day-to-day problems; introduction to algorithmic problem solving - sequence, basic selection, basic repetition steps; statistics; financial matters. (Total tuition time: ± 96 hours)

**FOUNDATION PRESENTATION AND REPORTING SKILLS (FPPRS01) 1 X 3-HOUR PAPER**  
**(Subject custodian: ICT First Years' and Foundation Unit)**

Aim/Purpose: To provide a sound foundation for, and to enhance basic language proficiency skills necessary for reading and writing in an ICT environment with specific reference to presentations and reports. Objectives: Preparation of effective and professional reports and PowerPoint presentations. Interpret, relate and reflect on all available and relevant resource material in proper English. Communicate orally in a comprehensible and clear manner specifically when presenting various IT topics, demonstrate intermediate-level proficiency in written English. Key topics: Conflict management; problem solving; interpersonal relationships; stress management; communication theory; listening skills; public speaking and presentation skills; and report writing. (Total tuition time: ± 84 hours)

