NATIONAL DIPLOMA: INFORMATION TECHNOLOGY: SUPPORT SERVICES (Extended curriculum programme with foundation provision)

Qualification code: NDIPF1 - NQF Level 6

Campus where offered:	Soshanguve South Campus (day classes offered during the week and on Saturdays)
Last year of new intake:	2019
Teach-out (phase-out) date:	31 December 2024

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.

CURRICULUM

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

Please note that students will register for all first- and second-year subjects under qualification code NDITF1.

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**	

As from the third year, a student will register for the specialisation field: Support Services (NDIPF1).

THIRD YEAR

CODE	SUBJECT	CREDIT	PREREQUISITE SUBJECT(S)
FIRST SEMESTER			
GUI10AT	Graphical User-Interface Design IA	(0,125)	
ISY23AB	Information Systems IIA	(0,125)	Computing Fundamentals IB
SSF24AT	System Software IIA	(0,125)	Computing Fundamentals IB Computing Systems IB
SUS20AT	Support Services IIA	(0,125)	Computing Fundamentals IB Computing Systems IB
TPG14AT	Technical Programming IA	(0,125)	Development Software IB
TOTAL CREDITS FOR THE SEMESTER:		0,625	
SECOND SEMESTER			
GUI10BT	Graphical User-Interface Design IB	(0,125)	Graphical User-Interface Design IA
ISY23BB	Information Systems IIB	(0,125)	Information Systems IIA
SSF24BT	System Software IIB	(0,125)	System Software IIA
SUS20BT	Support Services IIB	(0,125)	Support Services IIA
TPG14BT	Technical Programming IB	(0,125)	Technical Programming IA
TOTAL CREDITS FOR THE SEMESTER:		0,625	
TOTAL CREDITS FOR THE THIRD YEAR:		**1,250**	

FOURTH YEAR

CODE	SUBJECT	CREDIT	PREREQUISITE SUBJECT(S)
FIRST SEMESTER			
IDC30AT	Industry Exposure IIIA	(0,125)	
ISY34AB	Information Systems IIIA	(0,125)	Information Systems IIA Information Systems IIB
ISY34BB	Information Systems IIIB	(0,125)	Information Systems IIA Information Systems IIB
SUS30AT	Support Services IIIA	(0,125)	Support Services IIB System Software IIA System Software IIB
SUS30BT	Support Services IIIB	(0,125)	Support Services IIB
TOTAL CREDITS FOR THE SEMESTER:		0,625	

SECOND SEMESTER
On completion of all the above subjects. Students with only one subject outstanding may be allowed to register for that subject and Industry Exposure IIIB with the approval of the Head of Department.

IDC30BE	Industry Exposure IIIB	(0,125)
TOTAL CREDITS FOR THE SEMESTER:		0,125
TOTAL CREDITS FOR THE FOURTH YEAR:		**0,750**
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)

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)

G

GRAPHICAL USER-INTERFACE DESIGN IA (GUI10AT) **1 X 4-HOUR COMPUTER-BASED**
(Subject custodian: Department of Computer Science)
This subject introduces and teaches students Web design concepts and techniques in a Web authoring course that covers HTML and Adobe Dreamweaver. The objective of this subject is to present a practical approach to Web design using a blend of traditional development with current technologies, giving students an in-depth understanding of Web design concepts and techniques that are essential to planning, creating, testing, publishing, and maintaining Web sites. Contents include introduction to the Web environment and its tools, Web publish fundamentals, successful planning of Web sites, typography and graphics, Multimedia and interactivity on the Web and promoting and maintaining of Web sites. (Total tuition time: ± 80 hours)

GRAPHICAL USER-INTERFACE DESIGN IB (GUI10BT) **1 X 4-HOUR COMPUTER-BASED**
(Subject custodian: Department of Computer Science)
This subject teaches the student the skills and knowledge to facilitate the alignment of IT and business processes using ICT Web solutions. The content offers creative projects, concise instructions, and a complete coverage of basic and advanced Macromedia Flash 8 skills, helping you to create and publish Flash animation. After completion of the subject, students will be able to analyse and design Web solutions to industry related Information Technology problems, utilise the required technical skills to effectively implement the designed solutions in a distributed IT environment. Demonstrate the effective utilisation of business and management skills to bridge the gap between the IT discipline and the business functional areas in industry. (Total tuition time: ± 80 hours)

I

INDUSTRY EXPOSURE IIIA (IDC30AT) **1 X 3-HOUR PAPER**
(Subject custodian: Department of Informatics)
This subject enables students to gain insight to organisational characteristics and behaviour, personal and technological entrepreneurship; other issues include ethical and professional conduct in the workplace. The subject will also increase their knowledge of individual behavioural aspects, namely biographical characteristics, values attitudes, job satisfaction and personality and emotions, perceptions and individual decision making; broaden their understanding of the administrative structures of organisations, bureaucratic behaviour in global and diverse context; and develop interpersonal skills in applying and integrating contemporary theories of motivation. (Tuition time: ± 60 hours)

INDUSTRY EXPOSURE IIIB (IDC30BE) **CONTINUOUS ASSESSMENT**
(Subject custodian: Department of Information Technology)
Industry Exposure IIIB is career-orientated and is aimed at integrating academic training with practical skills, as demanded by industry. Students work in industry for six months. (No formal tuition)

INFORMATION SYSTEMS IIA (ISY23AB) **1 X 4-HOUR COMPUTER-BASED**
(Subject custodian: Department of Computer Science)
This subject introduces Oracle and SQL to students. The subject includes standard queries, joins, functions, sub-queries, report writing, creation of tables and views, data manipulation using the Oracle courseware and the Oracle software. Students will also learn how to create and maintain database objects and how to store, retrieve and manipulate data. (Total tuition time: ± 59 hours)

INFORMATION SYSTEMS IIB (ISY23BB) **1 X 3-HOUR PAPER**

(Subject custodian: Department of Computer Science)

An overview of information systems, focusing on the systems development life cycle and systems analysis techniques. It also includes topics on client/server architecture. Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made; organise and manage oneself and one's activities responsibly and effectively; collect, analyse, organise and critically evaluate information: Use science and technology effectively and critically and being culturally and aesthetically sensitive across a range of social contexts. (Total tuition time: ± 60 hours)

INFORMATION SYSTEMS IIIA (ISY34AB) **1 X 4-HOUR COMPUTER-BASED**

(Subject custodian: Department of Computer Science)

A study of the database environment, data concepts and modelling, as well as the design of databases, data administration, advanced database concepts and new developments. (Total tuition time: ± 60 hours)

INFORMATION SYSTEMS IIIB (ISY34BB) **1 X 3-HOUR PAPER**

(Subject custodian: Department of Computer Science)

Students are introduced to concepts of project management within an ICT environment. Topics that are covered include: project life cycle, project process groups, project management knowledge areas which include risk, time, cost, and scope management. A student is expected to have knowledge of systems analysis and design in the IT field. On completion, students are expected to be competent in project selection, project scheduling using Gantt/PERT charts, project cost estimation and project risk analysis. (Total tuition time: ± 59 hours)

S

SUPPORT SERVICES IIA (SUS20AT) **1 X 3-HOUR PAPER**

(Subject custodian: Department of Information Technology)

Building on knowledge gained from Information Systems I and System Software I, the emphasis is on Microsoft Windows 2000. This subject partially corresponds to the Comptia A+ Operating Systems Certification programme. Students acquire hands-on experience in assembling and repairing personal computers. (Total tuition time: ± 80 hours)

SUPPORT SERVICES IIB (SUS20BT) **1 X 3-HOUR PAPER**

(Subject custodian: Department of Information Technology)

An introduction to the fundamentals of customer support, helpdesks and support centres. The emphasis is on how excellent customer support can be obtained through implementing the desired components in a helpdesk or a support centre environment. (Total tuition time: ± 80 hours)

SUPPORT SERVICES IIIA (SUS30AT) **1 X 3-HOUR PAPER**

(Subject custodian: Department of Information Technology)

This subject introduces the concepts of implementing and maintaining a Windows Server 2012 Active Directory Infrastructure. The general purpose of this subject is to familiarise the student with the Windows Domain System, DHCP and Active Directory administration in a network environment. The student will learn how to install, configure, and administer different network servers. It partially corresponds to the MCSE Certification program. (Total tuition time: ± 80 hours)

SUPPORT SERVICES IIIB (SUS30BT) **1 X 3-HOUR PAPER**

(Subject custodian: Department of Information Technology)

This subject covers aspects of securing the operating system and other network resources. Students are introduced to mitigating threats to network security, identifying cryptography concepts including algorithms, implementing authentication systems, secure e-mail and messaging services, create security policies to secure file and print resources, install and enable public key infrastructure, install and configure security systems including biometric systems, assess vulnerability to security attacks against TCP/IP ports and protocols, configure intranet and extranet security zones, implement a secure wireless network, create a secure remote access network, use auditing logging and monitoring techniques and establish organisational security. This subject is aimed at giving students a thorough understanding of how to secure and harden the operating system. (Total tuition time: ± 80 hours)

SYSTEM SOFTWARE IIA (SSF24AT) **1 X 3-HOUR PAPER**

(Subject custodian: Department of Computer Systems Engineering)

Students are introduced to the basic system administration knowledge of Red Hat Linux, as well as to network administration in the Linux environment. (Total tuition time: ± 78 hours)

SYSTEM SOFTWARE IIB (SSF24BT) **1 X 3-HOUR PAPER**

(Subject custodian: Department of Information Technology)

Network concepts defined in System Software I will be further explored. The emphasis is on the TCP/IP protocol suite and services, and building a TCP/IP network. LAN and WAN infrastructures, remote networking, network security and disaster recovery form an integral part of this subject. (Total tuition time: ± 78 hours)

T

TECHNICAL PROGRAMMING IA (TPG14AT) **1 X 4-HOUR COMPUTER-BASED**

(Subject custodian: Department of Computer Science)

Aim/Purpose: To give students an opportunity to broaden their practical programming skills and become competent problem solvers using an advanced Visual Basic.NET tool. Objectives: The student must be able to create VB.NET programs containing data files, create object-orientated programs, create programs with multiple forms, classes and modules, design and create programs containing advanced arrays, and produce VB.NET programs encompassing more controls with string manipulation capabilities. Key topics: Application structures, advanced arrays, files and structures, classes and objects, string manipulation, controls. (Total tuition time: ± 78 hours)

TECHNICAL PROGRAMMING IB (TPG14BT) **1 X 4-HOUR COMPUTER-BASED**

(Subject custodian: Department of Computer Science)

Aim/Purpose: To give students an opportunity to broaden their practical programming skills and be competent problem solvers using an advanced Visual Basic.NET tool. Objectives: The student must be able to create VB.NET programs containing data files, create object-orientated programs, create database programs, create programs that will be error free, reliable, robust and easy to modify and maintain, and create multiform programs containing menus and reports. Key topics: Structures and files, inheritance, polymorphism, validations, exception handling, ADO.NET. (Total tuition time: ± 80 hour)