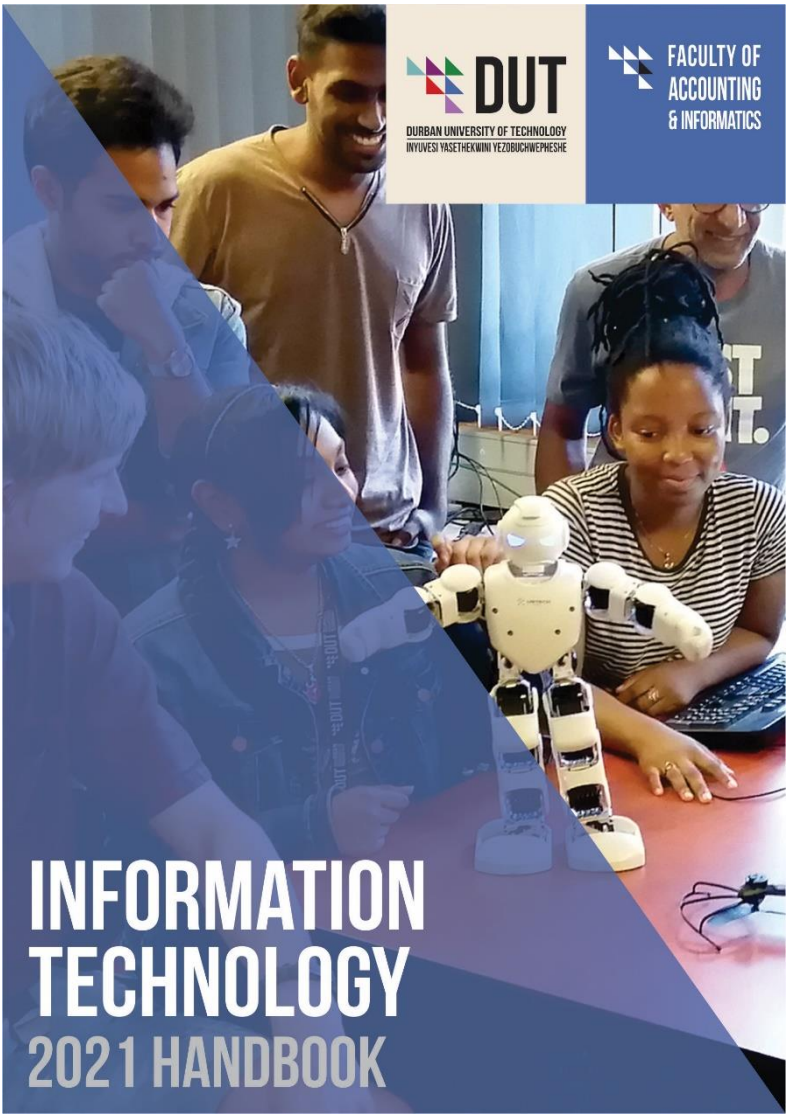

DUT
DURBAN UNIVERSITY OF TECHNOLOGY
INYUVESI YASETHEKWINI YEZOBUCHWEPHESHE

FACULTY OF ACCOUNTING & INFORMATICS

INFORMATION TECHNOLOGY

2021 HANDBOOK

HANDBOOK FOR 2021

FACULTY of Accounting and Informatics

DEPARTMENT of INFORMATION TECHNOLOGY

Faculty of Accounting & Informatics

Vision A globally recognized faculty for academic excellence.

Mission

"Developing Leaders for the Information Society" through

- Excellence in teaching and learning
- Relevant research and creative innovation
- Social entrepreneurship

Values

- **Fairness**: We treat people equitably with respect. Our decisions are impartial. We embrace diversity and inclusion.
- **Accountability**: We accept responsibility for activities, decisions, actions and disclose outcomes in a transparent way.
- **Integrity**: We enhance our reputation with consistent trustworthy conduct.

Department of Information Technology

Vision Leading ICT Scholarship and Innovation

Mission

"Advancing ICT" through

- A Quality Teaching and Learning Experience
- Relevant and Problem-Driven Research
- Engagement with Society
- Entrepreneurship

Values

- **Innovation:** Thinking out of the box. Striving for better. Cutting-edge curriculum, research and process. Creativity. Exciting. Embrace collaboration.
- **Compassion:** To care and have empathy – to consider from another's perspective. Understand our students. Ethics – do no harm. Committed. Ubuntu: "I am because we are".
- **Transformation:** Embrace the digital revolution. The architects of change. Be adaptive. Economic and societal progress. A mix of human and technological values.

Goals

The goals of the Department are:

- To continuously produce a critical mass of quality IT graduates from sound teaching, learning, and assessment practices
- To produce and publish high quality applied research in IT
- To significantly contribute to the empowerment of communities, society, and humanity, using IT as an enabler

What is a University of Technology?

A university of technology is characterized by being research informed rather than research driven where the focus is on strategic and applied research that can be translated into professional practice. Furthermore, research output is commercialized thus providing a source of income for the institution. Learning programmes, in which the emphasis on technological capability is as important as cognitive skills, are developed around graduate profiles as defined by industry and the professions.

IMPORTANT NOTICE

The departmental rules in this handbook must be read in conjunction with the University's General Rules included in the Student Handbook. *The University reserves the right to change the contents without prior notice.*

NOTE TO ALL REGISTERED STUDENTS

Your registration is in accordance with all current rules of the Institution. If, for whatever reason, you do not register consecutively for every year/semester of your programme, your existing registration contract with the Institution will cease. Your re-registration anytime thereafter will be at the discretion of the Institution and, if permitted, will be in accordance with the rules applicable at that time.

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1 DEPARTMENT AND FACULTY CONTACT DETAILS

All Departmental queries to:
Secretary:

Tel No:	031 373 5596
e-Mail:	itdept@dut.ac.za
Location:	2nd Floor, Block B,, West Wing, Ritson Campus

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Location:	2nd Floor, Block B,, West Wing, Ritson Campus

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Location:	East Wing, Hotel School Building, Ritson Campus

Executive Dean:	Prof O Olugbara
Secretary:	Ms B Martin
Tel No:	031 373 5597
e-Mail:	beulahm@dut.ac.za
Location:	North Wing, Hotel School Building, Ritson Campus

2 STAFFING

	Name and Qualification	
Head of Department	Dr Wing J W	PhD IT (DUT)
Associate Professors	Prof R C Millham	PhD Computer Science (De Montfort University), CEng (British Engineering Society)
Associate Directors	Khan F T	MSc (University of Sydney)
	Singh K	BSc (Hons) Computer Science, BEd (Hons) UHDE (UDW)
Senior Lecturers	Asmal E	NHD CDP (MLST), ND EDP (MLST)
	Hansrajh A	BSc (Hons) (UNISA) JSED (SCE)
	Pancham J	MICT (DUT) ND Telecom (Telkom), BSc (Hons) (UDW)
	Dr Singh A	DTech IT (DUT)
Lecturers	Dr Adeliyi T	PhD IT [DUT]
	Boamah-Abu C	MCom IS (UCT), BSc (Hons) Comp Sc (Rhodes)
	Dwarika, J	MSc IS (UNISA), BSc (Hons) (UNISA), BTech IT (DIT)
	Hoosen S	BSc (Hons) (UDW)
	Jackson P	MICT (DUT)
	Joseph S	MTech IT (DUT)
	Lingwati L	MICT (DUT), BTech IT (DUT), PGDBM (MANCOSA)
	Moodley S G	BTech IT (DUT)
	Ngxata B	MCom IS&T (UKZN), BTech IT (MLST), Dip IT (WSU)
	Dr Sibiya S	PhD IT [DUT]
	Soobramoney R	BSc (Hons) (UND)
	Soobramoney S	MICT (DUT)
	Sosibo-Khena NS	MTech IT (DUT), BTech IT (DIT), ND IT (TN)
	Thompson R C	MICT (DUT), NH Dip (TN),
	Vanker C	MCom IS&T (UKZN) BTech IT (MLST)
	White C R	BSc (Hons) Comp Sc, HDE (PG)
nGap Lecturer	Khubisa, F	MICT (cum laude) [DUT]

Administrative Staff:	Secretary:	
	Admin. Assistant	Mr L T Khumalo
	Senior Technician Networks:	Mr A Ramdass
	Technicians:	Mr M Womack
		Mrs G Pursan
		Mr BNM Mbuthuma
		Mr R Govender

3 PROGRAMMES OFFERED BY THE DEPARTMENT

The table below provides details of the programme offerings and phased out programmes.

IT = Information Technology
ICT = Information and Communications Technology
ECP = Extended Curriculum Programme

Programme Name	Code	SAQA NLRD	NQF level	NQF Credits
Higher Certificate in IT	HCINF1	98911	5	120
Diploma in ICT in Applications Development	DIIAD1	94697	6	360
Diploma in ICT in Applications Development (4 year ECP)	DIIAF1	94697	6	360
Advanced Diploma in ICT	ADICT1	109939	7	120
Bachelor of ICT	BINCT1	104534	7	376
Master of ICT	MICMT1	96833	9	180
PhD in IT	DPINF1	96804	10	360
PHASED-OUT Programmes			**Last new intake**	
ND: IT (Software Development)	NDINS1	72241	2015	
ND: IT (Business Applications)	NDINB1	72241	2015	
ND: IT (4 year Foundation)	NDISF1	72241	2015	
B.Tech. IT	BTINF2	72142	2019	

4 PROGRAMME INFORMATION

4.1. UNDER-GRADUATE PROGRAMMES

4.1.1. Higher Certificate in IT (HCINF1)

This programme is designed as an articulation pathway to higher NQF level IT qualifications such as, Diploma in ICT. The graduate will be equipped with foundational technical skills in IT with a focus on web development, e-commerce, computer networks and IT solutions development.

Duration
Min: 1 year; Max: 2 years

4.1.2. Diploma in ICT in Applications Development (DIIAD1)

One of two streams in the Diploma in ICT, this qualification will develop knowledge and practiced skill required for the development of IT solutions that are reliable, efficient and useful.

Duration
Min: 3 years; Max: 5 years

4.1.3. Diploma in ICT in Applications Development (4 year ECP) (DIIAF1)

Graduates will be able to develop knowledge and practiced skill required for the development of IT solutions that are reliable, efficient and useful.

Duration
Min: 4 years; Max: 5 years

4.1.4. Advanced Diploma in ICT (ADICT1)

This programme is designed to prepare graduates for the IT industry or for postgraduate study through the deepening of their knowledge and understanding of theories, methodologies and practices within the field of IT and research.

Duration
Min: 1 years; Max: 2 years

4.1.5. Bachelor of ICT (BINCT1)

This Bachelor Degree has a theoretical and practical focus aimed at developing knowledge and skills that are in high demand throughout the IT industry. Graduates will be capable of improving organizational processes through the implementation of current IT developments.

Duration
Min: 3 years; Max: 5 years

4.2. POST-GRADUATE PROGRAMMES

4.2.1. Master of ICT (MICMT1)

A full research programme, the Master of ICT is designed to equip its graduates with knowledge for conducting IT based research. Upon completion, graduates will be poised to undertake either independently or collaboratively complex IT research such as that required in a PhD. Graduates will have the ability to disseminate findings of their research through publications.

Duration
Min: 1 year; Max: 3 years

4.2.2. PhD in IT (DPINF1)

PhD will equip its graduates with knowledge for conducting high quality research and contributing new knowledge to an area of IT. Graduates will be able to conduct independent research that results in innovations and produces new knowledge in an area of IT. Graduates will have developed the ability to disseminate findings of their research and in doing so make a contribution towards IT.

Duration
Min: 2 years; Max: 4 years

5 MINIMUM ADMISSION REQUIREMENTS

5.1. Higher Certificate in IT (HCINF1)

In addition to General Rules G7 and G20B, the minimum admission requirement is a National Senior Certificate (NSC) or Senior Certificate (SC) or a National Certificate Vocational (NCV) level 4 pass and must meet the following requirements:

Compulsory Subjects	NSC Rating	SC		NCV
		HG	SG	
English (Home Language)	3	E	C	50%

Note: In addition to the above, the Department of IT can apply selection and ranking criteria based on academic merits and/or work experience before granting admission.

5.2. Diploma in ICT in Applications Development (DIIAD1)

In addition to the requirements of the General Rules G7 and G21B, the minimum admission requirement is a National Senior Certificate (NSC) or Senior Certificate (SC) or a National Certificate Vocational (NCV) that is valid for entry into a Diploma and must meet the following minimum requirements:

Compulsory Subjects	NSC Rating	SC		NCV
		HG	SG	
English (Home Language)	3	E	C	50%
OR				
English (1st Additional Language)	4	n/a	n/a	n/a
Mathematics	3	E	C	50%
OR				
Mathematical Literacy	6	n/a	n/a	n/a
Two 20 credit subjects (Life Orientation or more than one additional language is excluded)	3	n/a	n/a	(a) At least 50% in one fundamental subject, in addition to English & Mathematics. (b) At least 60% in three compulsory vocational subjects

Note: In addition to the above, the Department of IT can apply selection and ranking criteria based on academic merits and/or work experience before granting admission.

5.3. Diploma in ICT in Applications Development (4 year ECP) (DIIAF1)

In addition to the requirements of the General Rules G7 and G21B, the minimum admission requirement is a National Senior Certificate (NSC) or Senior Certificate (SC) or a National Certificate Vocational (NCV) that is valid for entry into a Diploma and must meet the following requirements:

Compulsory Subjects	NSC Rating	SC		NCV
		HG	SG	
English (Home Language) OR English (1st Additional Language)	3 3	E n/a	C n/a	50% n/a
Mathematics OR **Mathematical Literacy**	3 5	E n/a	C n/a	50% n/a
Two 20 credit subjects (Life Orientation or more than one additional language is excluded)	3	n/a	n/a	(a) At least 50% in one fundamental subject, in addition to English & Mathematics. (b) At least 60% in three compulsory vocational subjects

Note: In addition to the above, the Department of IT can apply selection and ranking criteria based on academic merits and/or work experience before granting admission.

5.4. Advanced Diploma in ICT (ADICT1)

In addition to General Rules G7 and G21C, admission requires a Diploma in Information and Communications Technology at NQF level 6, 360 credits or equivalent.

Note: In addition to the above, the Department of IT can apply selection and ranking criteria based on academic merits and/or work experience before granting admission.

5.5. **Bachelor of ICT (BINCT1)**

In addition to the requirements of the General Rules G7 and G23B, the minimum admission requirement is a National Senior Certificate (NSC) awarded with Bachelors Pass or Senior Certificate (SC) awarded with Exemption or a National Certificate Vocational (NCV) that is valid for entry into a Degree and must meet the following requirements:

Compulsory Subjects	NSC Rating	Compulsory Subjects	SC (HG)	NCV
English (Home Language) OR **English** (1st Additional Language)	4	**English**	D	
Mathematics	4	**Mathematics**	D	
And at least one of the following subjects: **Physical Science** OR **Information Technology**	4	And at least one of the following subjects: **Physical Science** OR **Information Technology**	D	(a) At least 60% in one fundamental subject, in addition to English & Mathematics. (b) At least 70% in three compulsory vocational subjects

Note: In addition to the above, the Department of IT can apply selection and ranking criteria based on academic merits and/or work experience before granting admission.

5.6. **Masters in ICT (MICMT1)**

In addition to the General Rule G24(1), the minimum admission requirement is Honours Degree in ICT OR Post Graduate Diploma in ICT OR equivalent.

Note: In addition to the above, admission requires approval of draft research proposal and availability of a willing and able supervisor from the Department of IT.

5.7. **PhD in IT (DPINF1)**

In addition to the General Rule G25(1), the minimum admission requirement is a Master of Information and Communications Technology Degree OR equivalent.

Note: In addition to the above, admission requires approval of draft research proposal and availability of a willing and able supervisor from the Department of IT.

6 PROGRAMME RULES

6.1. UNSATISFACTORY ACADEMIC PROGRESS

General Rules G17 and G19 to G25 apply. In addition, the Department reserves the right to recommend that a student withdraw from a programme due to poor performance.

6.2. PROGRESSION RULES

6.2.1. Diploma in ICT in Applications Development (DIIAD1)

In addition to General Rules G14, G16, G17 and G21B the student shall pass and accumulate the minimum number of credits at the end of each year as indicated in the table below. This gives the student five years to complete the three-year qualification without intervention. Should a student not achieve the minimum credit indicated in the table below, he/she will not be permitted to register in the subsequent year.

End of Year	Minimum Credits
1	50
2	120
3	200
4	280

A student may not progress to study period 3 (third year) unless they have passed all first-year majors (4), and 2 out of 5 second-year majors. See section 7 of this handbook for majors.

6.2.2. Diploma in ICT in Applications Development (4 year ECP) (DIIAF1)

In addition to Rules G14, G16, G17 and G21B the student shall pass and accumulate the minimum number of credits at the end of each year period, as indicated in the table below. This gives the student five years to complete the four-year qualification without intervention. Should a student not achieve the minimum credit indicated in the table below, he/she will not be permitted to register in the subsequent year.

End of Year	Minimum Credits
1	50
2	120
3	200
4	280

A student may not progress to study period 4 (fourth year) unless they have passed all the major modules in first and second year (4) and at least 2 of the 5 major modules in third year. See section 7 of this handbook for majors.

6.2.3. Bachelor of ICT (BINCT1)

In addition to Rules G14, G16, G17 and G23B the student shall pass and accumulate the minimum number of credits at the end of each year of registration, as indicated in the table below. This gives the student five years to complete the three-year qualification without intervention. Should a student not achieve the minimum credit indicated in the table below, he/she will not be permitted to register in the subsequent year.

End of year	Minimum Credits
1	60
2	120
3	200
4	260

6.3. INTERRUPTION OF STUDIES

Should a student interrupt their studies by more than three years the student will be required to provide evidence of appropriate knowledge which will be evaluated by the Department prior to being given permission to re-register. Furthermore, please refer to rule G6B in the DUT General Handbook.

6.4. FINAL MARK WEIGHTING

The final mark for a module with an examination is calculated as 40% course mark and 60% examination mark. The calculation of the course mark for each module will be indicated within the student guide of each module.

6.5. GENERAL EDUCATION MODULE RULES

The General Education modules are compulsory and covers 30% of the total credits of an undergraduate Diploma and Degree programme.

6.6. PHASE-OUT MODULE RULES

Phase out modules may not be offered as both full-time and part-time.

6.7. PART-TIME MODULE RULES

Part time students may have to write tests and/or examinations during full-time hours that is, during normal daytime working hours.

7 PROGRAMME STRUCTURE

7.1. Higher Certificate in IT (HCINF1)

Year 1 (Study Period – 1)

Module Code	Module Name	Core; Fundamental; General Education	NQF Level	SAQA Credits	Exam / CA	Prerequisites [P], Co-Requisites [C], Exposure [E]
CSTN101	Cornerstone 101		5	12	CA	
DBAD102	Database Administration		5	12	CA	
ECMR102	E-Commerce		5	12	CA	
HDWS102	Hardware Support		5	12	CA	
NWRK102	Networking		5	12	CA	
SWSP102	Software Support		5	12	CA	
SLDV102	Solutions Development		5	12	CA	
WEBP102	Web Project		5	24	CA	
WBTC102	Web Technology		5	12	CA	

7.2. Diploma in ICT in Applications Development (DIIAD1)

Note: * denotes Major module

Year 1 (Study Period – 1)

Module Code	Module Name	Core; Fundamental; General Education	NQF Level	SAQA Credits	Exam/ CA	Prerequisites [P], Co-Requisites [C], Exposure [E]
CSTN101	Cornerstone 101	[GE] Inst.	5	12	CA	
ICTL101	Information & Communications Technology Literacy & Skills	[GE] Inst.	5	8	CA	
BFND101	Business Fundamentals 1	[GE] Fac.	5	12	CA	
APDA101	Applications Development IA*	[C]	5	12	Exam	
FCSC101	Fundamentals of Computer Security	[F]	5	8	Exam	
INSS101	Information Systems 1*	[C]	5	8	Exam	
MWMU101	Me, My World, My Universe	[GE] Inst.	5	8	CA	
OSYS101	Operating Systems	[F]	5	12	Exam	
APDP101	Applications Development Project I*	[GE] Program	5	12	CA	Applications Development IA [E]; Applications Development IB [C]
APDB101	Applications Development IB*	[C]	5	12	Exam	Applications Development IA [E]
CNTW101	Communications Networks 1	[F]	5	16	Exam	

Year 2 (Study Period – 2)

Module Code	Module Name	Core; Fundamental; General Education	NQF Level	SAQA Credits	Exam/ CA	Prerequisites [P], Co-Requisites [C], Exposure [E]
BFND201	Business Fundamentals II	[GE] Fac.	6	12	CA	Business Fundamentals I [P]
MCPA201	Mobile Computing IIA	[C]	6	8	Exam	
ISYA201	Information Systems IIA*	[C]	6	8	Exam	Information Systems I [P]
APDA201	Applications Development IIA*	[C]	6	12	Exam	Applications Development IA [P]; Applications Development IB [P]
ITPM101	IT Project Management	[C]	6	12	Exam	
INMA201	Information Management IIA	[C]	6	8	Exam	
CMEP101	Community Engagement Project	[GE] Inst.	6	8	CA	
MCPB201	Mobile Computing IIB	[C]	6	12	Exam	Mobile Computing IIA [E]
ISYB201	Information Systems IIB*	[C]	6	8	Exam	Information Systems IIA [E]
APDB201	Applications Development IIB*	[C]	6	12	Exam	Applications Development IIA [E]
INMB201	Information Management IIB	[C]	6	8	Exam	Information Management IIA [E]
APDP201	Applications Development Project II*	[GE] Program	6	12	CA	Applications Development Project I [P]; Applications Development IIA [E]; Information Systems IIA [E].

Year 3 (Study Period – 3)

Module Code	Module Name	Core; Fundamental; General Education	NQF Level	SAQA Credits	Exam/ CA	Prerequisites [P], Co-Requisites [C], Exposure [E]
APDA301	Applications Development IIIA*	[C]	6	12	Exam	Applications Development IIA [P]; Applications Development IIB [P]
ISYA301	Information Systems IIIA*	[C]	6	12	Exam	Information Systems IIA [P]; Information Systems IIB [P]; Applications Development Project II [E]
ADPA301	Applications Development Project IIIA*	[GE] Program	6	12	CA	Applications Development Projects II [P]; Applications Development IIA [P]; Applications Development IIB [P]
HCIN101	Human Computer Interaction	[C]	6	12	Exam	
TIPP301	Theory of ICT Professional Practice III	[GE] Program	6	12	Exam	
ENSP101	Entrepreneurial Spirit	[GE] Fac.	6	12	CA	Business Fundamentals I [P], Business Fundamentals II [P]
APDB301	Applications Development IIIB*	[C]	6	12	Exam	Applications Development IIIA [E]
ISYB301	Information Systems IIIB*	[C]	6	12	Exam	Information Systems IIIA [E]
ADPB301	Applications Development Project IIIB*	[GE] Program	6	24	CA	Applications Development Project IIIA [E]; Applications Development IIIA [E]

7.3. Diploma in ICT in Applications Development (4 year ECP) (DIIAF1)

Note: * denotes Major module

Year 1 (Study Period – 1)

Module Code	Module Name	Core; Fundamental; General Education	NQF Level	SAQA Credits	Exam / CA	Prerequisites [P], Co-Requisites [C], Exposure [E]
CSTN101	Cornerstone 101	[GE] Inst.	5	4	CA	
FCSC101	Fundamentals of Computer Security	[F]	5	3	Exam	
ICTL101	Information & Communications Technology Literacy & Skills	[GE] Inst.	5	3	CA	
ILGA101	IT Logic & Technology IA	[F]	5	8	CA	
SKDA101	Skills Development IA	[F]	5	8	CA	
ILGB101	IT Logic & Technology IB	[F]	5	8	CA	IT Logic & Technology IA [E]
INSS101	Information Systems I*	[C]	5	3	Exam	
OSYS101	Operating Systems	[F]	5	3	Exam	
SKDB101	Skills Development IB	[F]	5	8	CA	

Year 2 (Study Period – 2)

Module Code	Module Name	Core; Fundamental; General Education	NQF Level	SAQA Credits	Exam/ CA	Prerequisites [P], Co-Requisites [C], Exposure [E]
APDA101	Applications Development IA*	[C]	5	6	Exam	
BFND101	Business Fundamentals I	[GE] Fac.	5	6	CA	
CNTW101	Communications Networks I	[F]	5	8	Exam	
ILGA201	IT Logic & Technology IIA	[F]	5	8	CA	IT Logic & Technology IA [P]; IT Logic & Technology IB [P]
SKDA201	Skills Development IIA	[F]	5	8	CA	Skills Development IA [P]; Skills Development IB [P]
APDB101	Applications Development IB*	[C]	5	6	Exam	Applications Development IA [E]
APDP101	Applications Development Project I*	[GE] Program	5	8	CA	Applications Development IA [E]; Applications Development 1B [C]
ILGB201	IT Logic & Technology IIB	[F]	5	8	CA	IT Logic & Technology IIA [E]
MWMU101	Me, My World, My Universe	[GE] Inst.	5	6	CA	
SKDB201	Skills Development IIB	[F]	5	8	CA	Skills Development IA [P]; Skills Development IB [P]

Year 3 (Study Period – 3)

Module Code	Module Name	Core; Fundamental; General Education	NQF Level	SAQA Credits	Exam/ CA	Prerequisites [P], Co-Requisites [C], Exposure [E]
APDA201	Applications Development IIA*	[C]	6	12	Exam	Applications Development IA [P]; Applications Development IB [P]
BFND201	Business Fundamentals II	[GE] Fac.	6	12	CA	Business Fundamentals I [P]
INMA201	Information Management IIA	[C]	6	8	Exam	
ISYA201	Information Systems IIA*	[C]	6	8	Exam	Information Systems I [P]
ITPM101	IT Project Management	[C]	6	12	Exam	
MCPA201	Mobile Computing IIA	[C]	6	8	Exam	
APDB201	Applications Development IIB*	[C]	6	12	Exam	Applications Development IIA [E]
APDP201	Applications Development Project II*	[GE] Program	6	12	CA	Applications Development Project I [P]; Applications Development IIA [E]; Information Systems IIA [E];
CMEP101	Community Engagement Project	[GE] Inst.	6	8	CA	
INMB201	Information Management IIB	[C]	6	8	Exam	Information Management IIA [E]
ISYB201	Information Systems IIB *	[C]	6	8	Exam	Information Systems IIA [E]
MCPB201	Mobile Computing IIB	[C]	6	12	Exam	Mobile Computing IIA [E]

Year 4 (Study Period – 4)

Module Code	Module Name	Core; Fundamental; General Education	NQF Level	SAQA Credits	Exam/ CA	Prerequisites [P], Co-Requisites [C], Exposure [E]
APDA301	Applications Development IIIA*	[C]	6	12	Exam	Applications Development IIA [P]; Applications Development IIB [P]
ISYA301	Information Systems IIIA*	[C]	6	12	Exam	Information Systems IIA [P]; Information Systems IIB [P]; Applications Development Project II [E]
ADPA301	Applications Development Project IIIA*	[GE] Program	6	12	CA	Applications Development Projects II [P]; Applications Development IIA [P]; Applications Development IIB [P]
HCIN101	Human Computer Interaction	[C]	6	12	Exam	
TIPP301	Theory of ICT Professional Practice III	[GE] Program	6	12	Exam	
ENSP101	Entrepreneurial Spirit	[GE] Fac.	6	12	CA	Business Fundamentals I [P], Business Fundamentals II [P]
APDB301	Applications Development IIIB*	[C]	6	12	Exam	Applications Development IIIA [E]
ISYB301	Information Systems IIIB*	[C]	6	12	Exam	Information Systems IIIA [E]
ADPB301	Applications Development Project IIIB*	[GE] Program	6	24	CA	Applications Development Project IIIA [E]; Applications Development IIIA [E]

7.4. Advanced Diploma in ICT (ADICT1)

Note: ** indicates an **Elective** – Two modules must be selected from the Electives.
The Department reserves the right not to offer an Elective Module.

Year 1 (Study Period – 1)

Module Code	Module Name	Core; Fundamental; General Education	NQF Level	SAQA Credits	Exam/ CA	Prerequisites [P], Co-Requisites [C], Exposure [E]
DAST401	Data Structures		7	16	Exam	
PBDE401	Platform Based Development		7	16	CA	
RESK401	Research skills		7	12	Exam	
APMC401	Applied Mathematics for Computing A (Probability & Statistics)		7	12	Exam	
SODM401	Software Development and Management		7	16	Exam	
APMC402	Applied Mathematics for Computing B (Discrete Structures & Linear Algebra)		7	16	Exam	
SAMA301	Strategy Acquisition and Management III**		7	16	Exam	
BUIN301	Business Intelligence III**		7	16	Exam	
PDCO301	Parallel and Distributed Computing III**		7	16	Exam	
MAIN301	Machine Intelligence III**		7	16	Exam	
GRAP301	Graphics III**		7	16	Exam	
HCIN301	Human Computer Interaction III**		7	16	Exam	

7.5. Bachelor of ICT (BINCT1)

Note: ** indicates an **Elective** – Two modules must be selected from the Electives.
The Department reserves the right not to offer an Elective Module.

Year 1 (Study Period – 1)

Module Code	Module Name	Core; Fundamental; General Education	NQF Level	SAQA Credits	Exam/ CA	Prerequisites [P], Co-Requisites [C], Exposure [E]
BFND101	Business Fundamentals I	[GE] Fac.	6	12	CA	
INCP101	Introduction to Computing	[C]	5	12	Exam	
DSTR101	Discrete Structures	[F]	6	16	Exam	
ICMS101	Interpersonal Communication & Self	[GE] Inst.	5	8	CA	
MCMA101	Mathematics for Computing IA	[F]	6	12	CA	
CSTN101	Cornerstone 101	[GE] Inst.	5	12	CA	
BFND201	Business Fundamentals II	[GE] Fac.	6	12	CA	Business Fundamentals I [P]
SWDF101	Software Development Fundamentals	[C]	5	12	Exam	
MCMB101	Mathematics for Computing IB	[C]	6	12	CA	
SYSF101	Systems Fundamentals	[F]	5	12	Exam	

Year 2 (Study Period – 2)

Module Code	Module Name	Core; Fundamental; General Education	NQF Level	SAQA Credits	Exam/ CA	Prerequisites [P], Co-Requisites [C], Exposure [E]
SADS201	Systems Analysis and Design II	[C]	6	12	Exam	
LWLF101	Law for Life	[GE] Inst.	5	8	CA	
OGBH201	Organizational Behavior II	[F]	5	12	Exam	
NOPS201	Networks and Operating Systems II	[C]	6	16	Exam	Systems Fundamentals [C]
PRLN201	Programming Languages II	[F]	6	12	Exam	
ALDS201	Algorithms and Data Structures II	[C]	6	12	Exam	Discrete Structures [C]
INFM201	Information Management II	[C]	6	12	Exam	
INAS201	Information Assurance and Security II	[C]	6	16	Exam	
COAR201	Computer Organization and Architecture II	[C]	6	16	Exam	Systems Fundamentals [C]
ENSP101	Entrepreneurial Spirit	[GE] Fac.	6	12	CA	Business Fundamentals I [P], Business Fundamentals II [P]

Year 3 (Study Period – 3)

Module Code	Module Name	Core; Fundamental; General Education	NQF Level	SAQA Credits	Exam/ CA	Prerequisites [P], Co-Requisites [C], Exposure [E]
IEXP101	Industry Exposure	[C]	7	12	CA	
PBDV301	Platform Based Development III	[C]	7	16	Exam	Programming Languages II [C]
IPRT301	Integrative Programming & Technology III	[C]	7	16	Exam	
SPRI301	Social and Professional Issues III	[C]	7	16	Exam	
PRJA301	Project IIIA	[C]	7	8	CA	Programming Languages II [C]
PRJB301	Project IIIB	[C]	7	12	CA	Programming Languages II [C]
SAQM301	Strategy Acquisition & Management III**	[E]	7	16	Exam	
SFEN301	Software Engineering III	[C]	7	16	Exam	
PJMN301	Project Management III**	[E]	7	16	Exam	
BSIT301	Business Intelligence III**	[E]	7	16	Exam	Information Management II [C]
PDCP301	Parallel and Distributed Computing III**	[E]	7	16	Exam	Programming Languages II [C]
MCHI301	Machine Intelligence III**	[E]	7	16	Exam	
GRPH301	Graphics III**	[E]	7	16	Exam	
HCPI301	Human Computer Interaction III**	[E]	7	16	Exam	
WSYT301	Web Systems and Technology III**	[E]	7	16	Exam	

7.6. **ABRIDGED SYLLABI**

Algorithms and Data Structures II [ALDS201]	**Applications Development 1A** [APDA101]
BINCT1 NQF: 6 SAQA: 12	DIIAD1;DIIAF1 NQF: 5 SAQA: 12
Basic analysis; Algorithmic strategies; Fundamental data structures and algorithms; Basic Automata, Computability and Complexity; Advanced Computational Complexity; Advanced Automata Theory and Computability; Advanced Data Structures Algorithms and Analysis	Introduction .Net Platform; Introducing the C# Programming Language; Getting start with .Net developing using C#; Language Essentials; Expressions and Operators; Primer on Types and Objects; Simple Flow Control; Basics of Exception and Resource Management; Introduction Types; Methods; Introduction To Unit Testing.
Applications Development 1B [APDB101]	**Applications Development IIA** [APDA201]
DIIAD1;DIIAF1 NQF: 5 SAQA: 12	**DIIAD1;DIIAF1 NQF: 6 SAQA: 12**
Fields, Properties & Indexers; Constructors and Finalizes; Operators, Overloading and Conversions; Object Oriented Programming; Generic Types and Methods Collection Types; Delegates; Events; Language Integrated Query Essentials; Exceptions; Working with IO.	Introduction to (a) development framework(s), Client-side; languages for Web Development, Server-side languages; for Web Development, Frontend Frameworks for Web; Development, Backend Frameworks for Web; Development, Web Development Tools.
Applications Development IIB [APDB201]	**Applications Development IIIA** [APDA301]
DIIAD1;DIIAF1 NQF: 6 SAQA: 12	DIIAD1;DIIAF1 NQF: 6 SAQA: 12
Creating and managing Filters, controller Extensibility,; creating and managing Views, Designing Model Templates,; Model Binding, Model Validation, Creating Asynchronous; Java Script Functions, Working with Java Script; Frameworks, Security Vulnerability when developing; applications, Authentication and Authorizing access to; applications, Deployment.	Informed understanding of Cloud Computing Concepts Design and build applications that are cloud computing ready; Create, deploy, configure and monitor applications that run in the chosen cloud platform; Ability host Windows Communication Foundation (WCF); services using the chosen cloud platform Solid knowledge of virtualization and storage A sound understanding of Blobs; Include web forms security in cloud-based applications Ability to upload and test cloud applications.

Applications Development IIIB [APDB301]	**Applications Development Project I** [APDP101]
DIIAD1;DIIAF1 NQF: 6 SAQA: 12	DIIAD1;DIIAF1 NQF: 5 SAQA: 12
Build service oriented cloud applications; Manage service oriented cloud applications; Analyse the programming of cloud computing services to fully reveal and understand the framework behind the various services; Sound knowledge of creating and deploying cloud services Employ worker roles and queues for asynchronous processing; Create and access SQL databases for cloud-based storage Control access to cloud applications.; Build cloud applications taking into consideration security,; confidentiality and audits.	Fundamental knowledge of how to design, develop and; implement an application, Ability to test the application in; a live environment, Ability to incorporate limited; processing capabilities into the application, Create and; submit documentation for the web application in the form; of a report; Ability to apply logic and problem solving skills, Abilities to; synthesize knowledge from other learning areas into the; capstone project, Demonstrate and present the; application.
Applications Development Project II [APDP201]	**Applications Development Project IIIA** [ADPA301]
DIIAD1;DIIAF1 NQF: 6 SAQA: 12	DIIAD1;DIIAF1 NQF: 6 SAQA: 12
Planning and Analysis: Documents and Presentation, design documents and Presentation, implementation and; Testing. Applications must include the use of either a; relational model database server or an object-relational; database. Examples of these database servers are Oracle; MS SQL, MY SQL, DB4objects, and DB2. All applications; must be developed as either web / mobile based and; designed to incorporate the relevant development; libraries.	Identify the expected outcomes of the project.; Provide a well-documented description of the problem to; be addressed and why it is important.; Indicate the expected outcomes of the project, preferably; in measurable terms.; List key personnel who will work on the project and include their CV's; Describe how long (days, months) specific tasks or; components of the project will take.; Show the annual and overall cost of the project. A; detailed budget should be divided into categories such as; salaries, fringe benefits, travel, supplies, equipment, etc.; Construct a plan of action for how the objectives will be achieved. Draw up a checklist that provides the means to determine if the project has accomplished its objectives.
Applications Development Project IIIB [ADPB301]	**Applied Mathematics for Computing A (Probability and Statistics)** [APMC401]
DIIAD1;DIIAF1 NQF: 6 SAQA: 24	ADICT1 NQF: 7 SAQA: 12
Understanding and application of concepts in application; development Application Development Methodology; Agile/Scrum, Waterfall, RAD, etc. Introduction to Project; Management The project management and Information; Technology Context. The project management process; groups Project Integration Management, Project Scope; Management, Project Time Management, Project Cost; Management, Project Quality Management, Project Human; Resource Management.	Overview; Discrete probability; Continuous probability; Expectation; Stochastic processes; Sampling distributions; Estimation; Hypothesis tests; Correlation and regression.

Applied Mathematics for Computing B (Discrete Structures and Linear Algebra) [APMC402]	**Business Fundamentals I** [BFND101]
ADICT1 NQF: 7 SAQA: 16	BINCT1;DIIAD1;DIIAF1 NQF: 6 SAQA: 12
Sets, Relations, and Functions Propositional logic; Basic Logic used in mathematics and problem solving; Proof Techniques; Basics of Counting; Vector Algebra; Linear Algebra	Efficiently manage key aspects of academic life Basic business communication, written and verbal Information Literacy; Basic Business Finance; customer benefits.; Market Analysis: You need to know your market,; customer needs, where they are, how to reach them, etc. Strategy and Implementation: Be specific. Include management responsibilities with dates and budget. Management Team: Include backgrounds of key members of the team, personnel strategy, and details.; Financial Plan: Include profit and loss, cash flow, balance; sheet, break-even analysis, assumptions, business ratios, etc.; Basic Research Methodology Project Presentation.
Business Fundamentals II [BFND201]	**Business Intelligence III** [BUIN301 / BSIT301]
BINCT1;DIIAD1;DIIAF1 NQF: 6 SAQA: 12	ADICT1 / BINCT1 NQF: 7 SAQA: 16
Introduction to research methodology (research terms and concepts e.g. qualitative; quantitative; research ethics; types of research); Environmental Considerations; Business Communication; Technology and Society.	Decision Making and Analytics: An Overview; Descriptive Analytics; Predictive Analytics; Prescriptive Analytics; Big Data and Future Directions for Business Analytics.
Communications Networks I [CNTW101]	**Community Engagement Project** [CMEP101]
DIIAD1;DIIAF1 NQF: 5 SAQA: 16	DIIAD1;DIIAF1 NQF: 6 SAQA: 8
Introduction to Networks. Networks in our Daily Lives. Communicating on a Local Network. Network Addressing; Providing Network Services; Building A Home Network. Network Security. Configuring Devices; Testing and Troubleshooting.	The principles of community engagement.; Working in groups (being an effective team player). Guidelines for undertaking a community engagement project.; The community as a main factor in community engagement.; Skills for community engagement. Ethical issues in community engagement.; Planning , Implementing and Evaluating a community engagement project.

Computer Organisation and Architecture II [COAR201]	**Cornerstone 101** [CSTN101]
BINCT1 NQF: 6 SAQA: 16	BINCT1;DIIAD1; HCINF1;DIIAF1 NQF: 5 SAQA: 12
Fundamentals of computer architecture ; Computer arithmetic; Memory system organization and architecture; Interfacing and communication; Device subsystems; Processor systems design; Organization of the CPU; Performance; Performance enhancements.	The module content will be developed around the concept of journeys, across time, across space, and across human relationships. Each section will draw in issues of ethics, diversity and critical citizenry. The design team may later take a different metaphor or theme, but; with the same outcomes and attributes. The final section of the module will identify and integrate learning from earlier sections, and examine implications for further learning.
Data Structures [DAST401]	**Database Administration** [DBAD102]
ADICT1 NQF: 7 SAQA: 16	HCINF1 NQF: 5 SAQA: 12
Abstract data structures; algorithms relevant to the data structures introduced; algorithmic analysis; algorithmic strategies.	The nature of data, information and knowledge is explained; The characteristic data types and data flows within a range of organisations; The choice and manipulation of the appropriate data structures to represent information; The relationships between items of data held within records, files, arrays and other appropriate data structures; The related systems of data capture, data quality control and data storage devices; Basic field, record and file formats; The principal methods of Database Organization; The characteristics and uses of applications package database and explain the criteria for the selection of a package; Advantages and disadvantages of a database approach; Physical database designs; Logical data models.
Discrete Structures [DSTR101]	**E-Commerce** [ECMR102]
BINCT1 NQF: 6 SAQA: 16	HCINF1 NQF: 5 SAQA: 12
Sets, Relations, and Functions Propositional logic; Basic Logic; Proof Techniques; Basics of Counting	Business processes for e-Commerce; User interface principles for e-commerce websites; Backend processes to capture data; Promotion and Marketing principles and practices; Security of payments; Basic cyber law.

Entrepreneurial Spirit [ENSP101]	**Fundamentals of Computer Security** [FCSC101]
BINCT1;DIIAD1;DIIAF1 NQF: 6 SAQA: 12	DIIAD1;DIIAF1 NQF: 5 SAQA: 8
Spirit of Entrepreneurship - Product visioning; Operations - Project Management; Team Management; Business and Finance - Investigating the Business Environment/Architecture; Financing; Marketing; Risk Management; Entrepreneurial Case study Analysis; ICT Enablers; Intellectual property protection; Completion of business plan.	Basic Security Principles & Terms; System Security; Human & Physical Security User Security; Malware; Policies/Procedures & Documentation; Basic Cryptography.
Graphics III [GRAP301 / GRPH301]	**Hardware Support** [HDWS102]
ADICT1 / BINCT1 NQF: 7 SAQA: 16	HCINF1 NQF: 5 SAQA: 12
Basic Rendering; Geometric Modeling; Computer Animation; OpenGL basics; 2 and 3-D transformations; 3-D Transformations in OpenGL; Projection principles; Objects and simple lighting in OpenGL; Hidden line and surface removal, clipping; Surface Representations: B´ezier and Spline methods, ; Texture mapping.	Personal Computer Concepts; Operating System Fundamentals; Professional best practices for a PC Technician; Installing and configuring peripheral components; Installing and configuring system components; Maintaining and troubleshooting Peripheral Components; Troubleshooting system components; Installing and configuring Operating Systems; Maintaining and troubleshooting operating systems.
Human Computer Interaction [HCIN101]	**Human Computer Interaction III** [HCIN301 / HCPI301]
DIIAD1;DIIAF1 NQF: 6 SAQA: 12	ADICT1 / BINCT1 NQF: 7 SAQA: 16
Informed understanding of the human cognitive and physical capabilities to process information; Sound understanding of incorporating HCI into design of technology; Informed understanding of availability and functionality of technology; Fundamental knowledge of principles and paradigms; embodying usability of interactive systems Fundamental knowledge of methods for evaluating Designs; Ability to analyse user's behaviour; Understand the principles and paradigms embodying; Usability.	HCI Concepts ; Human Centred Development ; Graphical User Interface Programming ; Multimedia Systems Development ; Interactive GUI Design ; Graphics and Visualization.

Industry Exposure [IEXP101]	**Info & Comm. Tech Literacy & Skills** [ICTL101]
BINCT1 NQF: 7 SAQA: 12	DIIAD1;DIIAF1 NQF: 5 SAQA: 8
Students will reflect on realistic workplace; expectations to draw links with discipline knowledge; and be able to explain real aspects of the real world; setting. They will be expected to respond and; compare their workplace in ways that inform and; improve future practice. Structured learning; activities and assessments tasks that allow students; the opportunity to illustrate and critically measure; learning and to share experience for a variety of; audiences will be of importance.	Basics of ICTs Hardware, Software, and Users Internet Search; Word Processing; Spreadsheets; Presentations; Referencing; Security, Legal, Ethical, and Societal Issues Economics of ICTs.
Information Assurance and Security II [INAS201]	**Information Management II** [INFM201]
BINCT1 NQF: 6 SAQA: 16	BINCT1 NQF: 6 SAQA: 12
Foundational Concepts in Security; Principles of Secure Design; Defensive Programming; Threats and Attacks; Network Security; Cryptography; Security Policy and Governance; Digital Forensics.	Information Management Concepts and Fundamentals; Database Query Languages; Data Organization Architecture; Data Modelling; Managing the Database Environment; Special Purpose Databases.
Information Management IIA [INMA201]	**Information Management IIB** [INMB201]
DIIAD1; DIIAF1 NQF: 6 SAQA: 8	DIIAD1;DIIAF1 NQF: 6 SAQA: 8
Database systems; The Database Approach Database Development Process Database Alternatives; Database Models; Relational Models Characteristics Database Design; Data Modelling with Entity Relationship Diagrams; Data Modelling Advanced Concepts Normalizing Database Designs; Introduction to Structured Query Language.	Advanced Structured Query Language; Implementation Alternatives; Database Management.

Information Systems I [INSS101]	**Information Systems IIA** [ISYA201]
DIIAD1;DIIAF1 NQF: 5 SAQA: 8	DIIAD1;DIIAF1 NQF: 6 SAQA: 8
An Overview of systems analysis and design The role of the systems analyst Investigating systems requirements; Use Cases Domain Modelling; Extending the Requirements models.	Essentials of Design and the Design Activities Designing the User and Systems Interfaces Object oriented design principles; Object oriented design: Use Case realization Database, Controls, and Security Making the system Operational.
Information Systems IIB [ISYB201]	**Information Systems IIIA** [ISYA301]
DIIAD1;DIIAF1 NQF: 6 SAQA: 8	DIIAD1;DIIAF1 NQF: 6 SAQA: 12
The Software life cycle models; Software Security Software Maintenance; Agile development using SCRUM as a tool History of agile methods; Philosophy of agile methods.	The Scope of Software Engineering; The Software Process and its Attendant Problems Software Life-Cycle Models; Software Quality Assurance; Current Trends in Systems Development
Information Systems IIIB [ISYB301]	**Integrative Programming and Technology III** [IPRT301]
DIIAD1;DIIAF1 NQF: 6 SAQA: 12	BINCT1 NQF: 7 SAQA: 16
Fundamentals of Software Testing; Ensuring Testing throughout the Software Life Cycle; Recognizing key concepts in maintenance testing Comparing the four test types; Coping with the psychology of testing; Implementing Static Analysis Techniques Leveraging Test-Design Techniques Differentiating various "specifications" Applying specification-based techniques Utilizing structure-based techniques Deploying experience-based knowledge Test Management, Structuring a test plan Interpreting a test summary report; Managing incidents, Addressing project and product risks Implementing Configuration Management (CM); Defining the functions of CM; Evaluating objectives of CM Adopting Test Support Tools.	Intersystem Communications; Data Mapping and Exchange; Integrative Coding; Scripting Techniques; Software Security Practices.

Interpersonal Communication & Self [ICMS101]	**Introduction to Computing** [INCP101]
BINCT1 NQF: 5 SAQA: 8	BINCT1 NQF: 5 SAQA: 12
Fundamentals to Interpersonal Communication ; Interpersonal Communication Skills in Action; Dimensions of Interpersonal Relationships.	Pervasive themes in Computing; History of Computing; Computing Disciplines; Computing Application Domains; Foundations of Computing Systems; The IS function; Impact of IS and computing on organisational; structures and processes.
IT Logic & Technology IA [ILGA101]	**IT Logic & Technology IB** [ILGB101]
DIIAF1 NQF: 5 SAQA: 4	DIIAF1 NQF: 5 SAQA: 4
Computer Technology Concepts; Logic skills & Problem solving techniques Pseudocode with variables and constructs Problem solving with puzzles; Critical Reasoning – logic Deductive and Inductive reasoning Problem solving using pseudocode, trace tables; Input, Process, Output Simple Algorithms Flowchart.	Structured algorithms; Flowcharts Trace tables; Introduction to Compiler, programming language Loops; Arrays.
IT Logic & Technology IIA [ILGA201]	**IT Logic & Technology IIB** [ILGB201]
DIIAF1 NQF: 5 SAQA: 6	DIIAF1 NQF: 5 SAQA: 6
Introduction to Programming; Levels / generations of Language Explore different Software Packages Introduce Programming Tool Syntax – Variable; Decision constructs; Repetition constructs.	Methods; 1D arrays; Objects and classes; GUI interface; Problem Solving using a programming tool.
IT Project Management [ITPM101]	**Law for Life** [LWLF101]
DIIAD1;DIIAF1 NQF: 6 SAQA: 12	BINCT1 NQF: 5 SAQA: 8
Backdrop: The Science of Scrum; New Management Responsibilities The Scrum Master; Bringing Order from Chaos The Product Owner Planning a Scrum Project; Project Reporting— Keeping Everything Visible The Team; Scaling Projects Using Scrum Rules.	Introduction; Civil and criminal law; Law of insurance; Road accident fund; Law of contract; Marriage; Succession.

Machine Intelligence III [MAIN301 / MCHI301]	**Mathematics for Computing IA** [MCMA101]
ADICT1 / BINCT1 NQF: 7 SAQA: 16	BINCT1 NQF: 6 SAQA: 12
Introduction to machine intelligence; Search Strategies; Knowledge Representation and Reasoning; Machine Learning; Intelligent Agents; Natural language processing; Computer vision.	Differential Calculus; Integral Calculus; Multivariate Calculus; Vector Algebra; Elementary Linear Algebra.
Mathematics for Computing IB [MCMB101]	**Me, My World, My Universe** [MWMU101]
BINCT1 NQF: 6 SAQA: 12	DIIAF1;DIIAD1 NQF: 5 SAQA: 6
Overview, Discrete probability; Continuous probability; Expectation; Stochastic processes; Sampling distributions; Estimation; Hypothesis tests; Correlation and regression.	The module will start with a "refresher" on the appropriate mathematical computations and solving of simple, single context applications in the following areas of mathematics; Numbers and Operations, Functional Relationships. Space, Shape, Measurement and Data Handling Broader issues involving the quantitative literacies/reasoning will be addressed by examining; relevant/current case studies within the themes indicated above.
Mobile Computing IIA [MCPA201]	**Mobile Computing IIB** [MCPB201]
DIIAD1;DIIAF1 NQF: 6 SAQA: 8	DIIAD1;DIIAF1 NQF: 6 SAQA: 12
Overview of Mobile technologies and platforms Basic User Interface design; Advanced User interface Design; Working with Files and Directories Understanding Protocol Independent Multicast Technology; Mobile Internationalization Generic connection framework Text and multimedia messaging; Sending and receiving messages (binary and multipart).	Wireless Devices and Services XML and Web Services Session Initiation Protocol Responses; Multimedia; Advanced Multimedia; Security and transactions Smartcards? Really?; Testing SATSA Applications with the Emulator Basic Smartcard Communication; Smart Card Communication with Java Card RMI Generating Signatures; Managing Certificates; Cryptography.
Networking [NWRK102]	**Networks and Operating Systems II** [NOPS201]
HCINF1 NQF: 5 SAQA: 12	BINCT1 NQF: 6 SAQA: 16
Network Technologies; Installing and Managing Network Connections; Supporting Laptops and mobile Computing Devices; Supporting peripherals; Personal Computer Security Concepts and security.	Overview of Operating Systems; Operating System Principles; Concurrency; Scheduling and Dispatch; Memory Management; Security and Protection; Networked Applications; Reliable Data Delivery; Routing and Forwarding.

Operating Systems [OSYS101]	**Organisational Behaviour II** [OGBH201]
DIIAD1;DIIAF1 NQF: 5 SAQA: 12	BINCT1 NQF: 5 SAQA: 12
Introduction to Operating Systems; Memory Management: Simple and Virtual Systems Processor Management; Process Management; Concurrent Processes Device Management File Management.	Introduction to Organizational Behaviour; Managing Demographic and Cultural Diversity; Understanding People at Work: Individual Differences and Perception; Individual Attitudes and Behaviours; Theories of Motivation ; Designing a Motivating Work Environment; Managing Stress and Emotions; Communication ; Managing Groups and Teams; Conflict and Negotiations; Making Decisions; Leading People Within Organizations; Power and Politics; Organizational Structure and Change Organizational Structure; Organizational Culture Building a Customer Service Culture.
Parallel and Distributed Computing III [PDCO301 / PDCP301]	**Platform Based Development** [PBDE401] / **Platform Based Development III** [PBDV301]
ADICT1 / BINCT1 NQF: 7 SAQA: 16	ADICT1 / BINCT1 NQF: 7 SAQA: 16
Parallelism fundamentals; Parallel Decomposition; Communication and Coordination; Parallel Algorithms, Analysis, and Programming; Parallel Architecture; Parallel Performance; Distributed Systems.	Introduction to Platform-based development; Web Platforms; Mobile Platforms; Game Platforms; Industrial Platforms.
Programming Languages II [PRLN201]	**Project IIIA** [PRJA301]
BINCT1 NQF: 6 SAQA: 12	BINCT1 NQF: 7 SAQA: 8
Introduction; Program Representation; Language Translation and Execution ; Syntax Analysis; Compiler Semantic Analysis; Code Generation; Runtime Systems; Static Analysis.	The project must incorporate any relevant area of emphasis either from the Computer Science or Information Technology focus area in the software engineering process of computer systems development.
Project IIIB [PRJB301]	**Project Management III** [PJMN301]
BINCT1 NQF: 7 SAQA: 12	BINCT1 NQF: 7 SAQA: 16
The project must incorporate any relevant area of emphasis either from the Computer Science or Information Technology focus area in the software engineering process of computer systems development.	Introduction to PM and IT PM; Planning; Schedule/time management; Cost management; Quality management; Human resource management Communications management; Risk management.

Research skills [RESK401]	**Skills Development IA** [SKDA101]
ADICT1 NQF: 7 SAQA: 12	DIIAF1 NQF: 5 SAQA: 3
Introduction to research; Research ethics; Information sources and retrieval; Literature review; Research process; Quantitative research design; Qualitative research design.	Academic Literacy; Information Literacy Language Skills Numeracy.
Skills Development IB [SKDB101]	**Skills Development IIA** [SKDA201]
DIIAF1 NQF: 5 SAQA: 3	DIIAF1 NQF: 5 SAQA: 5
Business English; Communication; Life Skills.	Basic Accounting Skills Accounting concepts Basic Business Skills.
Skills Development IIB [SKDB201]	**Social and Professional Issues III** [SPRI301]
DIIAF1 NQF: 5 SAQA: 5	BINCT1 NQF: 7 SAQA: 16
Business Processes; Enterprise Systems Knowledge for Business Sales processes; Purchasing processes; ERP foundation scenarios using SAP.	Social context of computing; Analytical Tools; Professional Ethics; Legal protection and personal privacy; Professional Communication; Sustainable computing.
Software Development and Management [SODM401]	**Software Development Fundamentals** [SWDF101]
ADICT1 NQF: 7 SAQA: 16	BINCT1 NQF: 5 SAQA: 12
Software Processes; Software Project Management; Tools and Environments; Requirements Engineering; Software Design; Software Construction; Software Verification Validation; Software Evolution	Algorithms and design; Fundamental programming concepts; Fundamental data structures; Development methods.
Software Engineering III [SFEN301]	**Software Support** [SWSP102]
BINCT1 NQF: 7 SAQA: 16	HCINF1 NQF: 5 SAQA: 12
Software Processes; Software Project Management; Tools and Environments; Requirements Engineering; Software Design; Software Construction; Software Verification Validation; Software Evolution.	Installing and configuring an operating system; Creating and implementing systems policies; Creating and managing partitions, file systems and fault-tolerant volumes; Supporting running applications under a windows operating system; Recognise problems related to boot processes; Viruses and malware; Determine appropriate action for troubleshooting

Solutions Development [SLDV102]	**Strategy Acquisition and Management III** [SAMA301 / SAQM301]
HCINF1 NQF: 5 SAQA: 12	ADICT1 / BINCT1 NQF: 7 SAQA: 16
Structured programming techniques; Objects and Data Types; Operators: Assignment, Logic, Arithmetic, etc; Decision Structures; Selection Statements: If/Nested If/Select Case; Loops; Data validation; Validation/Error/Exception Handling: If statements; Modular programming.	Business IS/IT alignment; Strategic IS planning; Strategic knowledge management; Business exploitation of ICT; Acquiring IT resources and capabilities; IS/IT benefits management and realization; IT risk management; IT governance frameworks.
Systems Analysis and Design II [SADS201]	**Systems Fundamentals** [SYSF101]
BINCT1 NQF: 6 SAQA: 12	BINCT1 NQF: 5 SAQA: 12
Organizational context; IT-enabled organizational change; Business process management; Analysis of business requirements; IT Project Management in global context; System analysis and design methodology; Analysis and specification of system requirements; Approaches to implementation of Information Systems.	Computational Paradigms; Cross-Layer Communications; State and State Machines; Parallelism; Evaluation; Resource Allocation and Scheduling; Proximity; Virtualization and Isolation; Reliability through Redundancy; Quantitative Evaluation.
Theory of ICT Professional Practice III [TIPP301]	**Web Project** [WEBP102]
DIIAD1;DIIAF1 NQF: 6 SAQA: 12	HCINF1 NQF: 5 SAQA: 24
Organizational structure Communication Skills; Skills of ethical analysis; Professional Ethics and Social Responsibility Elements of social analysis; Intellectual Property; Information Privacy; Responsibility of a computer professional.	Problem analysis; Identification of possible solutions; Project management; Group interaction.
Web Systems and Technology III [WSYT301]	**Web Technology** [WBTC102]
BINCT1 NQF: 7 SAQA: 16	HCINF1 NQF: 5 SAQA: 12
Web Technologies; Information Architecture; Digital Media; Web Development; Vulnerabilities	Internet principles; Web development tools; Using a package to create sound and animations; Security.

8 PHASE OUT:

8.1 **Bachelor of Technology in IT [BTINF2]** – last intake July 2019

A student is required to pass 10 modules (Project 4 counts as 2 modules) in order to graduate with a BTech (Information Technology).

SP	Module Code	Module Name	NQF Level	Exam / CA	Prerequisites [P], Co-Requisites [C], Exposure [E]	Last Offering for module
1	DSFW401	Development Software 4	7	Exam		January 2021 PT only
1	DBSY404	Database Systems 4	7	Exam		January 2021 PT only
1	OSYS404	Operating Systems 4	7	CA		January 2021 PT only
1	RMIT101	Research Methodology	7	CA		January 2021 PT only
1	INTM401	Information & Technology Management 4	7	Exam		January 2021 PT only
1	ADSW401	Advanced Development Software 4	7	Exam	Development Software 4 [E]	July 2021 PT only
1	SWED401	Software Engineering & Design 4	7	Exam		July 2021 PT only
1	USRI401	User Interfaces 4	7	Exam		July 2021 PT only
1	RMIT121	Research Methodology (if RMT1101 < 50%)	7	CA		July 2021 PT only
1	INSC401	Information Security	7	Exam		July 2021 PT only
1	NETW404	Networks 4	7	Exam		July 2021 PT only
1	PRJT402	Projects 4	7	CA	RMIT101 > 60%	**phased out**

Note: The Department may choose not to offer a module if the registration numbers are too low.

8.2 **ABRIDGED SYLLABI**

ADVANCED DEVELOPMENT SOFTWARE 4 [ADSW401]	**DATABASE SYSTEMS 4** [DBSY404]
BTINF2 NQF: 7 SAPSE Code: 60704606	BTINF2 NQF: 7 SAPSE Code: 60503306
Theory: Advanced Java Programming Data Structures Java; Design Patterns and/or Graphical Applications Practical: Practical work shall consist of tutorials, assignments and a group project.	Theory: Database Background; The relational model and languages; Database analysis and design Methodology; Selected database issues Business Intelligence. Practical: Practical work shall consist of tutorials, assignments and a group project.
DEVELOPMENT SOFTWARE 4 [DSFW401]	**INFORMATION AND TECHNOLOGY MANAGEMENT 4** [INTM401]
BTINF2 NQF: 7 SAPSE Code: 60703706	BTINF2 NQF: 7 SAPSE Code: 060207106
Theory: Advanced Data Structures; Advanced Programming Techniques with Java programming Practical: Practical work shall consist of tutorials and assignments	Theory: Managers and Management; The Historical Roots of Contemporary Management. The Management Environment Foundations of Planning Foundations of Decision-Making Basic Organization Designs. Managing Change, Stress, and Innovation. Motivating and Rewarding Employees Leadership and Trust. Communication and Interpersonal Skills Foundations of control.

INFORMATION SECURITY 4 [INSC401]	**NETWORKS 4** [NETW404]
BTINF2 NQF: 7 SAPSE Code: 60705306	BTINF2 NQF: 7 SAPSE Code: 60301906
Theory: Data Encryption; Internet Security Access Control Software security; Security policies Legal issues; Practical: Practical work shall consist of tutorials and assignments.	Theory: Top-down approach to Computer Networking. (featuring the Internet) Advanced topology and design issues relating to TCP and UDP. Network Protocols (HTTP, FTP, SMTP, DNS) In-depth study of the five Internet layers, viz. Application, Transport, Network, Link and Physical. Advanced network issues: Delay, Congestion, Reliability, Routing (algorithms), Security, Wireless and mobile networks, and network management. Practical: One project to cover the practical aspects of networking.
OPERATING SYSTEMS 4 [OSYS404]	**PROJECT 4** [PRJT402]
BTINF2 NQF: 7 SAPSE Code: 60801506	BTINF2 NQF: 7 SAPSE Code: 69900206
Computer System & Operating System Overview; Process Description and Control Threads, SMP and Micro Kernels Concurrency: Deadlock and Starvation Memory Management & Virtual Memory Uni-processor Scheduling.	Theory: Theories and concepts relevant to the project are covered in the Research Methodology course (229900012) Practical: Practical work shall consist of the design and execution of a research project with the following research phases: proposal development, Implementation of the proposal, write up of findings, including literature review, data collection, analysis and discussion.
RESEARCH METHODOLOGY [RMIT101]	**SOFTWARE ENGINEERING AND DESIGN 4** [SWED401]
BTINF2 NQF: 7 SAPSE Code: 229900012	BTINF2 NQF: 7 SAPSE Code: 60705106
Research methods aim to equip the student with the basic skills to do academic research. It is a compulsory prerequisite for MTECH studies. Topics such as research. approaches, methods and data collection methods are covered. The assessment of the subject consists of tests, assignments and a full proposal.	Intro to Software Engineering Revision of classic process models Agile process models. IT project management frameworks. Software quality frameworks Requirements engineering. Systems methods in software analysis. Cost estimation. Software architectural design Software team organization.
USER INTERFACES 4 [USRI401]	
BTINF2 NQF: 7 SAPSE Code: 60703206	
Theory: Interface standardization Computer graphics Computer user interfaces Input/output peripherals Practical: work shall consist of self-study assignments.	