DIPLOMA IN INFORMATION TECHNOLOGY
(Extended curriculum programme with foundation provision)
Qualification code: DPITF0 - NQF Level 6 (360 credits)

SAQA ID: 111493, CHE NUMBER: H/H16/E088CAN

Campus where offered: Soshanguve South Campus

REMARKS

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

Please take note that all completed applications received within the published due dates will be ranked. After consideration of the Departmental Student Enrolment Plan, only the top ranking applicants will be selected. Once a programme is full, a waiting list will be in place to provide an opportunity for applicants to fill places of those who did not register on time. Applicants will be informed of their status per official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

- **APPLICANTS WITH A SENIOR CERTIFICATE OBTAINED BEFORE 2008:**

Admission requirement(s):
A Senior Certificate with an equivalent qualification with an E symbol at Higher Grade or a D symbol at Standard Grade for English, Mathematics and Physical Science.

Recommended subjects:
Computer Science.

Selection criteria:
Swedish formula.

SYMBOL	HG VALUE	SG VALUE
A	5	4
B	4	3
C	3	2
D	2	1
E	1	

Applicants who score 9 or more points according to the formula for academic merit will be invited for an interview or a risk profile test.

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

- **APPLICANTS WITH A NATIONAL SENIOR CERTIFICATE OBTAINED 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 4 for Mathematics or Technical Mathematics or 6 for Mathematical Literacy and 3 for Physical Science or Technical Science.

Recommended subjects:
None.

Selection criteria:
To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **23** (with Mathematics or Technical Mathematics) or **25** (with Mathematical Literacy). Life Orientation is excluded for APS calculation.

Assessment procedures:
Applicants who achieve the minimum APS of **23** will be considered. Applicants with a score of **21** (with Mathematics or Technical Mathematics) or **24** (with Mathematical Literacy) will be added to a waiting list.

- **APPLICANTS WITH A NATIONAL CERTIFICATE (VOCATIONAL):**

Admission requirement(s):
A National Certificate (Vocational) with a bachelor's degree or a diploma endorsement, with at least 40% (APS of 3) for English (home language or first additional language) and 50% (APS of 4) for Mathematics or 70% (APS of 6) for Mathematical Literacy, 50% for Life Orientation (excluded for APS calculation) and 40% (APS of 3) for Physical Science/Applied Engineering Technology and at least 50% (APS of 4) in any two 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 **25** (with Mathematical Literacy). Life Orientation is excluded for APS calculation.

Assessment procedures:
Applicants who achieve the minimum APS of **23** will be considered. Applicants with a score of **21** (with Mathematics) or **24** (with Mathematical Literacy) will be added to a waiting list.

- **APPLICANTS WITH A NATIONAL N CERTIFICATE AS PUBLISHED IN NATED 191: (NQF LEVEL 4):**

Admission requirement(s):
A National Senior Certificate and a National N Certificate as published in Nated 191: N3 (NQF Level 4) issued by both the Department of Higher Education (DHET) and 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 N3 and Engineering Sciences N3.

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

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

d. *Minimum duration:*
Four years.

e. *Presentation:*
Day classes. Classes and assessments take place during the week and on Saturdays.

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

g. *Industrial Exposure 326R (Work-Integrated Learning):*
See Chapter 5 of Students' Rules and Regulations.

CURRICULUM

FIRST YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CN1F05D	Computer Networks 115R	(5)	(15)	
COEF05X	Communication for Academic Purpose	(5)	(10)	
DSMF06D	Discrete Mathematics 115R	(6)	(15)	

INFF25D	Information Literacy (block module)	(5)	(3)
LFSF25X	Life Skills (block module)	(5)	(2)
TROF05D	Introduction to Programming 115R	(5)	(15)

TOTAL CREDITS FOR THE FIRST YEAR: **60**

SECOND YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
FIRST SEMESTER				
CATF16D	Computer Architecture 125R	(6)	(15)	Discrete Mathematics 115R
HSPF15D	History of Computing and Information Models 115R	(5)	(15)	
TOTAL CREDITS FOR THE SEMESTER:			30	
SECOND SEMESTER				
CN2F15D	Computer Networks 125R	(5)	(15)	Computer Networks 115R
PPGF15D	Principles of Programming 125R	(5)	(15)	Introduction to Programming 115R
TOTAL CREDITS FOR THE SEMESTER:			30	
TOTAL CREDITS FOR THE SECOND YEAR:			**60**	

THIRD YEAR
Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
FIRST SEMESTER				
CN1216D	Computer Networks 215R	(6)	(15)	Computer Networks 125R
OOR216D	Object-Orientated Programming 216R	(6)	(15)	Introduction to Programming 115R
OSY216D	Operating Systems 226R	(6)	(15)	Computer Architecture 125R
PS1216D	Computer Security 215R	(6)	(15)	Computer Networks 125R
TOTAL CREDITS FOR THE SEMESTER:			60	
SECOND SEMESTER				
AOR216D	Advanced Object-Oriented Programming 226R	(6)	(15)	Object-Orientated Programming 216R
CN2216D	Computer Networks 226R	(6)	(15)	Computer Networks 215R
VMA216D	Virtual Machines 216R	(6)	(15)	Computer Security 215R
	plus one of following modules:			
PS2216D	Computer Security 226R	(6)	(15)	Computer Security 215R
WOR216D	Web Organisation 226R	(6)	(15)	
TOTAL CREDITS FOR THE SEMESTER:			60	
TOTAL CREDITS FOR THE THIRD YEAR:			**120**	

FOURTH YEAR
Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
FIRST SEMESTER				
CNT316D	Computer Networks 316R	(6)	(15)	Computer Networks 226R
NMG316D	Network Management 316R	(6)	(15)	
WNE316D	Wireless Networks 316R	(6)	(15)	Computer Networks 215R
	plus one of following modules:			
RAL316D	Resource Allocation 316R	(6)	(15)	Computer Networks 226R
CSY316D	Computer Security 316 R	(6)	(15)	Computer Security 226R
TOTAL CREDITS FOR THE SEMESTER:			60	
SECOND SEMESTER				
(On completion of all first-, second, third and fourth year (first semester) modules).				
IEX316D	Industrial Exposure 326R	(6)	(60)	
TOTAL CREDITS FOR THE SEMESTER:			60	
TOTAL CREDITS FOR THE FOURTH YEAR:			**120**	
TOTAL CREDITS FOR THE QUALIFICATION:			**360**	

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

A

ADVANCED OBJECT-ORIENTED PROGRAMMING 226R (AOR216D) 1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module covers advanced concepts of object-orientated programming such as data structures, multi-threading, database connectivity and client-server applications. (Total tuition time: not available)

C

COMMUNICATION FOR ACADEMIC PURPOSE (COEF05X) 1 X 3-HOUR PAPER
(Module custodian: ICT First Years' and Foundation Unit)
This module applies a variety of listening and note taking skills for academic and professional purposes, different reading strategies appropriate to the purpose for reading in both an academic and professional environment, composes a selection of written texts related to a specific field of study. Plan, draft, revise and edit written work for clarity, coherence, style and appropriateness. (Total tuition time: not available)

COMPUTER ARCHITECTURE 125R (CATF16D) 1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
It covers microcontroller principles and their applications and is concerned with design, development, and construction of microcontroller applications. The student will be introduced to architecture of a microcontroller, memory architectures, DMA transfers, basic I/O principles and devices, interrupts, and embedded application designs. (Total tuition time: not available)

COMPUTER NETWORKS 115R (CN1F05D) **1 X 3-HOUR PAPER**

(Module custodian: End User Computing Unit)

The content of this module include an overview of the evolution of computer networks and the Internet, a discussion of computer networks models and architectures, and the description and usage of the common networked applications including web, e-mail, file transfer, telnet, wikis. (Total tuition time: not available)

COMPUTER NETWORKS 125R (CN2F15D) **1 X 3-HOUR PAPER**

(Module custodian: Department of Information Technology)

This module provides students with the necessary techniques to design and implement computer network solutions to simple problems using emerging technologies, distributed computing and common network applications. (Total tuition time: not available)

COMPUTER NETWORKS 215R (CN1216D) **1 X 3-HOUR PAPER**

(Module custodian: Department of Information Technology)

The student will apply basic network concepts such as network optimization, routing protocol configuration, system migration and upgrading, problem diagnosis and troubleshooting; and system maintenance. (Total tuition time: not available)

COMPUTER NETWORKS 226R (CN2216D) **1 X 3-HOUR PAPER**

(Module custodian: Department of Information Technology)

The module will contribute to knowledge and skills such as VLAN design, VLAN and VTP configuration, VLAN interconnection, troubleshooting, and VLAN connectivity testing. (Total tuition time: not available)

COMPUTER NETWORKS 316R (CNT316D) **1 X 3-HOUR PAPER**

(Module custodian: Department of Information Technology)

This module introduces network concepts such as of Cloud services, Elasticity of resources, Virtualization, WAN technologies and Cloud-based data storage and skills such as VPN configuration, Virtualization configuration, and Virtualization testing (Virtualization management) to students. (Total tuition time: not available)

COMPUTER SECURITY 215R (PS1216D) **1 X 3-HOUR PAPER**

(Module custodian: Department of Information Technology)

This module covers concepts and applications of basic computer security. This module will contribute to knowledge of CIA (Confidentiality, Integrity, Availability), concepts of risk, threats, vulnerabilities, and attack vectors, authentication and authorisation, access control (mandatory vs. discretionary), concept of trust and trustworthiness, ethics (responsible disclosure), and skills such as fundamentals of authentication servers configuration, configuration of firewalls and basic security tools testing. (Total tuition time: not available)

COMPUTER SECURITY 226R (PS2216D) **1 X 3-HOUR PAPER**

(Module custodian: Department of Information Technology)

This module covers browser security model, which includes same-origin policy and threat models in web security. Thus the student will be introduced to computer security concepts such as the basic concepts in information security, including security policies, security models, and security mechanisms; concepts related to applied cryptography; common vulnerabilities in computer programs, and the requirements and mechanisms for identification and authentication. (Total tuition time: not available)

COMPUTER SECURITY 316R (CSY316D) **1 X 3-HOUR PAPER**

(Module custodian: Department of Information Technology)

This module introduces cyber security concepts and applications like cryptography, access control mechanisms, auditing, advanced network defence tools and strategies, etc. (Total tuition time: not available)

D

DISCRETE MATHEMATICS 115R (DSMF06D) **1 X 3-HOUR PAPER**

(Module custodian: Department of Computer Systems Engineering)

This module focuses on the area of discrete structures including important material from areas such as set theory, logic, methods of proofs, graph theory, combinatory, and recursion. The material is pervasive in the areas of data structures and algorithms. (Total tuition time: not available)

H

HISTORY OF COMPUTING AND INFORMATION MODELS 115R (HSPF15D) **1 X 3-HOUR PAPER**
(Module custodian: Department of Information Technology)
History of computing and Information Models prepares the student to apply the concepts and applications of any computer networks. The student will be able to apply his/her knowledge of basic network concepts such as history of computer hardware, software, networking; Information storage and retrieval (IS&R); Information management applications; Information capture and representation, key security elements, scalability and network system performance and skills such as Search, retrieval, linking, navigation of information. (Total tuition time: not available)

I

INDUSTRIAL EXPOSURE 326R (IEX316D) **WORK-INTEGRATED LEARNING**
(Module custodian: Department of Information Technology)
Student to integrate the application of the concepts and principles learned through the theoretical learning of all the modules in the qualification. The student will be able to apply his/her knowledge of theory acquired in the qualification. (Total tuition time: not available)

INFORMATION LITERACY (INFF25D) **CONTINUOUS ASSESSMENT**
(Module custodian: Directorate of Library and Information Services)
The purpose for this module is to provide students with an introduction to the competencies required to be an effective student at university. It aims to empower students with the skills, knowledge, abilities and attitudes required to address academic challenges in a proactive and meaningful way. (Total tuition time: not available)

INTRODUCTION TO PROGRAMMING 115R (TROF05D) **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
The focus of this module is to introduce students to intermediate object oriented programming concepts such as selection control structures, iteration control structures; and manipulation of strings, characters and primitive arrays. (Total tuition time: not available)

L

LIFE SKILLS (LFSF25X) **CONTINUOUS ASSESSMENT**
(Module custodian: Directorate of Student Development and Support)
The purpose for this module is to provide students with an introduction to the competencies required to be an effective student at university. It aims to empower students with the skills, knowledge, abilities and attitudes required to address academic challenges in a proactive and meaningful way. (Total tuition time: not available)

N

NETWORK MANAGEMENT 316R (NMG316D) **1 X 3-HOUR PAPER**
(Module custodian: Department of Information Technology)
The student will be able to apply his/her knowledge of basic network concepts such as network management issues, access control mechanisms, multiple LANs management, network troubleshooting, and skills such as routing optimization and network monitoring tools implementation. (Total tuition time: not available)

O

OBJECT-ORIENTED PROGRAMMING 216R (OOR216D) **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
This module introduces intermediate concepts of object-orientated programming. The module builds upon the knowledge and skills obtained in the “Principles of Programming”. (Total tuition time: not available)

OPERATING SYSTEMS 226R (OSY216D) **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers principles of operating systems like process management, interprocess communication and synchronisation, memory management, virtual memory, file system management, device management and security. (Total tuition time: not available)

P

PRINCIPLES OF PROGRAMMING 125R (PPGF15D) **1 X 4-HOUR COMPUTER-BASED**

(Module custodian: Department of Computer Science)

This module builds on the knowledge and skills already obtained in the Introduction to Programming module. The main focus is to introduce students to intermediate object oriented programming concepts such as selection control structures, iteration control structures; and manipulation of strings, characters and primitive arrays. (Total tuition time: not available)

R

RESOURCE ALLOCATION 316R (RAL316D) **1 X 3-HOUR PAPER**

(Module custodian: Department of Information Technology)

The student will be able to apply his/her knowledge of resource allocation techniques, congestion control, end-to-end and network assisted approaches, and skills such as resource allocation planning and congestion control implementation. (Total tuition time: not available)

V

VIRTUAL MACHINES 216R (VMA216D) **1 X 3-HOUR PAPER**

(Module custodian: Department of Information Technology)

This module prepares the student to apply the concepts and applications of any virtual technologies to the organisational structure or to a project. The student will be able to apply his/her knowledge of Virtualization, isolation and emulation techniques, Virtualization tradeoffs, Virtualization managers across different platforms, and skills such as Virtualization implementation, Virtualization management and isolate and emulate a virtual environment. (Total tuition time: not available)

W

WEB ORGANISATION 226R (WOR216D) **1 X 3-HOUR PAPER**

(Module custodian: Department of Information Technology)

This module covers browser security model, which includes same-origin policy and threat models in web security. Thus the student will be introduced to computer security concepts such as the basic concepts in information security, including security policies, security models, and security mechanisms; concepts related to applied cryptography; common vulnerabilities in computer programs, and the requirements and mechanisms for identification and authentication. (Total tuition time: not available)

WIRELESS NETWORKS 316R (WNE316D) **1 X 3-HOUR PAPER**

(Module custodian: Department of Information Technology)

This module prepares the student to apply the concepts and applications of any wireless technologies to the organisation structure or to a project. The student will be able to apply his/her knowledge of mobile ad hoc networks, cellular network systems, wireless networks, multiplexing techniques, wireless sensor networks and skills such as wireless LAN implementation, troubleshooting and connectivity testing. (Total tuition time: not available)