2025
PROSPECTUS

PART 6

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

CONTACT DETAILS
At time of publication, the contact details were as follows:

Admission enquiries
Tel: 012 382 5750/5780   E-mail address: admission@tut.ac.za

Contact Centre
Tel: 086 1102 421/012 382 5533   E-mail address: general@tut.ac.za

Enquiries relating to fees:
The Chief Financial Officer
Private Bag X680
PRETORIA 0001
Tel: 086 1102 422/012 382 5505/4213

The Registrar
Private Bag X680
PRETORIA 0001
Tel: 012 382 5180

ARCADIA CAMPUS
Private Bag X680   175 Nelson Mandela Drive
PRETORIA 0001   PRETORIA
Tel: 012 382 6377   GPS: (25°44'41.83"S 28°12'0.19"E)

ARTS CAMPUS
Private Bag X680   Cnr. Du Toit and Edmund Streets
PRETORIA 0001   PRETORIA
Tel: 012 382 6177   GPS: (25°44'26.16"S 28°11'45.99"E)

EMALAHLENI CAMPUS
The Campus Director
PO Box 3211   19 OR Tambo Street
EMALAHLENI 1035   EMALAHLENI
Tel: 012 382 3100/4/6   GPS: (25°52'44.40"S 29°14'09.89"E)

GA-RANKUWA CAMPUS
Private Bag X680   2827, Zone 2, Botsi Street
PRETORIA 0001   GA-RANKUWA
Tel: 012 382 0500/0840   GPS: (25°37'05.92"S 28°00'08.31"E)

MBOMBELA CAMPUS
The Campus Director
Private Bag X11312   Madiba Drive
MBOMBELA 1200   MBOMBELA
Tel: 012 382 3500/3621   GPS: (25°30'01.11"S 30°57'17.03"E)

POLOKWANE CAMPUS
The Campus Director
Private Bag X9496   Cnr. Market and Excelsior Streets
POLOKWANE 0700   POLOKWANE
Tel: 012 382 0700   GPS: (23°54'50.81"S 29°26'58.94"E)

PRETORIA CAMPUS
Private Bag X680   Staatsartillerie Road
PRETORIA 0001   PRETORIA WEST
Tel: 012 382 5911   GPS: (25°43'53.55"S 28°09'40.38"E)

SOSHANGUVE CAMPUS
Private Bag X680   2 Aubrey Matlala Road, Block K
PRETORIA 0001   SOSHANGUVE
Tel: 012 382 9000   GPS: (25°32'26.88"S 28°05'46.16"E)

PARTS OF THE PROSPECTUS

Please Note:

1. Although the information in this Prospectus has been compiled as accurately as possible, the Council accepts no responsibility for any inaccuracies in this publication. This Prospectus is valid for 2025 only.

2. Life Orientation and an achievement Level of 1 in a subject are not considered in the calculation of the Admission Point Score (APS).

3. Prospective students will not be admitted to any qualification without prior evaluation.

4. The indicated non-refundable administration fee and certified copies of the applicant's identity document, Senior Certificate/National Senior Certificate and all other relevant documents must accompany the completed application form or online application.

5. The closing dates for admissions are available on the University's website.

6. A student must complete a qualification at the learning site where he/she was accepted and is registered. A transfer between sites will only be allowed if the student follows the following process:

   • A formal request must be submitted to the academic manager/Head of the Department on the current learning site before the second Friday in May (to be considered for transfer in July of the same year) or the second Friday in October (to be considered for a transfer in January of the following year). The request must contain the reasons for the transfer.

   • A committee will meet shortly after each of the closing dates for submissions to consider every request on merit, keeping in mind the availability of space and the adherence to enrolment quotas on respective learning sites. Students will be informed of the outcome.

Important:
TUT admission requirements for entry-level programmes adhere to national legislation and therefore the following are required:

• Bachelor's degrees: at least four subjects at performance level 4.

• Diplomas: at least four subjects at performance level 3.

Please verify specific and additional requirements per programme as indicated in the Prospectus.

ACCEPTANCE IS SUBJECT TO AVAILABLE CAPACITY ACCORDING TO THE STUDENT ENROLMENT PLAN (SEP)
Alternative and international qualifications (HIGSCE, IGCSE, NSSC A&O Level, IB Higher and Standard Level, etc.) are dealt with in a specific manner:

• While there is a legal imperative to submit the certificate of equivalence (issued by SAQA or the CHE), it is recommended that the application process be initiated while the application for the certificate is in process.

• The Tshwane University of Technology cannot obtain this certificate on the applicant's behalf.

CONVERSION OF ALTERNATIVE/EQUIVALENT RECOGNISED CERTIFICATES

The following table and accompanying information give an indication of how the University will evaluate the various certificates that may be offered as equivalent to the National Senior Certificate (SA). Where possible, the University will evaluate the listed qualifications as indicated. However, the University has the right to refer any application to the formal application processes through the Senate.

APS	NSC	NC-V	HIGCSE	IGCSE/GCSE/ NSSC O-LEVEL		A-LEVEL	IB-HL	IB-SL	SAT
				Gr 11	Gr 12				
10						A	7		
9									
8						B	6		
7	7 (80 -100)	Outstanding competent (80-100%)	1	A		C	5	7	80-100
6	6 (70 -79)	4-Highly competent (70-79%)	2	B		D	4	6	70-79
5	5 (60-69)	3-Competent (60-69%)	3	C	A	E	3	5	60-69
4	4 (50-59)	3-Competent (50-59%)		D	B		2	4	50-59
3	3 (40-49)	Not yet Competent (40-49%)	4	E	C		1	3	40-49
2	2 (30-39)	Not achieved (0-39%)		F	D/E			2	30-39
1	1 (0-29)			G	F/G			1	0-29

NSC	National Senior Certificate
NC-V	National Certificate (Vocational)
IGCSE	International General Certificate of Secondary Education
HIGCSE	Higher International General Certificate of Secondary Education
SAT	Senior Academic Test/Senior Academic Proficiency Test
NSSC	Namibia Senior Secondary Certificate
O-LEVEL	Ordinary level
A-LEVEL	Advanced level
IB	International Baccalaureate Schools (higher and standard levels)

Please Note:

As from March 2005, a minimum score of 1500 is needed for admission to a National Diploma, with a subminimum of not less than 460 for Critical Reading, Mathematics and Writing. In accordance with HESA requirements, a minimum score of 1600 is needed for admission to a degree, with a subminimum of not less than 500 for Critical Reading and Mathematics and 550 for Writing. The percentiles on the SAT certificate can be used to derive scores for Mathematics and English, as indicated in the table above. The student's college entrance certificate (such as the certificate issued by the ACE School of Tomorrow) or individual SAT subject tests should be used for the scores of any other subjects required.

RECOGNITION OF PRIOR LEARNING, EQUIVALENCE AND STATUS

Candidates may also apply at the Office of the Registrar for Recognition of Prior Learning (RPL) or for admission via the Senate's discretionary route. The specific relevant documentation will be requested from these applicants, and these cases will be handled on an individual basis. Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

CONTENTS

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

At the time of publication, the information was as follows:

Executive Dean:	Dr EA van Wyk - BSc (Hons) (Computer Science) (Unisa), M Tech (Information Technology) (Tech Pta), PhD (Information Systems) (Unisa)
Acting Executive Secretary:	Ms LJ Mafora
Telephone number:	012 382-9230
E-mail address:	maforalj@tut.ac.za
Office:	Building 12, Room 178E, Soshanguve South Campus
Assistant Dean: (Postgraduate Studies, Research and Innovation)	Dr AB Pretorius - BSc (Hons) (Information Systems) (Unisa), MBL (Unisa), D Tech (Business Information Systems) (TUT)
Acting Assistant Dean: (Teaching, Learning and Technology)	Vacant at the time of publication.
Assistant Registrar:	S Mokgatle
Office:	Building 7G, Room 11, Soshanguve South Campus

VISION

To be a quality-driven locally relevant and internationally comparable university of technology ICT faculty at the cutting edge of ICT innovation.

MISSION

- Offering a portfolio of locally relevant, internationally recognised and career-focused ICT programmes.
- Producing well rounded ICT graduates who are attuned to the needs of the economy.
- Being an ICT research and innovation hub responsive to the national, regional and global challenges.
- Acting as an incubator for ICT postgraduate study in clearly defined areas of strength.
- Generating, integrating and applying ICT knowledge to stimulate socio-economic development.
- Partnering communities in ICT-enabled sustainable development.
- Being student-centred and quality-driven in all our endeavours.

SECTION A: DEPARTMENTS AND QUALIFICATIONS

1. DEPARTMENT OF COMPUTER SCIENCE

1.1 DIPLOMA IN COMPUTER SCIENCE
Dip (Computer Science) - NQF Level 6 (360 credits)
Qualification code: DPRS20
SAQA ID: 109017, CHE NUMBER: H/H16/E089CAN

Campus where offered: Soshanguve South, eMalahleni and Polokwane Campuses

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REMARKS

a. Admission requirement(s) and selection criteria:

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) and preference would be given to first-time entering students. Once a programme is full, a waiting list will be created to provide an opportunity for applicants to fill the places of those who did not register on time. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

• **FOR APPLICANTS WITH A SENIOR CERTIFICATE OBTAINED BEFORE 2008:**

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

Recommended subjects:
Computer Science and Physical Science.

Selection criteria:
Applicants are assessed by means of the following 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.

• **FOR 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 4 for English (home language or first additional language) and 5 for Mathematics or Technical Mathematics or 7 for Mathematical Literacy.

Recommended subjects:
Information Technology.

Selection criteria:
To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **26** (with Mathematics or Technical Mathematics) or **28** (with Mathematical Literacy). Applicants with a score of **23** (with Mathematics or Technical Mathematics) or **25** (with Mathematical Literacy) will be considered for the extended programme. Life Orientation is excluded for APS calculation.

Assessment procedure(s):
No further assessment will be done. Applicants who achieve the minimum APS will be considered until the programme complement is full.

- **FOR 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, with at least 50% (APS of 4) for English (first additional language) and 60% for Mathematics or 80% (APS of 7) for Mathematical Literacy, and 50% for Life Orientation (excluded for APS calculation), and 50% (APS of 4) for any other three compulsory vocational subjects.

  Selection criteria:
  To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **26** (with Mathematics) or **28** (with Mathematical Literacy). Applicants with a score of **23** (with Mathematics) or **25** (with Mathematical Literacy) will be considered for the extended programme. Life Orientation is excluded for APS calculation.

  Assessment procedure(s):
  No further assessment will be done. Applicants who achieve the minimum APS will be considered until the programme complement is full.

- **FOR 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), with at least 50% for English (APS of 4) and 60% for Mathematics N3 (APS of 5).

b. *Recognition of Prior Learning (RPL), equivalence and status:*
    Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

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

e. *Minimum duration:*
    Three years.

f. *Exclusion and readmission:*
    See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

g. *Work-Integrated Learning:*
    See Chapter 5 of Students' Rules and Regulations (Part 1 of the Prospectus).

Department of Computer Science

h. *Transfer between Learning Sites:*
A student must complete a qualification at the learning site where he/she was accepted and is registered. A transfer between sites will only be considered if the student follows the following process: A formal request must be submitted to the Academic manager/Head of the Department on the current learning site by the second Friday in October (to be considered for a transfer in January of the following year). The request must contain the reasons for the transfer.

i. *Personal equipment:*
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

FIRST YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
16P105X	Communication for Academic Purposes	(5)	(10)	
INF125D	Information Literacy (block module)	(5)	(3)	
LFS125X	Life Skills (block module)	(5)	(2)	

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CFA115D	Computing Fundamentals A	(5)	(15)	
COH115D	Computational Mathematics	(5)	(15)	
PPA115D	Principles of Programming A	(5)	(15)	

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CFB115D	Computing Fundamentals B	(5)	(15)	Computing Fundamentals A
DCT115D	Discrete Structures	(5)	(15)	Computational Mathematics
PPB115D	Principles of Programming B (first- or second-semester module)	(5)	(15)	Principles of Programming A
WEB115D	Web Computing	(5)	(15)	Principles of Programming A

TOTAL CREDITS FOR THE FIRST YEAR: **120**

SECOND YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
ADS216D	Advanced Discrete Structures	(6)	(15)	Discrete Structures
CAO216D	Computer Architecture and Organisation	(6)	(15)	
DTP216D	Database Principles	(6)	(15)	
OOP216D	Object-Oriented Programming	(6)	(15)	Principles of Programming B

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
AOP216D	Advanced Object-Oriented Programming	(6)	(15)	Object-Oriented Programming

ISC216D	Information Security	(6)	(15)
ORS216D	Operating Systems	(6)	(15)
SEF216D	Software Engineering Fundamentals	(6)	(15)

TOTAL CREDITS FOR THE SECOND YEAR: **120**

THIRD YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

INT316D	Internet Programming	(6)	(15)	Advanced Object-Orientated Programming
MOB316D	Mobile Computing	(6)	(15)	Advanced Object-Orientated Programming
SWP316D	Software Project	(6)	(15)	Advanced Object-Orientated Programming

plus one of the following electives:

DBP316D	Database Programming	(6)	(15)	Database Principles
DIS316D	Distributed Systems (module not currently offered)	(6)	(15)	
WEM316D	Web Server Management (not (module not currently offered)	(6)	(15)	

SECOND SEMESTER

| WOC316D | Work-Integrated Learning | (6) | (60) | Internet Programming Mobile Computing Software Project Web Server Management **or** Database Programming **or** Distributed Systems |

TOTAL CREDITS FOR THE THIRD YEAR: **120**

TOTAL CREDITS FOR THE QUALIFICATION: **360**

Department of Computer Science

1.2 DIPLOMA IN COMPUTER SCIENCE
(Extended curriculum programme with foundation provision)
Dip (Computer Science) - NQF Level 6 (360 credits)
Qualification code: DPRSF0
SAQA ID: 109017, CHE NUMBER: H/H16/E089CAN

Campus where offered:	Soshanguve South, eMalahleni and Polokwane Campuses

REMARKS

a.   Admission requirement(s) and selection criteria:

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) and preference would be given to first-time entering students. Once a programme is full, a waiting list will be created to provide an opportunity for applicants to fill the places of those who did not register on time. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

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

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

  Recommended subjects:
  Computer Science and Physical Science.

  Selection criteria:
  Applicants are assessed by means of the following 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.

- **FOR 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.

  Recommended subjects:
  Information Technology.

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 procedure(s):
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.

• **FOR 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, with at least 40% (APS of 3) for English (first additional language) and 50% for Mathematics (APS of 4) or 70% for Mathematical Literacy (APS of 6) and 50% for Life Orientation (excluded for APS calculation) and 50% (APS of 4) for any other three compulsory 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 procedure(s):
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.

• **FOR 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), with at least 40% (APS of 3) for English and 50% (APS of 4) for Mathematics N3.

b. *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

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

e. *Minimum duration:*
Four years.

f. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

g. *Work-Integrated Learning:*
See Chapter 5 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Transfer between Learning Sites:*
A student must complete a qualification at the learning site where he/she was accepted and is registered. A transfer between sites will only be considered if the student follows the following process: A formal request must be submitted to the Academic manager/Head of the Department on the current learning site by the second Friday in October (to be considered for a transfer in January of the following year). The request must contain the reasons for the transfer.

i. *Personal equipment:*
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

FIRST YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CAPF05X	Communication for Academic Purposes	(5)	(10)	
CFAF05D	Computing Fundamentals A	(5)	(15)	
COHF05D	Computational Mathematics	(5)	(15)	
INFF25D	Information Literacy (block module)	(5)	(3)	
LFSF25X	Life Skills (block module)	(5)	(2)	
PPAF05D	Principles of Programming A	(5)	(15)	

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

SECOND YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CFBF15D	Computing Fundamentals B	(5)	(15)	Computing Fundamentals A
WEBF15D	Web Computing	(5)	(15)	Principles of Programming A

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
DCTF15D	Discrete Structures	(5)	(15)	Computational Mathematics
PPBF15D	Principles of Programming B (first- or second-semester module)	(5)	(15)	Principles of Programming A

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

THIRD YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
ADS216D	Advanced Discrete Structures	(6)	(15)	Discrete Structures
CAO216D	Computer Architecture and Organisation	(6)	(15)	
DTP216D	Database Principles	(6)	(15)	
OOP216D	Object-Oriented Programming	(6)	(15)	Principles of Programming B

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
AOP216D	Advanced Object-Oriented Programming	(6)	(15)	Object-Oriented Programming
ISC216D	Information Security	(6)	(15)	
ORS216D	Operating Systems	(6)	(15)	

SEF216D	Software Engineering Fundamentals	(6)	(15)	

TOTAL CREDITS FOR THE THIRD YEAR: **120**

FOURTH YEAR				
CODE	**MODULE**	**NQF-L**	**CREDIT**	**PREREQUISITE MODULE(S)**
FIRST SEMESTER				
INT316D	Internet Programming	(6)	(15)	Advanced Object-Orientated Programming
MOB316D	Mobile Computing	(6)	(15)	Advanced Object-Orientated Programming
SWP316D	Software Project	(6)	(15)	Advanced Object-Orientated Programming
	plus one of the following electives:			
DBP316D	Database Programming	(6)	(15)	Database Principles
DIS316D	Distributed Systems (module not currently offered)	(6)	(15)	
WEM316D	Web Server Management (not (module not currently offered)	(6)	(15)	
SECOND SEMESTER				
WOC316D	Work-Integrated Learning	(6)	(60)	Internet Programming Mobile Computing Software Project Web Server Management **or** Database Programming **or** Distributed Systems

TOTAL CREDITS FOR THE FOURTH YEAR: **120**

TOTAL CREDITS FOR THE QUALIFICATION: **360**

1.3   ADVANCED DIPLOMA IN COMPUTER SCIENCE
AdvDip (Computer Science) - NQF Level 7 (120 credits)
Qualification code: ADRS20
SAQA ID: 115935, CHE NUMBER: H/H16/E167CAN

Campus where offered: Soshanguve South, eMalahleni and Polokwane campuses

REMARKS

a.   *Admission requirement(s):*
A National Diploma: Information Technology in the field of Technical Applications, or Software Development, or Web Application Development, **or** a Diploma in Computer Science, **or** a relevant bachelor's degree, **or** an equivalent qualification in Computer Science or Software Engineering at NQF Level 6 with a minimum of 360 credits. Prospective students are required to have knowledge of advanced JAVA programming.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b. *Selection criteria:*
Admission is subject to selection. Prospective students will be evaluated based on the marks obtained in the previous qualification and/or work experience.

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e. *Presentation:*
Day classes offered on Saturdays over a period of two years.

f. *Minimum duration:*
A minimum of one or two years (depending on the programme presentation).

g. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Re-registration:*
The option to re-register for Integrated Software Project is subject to a student's academic performance. The purpose of the re-registration option is to provide students with an opportunity to complete the final project only, and not to redo the whole module should they fail the module.

i. *Transfer between Learning Sites:*
A student must complete a qualification at the learning site where he/she was accepted and is registered. A transfer between sites will only be considered if the student follows the following process: A formal request must be submitted to the Academic manager/Head of the Department on the current learning site by the second Friday in October (to be considered for a transfer in January of the following year). The request must contain the reasons for the transfer.

j. *Personal equipment:*
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

ATTENDANCE (FIRST OR SECOND YEAR)
Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
ISJ107V	Integrated Software Project	(7)	(15)	Data Structures and Algorithms Distributed Programming
ISJ117R	Integrated Software Project (re-registration) (first- or second-semester module, see paragraph h)	(7)	(0)	

FIRST SEMESTER

DTD117V	Data Structures and Algorithms	(7)	(15)	
HMD117V	Human Computer Interaction	(7)	(15)	
SEC117V	Service-Oriented Computing	(7)	(15)	Distributed Programming
SFG117V	Software Engineering	(7)	(15)	

SECOND SEMESTER

DSD117V	Distributed Programming	(7)	(15)
IDA117V	Introduction to Data Science	(7)	(15)
TCR117V	Theoretical Computer Science	(7)	(15)

TOTAL CREDITS FOR THE QUALIFICATION: **120**

1.4 POSTGRADUATE DIPLOMA IN COMPUTER SCIENCE
PGDip (Computer Science) - NQF Level 8 (120 credits)
Qualification code: PDRS21
SAQA ID: 111271, CHE NUMBER: H/H16/E186CAN

Campus where offered: Soshanguve South Campus

REMARKS

a. *Admission requirement(s):*
An Advanced Diploma in Computer Science, **or** a Baccalaureus Technologiae: Information Technology in the field of Software Development or Technical Applications or Web and Application Development, **or** a Bachelor's degree in Computer Science, **or** an equivalent qualification at NQF Level 7 with a minimum of 120 credits. Preference will be given to candidates who obtained an average of 60% in the previous qualification.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b. *Selection criteria:*
Admission is based on a personal interview with a departmental selection panel. Candidates are evaluated based on the previous qualification obtained and/or work experience.

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e. *Presentation:*
Day classes offered on Saturdays over a period of two years.

f. *Duration:*
A minimum of one or two years (depending on the programme presentation).

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g. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Re-registration:*
The option to re-register for Research Project is subject to a student's academic performance The purpose of the re-registration option is to provide students with an opportunity to complete the final project only, and not to redo the whole module should they fail the module.

i. *Personal equipment:*
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum require-ments for specific programmes are published.

CURRICULUM

ATTENDANCE (FIRST OR SECOND YEAR)
Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULES)
RRS108G	Research Project	(8)	(30)	Research Methodologies
RRS118R	Research Project (re-registration) (semester module, see paragraph h)	(8)	(0)	

FIRST SEMESTER

MSI118G	Modelling and Simulations	(8)	(15)	
RMR118G	Research Methodologies	(8)	(15)	

SECOND SEMESTER

DSC118G	Data Science and Big Data Analytics	(8)	(15)	

plus three of the following electives:

First semester

NTT118G	New Technological Trends	(8)	(15)	
OEN118G	Ontology Engineering	(8)	(15)	

Second semester

ACX118G	Algorithms and Complexity	(8)	(15)	
FRD118G	Formal Aspects of Computing	(8)	(15)	

TOTAL CREDITS FOR THE QUALIFICATION: **120**

1.5 DIPLOMA IN MULTIMEDIA COMPUTING
Dip (Multimedia Computing) - NQF Level 6 (360 credits)
Qualification code: DPMC20
SAQA ID: 111914, CHE NUMBER: H/H16/E090CAN

Campus where offered: Soshanguve South Campus

REMARKS

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

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) and preference would be given to first-time entering students. Once a programme is full, a waiting list will be created to provide an opportunity for applicants to fill the places of those who did not register on time. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

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

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

  Recommended subjects:
  Computer Science and Physical Science.

  Selection criteria:
  Applicants are assessed by means of the following 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.

- **FOR 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 4 for English (home language or first additional language), 5 for Mathematics or Technical Mathematics or 7 for Mathematical Literacy.

  Recommended subjects:
  Information Technology.

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Selection criteria:
To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **26** (with Mathematics or Technical Mathematics) or **28** (with Mathematical Literacy). Applicants with a score of **23** (with Mathematics or Technical Mathematics) or **25** (with Mathematical Literacy) will be considered for the extended programme. Life Orientation is excluded for APS calculation.

Assessment procedure(s):
No further assessment will be done. Applicants who achieve the minimum APS will be considered until the programme complement is full.

- **FOR 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, with at least 50% (APS of 4) for English (first additional language) and 60% for Mathematics (APS of 5) or 80% for Mathematical Literacy (APS of 7) and 50% for Life Orientation (excluded for APS calculation), and 50% (APS of 4) for any other three compulsory vocational subjects.

 Selection criteria:
 To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **26** (with Mathematics) or **28** (with Mathematical Literacy). Applicants with a score of **23** (with Mathematics) or **25** (with Mathematical Literacy) will be considered for the extended programme. Life Orientation is excluded for APS calculation.

 Assessment procedure(s):
 No further assessment will be done. Applicants who achieve the minimum APS will be considered until the programme complement is full.

- **FOR 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), with at least 50% (APS of 4) for English and 60% (APS of 5) for Mathematics N3.

b. *Recognition of Prior Learning (RPL), equivalence and status:*
 Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

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

e. *Minimum duration:*
 Three years.

f. *Exclusion and readmission:*
 See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

g. *WIL (Work-Integrated Learning):*
 See Chapter 5 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Personal equipment:*
    Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

FIRST YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
16P105X	Communication for Academic Purposes	(5)	(10)	
INF125D	Information Literacy (block module)	(5)	(3)	
LFS125X	Life Skills (block module)	(5)	(2)	

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CFA115D	Computing Fundamentals A	(5)	(15)	
COH115D	Computational Mathematics	(5)	(15)	
PPA115D	Principles of Programming A	(5)	(15)	

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CFB115D	Computing Fundamentals B	(5)	(15)	Computing Fundamentals A
DCT115D	Discrete Structures	(5)	(15)	Computational Mathematics
PPB115D	Principles of Programming B (first- or second-semester module)	(5)	(15)	Principles of Programming A
WEB115D	Web Computing	(5)	(15)	Principles of Programming A
	TOTAL CREDITS FOR THE FIRST YEAR:		**120**	

SECOND YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
DTP216D	Database Principles	(6)	(15)	
MTE216D	Multimedia Technology	(6)	(15)	
OOP216D	Object-Orientated Programming	(6)	(15)	Principles of Programming B
TMO216D	3D Modelling	(6)	(15)	

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
AOP216D	Advanced Object-Orientated Programming	(6)	(15)	Object-Orientated Programming
GMP216D	Games Programming	(6)	(15)	Object-Orientated Programming
MUA216D	Multimedia Applications	(6)	(15)	
TAN216D	3D Animation	(6)	(15)	3D Modelling
	TOTAL CREDITS FOR THE SECOND YEAR:		**120**	

Department of Computer Science

THIRD YEAR				
CODE	**MODULE**	**NQF-L**	**CREDIT**	**PREREQUISITE MODULE(S)**
FIRST SEMESTER				
IVE316D	Interactive Virtual Environments	(6)	(15)	Games Programming
MGV316D	Motion Graphics and Visual Effects	(6)	(15)	3D Animation
MMD316D	Multimedia for Mobile Devices	(6)	(15)	Advanced Object-Orientated Programming
SOD316D	Sound Design	(6)	(15)	
SECOND SEMESTER				
WCM316D	WIL	(6)	(60)	Interactive Virtual Environments Motion Graphics and Visual Effects Multimedia for Mobile Devices Sound Design

TOTAL CREDITS FOR THE THIRD YEAR: **120**

TOTAL CREDITS FOR THE QUALIFICATION: **360**

1.6 DIPLOMA IN MULTIMEDIA COMPUTING
(Extended curriculum programme with foundation provision)
Dip (Multimedia Computing) - NQF Level 6 (360 credits)
Qualification code: DPMCF0
SAQA ID: 111914, CHE NUMBER: H/H16/E090CAN

Campus where offered: Soshanguve South Campus

REMARKS

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

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) and preference would be given to first-time entering students. Once a programme is full, a waiting list will be created to provide an opportunity for applicants to fill the places of those who did not register on time. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

• **FOR APPLICANTS WITH A SENIOR CERTIFICATE OBTAINED BEFORE 2008:**

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

Recommended subjects:
Computer Science and Physical Science.

Selection criteria:
Applicants are assessed by means of the following 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.

- **FOR 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), 4 for Mathematics or Technical Mathematics or 6 for Mathematical Literacy.

    Recommended subjects:
    Information Technology.

    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 procedure(s):
    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.

- **FOR 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, with at least 40% (APS of 3) for English (first additional language) and 50% for Mathematics (APS of 4) or 70% for Mathematical Literacy (APS of 6) and 50% for Life Orientation (excluded for APS calculation) and 50% (APS of 4) for any other three compulsory 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 procedure(s):
    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.

Department of Computer Science

- **FOR 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), with at least 40% (APS of 3) for English and 50% (APS of 4) for Mathematics N3.

b. *Recognition of Prior Learning (RPL), equivalence and status:*
   Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

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

e. *Minimum duration:*
   Four years.

f. *Exclusion and readmission:*
   See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

g. *WIL (Work-Integrated Learning):*
   See Chapter 5 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Personal equipment:*
   Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

FIRST YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CAPF05X	Communication for Academic Purposes	(5)	(10)	
CFAF05D	Computing Fundamentals A	(5)	(15)	
COHF05D	Computational Mathematics	(5)	(15)	
INFF25D	Information Literacy (block module)	(5)	(3)	
LFSF25X	Life Skills (block module)	(5)	(2)	
PPAF05D	Principles of Programming A	(5)	(15)	

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

SECOND YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
FIRST SEMESTER				
CFBF15D	Computing Fundamentals B	(5)	(15)	Computing Fundamentals A
WEBF15D	Web Computing	(5)	(15)	Principles of Programming A

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
DCTF15D	Discrete Structures	(5)	(15)	Computational Mathematics
PPBF15D	Principles of Programming B (first- or second-semester module)	(5)	(15)	Principles of Programming A

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

THIRD YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

DTP216D	Database Principles	(6)	(15)	
MTE216D	Multimedia Technology	(6)	(15)	
OOP216D	Object-Orientated Programming	(6)	(15)	Principles of Programming B
TMO216D	3D Modelling	(6)	(15)	

SECOND SEMESTER

AOP216D	Advanced Object-Orientated Programming	(6)	(15)	Object-Orientated Programming
GMP216D	Games Programming	(6)	(15)	Object-Orientated Programming
MUA216D	Multimedia Applications	(6)	(15)	
TAN216D	3D Animation	(6)	(15)	3D Modelling

TOTAL CREDITS FOR THE THIRD YEAR: **120**

FOURTH YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

IVE316D	Interactive Virtual Environments	(6)	(15)	Games Programming
MGV316D	Motion Graphics and Visual Effects	(6)	(15)	3D Animation
MMD316D	Multimedia for Mobile Devices	(6)	(15)	Advanced Object-Orientated Programming
SOD316D	Sound Design	(6)	(15)	

SECOND SEMESTER

| WCM316D | WIL | (6) | (60) | Interactive Virtual Environments Motion Graphics and Visual Effects Multimedia for Mobile Devices Sound Design |

TOTAL CREDITS FOR THE FOURTH YEAR: **120**

TOTAL CREDITS FOR THE QUALIFICATION: **360**

Department of Computer Science

1.7 ADVANCED DIPLOMA IN MULTIMEDIA COMPUTING
AdvDip (Multimedia Computing) - NQF Level 7 (120 credits)
Qualification code: ADMC20
SAQA ID: 111263, CHE NUMBER: H/H16/E166CAN

Campus where offered: Soshanguve South Campus

REMARKS

a.   *Admission requirement(s):*
A National Diploma: Information Technology in the field of Multimedia, **or** a Diploma in Multi-media Computing, **or** a relevant bachelor's degree, **or** an equivalent qualification in Multimedia Computing at NQF Level 6 with a minimum of 360 credits.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b.   *Selection criteria:*
Admission is subject to selection. Prospective students will be evaluated based on the marks obtained in the previous qualification and/or work experience.

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c.   *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e.   *Presentation:*
Day classes offered on Saturdays over a period of two years.

f.   *Minimum duration:*
A minimum of one or two years (depending on the programme presentation).

g.   *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h.   *Re-registration:*
The option to re-register for Multimedia Project is subject to a student's academic perfor-mance. The purpose of the re-registration option is to provide students with an opportu-nity to complete the final project only, and not to redo the whole module should they fail the module.

i.   *Personal equipment:*
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum require-ments for specific programmes are published.

CURRICULUM

ATTENDANCE (FIRST OR SECOND YEAR)
Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
MCP107V	Multimedia Project	(7)	(15)	Multimedia Project Design
MCP117R	Multimedia Project (re-registration) (first- or second-semester module, see paragraph h)	(7)	(0)	

FIRST SEMESTER

GMD117V	Games Engineering	(7)	(15)	
HMD117V	Human Computer Interaction	(7)	(15)	
INP117V	Internet Programming	(7)	(15)	

plus one of the following electives:

CGH117V	Computer Graphics	(7)	(15)	
ISE117V	Introduction to Software Engineering	(7)	(15)	

SECOND SEMESTER

GPR117V	Advanced Games Programming	(7)	(15)	
IMD117V	Instructional Multimedia Design	(7)	(15)	
MPD117V	Multimedia Project Design	(7)	(15)	

TOTAL CREDITS FOR THE QUALIFICATION: **120**

1.8 POSTGRADUATE DIPLOMA IN MULTIMEDIA COMPUTING

PGDip (Multimedia Computing) - NQF Level 8 (120 credits)
Qualification code: PDMC21
SAQA ID: 111269, CHE NUMBER: H/H16/E185CAN

Campus where offered: Soshanguve South Campus

REMARKS

a. *Admission requirement(s):*
    An Advanced Diploma in Multimedia Computing, **or** a Baccalaureus Technologiae: Informa-tion Technology in the field of Multimedia, **or** a bachelor's degree in the field of Multimedia, **or** an equivalent qualification at NQF Level 7 with a minimum of 120 credits. Preference will be given to candidates who obtained an average of 60% in the previous qualification.

    Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b. Selection criteria:
    Admission is based on a personal interview with a departmental selection panel. Candidates are evaluated based on the previous qualification obtained and/or work experience.

Department of Computer Science

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e. *Presentation:*
Day classes offered on Saturdays over a period of two years.

f. *Duration:*
A minimum of one or two years (depending on the programme presentation).

g. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Re-registration:*
The option to re-register for Multimedia Research Project is subject to a student's academic performance. The purpose of the re-registration option is to provide students with an opportunity to complete the final project only, and not to redo the whole module should they fail the module.

i. *Personal equipment:*
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

ATTENDANCE (FIRST OR SECOND YEAR)
Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
MRP108G	Multimedia Research Project	(8)	(30)	Research Methodologies
MRP118R	Multimedia Research Project (re-registration) (first-semester module, see paragraph h)	(8)	(0)	

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
RMC118G	Research Methodologies	(8)	(15)	
VED118G	Virtual Environment Design	(8)	(15)	

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
VEA118G	Virtual Environment Application	(8)	(15)	

plus three of the following electives:

First semester

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
AIG118G	Artificial Intelligence Games Programming	(8)	(15)	Artificial Intelligence

NTT118G	New Technological Trends	(8)	(15)

Second semester

ARI118G	Artificial Intelligence	(8)	(15)
CGH118G	Computer Graphics (module not currently offered)	(8)	(15)
FRD118G	Formal Aspects of Computing	(8)	(15)

TOTAL CREDITS FOR THE QUALIFICATION: **120**

1.9 MASTER OF COMPUTING
MComputing - NQF Level 9 (180 credits)
Qualification code: MDCO17
(Specialisation codes for admission and registration: MDMC17 / MDRS17)
SAQA ID: 96920, CHE NUMBER: H16/10793/HEQSF

Campus where offered: Soshanguve South Campus

REMARKS

a.   *Admission requirement(s):*
An Honours degree, **or** a Postgraduate Diploma in Computer Science or Multimedia Computing or in a closely related field in Computing. Candidates should have achieved an average of 60% in the previous qualification, if not, special permission must be obtained from the Department. The previous qualification should relate to the intended field of study.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b.   *Selection criteria:*
Admission to this programme is only granted after a successful interview with the Department. Admission is subject to selection. Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) as well as supervisory capacity. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c.   *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e.   *Presentation:*
Research. The topic should be chosen in consultation with the Department.

f.   *Duration:*
A minimum of one year and a maximum of three years.

g.   *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h.   *Rules on postgraduate studies:*
See Chapter 8 of Students' Rules and Regulations (Part 1 of the Prospectus).

CURRICULUM

The modules offered within the Master of Computing differ between departments. Please refer to the contents (page 5) to see which of the other departments within the faculty offer this programme.

Students register for one of the following specialisation options:

CODE	MODULE	NQF-L	CREDIT
Multimedia (MDMC17)			
MMM109M	Dissertation: Multimedia	(9)	(180)
MMM109R	Dissertation: Multimedia (re-registration)	(9)	(0)
Computer Science (MDRS17)			
MCS109M	Dissertation: Computer Science	(9)	(180)
MCS109R	Dissertation: Computer Science (re-registration)	(9)	(0)

TOTAL CREDITS FOR THE QUALIFICATION: **180**

1.10 DOCTOR OF COMPUTING
DComputing - NQF Level 10 (360 credits)
Qualification code: DDCO01
(Specialisation codes for admission and registration: DDMC17 / DDRS17)
SAQA ID: 96754, CHE NUMBER: H16/10789/HEQSF

Campus where offered:	Soshanguve South Campus

REMARKS

a. *Admission requirement(s):*
A Master's degree in Computer Science or Multimedia Computing or in a closely related field in Computing. Candidates should have achieved an average of 60% in the previous qualification. If not, special permission must be obtained from the Department. The previous qualification should relate to the intended field of study.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b. *Selection criteria:*
Admission to this programme is only granted after a successful interview with the Department. Admission is subject to selection. Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) as well as supervisory capacity. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

d. *Intake for the qualification:*
January and July.

e. *Presentation:*
Research. The topic should be chosen in consultation with the Department.

f. *Duration:*
A minimum of three years and a maximum of six years.

g. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Rules on postgraduate studies:*
See Chapter 8 of Students' Rules and Regulations (Part 1 of the Prospectus).

CURRICULUM

The modules offered within the Doctor of Computing differ between departments. Please refer to the contents (page 5) to see which of the other departments within the faculty offer this programme.

Students register for one of the following specialisation options:

CODE	MODULE	NQF-L	CREDIT
Multimedia (DDMC17)			
MM1010O	Thesis: Multimedia	(10)	(360)
MM1010R	Thesis: Multimedia (re-registration)	(10)	(0)
Computer Science (DDRS17)			
CS1010O	Thesis: Computer Science	(10)	(360)
CS1010R	Thesis: Computer Science (re-registration)	(10)	(0)
TOTAL CREDITS FOR THE QUALIFICATION:			**360**

2. DEPARTMENT OF COMPUTER SYSTEMS ENGINEERING

2.1 DIPLOMA IN COMPUTER SYSTEMS ENGINEERING
Dip (Computer Systems Engineering) - NQF Level 6 (360 credits)
Qualification code: DPYE20
SAQA ID: 111837, CHE NUMBER: H/H16/E077CAN

Campus where offered: Soshanguve South Campus

REMARKS

a. Admission requirement(s) and selection criteria:

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

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

  Selection criteria:
  To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **26**.

- **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 4 for English (home language or first additional language), 5 for Mathematics or Technical Mathematics and 4 for Physical Sciences or Technical Sciences.

  Selection criteria:
  To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **26** (with Mathematics or Technical Mathematics). Applicants with a score of **23** (with Mathematics or Technical Mathematics) will be considered for the extended programme. Life Orientation is excluded for APS calculation.

- **APPLICANTS WITH A NATIONAL CERTIFICATE (VOCATIONAL) AT NQF LEVEL 4:**

  Admission requirement(s):
  A National Certificate (Vocational) with a bachelor's at NQF Level 4 degree or a diploma endorsement, with at least 50% (APS of 4) for English (first additional language) and 60% for Mathematics, 50% (APS of 4) for Physical Science or Applied Engineering Technology, 50% for Life Orientation (excluded for APS calculation), and 50% (APS of 4) for any two compulsory vocational subjects.

  Selection criteria:
  To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **26**. Applicants with a score of **23** will be considered for the extended programme.

- **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), with at least 50% (APS of 4) for English and 60% (APS of 5) for Mathematics N3 and Engineering Sciences N3.

b. *Assessment procedure(s):*
   No further assessment will be done. Applicants who achieve the minimum APS will be considered until the programme complement is full.

   Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) and preference would be given to first-time entering students. Once a programme is full, a waiting list will be created to provide an opportunity for applicants to fill the places of those who did not register on time. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
   Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

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

f. *Minimum duration:*
   Three years.

g. *Exclusion and readmission:*
   See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Work-Integrated Learning 326:*
   See Chapter 5 of Students' Rules and Regulations (Part 1 of the Prospectus).

i. *Engineering Council of South Africa (ECSA):*
   This programme is accredited by the Engineering Council of South Africa (ECSA), and students completing the qualification will be able to register with that Council. The Department or ECSA can be contacted for additional information and registration purposes.

j. *Re-registration:*
   The option to re-register for a module is subject to a student's academic performance. The purpose of the re-registration option is to provide students with an opportunity to complete the final project only, and not to redo the whole module should they fail the module.

k. *Personal equipment:*
   Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

	CURRICULUM

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

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
FIRST SEMESTER				
CMS115D	Communication Science 165	(5)	(10)	
DE1115D	Digital Electronics 115	(5)	(10)	
EIP115D	Electrical Principles 115	(5)	(10)	
EL1115D	Electronics 115	(5)	(10)	
MT1115D	Mathematics 115	(5)	(10)	
PG1115D	Programming 115	(5)	(10)	
SECOND SEMESTER				
DE2116D	Digital Electronics 126	(6)	(10)	Digital Electronics 115
EL2116D	Electronics 126	(6)	(10)	Electronics 115
MT2116D	Mathematics 126	(6)	(10)	Mathematics 115
NWS115D	Network Systems 125	(5)	(10)	
PCO115D	Project Construction 125	(5)	(10)	Electrical Principles 115 Electronics 115
PG2116D	Programming 126	(6)	(10)	Programming 115

TOTAL CREDITS FOR THE FIRST YEAR: **120**

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

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
FIRST SEMESTER				
CAG216D	Computer Architecture and Organisation 216	(6)	(10)	Digital Electronics 115 Digital Electronics 126
DAB215D	Databases 215	(5)	(10)	
DEL216D	Digital Electronics 216	(6)	(10)	Digital Electronics 115 Digital Electronics 126
DP1216D	Digital Process Control 216	(6)	(10)	Digital Electronics 115 Digital Electronics 126
MHS216D	Mathematics 216	(6)	(10)	Mathematics 115 Mathematics 126
PGM216D	Programming 216	(6)	(10)	Programming 115 Programming 126
SECOND SEMESTER				
DP2216D	Digital Process Control 226	(6)	(10)	Digital Process Control 216 Programming 216
LOD216D	Logic Design 226	(6)	(10)	Computer Architecture and Organisation 216 Digital Electronics 216
OPS216D	Operating Systems 226	(6)	(10)	Programming 216
PLC216D	Programmable Logic Controllers 226	(6)	(10)	Digital Process Control 216 Programming 216

plus two of the following electives:

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
ARI216D	Artificial Intelligence 226	(6)	(10)	Mathematics 216 Programming 216
MRO216D	Mobile Robotics 226	(6)	(10)	Computer Architecture and Organisation 216 Digital Electronics 216 Digital Process Control 216 Programming 216
NWS216D	Network Systems 226	(6)	(10)	Network Systems 125

TOTAL CREDITS FOR THE SECOND YEAR: **120**

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

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
EMS316D	Embedded Systems 316	(6)	(10)	Digital Process Control 226 Logic Design 226 Programmable Logic Controllers 226
PBS316D	Probability and Statistics 316	(6)	(10)	Mathematics 115
PD1315D	Project Design 365	(5)	(10)	Digital Process Control 226 Logic Design 226 Programmable Logic Controllers 226
PD1315R	Project Design 365 (re-registration) (second-semester module, see paragraph j)	(5)	(0)	
SFE316D	Software Engineering 316	(6)	(10)	Databases 215 Programming 216
WYE306D	Work-Integrated Learning 326	(6)	(60)	Digital Process Control 226 Logic Design 226 Operating Systems 226 Programmable Logic Controllers 226

SECOND SEMESTER
On completion of all modules.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
PD2316D	Project Design 376	(6)	(20)	
PD2316R	Project Design 376 (re-registration) (first-semester module, see paragraph j)	(6)	(0)	

TOTAL CREDITS FOR THE THIRD YEAR: **120**

TOTAL CREDITS FOR THE QUALIFICATION: **360**

Department of Computer Systems Engineering

2.2 DIPLOMA IN COMPUTER SYSTEMS ENGINEERING
(Extended curriculum programme with foundation provision)
Dip (Computer Systems Engineering) - NQF Level 6 (360 credits)
Qualification code: DPYEF0
SAQA ID: 111837, CHE NUMBER: H/H16/E077CAN

Campus where offered: Soshanguve South Campus

REMARKS

a. Admission requirement(s) and selection criteria:

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

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

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

• **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 and 3 for Physical Sciences or Technical Sciences.

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). Life Orientation is excluded for APS calculation.

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

• **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, with at least 40% (APS of 3) for English (first additional language) and 50% (APS of 4) for Mathematics and 40% (APS of 3) for Physical Science or Applied Engineering Technology and 50% for Life Orientation (excluded for APS calculation), and 50% (APS of 4) for any two compulsory vocational subjects.

Selection criteria:
To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **23** (excluding Life Orientation).

- **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), with at least 40% (APS of 3) for English and 50% (APS of 4) for Mathematics N3 and Engineering Sciences N3.

b. *Assessment procedure(s):*
    No further assessment will be done. Applicants who achieve the minimum APS will be considered until the programme complement is full.

    Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) and preference would be given to first-time entering students. Once a programme is full, a waiting list will be created to provide an opportunity for applicants to fill the places of those who did not register on time. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
    Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

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

f. *Minimum duration:*
    Four years.

g. *Exclusion and readmission:*
    See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Work-Integrated Learning 326:*
    See Chapter 5 of Students' Rules and Regulations (Part 1 of the Prospectus).

i. *Engineering Council of South Africa (ECSA):*
    This programme is accredited by the Engineering Council of South Africa (ECSA), and students completing the qualification will be able to register with that Council. The Department or ECSA can be contacted for additional information and registration purposes.

j. *Re-registration:*
    The option to re-register for a module is subject to a student's academic performance. The purpose of the re-registration option is to provide students with an opportunity to complete the final project only, and not to redo the whole module should they fail the module.

k. *Personal equipment:*
    Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

Department of Computer Systems Engineering

	CURRICULUM			

FIRST YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CMSF05D	Communication Science 165	(5)	(10)	
DE1F05D	Digital Electronics 115	(5)	(10)	
EIPF05D	Electrical Principles 115	(5)	(10)	
EL1F05D	Electronics 115	(5)	(10)	
MT1F05D	Mathematics 115	(5)	(10)	
PG1F05D	Programming 115	(5)	(10)	

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

SECOND YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
DE2F06D	Digital Electronics 126	(6)	(10)	Digital Electronics 115
EL2F06D	Electronics 126	(6)	(10)	Electronics 115
MT2F06D	Mathematics 126	(6)	(10)	Mathematics 115
NWSF05D	Network Systems 125	(5)	(10)	
PCOF05D	Project Construction 125	(5)	(10)	Electrical Principles 115 Electronics 115
PG2F06D	Programming 126	(6)	(10)	Programming 115

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

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CAG216D	Computer Architecture and Organisation 216	(6)	(10)	Digital Electronics 115 Digital Electronics 126
DAB215D	Databases 215	(5)	(10)	
DEL216D	Digital Electronics 216	(6)	(10)	Digital Electronics 115 Digital Electronics 126
DP1216D	Digital Process Control 216	(6)	(10)	Digital Electronics 115 Digital Electronics 126
MHS216D	Mathematics 216	(6)	(10)	Mathematics 115 Mathematics 126
PGM216D	Programming 216	(6)	(10)	Programming 115 Programming 126

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
DP2216D	Digital Process Control 226	(6)	(10)	Digital Process Control 216 Programming 216
LOD216D	Logic Design 226	(6)	(10)	Computer Architecture and Organisation 216 Digital Electronics 216
OPS216D	Operating Systems 226	(6)	(10)	Programming 216
PLC216D	Programmable Logic Controllers 226	(6)	(10)	Digital Process Control 216 Programming 216

plus two of the following electives:

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
ARI216D	Artificial Intelligence 226	(6)	(10)	Mathematics 216 Programming 216
MRO216D	Mobile Robotics 226	(6)	(10)	Computer Architecture and Organisation 216 Digital Electronics 216 Digital Process Control 216 Programming 216
NWS216D	Network Systems 226	(6)	(10)	Network Systems 125
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

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
EMS316D	Embedded Systems 316	(6)	(10)	Digital Process Control 226 Logic Design 226 Programmable Logic Controllers 226
PBS316D	Probability and Statistics 316	(6)	(10)	Mathematics 115
PD1315D	Project Design 365	(5)	(10)	Digital Process Control 226 Logic Design 226 Programmable Logic Controllers 226
PD1315R	Project Design 365 (re-registration) (second-semester module, see paragraph j)	(5)	(0)	
SFE316D	Software Engineering 316	(6)	(10)	Databases 215 Programming 216
WYE306D	Work-Integrated Learning 326	(6)	(60)	Digital Process Control 226 Logic Design 226 Operating Systems 226 Programmable Logic Controllers 226

SECOND SEMESTER
On completion of all modules.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
PD2316D	Project Design 376	(6)	(20)	
PD2316R	Project Design 376 (re-registration) (first-semester module, see paragraph j)	(6)	(0)	
TOTAL CREDITS FOR THE FOURTH YEAR:			**120**	
TOTAL CREDITS FOR THE QUALIFICATION:			**360**	

Department of Computer Systems Engineering

2.3 ADVANCED DIPLOMA IN COMPUTER SYSTEMS ENGINEERING
AdvDip (Computer Systems Engineering) - NQF Level 7 (140 credits)
Qualification code: ADYE20
SAQA ID: 111747, CHE NUMBER: H/H16/E133CAN

Campus where offered: Soshanguve South Campus

REMARKS

a. *Admission requirement(s):*
A National Diploma: Engineering: Computer Systems, **or** a National Diploma: Information Technology in the field of Intelligent Industrial Systems, **or** a National Diploma: Engineering: Electrical (Electronics), **or** a Diploma in Computer Systems Engineering, **or** a relevant bachelor's degree, **or** an equivalent qualification at NQF Level 6 with a minimum of 360 credits.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b. *Selection criteria:*
Admission is subject to selection. Prospective students will be evaluated based on the marks obtained in the previous qualification and/or work experience.

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e. *Presentation:*
Day classes offered on Saturdays over a period of two years.

f. *Minimum duration:*
A minimum of one or two years (depending on the programme presentation).

g. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Re-registration:*
The option to re-register for Engineering Project Design is subject to a student's academic performance. The purpose of the re-registration option is to provide students with an opportunity to complete the final project only, and not to redo the whole module should they fail the module.

i. *Engineering Council of South Africa (ECSA):*
This programme is accredited by the Engineering Council of South Africa (ECSA), and students completing the qualification will be able to register with that Council. The Department or ECSA can be contacted for additional information and registration purposes.

j. *Personal equipment:*
    Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

ATTENDANCE (FIRST OR SECOND YEAR)
Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
EGD107V	Engineering Project Design	(7)	(30)	
EGD117R	Engineering Project Design (re-registration) (first-semester module, see paragraph h)	(7)	(0)	

FIRST SEMESTER

AIS117V	Artificial Intelligent Systems	(7)	(15)	
CMD116V	Computational Mathematics	(6)	(15)	
DSR117V	Digital Signal Processing	(7)	(15)	
EPM117V	Engineering Project Management	(7)	(10)	

SECOND SEMESTER

EBD117V	Embedded Systems Design	(7)	(15)	
EER117V	Engineering Ethics and Practices	(7)	(10)	

plus any two of the following electives:

FIRST SEMESTER

CNT117V	Computer Networks	(7)	(15)	
IES117V	Intelligent Electro-Mechanical Systems	(7)	(15)	Embedded Systems Design

SECOND SEMESTER

CAO117V	Computer Architecture and Organisation	(7)	(15)	
CES117V	Computer Emerging Technologies (first- or second-semester module)	(7)	(15)	Artificial Intelligent Systems
IIS117V	Intelligent Industrial Systems	(7)	(15)	Artificial Intelligent Systems
SRG117V	Systems Resources Management	(7)	(15)	Computational Mathematics

TOTAL CREDITS FOR THE QUALIFICATION: **140**

2.4 POSTGRADUATE DIPLOMA IN COMPUTER SYSTEMS ENGINEERING
PGDip (Computer Systems Engineering) - NQF Level 8 (120 credits)
Qualification code: PDYE21
SAQA ID: 111238, CHE NUMBER: H/H16/E156CAN

Campus where offered: Soshanguve South Campus

REMARKS

a. *Admission requirement(s):*
An Advanced Diploma in Computer Systems Engineering or Electronics, **or** a relevant Baccalaureus Technologiae: Computer Systems or Electronics or Information Technology in the field of Intelligent Industrial Systems, **or** a relevant bachelor's degree, **or** an equivalent qualification at NQF Level 7 with a minimum of 120 credits. Preference will be given to candidates who obtained an average of 60% in the previous qualification.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b. *Selection criteria:*
Admission is subject to selection. Candidates are evaluated based on the previous qualification obtained and/or work experience.

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e. *Presentation:*
Day classes offered on Saturdays over a period of two years.

f. *Duration:*
A minimum of one or two years (depending on the programme presentation).

g. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Re-registration:*
The option to re-register for Industrial Research Project is subject to a student's academic performance. The purpose of the re-registration option is to provide students with an opportunity to complete the final project only, and not to redo the whole module should they fail the module.

i. *Personal equipment:*
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

ATTENDANCE (FIRST OR SECOND YEAR)
Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT
IDD108G	Industrial Research Project	(8)	(30)
IDD118R	Industrial Research Project (re-registration) (first-semester module, see paragraph h)	(8)	(0)

FIRST SEMESTER

ESD118G	Advanced Embedded Systems Design	(8)	(15)
DSR118G	Advanced Digital Signal Processing	(8)	(15)

SECOND SEMESTER

AIS118G	Advanced Artificial Intelligent Systems	(8)	(15)

plus any three of the following electives (a student may only choose a maximum of two modules per semester):

FIRST SEMESTER

CAO118G	Advanced Computer Architecture and Organisation	(8)	(15)
IES118G	Advanced Intelligent Electro-Mechanical Systems	(8)	(15)
IIS118G	Advanced Intelligent Industrial Systems	(8)	(15)

SECOND SEMESTER

CES118G	Advanced Computer Emerging Technologies (first- or second semester module)	(8)	(15)
CNE118G	Advanced Computer Networks	(8)	(15)

TOTAL CREDITS FOR THE QUALIFICATION: **120**

Department of Computer Systems Engineering

2.5 MASTER OF COMPUTING
MComputing - NQF Level 9 (180 credits)
Qualification code: MDCO17
(Specialisation code for admission and registration: MDYE17)
SAQA ID: 96920, CHE NUMBER: H16/10793/HEQSF

Campus where offered: Soshanguve South Campus

REMARKS

a. *Admission requirement(s):*
An Honours degree, **or** a Postgraduate Diploma in Computer Systems Engineering or in a closely related field in Computing or Engineering. Candidates should have achieved an average of 60% in the previous qualification, if not, special permission must be obtained from the Department.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b. *Selection criteria:*
Admission to this programme is only granted after a successful interview with the Department. Admission is subject to selection. Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) as well as supervisory capacity. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e. *Presentation:*
Research. The topic should be chosen in consultation with the Department.

f. *Duration:*
A minimum of one year and a maximum of three years.

g. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Rules on postgraduate studies:*
See Chapter 8 of Students' Rules and Regulations (Part 1 of the Prospectus).

CURRICULUM

The modules offered within the Master of Computing differ between departments. Please refer to the contents (page 5) to see which of the other departments within the faculty offer this programme.

CODE	MODULE	NQF-L	CREDIT
MCY109M	Dissertation: Computer Systems Engineering	(9)	(180)
MCY109R	Dissertation: Computer Systems Engineering (re-registration)	(0)	(0)

TOTAL CREDITS FOR THE QUALIFICATION: **180**

2.6 DOCTOR OF COMPUTING
DComputing - NQF Level 10 (360 credits)
Qualification code: DDCO01
(Specialisation code for admission and registration: DDYE17)
SAQA ID: 96754, CHE NUMBER: H16/10789/HEQSF

Campus where offered: Soshanguve South Campus

REMARKS

a.   *Admission requirement(s):*
A Master's degree in Computer Systems Engineering or in a closely related field in Computing or Engineering. Candidates should have achieved an average of 60% in the previous qualification, if not, special permission must be obtained from the Department.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b.   *Selection criteria:*
Admission to this programme is only granted after a successful interview with the Department. Admission is subject to selection. Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) as well as supervisory capacity. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c.   *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

d.   *Intake for the qualification:*
January and July.

e.   *Presentation:*
Research. The topic should be chosen in consultation with the Department.

f.   *Duration:*
A minimum of three years and a maximum of six years.

g.   *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h.   *Rules on postgraduate studies:*
See Chapter 8 of Students' Rules and Regulations (Part 1 of the Prospectus).

CURRICULUM

The modules offered within the Doctor of Computing differ between departments. Please refer to the contents (page 5) to see which of the other departments within the faculty offer this programme.

CODE	MODULE	NQF-L	CREDIT
CY1010O	Thesis: Computer Systems Engineering	(10)	(360)
CY1010R	Thesis: Computer Systems Engineering (re-registration)	(10)	(0)

TOTAL CREDITS FOR THE QUALIFICATION: **360**

Department of Computer Systems Engineering

3. DEPARTMENT OF INFORMATICS

3.1 DIPLOMA IN INFORMATICS
Dip (Informatics) - NQF Level 6 (360 credits)
Qualification code: DPIF20
SAQA ID: 103078, CHE NUMBER: H/H16/E061CAN

Campus where offered: Soshanguve South Campus

REMARKS

a.   Admission requirement(s) and selection criteria:

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) and preference would be given to first-time entering students. Once a programme is full, a waiting list will be created to provide an opportunity for applicants to fill the places of those who did not register on time. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

•   **FOR APPLICANTS WITH A SENIOR CERTIFICATE OBTAINED BEFORE 2008:**

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

Recommended subjects:
Computer Science and Physical Science.

Selection criteria:
Applicants are assessed by means of the following 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. This rule applies to all applicants, as well as to applicants who are already registered at other institutions.

•   **FOR 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 4 for English (home language or first additional language) and 5 for Mathematics or Technical Mathematics or 7 for Mathematical Literacy.

Recommended subjects:
None.

Selection criteria:

To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **26** (with Mathematics or Technical Mathematics) or **28** (with Mathematical Literacy). Applicants with a score of **23** (with Mathematics or Technical Mathematics) or **25** (with Mathematical Literacy) will be considered for the extended programme. Life Orientation is excluded for APS calculation.

Assessment procedure(s):

No further assessment will be done. Applicants who achieve the minimum APS will be considered until the programme complement is full.

- **FOR 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, with at least 50% (APS of 4) for English (first additional language) and 60% (APS of 5) for Mathematics or 80% (APS of 7) for Mathematical Literacy, and 50% for Life Orientation (excluded for APS calculation), and 50% (APS of 4) for any other three compulsory vocational subjects.

  Selection criteria:

  To be considered for this qualification, applicants must have an Admission Point Score (APS) of at least **26** (with Mathematics) or **28** (with Mathematical Literacy). Applicants with a score of **23** (with Mathematics) or **25** (with Mathematical Literacy) will be considered for the extended programme. Life Orientation is excluded for APS calculation.

  Assessment procedure(s):

  No further assessment will be done. Applicants who achieve the minimum APS will be considered until the programme complement is full.

- **FOR 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), with at least 60% (APS of 5 for Mathematics N3).

b. *Recognition of Prior Learning (RPL), equivalence and status:*
    Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

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

e. *Minimum duration:*
    Three years.

f. *Exclusion and readmission:*
    See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

g. *Work-Integrated Learning:*
    See Chapter 5 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Personal equipment:*
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

FIRST YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
16E105X	Communication for Academic Purpose	(5)	(10)	
INF125D	Information Literacy (block module)	(5)	(3)	
LFS125X	Life Skills (block module)	(5)	(2)	

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CGA115D	Computing Fundamentals A	(5)	(15)	
COH115D	Computational Mathematics	(5)	(15)	
PPA115D	Principles of Programming A	(5)	(15)	

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
BCM115D	Business Cost Management	(5)	(15)	Computational Mathematics
BFS115D	Business Fundamentals	(5)	(15)	Computational Mathematics
CGB115D	Computing Fundamentals B	(5)	(15)	Computing Fundamentals A
PPB115D	Principles of Programming B (first- or second-semester module)	(5)	(15)	Principles of Programming A

TOTAL CREDITS FOR THE FIRST YEAR:			**120**	

SECOND YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
BUA216D	Business Analysis A	(6)	(15)	Computational Mathematics
DBA216D	Database Management Systems A	(6)	(15)	Computing Fundamentals B Principles of Programming B
SIS216D	Introduction to Strategic Information Systems	(6)	(15)	Business Fundamentals Computing Fundamentals B
SYA216D	System Analysis A	(6)	(15)	Computational Mathematics

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
BUB216D	Business Analysis B	(6)	(15)	Business Analysis A
DBB216D	Database Management Systems B	(6)	(15)	Database Management Systems A
ITP216D	IT Project Management A	(6)	(15)	Computational Mathematics
SYB216D	System Analysis B	(6)	(15)	System Analysis A

TOTAL CREDITS FOR THE SECOND YEAR:			**120**	

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

THIRD YEAR

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
IEA316D	Introduction to Enterprise Architecture	(6)	(15)	Introduction to Strategic Information Systems
ISD316D	Information System Deployment	(6)	(15)	Business Analysis B Database Management Systems B IT Project Management A System Analysis B
ITP316D	IT Project Management B	(6)	(15)	IT Project Management A
PCT316D	Process Testing	(6)	(15)	Database Management Systems B

SECOND SEMESTER
On completion of first-semester modules.

CODE	MODULE	NQF-L	CREDIT	
WII316D	Work-Integrated Learning	(6)	(60)	

TOTAL CREDITS FOR THE THIRD YEAR: **120**

TOTAL CREDITS FOR THE QUALIFICATION: **360**

3.2 DIPLOMA IN INFORMATICS
(Extended curriculum programme with foundation provision)
Dip (Informatics) - NQF Level 6 (360 credits)
Qualification code: DPIFF0
SAQA ID: 103078, CHE NUMBER: H/H16/E061CAN

Campus where offered: Soshanguve South Campus

REMARKS

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

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) and preference would be given to first-time entering students. Once a programme is full, a waiting list will be created to provide an opportunity for applicants to fill the places of those who did not register on time. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

•   **FOR APPLICANTS WITH A SENIOR CERTIFICATE OBTAINED BEFORE 2008:**

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

Recommended subjects:
Computer Science and Physical Science.

Selection criteria:
Applicants are assessed by means of the following 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. This rule applies to all applicants, as well as to applicants who are already registered at other institutions.

- **FOR 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.

  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 **25** (with Mathematical Literacy). Life Orientation is excluded for APS calculation.

  Assessment procedure(s):
  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.

- **FOR 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, with at least 40% (APS of 3) for English (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), 50% (APS of 4) for any other three compulsory 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) will be considered for the extended programme. Life Orientation is excluded for APS calculation.

  Assessment procedure(s):
  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.

- **FOR 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), with at least 50% (APS of 4) for Mathematics N3.

b. *Recognition of Prior Learning (RPL), equivalence and status:*
   Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

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

e. *Minimum duration:*
   Four years.

f. *Exclusion and readmission:*
   See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

g. *Work-Integrated Learning:*
   See Chapter 5 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Personal equipment:*
   Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

FIRST YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CGAF05D	Computing Fundamentals A	(5)	(15)	
COEF05X	Communication for Academic Purpose	(5)	(10)	
COHF05D	Computational Mathematics	(5)	(15)	
INFF25D	Information Literacy (block module)	(5)	(3)	
LFSF25X	Life Skills (block module)	(5)	(2)	
PPAF05D	Principles of Programming A	(5)	(15)	

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

SECOND YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CGBF15D	Computing Fundamentals B	(5)	(15)	Computing Fundamentals A
PPBF15D	Principles of Programming B (first- or second-semester module)	(5)	(15)	Principles of Programming A

SECOND SEMESTER

BCMF15D	Business Cost Management	(5)	(15)	Computational Mathematics
BFSF15D	Business Fundamentals	(5)	(15)	Computational Mathematics

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

THIRD YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

BUA216D	Business Analysis A	(6)	(15)	Computational Mathematics
DBA216D	Database Management Systems A	(6)	(15)	Computing Fundamentals B Principles of Programming B
SIS216D	Introduction to Strategic Information Systems	(6)	(15)	Business Fundamentals Computing Fundamentals B
SYA216D	System Analysis A	(6)	(15)	Computational Mathematics

SECOND SEMESTER

BUB216D	Business Analysis B	(6)	(15)	Business Analysis A
DBB216D	Database Management Systems B	(6)	(15)	Database Management Systems A
ITP216D	IT Project Management A	(6)	(15)	Computational Mathematics
SYB216D	System Analysis B	(6)	(15)	System Analysis A

TOTAL CREDITS FOR THE THIRD YEAR: **120**

FOURTH YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

IEA316D	Introduction to Enterprise Architecture	(6)	(15)	Introduction to Strategic Information Systems
ISD316D	Information System Deployment	(6)	(15)	Business Analysis B Database Management Systems B IT Project Management A System Analysis B
ITP316D	IT Project Management B	(6)	(15)	IT Project Management A
PCT316D	Process Testing	(6)	(15)	Database Management Systems B

SECOND SEMESTER
On completion of first-semester modules.

WII316D	Work-Integrated Learning	(6)	(60)	

TOTAL CREDITS FOR THE FOURTH YEAR: **120**

TOTAL CREDITS FOR THE QUALIFICATION: **360**

3.3 ADVANCED DIPLOMA IN INFORMATICS
AdvDip (Informatics) - NQF Level 7 (120 credits)
Qualification code: ADIF20
SAQA ID: 111463, CHE NUMBER: H/H16/E168CAN

Campus where offered: Soshanguve South Campus

REMARKS

a. *Admission requirement(s):*
    A National Diploma: Information Technology in the field of Business Applications, **or** a Diploma in Informatics, **or** a relevant bachelor's degree, **or** an equivalent qualification at NQF Level 6 with a minimum of 360 credits.

    Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b. *Selection criteria:*
    Admission is subject to selection. Prospective students will be evaluated based on the marks obtained in the previous qualification and/or work experience.

    Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
    Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e. *Presentation:*
    Day classes offered on Saturdays over a period of two years.

f. *Minimum duration:*
    A minimum of one or two years (depending on the programme presentation).

g. *Exclusion and readmission:*
    See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Re-registration:*
    The option to re-register for Information System Research is subject to a student's academic performance. The purpose of the re-registration option is to provide students with an opportunity to complete the final project only, and not to redo the whole module should they fail the module.

i. *Personal equipment:*
    Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

Department of Informatics

CURRICULUM

ATTENDANCE (FIRST OR SECOND YEAR)
Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
BAA117V	Business Analysis and Application	(7)	(15)	
ITM117V	Information and Technology Management	(7)	(15)	
KWM117V	Knowledge Management	(7)	(15)	
PIF117V	Principles of Research	(7)	(15)	

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
IAR117V	Information Systems Architecture	(7)	(15)	
ISR117V	Information System Research	(7)	(15)	Principles of Research
ISR117R	Information System Research (re-registration) (first-semester module - see paragraph h)	(7)	(0)	
ITP117V	Information Technology Project Management	(7)	(15)	
SIS117V	Strategic Information Systems	(7)	(15)	

TOTAL CREDITS FOR THE QUALIFICATION: **120**

3.4 POSTGRADUATE DIPLOMA IN INFORMATICS
PGDip (Informatics) - NQF Level 8 (120 credits)
Qualification code: PDIF21
SAQA ID: 111841, CHE NUMBER: H/H16/E174CAN

Campus where offered: Soshanguve South Campus

REMARKS

a.   *Admission requirement(s):*
An Advanced Diploma in Informatics, **or** a Baccalaureus Technologiae: Information Technology in the field of Business Applications or Knowledge Management or Information Management or Business Information Systems, **or** a Bachelor's degree in Informatics or in Information Systems, **or** an equivalent specialisation qualification at NQF Level 7 with a minimum of 120 credits. Preference will be given to candidates who obtained an average of 60% in the previous qualification.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b.   *Selection criteria:*
Admission is subject to selection. Candidates are evaluated based on the previous qualification obtained and/or work experience.

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e. *Presentation:*
Day classes offered on Saturdays over a period of two years.

f. *Duration:*
A minimum of one or two years (depending on the programme presentation).

g. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Re-registration:*
The option to re-register for Advanced Research Project is subject to a student's academic performance. The purpose of the re-registration option is to provide students with an opportunity to complete the final project only, and not to redo the whole module should they fail the module.

i. *Personal equipment:*
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

ATTENDANCE (FIRST OR SECOND YEAR)
Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
ARP108G	Advanced Research Project	(8)	(24)	Research Methodology
ARP118R	Advanced Research Project (re-registration) (first-semester module, see paragraph h)	(8)	(0)	

FIRST SEMESTER

BAA118G	Advanced Business Analysis and Application	(8)	(24)	
ITP118G	Advanced IT Project Management	(8)	(24)	

SECOND SEMESTER

KWM118G	Advanced Knowledge Management	(8)	(24)	
RIF118G	Research Methodology	(8)	(24)	

TOTAL CREDITS FOR THE QUALIFICATION: **120**

Department of Informatics

3.5 MASTER OF COMPUTING

MComputing - NQF Level 9 (180 credits)

Qualification code: MDCO17

(Specialisation code for admission and registration: MDIF17)

SAQA ID: 96920, CHE NUMBER: H16/10793/HEQSF

Campus where offered: Soshanguve South Campus

REMARKS

a. *Admission requirement(s):*
   An Honours degree, **or** a Postgraduate Diploma in Informatics or in a closely related field in Computing. Candidates should have achieved an average of 60% in the previous qualification, if not, special permission must be obtained from the Department.

   Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b. *Selection criteria:*
   Admission to this programme is only granted after a successful interview with the Department. Admission is subject to selection. Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) as well as supervisory capacity. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
   Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e. *Presentation:*
   Research. The topic should be chosen in consultation with the Department.

f. *Duration:*
   A minimum of one year and a maximum of three years.

g. *Exclusion and readmission:*
   See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Rules on postgraduate studies:*
   See Chapter 8 of Students' Rules and Regulations (Part 1 of the Prospectus).

CURRICULUM

The modules offered within the Master of Computing differ between departments. Please refer to the contents (page 5) to see which of the other departments within the faculty offer this programme.

CODE	MODULE	NQF-L	CREDIT
MIN109M	Dissertation: Informatics	(9)	(180)
MIN109R	Dissertation: Informatics (re-registration)	(9)	(0)

TOTAL CREDITS FOR THE QUALIFICATION: **180**

3.6 DOCTOR OF COMPUTING
DComputing - NQF Level 10 (360 credits)
Qualification code: DDCO01

(Specialisation code for admission and registration: DDIF17)
SAQA ID: 96754, CHE NUMBER: H16/10789/HEQSF

Campus where offered: Soshanguve South Campus

REMARKS

a.   *Admission requirement(s):*
A Master's degree in Informatics or in a closely related field in Computing. Candidates should have achieved an average of 60% in the previous qualification, if not, special permission must be obtained from the Department.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b.   *Selection criteria:*
Admission to this programme is only granted after a successful interview with the Department. Admission is subject to selection. Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) as well as supervisory capacity. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c.   *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

d.   *Intake for the qualification:*
January and July.

e.   *Presentation:*
Research. The topic should be chosen in consultation with the Department.

f.   *Duration:*
A minimum of three years and a maximum of six years.

g.   *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h.   *Rules on postgraduate studies:*
See Chapter 8 of Students' Rules and Regulations (Part 1 of the Prospectus).

CURRICULUM

The modules offered within the Doctor of Computing differ between departments. Please refer to the contents (page 5) to see which of the other departments within the faculty offer this programme.

CODE	MODULE	NQF-L	CREDIT
IN1010O	Thesis: Informatics	(10)	(360)
IN1010R	Thesis: Informatics (re-registration)	(10)	(0)

TOTAL CREDITS FOR THE QUALIFICATION: **360**

4. DEPARTMENT OF INFORMATION TECHNOLOGY

4.1 DIPLOMA IN INFORMATION TECHNOLOGY
Dip (Information Technology) - NQF Level 6 (360 credits)
Qualification code: DPIT20
SAQA ID: 111493, CHE NUMBER: H/H16/E088CAN

Campus where offered: Soshanguve South Campus

REMARKS

a. *Admission requirement(s) and selection criteria:*
    Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) and preference would be given to first-time entering students. Once a programme is full, a waiting list will be created to provide an opportunity for applicants to fill the places of those who did not register on time. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

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

    Admission requirement(s):
    A Senior Certificate or 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:
    Applicants are assessed by means of the following 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.

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

- **FOR 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 4 for English (home language or first additional language) and 5 for Mathematics or Technical Mathematics or 7 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 **26** (with Mathematics or Technical Mathematics) or **28** (with Mathematical Literacy). Applicants with a score of **23** (with Mathematics or Technical Mathematics) or **25** (with Mathematical Literacy) will be considered for the extended programme. Life Orientation is excluded for APS calculation.

Assessment procedure(s):
No further assessment will be done. Applicants who achieve the minimum APS will be considered until the programme complement is full.

- **FOR 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, with at least 50% (APS of 4) for English (first additional language) and 60% for Mathematics (APS of 5) or 80% for Mathematical Literacy (APS of 7) and 50% for Life Orientation (excluded for APS calculation) and 40% (APS of 3) for Physical Science/Applied Engineering Technology 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 **26** (with Mathematics) or **28** (with Mathematical Literacy). Applicants with a score of **23** (with Mathematics) or **25** (with Mathematical Literacy) will be considered for the extended programme. Life Orientation is excluded for APS calculation.

  Assessment procedure(s):
  No further assessment will be done. Applicants who achieve the minimum APS will be considered until the programme complement is full.

- **FOR 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), with at least 50% (APS of 4) for English and 60% (APS of 5) for Mathematics N3 and Engineering Sciences N3.

b. *Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

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

e. *Minimum duration:*
Three years.

f. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

g. *Industrial Exposure 326R (Work-Integrated Learning):*
See Chapter 5 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Personal equipment:*
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM
Key to asterisks:
* Information does not correspond to SAQA registration certificate as per SAQA ID: 111493. (The deviations are pending final approval by SAQA.)

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

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
16E105X	Communication for Academic purpose	(5)	(10)	
INF125D	Information Literacy (block module)	(5)	(3)	
LFS125X	Life Skills (block module)	(5)	(2)	

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CHO115D	Computational Mathematics*	(5)	(15)	
CN1115D	Computer Networks 115R	(5)	(15)	
TRO115D	Introduction to Programming 115R	(5)	(15)	

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CAT116D	Computer Architecture 125R	(6)	(15)	Computational Mathematics
CN2115D	Computer Networks 125R	(5)	(15)	Computer Networks 115R
DSM116D	Discrete Mathematics 115R	(6)	(15)	Computational Mathematics
PPG115D	Principles of Programming 125R	(5)	(15)	Introduction to Programming 115R

TOTAL CREDITS FOR THE FIRST YEAR: **120**

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

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)

FIRST SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CN1216D	Computer Networks 215R	(6)	(15)	Computer Networks 125R
OOR216D	Object-Orientated Programming 216R	(6)	(15)	Principles of Programming 125R
OSY216D	Operating Systems 226R	(6)	(15)	Computer Architecture 125R
PS1216D	Computer Security 215R	(6)	(15)	Computer Networks 125R

SECOND SEMESTER

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
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 electives:

PS2216D	Computer Security 226R	(6)	(15)	Computer Security 215R
WOR216D	Web Organisation 226R (not offered in 2025)	(6)	(15)	

TOTAL CREDITS FOR THE SECOND YEAR: **120**

THIRD 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 electives:			
CSY316D	Computer Security 316R	(6)	(15)	Computer Security 226R
RAL316D	Resource Allocation 316R (not offered in 2025)	(6)	(15)	Computer Networks 226R

SECOND SEMESTER
On completion of all modules.

IEX316D	Industrial Exposure 326R	(6)	(60)	

TOTAL CREDITS FOR THE THIRD YEAR: **120**

TOTAL CREDITS FOR THE QUALIFICATION: **360**

4.2 DIPLOMA IN INFORMATION TECHNOLOGY
(Extended curriculum programme with foundation provision)
Dip (Information Technology) - NQF Level 6 (360 credits)
Qualification code: DPITF0
SAQA ID: 111493, CHE NUMBER: H/H16/E088CAN

Campus where offered: Soshanguve South Campus

REMARKS

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

Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) and preference would be given to first-time entering students. Once a programme is full, a waiting list will be created to provide an opportunity for applicants to fill the places of those who did not register on time. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

- **FOR 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:
  Applicants are assessed by means of the following 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.

- **FOR 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 procedure(s):
  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.

- **FOR 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, with at least 40% (APS of 3) for English (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 procedure(s):
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.

• **FOR 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), 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:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

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

e. *Minimum duration:*
Four years.

f. *Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

g. *Industrial Exposure 326R (Work-Integrated Learning):*
See Chapter 5 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Personal equipment:*
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM
Key to asterisks:
* Information does not correspond to SAQA registration certificate as per SAQA ID: 111493.
(The deviations are pending final approval by SAQA.)

FIRST YEAR

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
CHOF05D	Computational Mathematics*	(5)	(15)	
CN1F05D	Computer Networks 115R	(5)	(15)	
COEF05X	Communication for Academic Purpose	(5)	(10)	
INFF25D	Information Literacy (block module)	(5)	(3)	
LFSF25X	Life Skills (block module)	(5)	(2)	

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	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)	Computational Mathematics
DSMF16D	Discrete Mathematics 115R	(6)	(15)	Computational Mathematics

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 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)	Principles of Programming 125R
OSY216D	Operating Systems 226R	(6)	(15)	Computer Architecture 125R
PS1216D	Computer Security 215R	(6)	(15)	Computer Networks 125R

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 electives:

PS2216D	Computer Security 226R	(6)	(15)	Computer Security 215R
WOR216D	Web Organisation 226R (not offered in 2025)	(6)	(15)	

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 electives:

CSY316D	Computer Security 316R	(6)	(15)	Computer Security 226R
RAL316D	Resource Allocation 316R (not offered in 2025)	(6)	(15)	Computer Networks 226R

SECOND SEMESTER
On completion of all modules.

IEX316D	Industrial Exposure 326R	(6)	(60)

TOTAL CREDITS FOR THE FOURTH YEAR: **120**

TOTAL CREDITS FOR THE QUALIFICATION: **360**

4.3 ADVANCED DIPLOMA IN INFORMATION TECHNOLOGY
AdvDip (Information Technology) - NQF Level 7 (120 credits)
Qualification code: ADIT21
SAQA ID: 117676, CHE NUMBER: H/H16/E158CAN

Campus where offered: Soshanguve South Campus

REMARKS

a. *Admission requirement(s):*
   A Diploma in Information Technology, **or** a National Diploma Information Technology in the field of Communication Networks or Support Services, **or** a relevant bachelor's degree, **or** an equivalent qualification at NQF Level of 6 with a minimum of 360 credits. Prospective students are required to have advanced knowledge of Communication/Computer Networks and Cyber/Computer Security.

   Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b. *Selection criteria:*
   Admission is subject to selection. Prospective students will be evaluated based on the marks obtained in the previous qualification and/or work experience.

   Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
   Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e. *Presentation:*
   Day classes offered on Saturdays over a period of two years.

f. *Minimum duration:*
   A minimum of one or two years (depending on the programme presentation).

g. Exclusion and readmission:
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. Re-registration:
The option to re-register for Research Project IV is subject to a student's academic performance. The purpose of the re-registration option is to provide students with an opportunity to complete the final project only, and not to redo the whole module should they fail the module.

i. Personal equipment:
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

ATTENDANCE (FIRST OR SECOND YEAR)
Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
FIRST SEMESTER				
NWG117V	Network Management IV	(7)	(15)	
NWP117V	Network Applications IV	(7)	(15)	
PIT117V	Principles of Research	(7)	(15)	
SAM117V	System Administration and Maintenance IV	(7)	(15)	
SECOND SEMESTER				
RIT117V	Research Project IV	(7)	(15)	Principles of Research
RIT117R	Research Project IV (re-registration) (first-semester module, see paragraph h)	(7)	(0)	
WNE117V	Wireless Networks IV	(7)	(15)	
	plus one of the following electives:			
PNA117V	Computer Networks IVA	(7)	(15)	
SEA117V	Computer Security IVA	(7)	(15)	
	plus one of the following electives:			
PNB117V	Computer Networks IVB	(7)	(15)	Computer Networks IVA
SEB117V	Computer Security IVB	(7)	(15)	Computer Security IVA
TOTAL CREDITS FOR THE QUALIFICATION:			**120**	

4.4 POSTGRADUATE DIPLOMA IN INFORMATION TECHNOLOGY
PGDip (Information Technology) - NQF Level 8 (120 credits)
Qualification code: PDIT21
SAQA ID: 110062, CHE NUMBER: H/H16/E171CAN

Campus where offered: Soshanguve South Campus

REMARKS

a. *Admission requirement(s):*
    An Advanced Diploma in Information Technology in the field of Computer Networks or Cyber Security, **or** a Baccalaureus Technologiae: Information Technology in the field of Communication Networks or Support Services, **or** a relevant bachelor's degree, **or** an equivalent qualification at NQF Level 7 with specialisation in Computer Networks or Cyber Security. Preference will be given to candidates who obtained an average of 60% in the previous qualification.

    Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b. *Selection criteria:*
    Admission is subject to selection. Candidates are evaluated based on the previous qualification obtained and/or work experience.

    Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP). Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
    Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e. *Presentation:*
    Day classes offered on Saturdays over a period of two years.

f. *Duration:*
    A minimum of one or two years (depending on the programme presentation).

g. *Exclusion and readmission:*
    See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Re-registration:*
    The option to re-register for Network Research Project V is subject to a student's academic performance. The purpose of the re-registration option is to provide students with an opportunity to complete the final project only, and not to redo the whole module should they fail the module.

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j. *Personal equipment:*
Access to a laptop or desktop computer is essential to participate in multimodal learning experiences as well as to complete assignments and projects. NSFAS students receive an allowance to acquire a laptop, and using this allowance for this purpose is critical for academic success. Students are encouraged to consult the faculty website where the minimum requirements for specific programmes are published.

CURRICULUM

ATTENDANCE (FIRST OR SECOND YEAR)
Modules are offered as determined by the Head of the Department.

CODE	MODULE	NQF-L	CREDIT	PREREQUISITE MODULE(S)
NWR108G	Network Research Project V	(8)	(15)	Principles of Research V
NWR118R	Network Research Project V (re-registration) (first-semester module, see paragraph h)	(8)	(0)	

FIRST SEMESTER

PIT118G	Principles of Research V	(8)	(15)	
SCN118G	Social Engineering and New Trends in Networks	(8)	(15)	

plus one of the following electives:

CN2118G	Computer Networks 502	(8)	(15)	Computer Networks 501
CRG118G	Cryptography 502	(8)	(15)	Computer Security 501

plus one of the following electives:

NWA118G	Network Management 501	(8)	(15)	
SPG118G	Security Policy and Governance 501	(8)	(15)	

SECOND SEMESTER

DFO118G	Digital Forensics V	(8)	(15)	

plus one of the following electives:

CN1118G	Computer Networks 501	(8)	(15)	
CSY118G	Computer Security 501	(8)	(15)	

plus one of the following electives:

EHA118G	Ethical Hacking 502	(8)	(15)	Computer Security 501
SDN118G	Software Defined Networks 502	(8)	(15)	Computer Networks 501

TOTAL CREDITS FOR THE QUALIFICATION: **120**

4.5 MASTER OF COMPUTING

MComputing - NQF Level 9 (180 credits)
Qualification code: MDCO17

(Specialisation code for admission and registration: MDIT17)
SAQA ID: 96920, CHE NUMBER: H16/10793/HEQSF

Campus where offered: Soshanguve South Campus

REMARKS

a. *Admission requirement(s):*
    An Honours degree, **or** a Postgraduate Diploma in Information Technology in the fields of Communication Networks or Cyber Security or in a closely related field in Computing. Candidates should have achieved an average of 60% in the previous qualification, if not, special permission must be obtained from the Department.

    Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b. *Selection criteria:*
    Admission to this programme is only granted after a successful interview with the Department. Admission is subject to selection. Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) as well as supervisory capacity. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c. *Recognition of Prior Learning (RPL), equivalence and status:*
    Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

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

e. *Presentation:*
    Research. The topic should be chosen in consultation with the Department.

f. *Duration:*
    A minimum of one year and a maximum of three years.

g. *Exclusion and readmission:*
    See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h. *Rules on postgraduate studies:*
    See Chapter 8 of Students' Rules and Regulations (Part 1 of the Prospectus).

CURRICULUM

The modules offered within the Master of Computing differ between departments. Please refer to the contents (page 5) to see which of the other departments within the faculty offer this programme.

CODE	MODULE	NQF-L	CREDIT
MIT109M	Dissertation: Information Technology	(9)	(180)

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MIT109R	Dissertation: Information Technology (re-registration)	(9)	(0)

TOTAL CREDITS FOR THE QUALIFICATION: **180**

4.6 DOCTOR OF COMPUTING
DComputing - NQF Level 10 (360 credits)
Qualification code: DDCO01
(Specialisation code for admission and registration: DDIT17)
SAQA ID: 96754, CHE NUMBER: H16/10789/HEQSF

Campus where offered:　　　　　　　Soshanguve South Campus

REMARKS

a.　*Admission requirement(s):*
A Master's degree in Information Technology in the fields of Communication Networks or Cyber Security or in a closely related field in Computing. Candidates should have achieved an average of 60% in the previous qualification, if not, special permission must be obtained from the Department.

Holders of any other equivalent South African or international qualification may also be considered, see Chapter 1 of Students' Rules and Regulations (Part 1 of the Prospectus).

b.　*Selection criteria:*
Admission to this programme is only granted after a successful interview with the Department. Admission is subject to selection. Acceptance is subject to available capacity according to the Student Enrolment Plan (SEP) as well as supervisory capacity. Applicants will be informed of their status per an official letter from the Office of the Registrar, alternatively, they can check their application status on the TUT website, www.tut.ac.za.

c.　*Recognition of Prior Learning (RPL), equivalence and status:*
Information on the rules and the process to follow is available in Chapter 30 of Students' Rules and Regulations (Part 1 of the Prospectus).

d.　*Intake for the qualification:*
January and July.

e.　*Presentation:*
Research. The topic should be chosen in consultation with the Department.

f.　*Duration:*
A minimum of three years and a maximum of six years.

g.　*Exclusion and readmission:*
See Chapter 2 of Students' Rules and Regulations (Part 1 of the Prospectus).

h.　*Rules on postgraduate studies:*
See Chapter 8 of Students' Rules and Regulations (Part 1 of the Prospectus).

CURRICULUM

The modules offered within the Doctor of Computing differ between departments. Please refer to the contents (page 5) to see which of the other departments within the faculty offer this programme.

CODE	MODULE	NQF-L	CREDIT
IT1010O	Thesis: Information Technology	(10)	(360)
IT1010R	Thesis: Information Technology (re-registration)	(10)	(0)

TOTAL CREDITS FOR THE QUALIFICATION: **360**

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SECTION B: 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 relevant academic department or in the study guide that applies to a particular module. At the time of publication, the syllabus content was defined as follows:

A

ADVANCED ARTIFICIAL INTELLIGENT SYSTEMS (AIS118G)　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers applied supervised learning (parametric/non-parametric algorithms, support vector machines, kernels, neural networks), applied unsupervised learning (clustering, dimensionality reduction, recommender systems, deep learning), and applied best practices in machine learning (bias/variance theory; innovation process in machine learning and Artificial Intelligence). The student will be able to design supervised, unsupervised, and deep learning systems to solve diverse engineering problems. (Total notional time: 150 hours)

ADVANCED BUSINESS ANALYSIS AND APPLICATION (BAA118G)　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
The student will be able to apply his/her knowledge of the Software Development Lifecycle (SDLC) and advanced systems analysis techniques to initiate, plan, design, and deploy information systems solutions within an organisation and able to adapt to best practices in relation to information systems projects. (Total notional time: 240 hours)

ADVANCED COMPUTER ARCHITECTURE AND ORGANISATION (CAO118G)　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module aims to provide an understanding of modern computer system architecture, computer subsystem hardware design, CPU control unit design, memory organisation, cache design, virtual memory, and algorithms. After successful completion of this module, the student must be able to design a prototype that consist of hardware and compiled algorithms. (Total notional time: 150 hours)

ADVANCED COMPUTER EMERGING TECHNOLOGIES (CES118G)　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module will explore current breakthrough technologies and disruptive innovations that have emerged over the past few years and the new inventions that have yet to emerge as viable technologies in the field of Computer Systems Engineering. After successful completion of this module, the student must be able to understand computer engineering trends in a global context. (Total notional time: 150 hours)

ADVANCED COMPUTER NETWORKS (CNE118G)　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers the theory and simulation of network nodes and network security. The mathematics of computer networks is implemented by using tools such as Python, GNS, Cisco VIRL and NS3. After successful completion of this module, the student must be able to design and simulate complex networks using modern and advanced network simulators. (Total notional time: 150 hours)

ADVANCED DIGITAL SIGNAL PROCESSING (DSR118G)　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers digital signal processing systems, time-domain signal processing, filter theory, frequency-domain transforms and processing, and various filters such as Kalman Filter, Gaussian filter. After successful completion of this module, the student must be able to apply the knowledge of the module to real industrial problems such as image processing, sound, computer vision, etc. (Total notional time: 150 hours)

ADVANCED DISCRETE STRUCTURES (ADS216D)　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Science)
This module is meant to help students develop the mathematical foundations necessary for more specialised modules in Computer Science, including data structures, algorithms, graphs and trees, and discrete probability. After completion of this module, students will have learnt the mathematical expertise required for an in-depth study of the science and technology of the computer age. (Total notional time: 150 hours)

ADVANCED EMBEDDED SYSTEMS DESIGN (ESD118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers recent and industry-inclined intelligent devices (microcontroller). The student will be able to use the most recent intelligent devices to solve real industrial problems. (Total notional time: 150 hours)

ADVANCED GAMES PROGRAMMING (GPR117V)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module prepares the student to provide an overview coverage of design, programming, and implementation of advanced 3D games on different platforms, including the mobile, web and computers platforms. (Total notional time: 150 hours)

ADVANCED INTELLIGENT ELECTRO-MECHANICAL SYSTEMS (IES118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers Advanced Computer-based Instrumentation Systems, Advanced Computer-Integrated Manufacturing Systems with PLC, Advanced Magnetic Circuits and Transformers, Design of Motors, Advanced DC Machines, Advanced AC Machines, Advanced Mechanical Systems and Intermediate Power Electronic Devices. After successful completion of this module, the student must be able to design a prototype that will consist of intelligent devices, electro-mechanical and API. (Total notional time: 150 hours)

ADVANCED INTELLIGENT INDUSTRIAL SYSTEMS (IIS118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers Implementation of behaviour-based robotics, Mobile robot localisation, Mobile robot map building, Mobile robot SLAM and Implementation and applications using industry-standard software/hardware. After successful completion of this module, the student must be able to design a complete mobile robot with a defined application. (Total notional time: 150 hours)

ADVANCED IT PROJECT MANAGEMENT (ITP118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Informatics)
This module prepares the student to apply advanced project management principles in an Information Systems environment. This module is aligned with Project Management Body of Knowledge (PMBOK) and the standard for Portfolio Management guide. (Total notional time: 240 hours)

ADVANCED KNOWLEDGE MANAGEMENT (KWM118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Informatics)
The student will be able to apply his/her knowledge of Knowledge Management (KM) in the different management disciplines throughout the various functional enterprise environments, apply the different organisational theories and the management of intellectual capital. Upon completion of the module, the student will be able to apply, explain, design, and deploy advanced KM solutions within an organisation. (Total notional time: 240 hours)

ADVANCED OBJECT-ORIENTED PROGRAMMING (AOP216D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module covers advanced concepts of object-orientated programming using the Java language. The module builds upon the knowledge and skills obtained in the "Object-oriented Programming" module offered in the first semester of the second year. The focus of this module is to introduce students to advanced object-oriented programming concepts in Java such as data structures (lists and queues), multithreading, database connectivity and client-server applications. The student will be able to apply his/her knowledge of these advanced programming concepts to the problems arising in the software industry. (Total notional time: 150 hours)

ADVANCED OBJECT-ORIENTED   1 X 4-HOUR COMPUTER-BASED
PROGRAMMING 226R (AOR216D)
(Module custodian: Department of Computer Science)
This module covers advanced concepts of object-orientated programming such as data structures, multithreading, database connectivity and client-server applications. (Total notional time: 150 hours)

ADVANCED RESEARCH PROJECT (ARP108G/ARP118R)   PROJECT ASSESSMENT
(Module custodian: Department of Informatics)
Upon completion of the module, the student will know research paradigms, the difference between positivist, non-positivist (interpretivist) and Design Science research approaches, describe and explain reasons for the choice of these approaches in any research project, but also for a particular proposed research project, and be able to design a research plan including research methods, data collection instruments and data analysis aligned with the chosen research approach. (Total notional time: 240 hours)

ALGORITHMS AND COMPLEXITY (ACX118G)   CONTINUOUS ASSESSMENT
(Module custodian: Department of Computer Science)
The purpose of this module is to prepare students to acquire the central concepts and skills required to design and implement algorithms and conduct their computational complexity analysis for performance efficiency of implementation. (Total notional time: 150 hours)

ARTIFICIAL INTELLIGENCE (ARI118G)   CONTINUOUS ASSESSMENT
(Module custodian: Department of Computer Science)
The focus of this module is to lay the foundation for the design of artificial intelligence systems on different computing platforms. (Total notional time: 150 hours)

ARTIFICIAL INTELLIGENCE 226 (ARI216D)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers applied intermediate artificial intelligence and is concerned with the implementation of intermediate-level artificial intelligence concepts. The student will be introduced to autonomous agents, state-driven design, basic user interaction concepts, autonomous virtual world generation, pathfinding and basic network programming. After successful completion of this module, the student must be able to create and design autonomous agents in a virtual world that achieve specific given goals using intermediate artificial intelligence concepts. (Total notional time: 100 hours)

ARTIFICIAL INTELLIGENCE GAMES PROGRAMMING (AIG118G)   CONTINUOUS ASSESSMENT
(Module custodian: Department of Computer Science)
The focus of this module is to lay the foundation for the implementation of artificial intelligence systems on different computing platforms. (Total notional time: 150 hours)

ARTIFICIAL INTELLIGENT SYSTEMS (AIS117V)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers introductory on supervised learning (parametric/non-parametric algorithms, support vector machines, kernels, neural networks), unsupervised learning (clustering, dimensionality reduction, recommender systems, deep learning) and best practices in machine learning (bias/variance theory; innovation process in machine learning and Artificial Intelligence (AI)). After successful completion of this module, the student must be able to design systems that are fully managed by AI. (Total notional time: 150 hours)

B

BUSINESS ANALYSIS A (BUA216D)   1 X 3-HOUR PAPER
(Module custodian: Department of Informatics)
This module introduces the student to the concepts and principles of business analysis, communication skills, interaction skills, ethics and behaviour within an organisation, Organisational Culture and lastly individual perception, attitudes and personality. (Total notional time: 150 hours)

BUSINESS ANALYSIS B (BUB216D)   1 X 3-HOUR PAPER
(Module custodian: Department of Informatics)
This module prepares the students with a basic understanding of business analysis concepts thus enabling them to possess a clear understanding of the business analysis environment, knowing the projects and how to increase their value. This entails building the Business Analysis foundation, time management, how to build relationships with the clients and within the organisation. (Total notional time: 150 hours)

BUSINESS ANALYSIS AND APPLICATION (BAA117V)　　　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
This module prepares the student to apply business system models and applications to the IT environment. It is aligned with the Business Analysis Body of Knowledge (BABOK) intermediate level. (Total notional time: 150 hours)

BUSINESS COST MANAGEMENT (BCM115D, BCMF15D)　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
This module prepares the student to apply the concepts and applications of any accounting system (cost management) to the organisation structure or to a project. The student will be able to apply his/her knowledge of basic cost management concepts such as budgets and expenses to any organisation's structure. (Total notional time: 150 hours)

BUSINESS FUNDAMENTALS (BFS115D, BFSF15D)　　　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
This module prepares the student to apply the concepts and principles of business, management and Organisational behaviour to the organisation or to a project. The student will be able to apply his/her knowledge of basic business and management theory and Organisational behaviour concepts to an organisation's structure. (Total notional time: 150 hours)

C

COMMUNICATION FOR ACADEMIC PURPOSE (16E105X, COEF05X)　**1 X 3-HOUR PAPER**
COMMUNICATION FOR ACADEMIC PURPOSES (16P105X, CAPF05X)　**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 notional time: 100 hours)

COMMUNICATION SCIENCE 165 (CMS115D, CMSF05D)　　　　**1 X 3-HOUR PAPER**
(Module custodian: ICT First Years' and Foundation Unit)
This module covers the discipline of communication as a whole and touches on adjusting to and thriving in a tertiary environment and is concerned with the life skills needed for study at a university, using a computer for writing, doing research, and techniques for presenting research. The student will be introduced to concepts of change and personal adjustment, goal setting and time management, interpersonal skills, and listening and study skills. (Total notional time: 100 hours)

COMPUTATIONAL MATHEMATICS (COH115D, COHF05D)　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Science)
The focus of this module is to teach students mathematical reasoning which will be necessary to solve complex programming problems in other modules. The theoretical knowledge obtained from this module is expected to develop students to solve real-world computer systems challenges by applying logic from a mathematical perspective relating to computer applications. (Total notional time: 150 hours)

COMPUTATIONAL MATHEMATICS (CHO115D, CHOF05D)　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Information Technology)
This module 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 notional time: 150 hours)

COMPUTATIONAL MATHEMATICS (CMD116V)　　　　　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module prepares the student to apply computational mathematics principles and models to solve problems related to Computer Systems Engineering. The focus is directed towards Numerical Computing with an emphasis on the mathematical software as a tool to solve most of the engineering problems mathematically. After successful completion of this module, the student must be able to apply knowledge of Computational Mathematics to applied engineering procedures, processes, systems and methodologies to solve broadly-defined engineering problems and thus, the processes interpreted in mathematical form. (Total notional time: 150 hours)

COMPUTER ARCHITECTURE 125R (CAT116D, CATF16D)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers microcontroller principles and their applications and is concerned with design, development, and construction of microcontroller applications. The student will be introduced to the architecture of a microcontroller, memory architectures, DMA transfers, basic I/O principles and devices, interrupts, and embedded application designs. (Total notional time: 150 hours)

COMPUTER ARCHITECTURE AND ORGANISATION (CAO117V)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers a single-core versus multi-core processors and architectures, on-chip interconnect networks, memory controller issues, program partitioning, and programming techniques. The student will be able to design circuitry and develop software to complete a functioning microcontroller application. (Total notional time: 150 hours)

COMPUTER ARCHITECTURE AND ORGANISATION (CAO216D)   **1 X 3-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Systems Engineering)
The focus of this module is to introduce students to microcontroller principles and their applications. The module covers the design, development, and construction of microcontroller applications. After completion, the student must be able to design circuitry and develop software to complete a functioning microcontroller application. (Total notional time: 150 hours)

COMPUTER ARCHITECTURE AND ORGANISATION 216 (CAG216D)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers microcontroller principles and their applications and is concerned with design, development, and construction of microcontroller applications. The student will be introduced to the architecture of a microcontroller, memory architectures, DMA transfers, basic I/O principles and devices, interrupts, and embedded application designs. (Total notional time: 100 hours)

COMPUTER EMERGING TECHNOLOGIES (CES117V)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers the current breakthrough technologies and disruptive innovations that have emerged over the past few years and the new inventions that are yet to emerge as viable technologies in the field of Computer Systems Engineering. After successful completion of this module, the student must be able to design a system with the components of emerging technologies in the field of computer systems engineering. (Total notional time: 150 hours)

COMPUTER GRAPHICS (CGH117V)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
The focus of this module is to introduce the student to the mathematics behind signal processing and its implementation to different platforms such as the web and mobile devices. (Total notional time: 150 hours)

COMPUTER GRAPHICS (CGH118G)   **CONTINUOUS ASSESSMENT**
(Module custodian: Department of Computer Science)
The focus of this module is to introduce the student to the mathematics behind signal processing and its implementation to different platforms such as the web and mobile devices. (Total notional time: 150 hours)

COMPUTER NETWORKS (CNT117V)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers various aspects of network security concepts and strategies and is concerned with the relationship with the industry problems. The student is introduced to network security threats, security of network devices, authentication and authorisation, firewall technologies, implementation of intrusion prevention, and management of a secure network. After completion of this module, students will be able to design, manage, and maintain a secure network system by applying the knowledge gained throughout the module. (Total notional time: 150 hours)

COMPUTER NETWORKS IVA (PNA117V)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Information Technology)
The general purpose of this module is to provide students with the Internet and Computer networks in general, different protocols used to accomplish different communication tasks, network security and applications. The emphasis is on equipping the students to be competent problem solvers who can originate and recommend computer network strategies. (Total notional time: 150 hours)

COMPUTER NETWORKS IVB (PNB117V)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The purpose of this module is to provide students with the Internet and Computer networks in general. Ether-Channel, Spanning-tree and WAN technologies are covered. (Total notional time: 150 hours)

COMPUTER NETWORKS 115R (CN1115D, CN1F05D)   1 X 3-HOUR PAPER
(Module custodians: Department of Information Technology and End User Computing Unit)
This module provides the fundamentals of computers; Key applications; the Evolution of computer networks and the Internet. The purpose of this module is to identify legal, ethical and security issues related to information technology. (Total notional time: 150 hours)

COMPUTER NETWORKS 125R (CN2115D, 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 notional time: 150 hours)

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 optimisation, routing protocol configuration, system migration and upgrading, problem diagnosis and troubleshooting; and system maintenance. (Total notional time: 150 hours)

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 notional time: 150 hours)

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, Virtualisation, WAN technologies and Cloud-based data storage and skills such as VPN configuration, virtualisation configuration, and virtualisation testing (virtualisation management) to students. (Total notional time: 150 hours)

COMPUTER NETWORKS 501 (CN1118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The general purpose of this module to is to provide students with the Internet and Computer networks in general, different WAN technologies used to accomplish different communication tasks, network security and applications. The emphasis is on equipping the students to be competent problem solvers who can originate and recommend computer network strategies. (Total notional time: 150 hours)

COMPUTER NETWORKS 502 (CN2118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The general purpose of this module is to provide students with the necessary tools and techniques to design and implement networks. The emphasis is on equipping the students to be competent problem solvers who can originate and recommend computer network strategies. (Total notional time: 150 hours)

COMPUTER SECURITY IVA (SEA117V)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The general purpose of this module is to provide students with knowledge of cyber security principles and tools used to protect network security, Client-side technologies used in applications and manage security applications using applicable tools. (Total notional time: 150 hours)

COMPUTER SECURITY IVB (SEB117V)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The general purpose of this module is to provide students with knowledge of wireless and mobile device, network security, applications security tools and computer security risk mitigation. (Total notional time: 150 hours)

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), concepts 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 notional time: 150 hours)

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 notional time: 150 hours)

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 notional time: 150 hours)

COMPUTER SECURITY 501 (CSY118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The emphasis of this module is on equipping the students to be competent problem solvers who can originate and recommend security strategies. (Total notional time: 150 hours)

COMPUTING FUNDAMENTALS A (CFA115D, CFAF05D)   1 X 3-HOUR PAPER
(Module custodian: End User Computing Unit)
This module provides the fundamentals of computers; Key applications; Evolution of computer networks and the Internet. The purpose of this module is to identify legal, ethical and security issues related to information technology. (Total notional time: 150 hours)

COMPUTING FUNDAMENTALS A (CGA115D, CGAF05D)   1 X 3-HOUR PAPER
(Module custodian: End User Computing Unit)
The focus of this module is to lay the foundation for the design and implementation of computer programming solutions on different platforms, including the web and mobile devices by enabling students to gain basic computer professional skills in the area of computer structure, operating systems, security and computer professional practice. The student will be able to apply his/her knowledge in the above-mentioned areas to produce solutions which are meant to solve problems arising in the software industry. (Total notional time: 150 hours)

COMPUTING FUNDAMENTALS B (CFB115D, CFBF15D)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
This module provides the foundation for the design and implementation of computer programming solutions on different platforms. The focus of this module is to lay the foundation for the design and implementation of computer programming solutions on different platforms, including the web and mobile devices. The student will be able to apply his/her knowledge of concepts and principles relating to information systems, databases, systems analysis, system requirements, and IT project management. (Total notional time: 150 hours)

COMPUTING FUNDAMENTALS B (CGB115D, CGBF15D)   1 X 3-HOUR PAPER
(Module custodian: End User Computing Unit)
This module prepares the student to apply programming and software engineering principles to provide solutions to a range of problems emanating in the IT industry. The focus of this module is to lay the foundation for the design and implementation of computer programming solutions on different platforms, including the web and mobile devices. The student will be able to apply his/her knowledge of concepts and principles relating to information systems, databases, systems analysis, system requirements, IT project justification and the internet (web). (Total notional time: 150 hours)

CRYPTOGRAPHY 502 (CRG118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The emphasis of this module is on equipping the students to be competent problem solvers who can originate and recommend Cryptography Terminologies. (Total notional time: 150 hours)

D

DATA SCIENCE AND BIG DATA ANALYTICS (DSC118G)   CONTINUOUS ASSESSMENT
(Module custodian: Department of Computer Science)
The focus of this module is to train students in the intersection of subjects ranging from statistics, information and computer science, system design and social sciences. (Total notional time: 150 hours)

DATA STRUCTURES AND ALGORITHMS (DTD117V)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
The focus of this module is to introduce candidates to new types of data structures such as trees, heaps, stacks and queues. (Total notional time: 150 hours)

DATABASE MANAGEMENT SYSTEMS A (DBA216D)   1 X 3-HOUR PAPER
(Module custodian: Department of Informatics)
In this module, students will gain an understanding of the process of handling database management so that they can use this knowledge to create a new object-orientated database. During the course of this module, students will also learn the various tools and techniques that can be used for Database Management. (Total notional time: 150 hours)

DATABASE MANAGEMENT SYSTEMS B (DBB216D)   1 X 3-HOUR PAPER
(Module custodian: Department of Informatics)
In this module, students will gain an ability to create and manipulate object-orientated databases. Candidates completing this module will be able to apply database management techniques, what is involved in the databases management process, and be able to use databases utilising various techniques (attention will be given to the various techniques of manipulating databases). During the course of this module, students will also learn how to use MySQL as a tool within the project to reach a successful solution of the problem and the various manipulations of data. (Total notional time: 150 hours)

DATABASE PRINCIPLES (DTP216D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
The focus of this module is to lay the foundation for the design and implementation of database programming solutions on different platforms, including the web and mobile devices. The student will be able to apply his/her knowledge of database concepts such as data insertion and data selection (data retrieval), database normalisation to solve database related problems arising in the software industry. (Total notional time: 150 hours)

DATABASE PROGRAMMING (DBP316D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module is aimed at preparing students to design and implement databases on different platforms using PL/SQL programming techniques in order to provide solution to a range of business problems in the IT industry. The module builds upon theoretical knowledge and skills obtained in "Database Systems" module offered in second year, first semester. The student will be able to apply his/her knowledge of design and implementation of database programming solutions based on PL/SQL programming techniques. (Total notional time: 150 hours)

DATABASES 215 (DAB215D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module covers the world of database systems and their use in industry and is concerned with the use and construction of databases as part of a solution to a problem. After successful completion of this module, the student must be able to display a firm grasp of database systems and their application as part of a solution to a problem. (Total notional time: 100 hours)

DIGITAL ELECTRONICS 115 (DE1115D, DE1F05D)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers introductory digital electronics and is concerned with the building blocks of digital systems. After successful completion of this module, the student must be able to design, troubleshoot and build basic digital system circuits. (Total notional time: 100 hours)

DIGITAL ELECTRONICS 126 (DE2116D, DE2F06D) **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module introduces data storage, data transmission, data processing and control, and signal conversion and processing, through the implementation of basic digital electronic concepts. On completion of this module, students should be able to explain how the mentioned systems are built using basic digital electronic building blocks. (Total notional time: 100 hours)

DIGITAL ELECTRONICS 216 (DEL216D) **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers introductory microcontroller concepts and is concerned with the basics of an 8-bit microcontroller. After successful completion of this module, the student must be able to design, program and debug a program, using assembler language for an 8-bit microcontroller. (Total notional time: 100 hours)

DIGITAL FORENSICS V (DFO118G) **1 X 3-HOUR PAPER**
(Module custodian: Department of Information Technology)
The general purpose of this module is to provide students with the internet and computer digital forensics, principles and methodologies of digital forensics, software and hardware digital forensics tools. The emphasis is on equipping the students to be competent problem solvers who can originate and recommend digital forensics strategies. (Total notional time: 150 hours)

DIGITAL PROCESS CONTROL 216 (DP1216D) **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers introductory intelligent systems that encompass the integration of software and electronic systems and is concerned with the implementation of control systems. After successful completion of this module, the student must be able to apply a combination of hardware and software systems in a solution to a given problem. (Total notional time: 100 hours)

DIGITAL PROCESS CONTROL 226 (DP2216D) **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers the theory of mobile robotics and is concerned with robotics and related technologies. The student will be introduced to the theory behind sensor integration using various sensors, applying a variety of algorithms and techniques to a robotic platform in order to solve problems, these include and are not limited to localisation, pathfinding, map generation, proportional integral derivative control, and navigation. After successful completion of this module, the student must be able to describe, explain and solve various robotic related problems. (Total notional time: 100 hours)

DIGITAL SIGNAL PROCESSING (DSR117V) **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers an introduction to analogue signals and LTI systems representation and transformation, analogue convolution and analogue filters, Laplace and Z-transform, Digital signals and sampling requirements, Basic types of digital signals, Quantisation error, Time-domain analysis, including Linear-time-invariant discrete system, Block Diagram for LTI discrete systems, Impulse response, Convolution sum, Difference equations, Frequency-domain analysis, and Filter design. After successful completion of this module, the student must be able to design signal process systems and various filters with application in various engineering fields. (Total notional time: 150 hours)

DISCRETE MATHEMATICS 115R (DSM116D, DSMF16D) **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 notional time: 150 hours)

DISCRETE STRUCTURES (DCT115D, DCTF15D) **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Science)
The focus of this module is to teach students notations used in Discrete Structures related to Computer Science. The module will teach the rudiments of elementary mathematical reasoning which will be necessary to solve complex programming problems in other modules. The student will be able to apply his/her knowledge of discrete structures principles, algorithms, number theory and cryptography to the problems arising in the software industry. (Total notional time: 150 hours)

DISTRIBUTED PROGRAMMING (DSD117V)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
The focus of this module is to equip the student with the requisite skills to create automated applications that are distributed over distinct application servers using the JEE framework in the software industry. (Total notional time: 150 hours)

DISTRIBUTED SYSTEMS (DIS316D)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Science)
This module prepares the student to apply the concepts and applications of any computer network. The student will be able to apply his/her knowledge of basic network concepts such as LAN design, WAN design, troubleshooting, implementing networks and network connectivity. The technical knowledge obtained in this module together with the communication skills and presentation skills will prepare the students for the workplace. Graduates should have the ability to make effective presentations to a range of audiences about technical problems and their solutions. (Total notional time: 150 hours)

E

ELECTRICAL PRINCIPLES 115 (EIP115D, EIPF05D)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers electrical principles and is concerned with the study and application of electricity, electronics and electromagnetism. The student will be introduced to basic principles of modern-day electrical engineering technology. After successful completion of this module, the student must be able to deal with the basic principles of electricity, such as the analysis of direct current circuits, the analysis of alternating current circuits, electromagnetism, magnetic circuits, inductors, capacitors and some mechanical calculations. (Total notional time: 100 hours)

ELECTRONICS 115 (EL1115D, EL1F05D)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers electronic components and their operations and is concerned with atomic theory, electrical charge, electrical voltage, current, resistance, series and parallel circuits, conductors and insulators. After successful completion of this module, the student must be able to design basic power supplies and biasing circuits for BJT, FET transistors and operational amplifiers. (Total notional time: 100 hours)

ELECTRONICS 126 (EL2116D, EL2F06D)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers the analysis and design of simple electronic circuits and is concerned with the modelling of electronic components and their application in circuit analysis and design. After successful completion of this module, the student must be able to design and analyse simple power supplies, basic filters, transistor amplifiers and calculate heat sink requirements for power circuits. (Total notional time: 100 hours)

EMBEDDED SYSTEMS 316 (EMS316D)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers the implementation of software on an embedded system and is concerned with the model and design of the joint dynamics of software, networks, and physical processes. After successful completion of this module, the student must be able to model, design and implement an embedded system. (Total notional time: 100 hours)

EMBEDDED SYSTEMS DESIGN (EBD117V)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers embedded computers and networks, which monitor and control the physical processes, usually with feedback loops where these loops affect computations. After successful completion of this module, the student must be able to design broadly-defined embedded systems. (Total notional time: 150 hours)

ENGINEERING ETHICS AND PRACTICES (EER117V)   CONTINUOUS ASSESSMENT
(Module custodian: Department of Computer Systems Engineering)
This module covers introduction to ethical reasoning and engineering ethics, professional practice in engineering, ethics as design, professional responsibility of engineers, rights and responsibilities regarding intellectual property. The student will understand what it takes to maintain continued competence and to keep abreast of up-to-date tools and techniques, understand the ECSA code of conduct, continuing professional development, and know what it takes to accept responsibility for own actions. (Total notional time: 100 hours)

ENGINEERING PROJECT DESIGN (EGD107V, EGD117R)   PROJECT ASSESSMENT
(Module custodian: Department of Computer Systems Engineering)
This module is concerned with identifying a particular existing problem and solving it through the development and implementation of a software and hardware solution. The student will be introduced to project time management, system development and design lifecycle, circuit analysis and the use of modern tools available to hardware and software engineers. After successful completion of this module, the student must be able to solve problems by making responsible, safety-conscious decisions and using critical and creative thinking. (Total notional time: 300 hours)

ENGINEERING PROJECT MANAGEMENT (EPM117V)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers engineering communication, project management, basic management accounting and engineering entrepreneurship. After successful completion of this module, the student must be able to execute engineering projects effectively, write quality technical reports and communicate all project information to peers, understand contract law and entrepreneurship within industrial digital transformation. (Total notional time: 100 hours)

ETHICAL HACKING 502 (EHA118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The student will learn the basics of ethical and moral technology hacking. The module teaches the student how to find weak points and compositional errors in computer networks and systems. (Total notional time: 150 hours)

F

FORMAL ASPECTS OF COMPUTING (FRD118G)   CONTINUOUS ASSESSMENT
(Module custodian: Department of Computer Science)
This module prepares the student to use formal methods as a tool in the development of a set of modelling notations that allow software architects to precisely specify the structure, behaviour and properties of the critical aspects of a system. (Total notional time: 150 hours)

G

GAMES ENGINEERING (GMD117V)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module prepares the student to provide an overview coverage of advanced game design, programming, and implementation of 3D games on different platforms, including the mobile, web and computers platforms. (Total notional time: 150 hours)

GAMES PROGRAMMING (GMP216D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module provides an overview coverage of game design, programming, and implementation of 3D games on different platforms, including the mobile, web and computer platforms. The focus of this module is to lay the foundation for the design and implementation of gaming solutions. (Total notional time: 150 hours)

H

HUMAN COMPUTER INTERACTION (HMD117V   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module prepares and equips the student with a practical know-how that helps to address the basic tactical and strategic principles of designing systems that interact with human beings. (Total notional time: 150 hours)

INDUSTRIAL RESEARCH PROJECT (IDD108G, IDD118R)   **PROJECT ASSESSMENT**
(Module custodian: Department of Computer Systems Engineering)
This module is concerned with identifying a particular existing problem, researching the proposed solutions and solving it through the development and implementation of a novel software and hardware solution. The student will be expected to utilise knowledge from the various years of study, including project time management, system development and design lifecycle, circuit analysis and the use of modern tools available in hardware and software engineers. (Total notional time: 300 hours)

INFORMATION AND TECHNOLOGY MANAGEMENT (ITM117V)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
This module introduces the effective management of information systems with an emphasis on the interaction between strategic management and information systems. Students learn to master the principles, tools and techniques that are used in IS management solutions. Some practical implementations of different IT strategies are infused. (Total notional time: 150 hours)

INFORMATION LITERACY (INF125D, INFF25D)   **CONTINUOUS ASSESSMENT**
(Module custodian: Directorate of Library and Information Services)
Introduction of information literacy. Development of a search strategy and application of a search string to search engines and academic databases. Evaluation of information sources. Ethical and legal use of information. Organisation and management of information. (Total notional time: 30 hours)

INFORMATION SECURITY (ISC216D)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Information Technology)
This module prepares the student to apply the concepts and applications of basic computer security. The 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), the concept of trust and trustworthiness, ethics (responsible disclosure), and skills such as fundamentals of authentication configuration of servers, configuration of firewalls and basic security tools testing. The technical knowledge obtained in this module together with the communication skills and presentation skills will prepare the students for the workplace. (Total notional time: 150 hours)

INFORMATION SYSTEM DEPLOYMENT (ISD316D)   **PROJECT ASSESSMENT**
(Module custodian: Department of Informatics)
The student will be able to apply his/her knowledge of basic cost management, business theory, project management and Organisational performance with business analysis, system analysis and database management to deploy an Information System. Upon completion of the module, the student will be able to research, identify, analyse, and design; propose expansion, test, maintain and deploy an Organisational IT system. (Total notional time: 150 hours)

INFORMATION SYSTEM RESEARCH (ISR117V/R)   **PROJECT ASSESSMENT**
(Module custodian: Department of Informatics)
The student will learn how, and when, to use quantitative and qualitative techniques to investigate different research questions. The student will practice and apply these techniques by producing research questions, conducting literature reviews, data collection, analysis and interpretation, including the use of specialist computer packages. (Total notional time: 150 hours)

INFORMATION SYSTEMS ARCHITECTURE (IAR117V)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
The student will be able to apply his/her knowledge of information systems architectural design approach for developing and managing the lifecycle of an enterprise architecture, and adopting best practices such as The Open Groups Architecture Framework (TOGAF). (Total notional time: 150 hours)

INFORMATION TECHNOLOGY PROJECT MANAGEMENT (ITP117V)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
This module prepares students to apply advanced project management principles in an Information Systems environment. This module is aligned with Project Management Body of Knowledge (PMBOK) and the standard for Program Management guides. (Total notional time: 150 hours)

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 notional time: 600 hours)

INSTRUCTIONAL MULTIMEDIA DESIGN (IMD117V)   **PROJECT ASSESSMENT**
(Module custodian: Department of Computer Science)
This module equips students with the required skills to design effective multimedia for e-learning environments. This module includes instructional design principles, including cognitive load theory, cognitive theory of multimedia learning and instructional design principles for multimedia. (Total notional time: 150 hours)

INTEGRATED SOFTWARE PROJECT (ISJ107V, ISJ117R)   **PROJECT ASSESSMENT**
(Module custodian: Department of Computer Science)
This module presents students with the opportunity to apply and extend their practical knowledge acquired in other modules completed prior to this one by completing an industry-related Information Technology software project similar to projects found in a workplace environment, incorporating relevant current technologies. (Total notional time: 150 hours)

INTELLIGENT ELECTRO-MECHANICAL SYSTEMS (IES117V)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers Computer-based Instrumentation systems, Computer-Integrated Manufacturing Systems with PLCs, Magnetic Circuits and Transformers, Overview of Motors, Mechanical Systems, and basic Power Electronic Devices. After successful completion of this module, the student must be able to adapt cross-discipline skills, particularly in the fields of robotics, automated manufacturing and electro-mechanical power systems to develop intelligent electro-mechanical systems. (Total notional time: 150 hours)

INTELLIGENT INDUSTRIAL SYSTEMS (IIS117V)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module covers Review of Artificial Neural Networks, Industrial mobile robots, Coordinate Transformation Trajectory interpolation, Locomotion, Mobile robot kinematics and Case studies with Application of ROS. After successful completion of this module, the student must be able to apply a combination of Arteficial Intelligence (AI), computer vision, and image processing with hardware and software systems in a solution to a given problem. (Total notional time: 150 hours)

INTERACTIVE VIRTUAL ENVIRONMENTS (IVE316D)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
This module provides an overview of planning, designing, and developing effective desktop, mobile, and browser-based interactive virtual environments. The focus of this module is to lay the foundation for the design and implementation of interactive virtual environment solutions on various platforms. (Total notional time: 150 hours)

INTERNET PROGRAMMING (INP117V)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
The focus of this module is to lay the foundation for the design and implementation of internet applications using JEE components for a web container. Advanced programming concepts such as MVC design pattern, Servlets, Java Server Pages, Expression Language and Java Standard Tag Library (JSTL) are covered. (Total notional time: 150 hours)

INTERNET PROGRAMMING (INT316D)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
This module prepares the student to apply programming and software engineering principles to provide solutions to a range of problems emanating from the IT industry. The focus of this module is to lay the foundation for the design and implementation of internet applications using JEE components for a web container. The student will be able to apply his/her knowledge of advanced programming concepts such as MVC design pattern, Servlets, Java Server Pages, Expression Language and Java Standard Tag Library (JSTL) to the problems arising in the software industry. (Total notional time: 150 hours)

INTRODUCTION TO DATA SCIENCE (IDA117V)　　　　　**1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
This module prepares the student to manage vast amounts of data using a variety of modern computing technologies and infrastructure from different kinds of sources. (Total notional time: 150 hours)

INTRODUCTION TO ENTERPRISE ARCHITECTURE (IEA316D)　　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
This module prepares the student to apply their individual knowledge and skills to identify the enterprise architecture of an organisation. The focus of this module is to introduce students to Enterprise Architecture contexts (Zachman), methodologies, frameworks (TOGAF) and handling of policies and procedures for an organisation). (Total notional time: 150 hours)

INTRODUCTION TO PROGRAMMING 115R (TRO115D, 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 notional time: 150 hours)

INTRODUCTION TO SOFTWARE ENGINEERING (ISE117V)　　　　**1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
The focus of this module is to teach students principles of software engineering about systems analysis, and design of software solutions within the context of industry-based problems. (Total notional time: 150 hours)

INTRODUCTION TO STRATEGIC INFORMATION SYSTEMS (SIS216D)　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
This module prepares the student to apply the concepts and principles to determine the actual output or results of an organisation measured against the intended outputs (goals and objectives), therefore the strategic information systems. (Total notional time: 150 hours)

IT PROJECT MANAGEMENT A (ITP216D)　　　　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
This module prepares the student to apply their individual knowledge and skills to administer the management of a project related to the organisation and the Information System environment. The focus of this module is to expose the graduate to the fundamentals of project management. (Total notional time: 150 hours)

IT PROJECT MANAGEMENT B (ITP316D)　　　　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
This module prepares the student to apply advanced individual knowledge and skill to administer the management of agile project related to the organisation and the Information System environment. The focus of this module is to expose the student to the strategies on management of time through all the project phases. (Total notional time: 150 hours)

K

KNOWLEDGE MANAGEMENT (KWM117V)　　　　　　　**1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
This module prepares the student to apply the concepts and principles of organisation-wide Knowledge Management (KM) deployment based on the knowledge sharing needs of an organisation. The student will be able to apply his/her knowledge of KM approaches to initiate, plan, design, and deploy KM solutions within an organisation and be able to adapt best practices in relation to KM. (Total notional time: 150 hours)

L

LIFE SKILLS (LFS125X, LFSF25X)　　　　　　　**CONTINUOUS ASSESSMENT**
(Module custodian: Directorate of Student Development and Support)
Personal, socio-emotional and academic skills development for students in higher education. This module includes 1. Intra- and interpersonal skills (e.g. emotional intelligence, relationships, and conflict management); 2. General study skills (e.g. time management, goal setting, learning styles); 3. Health and wellness (e.g. HIV/AIDS, GBV issues, substance abuse); 4. Student life and adjustment (e.g. identity development, adjusting to a higher education environment); and 5. Financial management. (Total notional time: 20 hours)

LOGIC DESIGN 226 (LOD216D)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers the design principles of logic circuits using a hardware descriptive language and is concerned with the building blocks in understanding logic design principles using a hardware descriptive language. After successful completion of this module, the student must be able to design basic logic circuits using relevant components (PALs, PLAs, FPGAs, CPLDs, development boards, etc.), tools (HDL compilers, programming suites, etc.) and methods (relevant optimisation methods, FSMs, etc.) to design logic circuits. (Total notional time: 100 hours)

M

MATHEMATICS 115 (MT1115D, MT1F05D)   1 X 3-HOUR PAPER
(Module custodian: Department of Mathematics and Statistics)
This module covers basic mathematics and is concerned with introductory mathematical concepts such as algebra, exponents, differentiation, integration, functions, matrices, vectors, and data handling. After successful completion of this module, the student must be able to find solutions to problems involving methods of basic mathematical calculation. (Total notional time: 100 hours)

MATHEMATICS 126 (MT2116D, MT2F06D)   1 X 3-HOUR PAPER
(Module custodian: Department of Mathematics and Statistics)
This module covers intermediate-level mathematics and is concerned with differentiation of multi-variable functions, integration, numerical methods, first-order ordinary differential equations, and matrices and Gauss elimination. After successful completion of this module, the student must be able to find solutions to linear, non-linear and partial differentiation problems and applications. (Total notional time: 100 hours)

MATHEMATICS 216 (MHS216D)   1 X 3-HOUR PAPER
(Module custodian: Department of Mathematics and Statistics)
This module covers advanced concepts in pure and discrete mathematics and is concerned with principles relating to the field. After successful completion of this module, the student must be able to understand and implement principles of pure and discrete mathematics to solve practical problems relating to the field. (Total notional time: 100 hours)

MOBILE COMPUTING (MOB316D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module prepares the student to apply mobile computing principles to provide solutions to a range of problems emanating from the IT industry. The focus of this module is to lay the foundation for the design and implementation of mobile applications on Google Android Operating System. The student will be able to apply his/her knowledge of basic programming concepts such as Android development platform, Android user interface design and programming; Multi-threading in Android, Android storage techniques; and Location-Based Services and notifications to the problems arising in the software industry. (Total notional time: 150 hours)

MOBILE ROBOTICS 226 (MRO216D)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers practical mobile robotics and is concerned with robotics and related technologies. After successful completion of this module, the student must be able to apply various techniques on a mobile robot using dedicated software such as ROS or Player/Stage in order to solve given problems. (Total notional time: 100 hours)

MODELLING AND SIMULATION (MSI118G)   CONTINUOUS ASSESSMENT
(Module custodian: Department of Computer Science)
This module will improve the student's understanding of how models and simulations of real or theoretical systems work, how they are designed and implemented subject to inherent constraints and based on the assumptions of reality involved, what limitations they have, and what can be done to improve them. (Total notional time: 150 hours)

MOTION GRAPHICS AND VISUAL EFFECTS (MGV316D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)

This module prepares the student to apply motion graphics principles to provide solutions to a range of problems emanating from the IT industry. The focus of this module is to lay the foundation for the design and implementation of motion graphics solutions on different platforms, including the web and mobile devices. The module builds upon the knowledge and skills obtained in the "3D modelling" module. (Total notional time: 150 hours)

MULTIMEDIA APPLICATIONS (MUA216D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)

This module prepares the student to develop 2D animations to be incorporated on the Web, computer, and mobile applications. The focus of this module is to lay the foundation for the design and implementation of 2D animation applications. (Total notional time: 150 hours)

MULTIMEDIA FOR MOBILE DEVICES (MMD316D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)

This module prepares the student to apply mobile computing principles to provide solutions to a range of problems emanating from the IT industry. The focus of this module is to lay the foundation for the design and implementation of mobile applications on Google Android Operating System. The student will be able to apply his/her knowledge of basic programming concepts such as Android development platform, Android user interface design and programming; Multi-threading in Android, Android storage techniques; and Location-based Services and notifications to the problems arising in the software industry. (Total notional time: 150 hours)

MULTIMEDIA PROJECT (MCP107V, MCP117V)   PROJECT ASSESSMENT
(Module custodian: Department of Computer Science)

This module prepares the student to apply the concepts and principles learned through the theoretical learning of all the modules in the qualification to provide solutions to a range of problems emanating from the multimedia IT industry. This module implements the design plan that was created in the Multimedia Project Design module. (Total notional time: 150 hours)

MULTIMEDIA PROJECT DESIGN (MPD117V)   PROJECT ASSESSMENT
(Module custodian: Department of Computer Science)

This module prepares the student to make use of multimedia project design principles to provide solutions to a range of problems emanating from the IT industry. (Total notional time: 150 hours)

MULTIMEDIA RESEARCH PROJECT (MRP108G, MRP118R)   PROJECT ASSESSMENT
(Module custodian: Department of Computer Science)

The focus of this module is to enable students to apply and implement the research principles acquired in the Research methodologies module on a proposed research topic. (Total notional time: 300 hours)

MULTIMEDIA TECHNOLOGY (MTE216D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)

This module prepares the student to be competent in all multimedia concepts and have a solid foundation in the planning process and design considerations, while covering industry-standard applications and emerging technologies. The focus of this module is to lay the foundation for the design and implementation of graphical editing tools as well as digital photography. The module builds the foundation for higher-level modules that deal with graphical solutions. (Total notional time: 150 hours)

N

NETWORK APPLICATIONS IV (NWP117V)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)

The general purpose of this module is to provide students with knowledge on how to analyse web-based protocols, understanding the efficiency of web search, the deployment of web-based applications and of database-driven websites. (Total notional time: 150 hours)

NETWORK MANAGEMENT IV (NWG117V)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The general purpose of this module is to provide students with knowledge of computer network management techniques, network management protocols and network management tools. (Total notional time: 150 hours)

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 optimisation and network monitoring tools implementation. (Total notional time: 150 hours)

NETWORK MANAGEMENT 501 (NWA118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The general purpose of this module is to provide students with an overview of network management, this includes an understanding of the building blocks of network management with its associated remote networking tools that can be applied to network infrastructures. (Total notional time: 150 hours)

NETWORK RESEARCH PROJECT V (NWR108G/NWR118R)   PROJECT ASSESSMENT
(Module custodian: Department of Information Technology)
In this module, the student will learn how, and when, to use quantitative and qualitative techniques to investigate different research questions. The student will practice and apply these techniques by producing research questions, conducting literature reviews, data collection, analysis and interpretation, including the use of specialist computer packages. (Total notional time: 150 hours)

NETWORK SYSTEMS 125 (NWS115D, NWSF05D)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
This module covers various networking concepts and strategies and is concerned with ensuring the student knows and can apply various networking concepts and strategies to industry-related problems. After successful completion of this module, the student must be able to make effective presentations to a range of audiences about technical problems and their solutions. (Total notional time: 100 hours)

NETWORK SYSTEMS 226 (NWS216D)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
This module covers various networking concepts and strategies and is concerned with ensuring the student knows and can apply various networking concepts and strategies to industry-related problems. After successful completion of this module, the student must be able to make effective presentations to a range of audiences about technical problems and their solutions. (Total notional time: 100 hours)

NEW TECHNOLOGICAL TRENDS (NTT118G)   CONTINUOUS ASSESSMENT
(Module custodian: Department of Computer Science)
The purpose of this module is to expose students to the trends in the evolution and continuing developments in the field of Computing and its associated academic disciplines, including Computer Science, Information Systems, Information Technology and Multimedia Computing. (Total notional time: 150 hours)

O

OBJECT-ORIENTED PROGRAMMING (OOP216D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module covers intermediate concepts of object-orientated programming using the Java language. The module builds upon the knowledge and skills obtained in the "Principles of Programming B" module offered in the second semester of the first year. Furthermore, it introduces students to intermediate object-oriented programming concepts in Java such as arrays of objects, inheritance, polymorphism, exception handling, files and graphical user interface components. The student will be able to apply his/her knowledge of these advanced programming concepts to the problems arising in the software industry. (Total notional time: 150 hours)

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 notional time: 150 hours)

ONTOLOGY ENGINEERING (OEN118G)   **CONTINUOUS ASSESSMENT**
(Module custodian: Department of Computer Science)
The focus of this module is to lay the foundation for the design and implementation ontology solutions on different platforms, including the web and mobile devices. (Total notional time: 150 hours)

OPERATING SYSTEMS 226 (OPS216D)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Systems Engineering)
This module covers base knowledge surrounding operating systems and is concerned with creating an in-depth understanding of operating systems that can then be further applied in the up-coming modules. After successful completion of this module, the student must be able to demonstrate a sound knowledge of operating systems aiding them in developing OS specific applications and even operating systems themselves. (Total notional time: 100 hours)

OPERATING SYSTEMS (ORS216D)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module prepares the student to apply operating systems principles to a range of problems emanating from the IT industry. The focus of this module is to introduce students to operating systems principles and their applications. The module covers process management, inter-process communication and synchronisation, memory management, virtual memory, file system management, device management and security. After successful completion of this module, the student must be able to demonstrate a sound knowledge of operating systems aiding them in developing operating systems specific applications and even operating systems themselves. (Total notional time: 150 hours)

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 notional time: 150 hours)

P

PRINCIPLES OF PROGRAMMING A (PPA115D, PPAF05D)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
The focus of this module is to introduce students to the basic Object-Oriented Programming (OOP) concepts in VB.NET such as the importance of OOP in the software industry, identification of objects from problem statements, relationship between objects and classes, usage of predefined classes in programs, arithmetic operators, data types and their conversion. (Total notional time: 150 hours)

PRINCIPLES OF PROGRAMMING B (PPB115D, PPBF15D)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
This module introduces students to intermediate object-oriented programming concepts in VB.NET such as selection control structures, iteration control structures and manipulation of strings, characters and primitive arrays. (Total notional time: 150 hours)

PRINCIPLES OF PROGRAMMING 125R (PPG115D, 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 notional time: 150 hours)

PRINCIPLES OF RESEARCH (PIF117V, PIT117V)   **CONTINUOUS ASSESSMENT**
(Module custodians: Departments of Informatics and Information Technology)
The purpose of this module is to prepare the student to investigate and analyse a research problem using introductory research methods and tools that are commonly used in computing and related research fields. The module will also enable participants to formulate and define research problems and questions, critically review the literature, research designs and reported research findings, evaluate and select appropriate research methods and data collection techniques for formulating ethical research proposals. (Total notional time: 150 hours)
 (Total notional time: 150 hours)

PRINCIPLES OF RESEARCH V (PIT118G)   **CONTINUOUS ASSESSMENT**
(Module custodian: Department of Information Technology)
The purpose of this module is to prepare the student to investigate and analyse a research problem using introductory research methods and tools that are commonly used in computing and related research fields. The module will also enable participants to formulate and define research problems and questions, critically review the literature, research designs and reported research findings, evaluate and select appropriate research methods and data collection techniques for formulating ethical research proposals. (Total notional time: 150 hours)

PROBABILITY AND STATISTICS 316 (PBS316D)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Mathematics and Statistics)
This module covers aspects of probability and statistics and is concerned with discrete probability, continuous probability, expectation, stochastic processes, sampling distributions, estimation, and hypothesis testing. After successful completion of this module, the student must be able to understand and implement probability and statistics and its various applications. (Total notional time: 100 hours)

PROCESS TESTING (PCT316D)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Informatics)
In this module, students will gain the fundamentals of process testing skills so that they can effectively use this knowledge to bridge the gap between business modelling and system deployment. Students that have completed this module will be able to conduct fundamental testing on Information systems, also within the Information Technology environment. (Total notional time: 150 hours)

PROGRAMMABLE LOGIC CONTROLLERS 226 (PLC216D)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Computer Systems Engineering)
This module is concerned with designing and implementing PLC-based systems. Various sensors, actuators and control methods are looked at and utilised practically. After successful completion of this module, the student must be able to identify and explain the main design characteristics, internal architecture, and operating principles of Programmable Logic Controllers and implement a PLC in designing a solution to a given problem. (Total notional time: 100 hours)

PROGRAMMING 115 (PG1115D, PG1F05D)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
This module covers introductory engineering programming principles and is concerned with the application of programming and software engineering principles to provide solutions to a range of problems emanating in the IT industry. After successful completion of this module, the student must be able to write a basic C++ program, evaluate C++ expressions using arithmetic operators, enable a program to make decisions, enable a program to repeat instructions, create and work with functions and manipulate collections of data. (Total notional time: 100 hours)

PROGRAMMING 126 (PG2116D, PG2F06D)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
This module covers intermediate engineering programming principles and is concerned with object-oriented programming concepts such as inheritance and polymorphism, producing documentation and implementing advanced solutions to problems arising in the software industry. After successful completion of this module, the student must be able to design and implement computer application/software that can solve various software and hardware-based problems. (Total notional time: 100 hours)

PROGRAMMING 216 (PGM216D)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
This module covers intermediate/advanced engineering programming principles and is concerned with using the Rapid Application Development Tool (RAD) for problem-solving in a GUI environment. After successful completion of this module, the student must be able to solve intermediate/advanced level programming problems using intermediate/advanced level programming skills. (Total notional time: 100 hours)

PROJECT CONSTRUCTION 125 (PCO115D, PCOF05D)   **PROJECT ASSESSMENT**
(Module custodian: Department of Computer Systems Engineering)
This module covers all aspects of constructing an electronic project and is concerned with design, research manufacturing, and basic hand skills required to complete an electronic project. After successful completion of this module, the student must be able to successfully construct an electronic project using the necessary electronic knowledge, hand skills and safety procedures needed for completion. (Total notional time: 100 hours)

PROJECT DESIGN 365 (PD1315D/R)   **PROJECT ASSESSMENT**
(Module custodian: Department of Computer Systems Engineering)
This module covers professional conduct, project design approach and design considerations and is concerned with personal and interpersonal skills, self-management, team dynamics and cultural diversity, legal issues in IT, computer-assisted design, knowledge of materials and construction, manufacturing tools and processes, environmental design skills, and an overview of current technology. After successful completion of this module, the student must be able to operate efficiently in a working environment, and successfully research, plan, and design appropriate artefacts for the work environment. (Total notional time: 100 hours)

PROJECT DESIGN 376 (PD2316D/R)   **PROJECT ASSESSMENT**
(Module custodian: Department of Computer Systems Engineering)
This module is concerned with identifying a particular existing problem and solving it through the development and implementation of a software and hardware solution. After successful completion of this module, the student must be able to solve problems by making responsible, safety-conscious decisions and using critical and creative thinking; Manage oneself and one's study activities responsibly and effectively by submitting the documents on time and budgeting your project time effectively; Research, collect, organise, and evaluate information in order to form a complete picture regarding the selected project; Communicate effectively using visual, mathematical and language skills when completing and submitting the project design documents; Exploring career opportunities by investigating possible employment options; Communication, including receiving advice from supervisors; Self-management by organising and managing oneself and one's activities responsibly and effectively. (Total notional time: 200 hours)

R

RESEARCH METHODOLOGIES (RMC118G, RMR118G)   **CONTINUOUS ASSESSMENT**
(Module custodian: Department of Computer Science)
The focus of this module is to introduce a student to research methods, planning, management, ethics, legal, and professional issues, and also how to write scientific research articles and theses/dissertations. (Total notional time: 150 hours)

RESEARCH METHODOLOGY (RIF118G)   **CONTINUOUS ASSESSMENT**
(Module custodian: Department of Informatics)
The student will understand, select and apply research methodologies, paradigms and techniques to Information Technology research projects. The student will be able to apply his/her knowledge of the most common Information Systems (IS) research strategies and techniques. (Total notional time: 240 hours)

RESEARCH PROJECT IV (RIT117V/R)   **PROJECT ASSESSMENT**
(Module custodian: Department of Information Technology)
The module demonstrates research and writing skills according to the project topics and research problem, in line with the department niche area. (Total notional time: 150 hours)

RESEARCH PROJECT (RRS108G, RRS118R)   **PROJECT ASSESSMENT**
(Module custodian: Department of Computer Science)
The focus of this module is to enable students to apply and implement the research principles acquired in the Research Methodologies module on a proposed research topic. (Total notional time: 300 hours)

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 notional time: 150 hours)

S

SECURITY POLICY AND GOVERNANCE 501 (SPG118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The focus of this module is to equip the student to implement computer security governance processes and procedures and recommend security strategies. (Total notional time: 150 hours)

SERVICE-ORIENTED COMPUTING (SEC117V)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
The focus of this module is to equip the student with the requisite skills to create secure web services using the JEE framework to integrate heterogeneous systems in the software industry. (Total notional time: 150 hours)

SOCIAL ENGINEERING AND NEW TRENDS IN NETWORKS (SCN118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The general purpose of this module is to provide students with an overview of social engineering techniques and countermeasures as well as ethical, privacy and security issues in the online social network ecosystem. (Total notional time: 150 hours)

SOFTWARE DEFINED NETWORKS 502 (SDN118G)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The content of this module includes examining the structure and capabilities of commercial and open-source controllers whereby detailed information on constructing and maintaining a software-defined network infrastructure is explained. (Total notional time: 150 hours)

SOFTWARE ENGINEERING (SFG117V)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module is aimed at taking the students through the areas of Software Engineering to equip them with the necessary knowledge, skills, technical abilities and exposure to technologies and methods applicable to the software development environment and activities. (Total notional time: 150 hours)

SOFTWARE ENGINEERING 316 (SFE316D)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers advanced software development and is concerned with creating robust programming solutions for real-world problems. After successful completion of this module, the student must be able to create robust solutions for real-world problems utilising advanced software engineering concepts. (Total notional time: 100 hours)

SOFTWARE ENGINEERING FUNDAMENTALS (SEF216D)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Science)
The purpose of the module is to prepare students to apply programming and software engineering principles to provide solutions to a range of problems emanating from the IT industry. The focus of this module is to teach students principles of software engineering with regard to systems analysis, and design of software solutions within the context of industry-based problems. Upon completion of this module, a student will be able to develop fault-free software that satisfies user requirements, delivered on time and within budget. (Total notional time: 150 hours)

SOFTWARE PROJECT (SWP316D)   PROJECT ASSESSMENT
(Module custodian: Department of Computer Science)
This module presents students with the opportunity to apply and extend their practical knowledge acquired in other modules completed prior to this one by completing an industry-related Information Technology software project similar to projects found in a workplace environment. It will not only enable students to apply but also appreciate the usefulness of their skills and knowledge acquired thus far in this qualification. The final product of the project should be a three-tier system, with each tier residing/hosted in a separate machine. (Total notional time: 150 hours)

SOUND DESIGN (SOD316D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module prepares the student to apply audio design principles to provide solutions to a range of problems emanating from the IT industry. The focus of this module is to lay the foundation for the design and implementation of audible sound solutions on different platforms, including the web and mobile devices. (Total notional time: 150 hours)

STRATEGIC INFORMATION SYSTEMS (SIS117V)   1 X 3-HOUR PAPER
(Module custodian: Department of Informatics)
The student will be able to: Interpret information to be able to find how to sustain a competitive advantage; make use of basic competitive analysis techniques; demonstrate the strategic use of information systems and the impact thereof on the business and organisational strategies; identify the influence of IT in the design of business and business processes; argue and demonstrate how information requirements for specific businesses must be met to gain competitive advantage; and incorporate important and relevant aspects of information into strategic solutions such as ethics, funding, project management and emerging architectures in corporate IS solution design. (Total notional time: 150 hours)

SYSTEM ADMINISTRATION AND MAINTENANCE IV (SAM117V)   1 X 3-HOUR PAPER
(Module custodian: Department of Information Technology)
The general purpose of this module is to provide students with knowledge for deployment and maintenance of modern computer systems, with particular emphasis on the administration of user accounts. Do administrative tasks associated with network operating systems such as Windows and Linux, and how to use deployment tools and solutions such as hardware, applications and software and security updates. (Total notional time: 150 hours)

SYSTEM ANALYSIS A (SYA216D)   1 X 3-HOUR PAPER
(Module custodian: Department of Informatics)
This module prepares the student to apply the concepts and principles of a predictive system structured approach to system analysis and design. Upon completion of the module, the student will be able to identify and explain a structured approach concept and principles, and be able to design a system based on the Software Development Life Cycle (SDLC). (Total notional time: 150 hours)

SYSTEM ANALYSIS B (SYB216D)   1 X 3-HOUR PAPER
(Module custodian: Department of Informatics)
Upon completion of the module, the student will be able to identify and explain an object-orientated approach concept and principles, know the difference between object-orientated and structured approaches and be able to design a system based on a best practice modelling technique (such as UML). (Total notional time: 150 hours)

SYSTEMS RESOURCES MANAGEMENT (SRG117V)   1 X 3-HOUR PAPER
(Module custodian: Department of Computer Systems Engineering)
This module covers the overview of systems resources management, relevant tools, standards, and/or engineering constraints and several techniques for managing system resources. After successful completion of this module, the student must be able to design with an optimum resource allocation. (Total notional time: 150 hours)

T

THEORETICAL COMPUTER SCIENCE (TCR117V)   1 X 4-HOUR PAPER
(Module custodian: Department of Computer Science)
The focus of this module is to lay the foundation upon which many of the essential topics of computer science are built, such as design of programming languages and compilers, data structures, algorithms, and natural language processing. Understanding of this module will enable reasoning about the computability of certain functions. (Total notional time: 150 hours)

3D ANIMATION (TAN216D)   1 X 4-HOUR COMPUTER-BASED
(Module custodian: Department of Computer Science)
This module prepares the student to produce 3D animations and video outputs to provide solutions to a wide range of disciplines. The focus of this module is to design and implement 3D animations on different platforms, including web, games, simulations and virtual reality applications. (Total notional time: 150 hours)

3D MODELLING (TMO216D)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
This module provides an overview of planning, designing, and developing effective 3D models using 3D mo-delling software. The focus of this module is to lay the foundation for the design, texturing and implementation of 3D models on different platforms, including 3D games and simulation environments. (Total notional time: 150 hours)

V

VIRTUAL ENVIRONMENT APPLICATION (VEA118G)   **CONTINUOUS ASSESSMENT**
(Module custodian: Department of Computer Science)
The purpose of this module is to teach students how to develop virtual environment applications effectively. This module will improve the student's understanding of how virtual reality systems should be developed for integrated headsets and mobile platforms. (Total notional time: 150 hours)

VIRTUAL ENVIRONMENT DESIGN (VED118G)   **CONTINUOUS ASSESSMENT**
(Module custodian: Department of Computer Science)
This module will improve the student's understanding of how virtual reality systems work, what limitations they have, and what can be done to improve them. (Total notional time: 150 hours)

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 a project. The student will be able to apply his/her knowledge of virtualisation, isolation and emulation techniques, virtualisation tradeoffs, virtualisation managers across different platforms, and skills such as virtualisation implementation, virtualisation management and isolate and emulate a virtual environment. (Total notional time: 150 hours)

W

WEB COMPUTING (WEB115D, WEBF15D)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
This module prepares the student to apply programming and software engineering principles to provide solu-tions to a range of problems emanating from the IT industry. The focus of this module is to lay the foundation for the design and implementation of computer programming solutions on different platforms, including the web and mobile devices. The student will be able to apply his/her knowledge of basic programming concepts such as planning, designing, scripting and developing effective Web applications using client-side Web technologies to the problems arising in the software industry. (Total notional time: 150 hours)

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 in-formation 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 notional time: 150 hours)

WEB SERVER MANAGEMENT (WEM316D)   **1 X 4-HOUR COMPUTER-BASED**
(Module custodian: Department of Computer Science)
This module focuses on introducing students to the understanding of installation, administering, updating and securing a web server. This module combines the concepts of Web server management with plenty of opportu-nities for hands-on practice to apply the concepts. Each lecture will introduce a networking or Web server topic, discuss it in the context of either Windows and/or Linux, and then provide steps for each operating system. (Total notional time: 150 hours)

WIL (WCM316D)   **WORK-INTEGRATED LEARNING**
(Module custodian: Department of Computer Science)
This module prepares the 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. Upon completion of the module, the student will be able to analyse and behave professionally in the working environment. (Total notional time: 600 hours)

WIRELESS NETWORKS IV (WNE117V)   **1 X 3-HOUR PAPER**
(Module custodian: Department of Information Technology)
The content of the module includes the illustration of how email and other traffic are routed using mobile IP and the implementation of simple application that relies on mobile and wireless data communications. Software package support for mobile and wireless computing. Performance issues of wireless local area networks. (Total notional time: 150 hours)

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 notional time: 150 hours)

WORK-INTEGRATED LEARNING (WOC316D)   **WORK-INTEGRATED LEARNING**
(Module custodian: Department of Computer Science)
This module prepares the 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. Upon completion of the module, the student will be able to analyse and behave professionally in the working environment. (Total notional time: 600 hours)

WORK-INTEGRATED LEARNING (WII316D)   **WORK INTEGRATED LEARNING**
(Module custodian: Department of Informatics)
This module prepares the 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 learned in the qualification. Upon completion of the module, the student will be able to analyse and behave professionally in the working environment. (Total notional time: 600 hours)

WORK-INTEGRATED LEARNING 326 (WYE306D)   **WORK-INTEGRATED LEARNING**
(Module custodian: Department of Computer Systems Engineering)
This module covers integrating the student into a work environment and exposing him/her to a professional work environment. The student will be introduced to the professional world in an industry-related to the programme. (Total notional time: 600 hours)