## 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.**

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| Campus where offered: | Soshanguve South Campus<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)<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) |

**Important notification to new applicants:**
No new applications will be accepted as from 2020. Students who enrolled for this qualification for the first time in 2017 (or thereafter), should note that it will not be possible to continue with any Baccalaureus Technologiae as from 2020, since it is being replaced by qualifications aligned with the newly-implemented Higher Education Qualification Sub-Framework. Potential students are advised to consult the University's website for any new qualifications which might not be published in this Prospectus.

## REMARKS

**Important information for the prospective student:**

- The admission requirements as indicated below will be the only criteria considered for admission to the National Diploma: Information Technology (Extended Curriculum).
- Applicants who have already enrolled at another university, university of technology or SAQA-accredited equivalent, and who meet the minimum requirements, may officially apply and having been accepted, subject exemptions may be granted (this is not applicable to subjects from the foundation year). However, any qualification or subjects passed at other institutions do not imply or automatically guarantee admission to the programmes.
- Applicants who do not meet the minimum requirements, but completed other qualifications or are currently studying at other institutions, may formally apply for recognition of prior learning (RPL) and prepare a portfolio according to the RPL rules and regulations of TUT. The portfolio will be evaluated by the Faculty EXCO and approved by the SCRPL and Senate.
  This process may take up to six months. RPL is also applicable in the instances where applicants completed other qualifications or, are currently studying at other institutions, qualify for the extended programme (NDITF1), yet would like to be accepted into the mainstream programme (NDIT12).

a. *Admission requirement(s) and selection criteria:*

- **FOR APPLICANTS WHO OBTAINED A SENIOR CERTIFICATE BEFORE 2008:**

  **Admission requirement(s):**
  A Senior Certificate or an equivalent qualification with a 50% pass in Mathematics at Standard Grade (SG).

  **Recommended subject(s):**
  Computer Science and Physical Science.

  **Selection criteria:**
  Initial selection is based on school results. Applicants are assessed according to the following formula:

| SYMBOL | HG | SG |
|---|---|---|
| A | 5 | 4 |
| B | 4 | 3 |
| C | 3 | 2 |
| D | 2 | 1 |
| E | 1 | 0 |

Applicants should obtain at least 9 points, as well as at least a D symbol at Standard Grade for Mathematics, in order to be invited for an assessment.

Applicants will be notified to make an appointment with the Departmental secretary for this assessment. This rule applies to all applicants, as well as to applicants who are already registered at other institutions.

- **FOR APPLICANTS WHO OBTAINED A NATIONAL SENIOR CERTIFICATE IN OR AFTER 2008:**

**Admission requirement(s):**
A National Senior Certificate with a bachelor's degree or a diploma endorsement or an equivalent qualification, with an achievement level of at least 3 for English (home language or first additional language) and 3 for Mathematics or at least 5 for Mathematical Literacy.

**Recommended subject(s):**
None.

**Selection criteria:**
To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **18** (with Mathematics) or at least **20** (with Mathematical Literacy).

**Assessment procedures:**
Applicants who meet the minimum requirements will be considered for admission to the programme.

**When the final Grade 12 results are available –**
- applicants who were accepted for the extended programme who obtained a final mark of at least 4 for Mathematics will be moved to the National Diploma; and
- applicants who were accepted for the National Diploma, but whose final mark for Mathematics was only 3, will be moved to the extended programme.

- **FOR APPLICANTS WHO OBTAINED A QUALIFICATION FROM TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET) COLLEGES (PREVIOUSLY KNOWN AS FET COLLEGES):**

**Applicants with a National Certificate (Vocational) at NQF Level 4:**

**Admission requirement(s):**
A National Certificate (Vocational) at NQF level 4 with a bachelor's degree or a diploma endorsement issued by the Council for Quality Assurance in General and Further Education and Training (Umalusi), with at least 50% (APS of 4) for English and 50% (APS of 4) for Mathematics or at least 60% (APS of 5) for Mathematical Literacy and at least 60% (APS of 5) in any three other vocational subjects.

**Selection criteria:**
To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **23** (with Mathematics) or **24** (with Mathematical Literacy).

**Applicants with a National N Certificate as published in Nated 191: N3 at (NQF Level 4):**
A National Senior Certificate or a N Certificate as published in Nated 191: N3 (NQF Level 4) issued by the Council for Quality Assurance in General and Further Education and Training (Umalusi) with at least 40% (APS of 3) for English and 50% (APS of 4) for Mathematics.

*b. Minimum duration:*
Four years, divided as follows:
- Year one: foundation subjects.
- Year two: general first-year subjects.
- Years three and four: specialisation subjects.

*c. Presentation:*
Day classes.

*d. Intake for the qualification:*
January only.

*e. Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations.

*f. Recognition of Prior Learning (RPL), equivalence and status:*
See Chapter 30 of Students' Rules and Regulations.

*g. Laboratory periods:*
Apart from classes scheduled for the four foundation subjects, students will also have to attend compulsory laboratory periods for at least eight hours per week (which are linked to specific subjects), in order to become familiar with keyboard skills, computational thinking and problem-solving skills, and various other skills needed in the IT environment.

*h. Subject credits:*
Subject credits are shown in brackets after each subject.

## CURRICULUM

### FIRST YEAR

| CODE | SUBJECT | CREDIT | PREREQUISITE SUBJECT(S) |
|---|---|---|---|
| **FIRST SEMESTER** | | | |
| FPALS01 | Foundation Academic and Language Skills | (0,125) | |
| FPITM01 | Foundation ICT Mathematical Skills | (0,125) | |
| TOTAL CREDITS FOR THE SEMESTER: | | 0,250 | |
| **SECOND SEMESTER** | | | |
| 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: | | **0,500** | |

**SECOND YEAR**
**After completion of all first-year subjects.**

| CODE | SUBJECT | CREDIT | PREREQUISITE SUBJECT(S) |
|---|---|---|---|
| **FIRST SEMESTER** | | | |
| 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. On 02 August 2018, the syllabus content was defined as follows:

**C**

**COMPUTING FUNDAMENTALS IA (CFS10AT)** **1 X 3-HOUR PAPER**
***(Subject custodian: Department of Computer Science)***
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: Department of Computer Science)***

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)

## F

**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; mtrices. (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)