

**NAMIBIA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**YEARBOOK 2017**

**PART 4**

**FACULTY OF COMPUTING AND INFORMATICS**

**(Note:** The final interpretation of all regulations in this *Yearbook for the Faculty of Computing and Informatics* shall be vested in Council).

## NOTE

The *Yearbook for the Faculty of Computing and Informatics* is valid for 2017 only. Curricula and syllabi may be amended for 2018.

It is obtainable free of charge from:

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**Namibia University of Science and Technology**  
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The fact that particulars of a specific programme, field of study, subject, or course have been included in this Yearbook does not necessarily mean that such a programme, field of study, subject, or course will be offered in the academic year 2017.

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## FACULTY OF COMPUTING AND INFORMATICS

FACULTY CODE 1

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## UNDERGRADUATE PROGRAMMES

### QUALIFICATIONS OFFERED

	CODES
Bachelor of Information Technology in Business Computing (Phased out from 2014)	80BSBC
Bachelor of Information Technology in Software Development (Phased out from 2014)	80BSSD
Bachelor of Information Technology in Systems Administration & Networks (Phased out from 2014)	80BSAN
Bachelor of Computer Science (Phased in 2014)	07BACS
Bachelor of Computer Science in Cyber Security (Phased in 2016)	07BCCS
Bachelor of Informatics (Phased in 2014)	07BAIF

### Description

Computer Science and Informatics refers to the skills and knowledge needed to design applications and operate computer systems. Computer Science and Informatics studies at the Namibia University of Science and Technology offer different areas of specialisations as well as different exit levels.

**Bachelor of Information Technology:** for those who successfully completed all requirements for the three year degree of the phasing out programmes.

**Bachelor of Computer Science or Bachelor of Informatics:** for those who successfully completed all requirements for the three year degree of the phasing in (2014) programme.

### Special Faculty Assessment Regulations

There are situations where assessment of an individual course provided by other Faculties will supersede assessment regulations. This is reflected in the course documentation.

### Course Evaluation for all courses offered by the Faculty utilising in-course assessment and a Theory Paper and a Practical Paper

- An in-course mark is determined by continuous evaluation made up of tests and practicals during the semester.
- Students must have satisfactorily completed to the minimum standard (40 % overall) all practicals and tests during the year to be admitted to the final examination. E.g. a class mark of 40 %.

### Final Examination consists of two papers: Theory and Practical

- A sub-minimum of 40 % must be obtained in each paper. The combined examination mark must be at least 50 % overall.
- In-course mark and examination mark shall be used jointly to determine the final mark in the ratio of 50 % (semester mark) to 50 % (examination mark).

### Course Evaluation for all courses offered by the Faculty utilising in-course assessment and a Theory Paper

- An in-course mark is determined by continuous evaluation made up of tests and assignments during the semester.
- Students must have satisfactorily completed to the minimum standard (40 % overall) all assignments and tests during the year to be admitted to the final examination.

### Final examination consists of one Theory paper

- A sub-minimum of 40 % must be obtained in the examination.
- In-course mark and examination mark shall be used jointly to determine the final mark in the ratio of 50 % semester mark to 50 % examination mark.

### Course Evaluation for all courses offered by the Faculty using Continuous Evaluation only

- The semester mark is determined by continuous evaluation made up of tests and assignments during the year.
- The course mark is the final mark.



- Students must obtain a 50 % mark to pass the course.
- Supplementary tests and extensions will be defined within the individual course outline.

**NB:** For all assessments the Faculty plagiarism policy applies.

**DEPARTMENT OF COMPUTER SCIENCE**

**Code 22**

**BACHELOR OF INFORMATION TECHNOLOGY: SYSTEMS ADMINISTRATION AND NETWORKS  
(Phasing out from 2014 until 2018)**

**80BSAN**

**Description**

Systems Administration and Networks is a branch of Information Technology that concerns itself with the task of establishing and maintaining the technical environment for computer systems with optimal functionality, reliability and security. Information system administrators design, and create computer networks, install and maintain software systems, implement rules and procedures to insure high performance, reliability and “round-the-clock” availability of service, take responsibility for security both against equipment failure, and against unauthorised intrusion by viruses and hackers, and trouble-shoot arising problems. Successful candidates often rise into middle and upper-level technical management, charged with the responsibility for all computing requirements of an organisation.

**Admission Requirements**

Applicants must have passed at least 50 % (rounded down) of the courses of the Diploma: Information Technology, and must have passed Communication Skills. The Head of Department may approve exceptions to the entry requirements. Applicants must complete the Diploma before they can be awarded the Bachelor’s degree.

**Electives**

**NB:** There are three tracks of electives (Programming, Databases and Business) of which two must be completed in order to graduate. The requirements for completion of each of the tracks are as follows:

1. Programming track: Complete all three courses from this track.
2. Database track: Complete all four courses from this track.
3. Business track: Complete all items (a), (b), (c) below:
  - (a) Complete Innovation, Creativity & Entrepreneurship (ICE712S)
  - (b) Complete one of the following two courses:  
Enterprise Systems Applications (ESA310S);  
Electronic Commerce (ELC220S)
  - (c) Complete one more course from this track.

**Transitional Arrangements from Old to the New Programme**

Since 2008, only the new courses are offered. Provision will be made to credit the new courses against the replaced or revised old courses for the students to obtain the old diploma until 2009. Students have the opportunity to change registration to the new qualification namely the Bachelor of Systems Administration and Networks and will obtain credit on a course-by-course basis as described in the table below. The table also shows the course equivalence where old course have been revised and/or new ones introduced.

**National Diploma Information Systems Administration**

<b>Old courses</b>		<b>Equivalent Current courses</b>		
Operating Systems 1A	OPS110S	Operating Systems and Networks	OSN110S	New
CCNA 1	CCN110S	Intro. to Computer Networking	ICN210S	New
Introduction to Databases 1A	IDB110S	Introduction to Databases 1A	IDB210S	Revised
Programming 1B	PRG120S	Procedural Programming	PPR210S	Revised
Project Management (IT)	PJM110S	Project Management (IT)	PTM210S	Revised
Computer Hardware	CHW110S			
Applied Software Engineering	ASE110S	Software analysis and Design and SQT110S	SED210S SQT220S	Restructured
Systems Administration	SAD110S	Systems Administration	SAD221S	Revised
CCNA 2, CCNA3 taken together	CCN120S/ CCN130S	Introduction to Routing and Switching	IRS220S	New

Object Oriented Technology	OOT110S	Object Oriented Programming	OOP210S	Revised
Introduction to Databases 1B	IDB120S	Introduction to Databases 1B	IDB220S	Revised
Introduction to Web Design	IWD110S	Web Development Fundamentals	WDF220S	Revised
CCNA 4	CCN140S	Internetworking and WAN Technologies	IWT310S	New
Management Info. Systems	MNS110S	Management Information Systems	MNS210S	Revised
Database Programming	DBP110S	Database Programming	DBP220S	Revised
Internet Server Programming	ISP110S	Internet Technology and Internet Programming	INT220S INP310S	
Introduction to SAP	SAP110S	Enterprise Systems Applications	ESA310S	New
Systems Administration Project in Industry	IAP110S	Systems Administration Project in Industry 15 weeks	IAP320S	Revised

Students currently on the old Diploma in Information Systems Administration can change registration to the new Bachelor. In this regard the student would obtain the following credits from the old National Diploma.

### **Bachelor of Information Technology Systems Administration and Networking**

<b>Current courses</b>		<b>Credit obtainable Old diploma</b>	
<b>Course</b>	<b>Code</b>	<b>Course</b>	<b>Code</b>
Introduction to Systems Administration	ISA210S	Introduction to Systems Administration	ISA110S
Introduction to Computer Networking	ICN210S	CCNA 1	CCN110S
Operating Systems	OPS210S	Operating Systems 1A and 1B	OPS110S
Web Development Fundamentals	WDF220S	Introduction to Web Design	IWD110S
Management Information System	MNS210S	Management Information Systems	MNS110S
Introduction to Databases 1A	IDB210S	Introduction to Databases 1A	IDB110S
Introduction to Routing and Switching	IRS220S	CCNA 2 and CCNA 3	CCN120S CCN130S
Systems Administration	SAD221S	Systems Administration	SAD110S
Project Management (IT)	PTM210S	Project Management (IT)	PJM110S
Object Oriented Programming	OOP210S	Object Oriented Technology	OOT110S
Introduction to Databases 1B	IDB220S	Introduction to Databases 1B	IDB120S
Internetworking and WAN Technologies	IWT310S	CCNA 4	CCN140S
Internet Programming	INP310S	Internet Server Programming & Advanced Internet Technologies	ISP110S AIT410S
Electronic Commerce	ELC220S	Electronic Commerce	ELC110S
Database Administration	DSA320S	Database Administration	DSA410S
Systems Administration project in Industry (Experiential Learning)	IAP320S	Systems Administration project in Industry (Experiential Learning)	IAP110S

To ensure that the degree can be completed in the prescribed period, it is recommended to attend all listed courses in the semester outlined below. If, however, subjects from previous academic years still need to be taken, the recommended maximum number of subjects per semester is five, students are advised to consult the Head of Department on their subject choice prior to registration.

**CURRICULUM**

**Second Year**

**Semester 3**

<b>Course Title</b>	<b>Course Code</b>	<b>Prerequisite(s)</b>
Introduction to Systems Administration	ISA210S	Operating Systems and Networks
Introduction to Computer Networking	ICN210S	Operating Systems and Networks
Project Management	PTM210S	None
<b><i>Electives (Choose 2 tracks) (see section on electives)</i></b>		
<b><u>Programming Track</u></b>		
Object Oriented Programming	OOP210S	Introduction to Programming (Sem 2)
<b><u>Databases Track</u></b>		
Introduction to Databases 1A	IDB210S	Computer User Skills
Introduction to Databases 1B	IDB220S	Computer User Skills
<b><u>Business Track</u></b>		
Management Information Systems	MNS210S	None

**Semester 4**

Operating Systems	OPS210S	Operating Systems and Networks
Introduction to Routing and Switching	IRS220S	Introduction to Computer Networking
Systems Administration	SAD221S	Introduction to Systems Administration
<b><i>Electives (Choose 2 tracks) (see section on electives)</i></b>		

**Programming Track**

Internet Technology	INT220S	Object Oriented Programming
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**Databases Track**

Database Programming	DBP220S	Introduction to Databases 1B
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**Business Track**

Web Development Fundamentals	WDF220S	Computer User Skills
Electronic Commerce	ELC220S	None

**Semester 5**

Internetworking and WAN Technologies	IWT310S	Introduction to Routing and Switching
Internet and Intranet Systems	IIS310S	Systems Administration
Administration Computer Forensics	CFR311S	Operating Systems
<b><i>Electives (Choose 2 tracks) (see section on electives)</i></b>		

**Programming Track**

Internet Programming	INP310S	Internet Technology
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**Business Track**

Innovation, Creativity and Entrepreneurship	ICE712S	None
Enterprise Systems Applications	ESA310S	Management Information System

**Semester 6**

Systems Administration Project in Industry (Experiential Learning)	IAP320S	ND (IT)
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***Electives (Choose 2 tracks) (see section on electives):***

**Databases Track**

Database Administration	DSA320S	Introduction to Databases 1B Database Programming
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The Project in Industry is not a taught course but an internship. Students are advised to find a company to take them as interns by themselves, but the Department will assist with finding suitable placements. Registration for

this course will only be allowed after an internship place has been found, and the industry supervisor has agreed in writing to supervise the student.

**BACHELOR OF INFORMATION TECHNOLOGY IN SOFTWARE ENGINEERING  
(Phasing out from 2014 until 2018)**

**80BSSD**

**NQF Level: 7**

**NQF Credits: 392**

**NQF Qualification ID: Q0167**

**Description**

Software Development is a branch of Information Technology that is oriented towards the creation of computer programs for a wide variety of purposes. It is about developing the programs that make computers useful and interesting. The successful software engineer is able to analyse requirement, translate into design suitable for a computing solution, create or program it as a system of software modules, verify its functionality, and implement it for the end-user. The software engineer uses a variety of tools from traditional programming languages to most sophisticated specialised software workbenches and testing tools. In addition to the ability to learn quickly the essential features of an application in any area of client needs, excellent communications and writing skills are equally essential. Successful software engineers also possess a good command of time and project management skills with special regard to managing complex software development efforts.

**Admission Requirements**

Applicants must have passed at least 50 % (rounded down) of the courses of the Diploma: Information Technology, and must have passed English for Academic Purposes/Communication Skills. The HOD may approve exceptions.

Candidates must complete the requirements for the Diploma before the Bachelor will be awarded.

**Transitional Arrangements from Old National Diploma to the Bachelor degree**

Since 2008 only the new courses are offered. Provision will be made to credit the new courses against the replaced or revised old courses for the students to obtain the old National Diploma until 2009. Students have the opportunity to change registration to the new Bachelor and will obtain credit on a course-by-course basis. See tables below:

**National Diploma Software Engineering**

<b>Old courses</b>		<b>Equivalence Current courses</b>		
Introduction to Databases 1A	IDB110S	Introduction to Databases 1A	IDB210S	Revised
Programming 1B	PRG120S	Procedural Programming	PPR210S	Revised
Operating Systems 1A	OPS110S	Operating Systems and Networks	ONS110S	
Statistics for IT 1A	SIT111S	Statistics for IT 1 A	SIT11S	Same
Computer Hardware	CHW110S	Computer Hardware	CHW121S	Same
Project Management	PJM110S	Project Management	PTM210S	Revised
Applied Software Engineering	ASE110S	Software Analysis and Design and SQT110S	SED210S SQT220S	Restructured
Introduction to Databases 1B	IDB120S	Introduction to Databases 1B	IDB220S	Revised
Object Oriented Technology	OOT110S	Object Oriented Programming	OOP210S	Revised
Software Engineering 1	SEN110S	Software quality and testing and SED110S	SQT220S SED210S	Restructured
Operating System 1B	OPS120S	Operating Systems	OPS210S	New
Statistics 1B	SIT121S	Statistics 1B	SIT121S	Same
Introduction to Web Design	IWD110S	Web Dev. Fundamentals	WDF220S	
Internet Server Programming	ISP110S	Internet Technology and Internet Programming	INT220S INP310S	
Visual Application Development	VAD110S	User Interface Design	UID220S	New
Software Engineering 2	SEN210S	Software Engineering 2	SEN311S	Same
Database Programming	DBP110S	Database programming	DBP220S	Revised
Management Info. Systems	MNS110S	Management Info. Systems	MNS210S	Revised

Introduction to SAP	SAP110S	Enterprise Systems Applications	ESA310S	New
Software Engineering Project in Industry	SEP110S	Software Engineering Project in Industry 14 weeks	SEO320S	Temporary arrangement

Student wanting to finish of the old National Diploma had 2008 and 2009 with the above mentioned arrangements.

Students changing to the new Bachelor can obtain the following credits from the old National Diploma. (The courses marked with an asterisk (\*) have no prior equivalence and will have to be done by the student)

### **Bachelor of Information Technology in Software Engineering** **Credit obtainable**

<b>New courses</b>		<b>Old diploma</b>	
<b>Course</b>	<b>Code</b>	<b>Course</b>	<b>Code</b>
Procedural Programming*	PPR210S		
Object Oriented Programming	OOP210S	Object Oriented Technology	OOT110S
Software analysis and design	SED210S	Applied Software Engineering and Software Engineering 1	ASE110S SEN110S
Introduction to Databases 1A	IDB210S	Introduction to Databases 1A	IDB110S
Introduction to Databases 1B	IDB220S	Introduction to Databases 1B	IDB120S
Project Management	PTM210S	Project Management	PJM110S
Internet Technology*	INT220S		
User Interface Design	UID220S	VAD110S and HID410S	
Software quality and testing	SQT220S	ASE and SEN110S	
Database Programming	DBP220S	Database Programming	DBP120S
Statistics 1B	SIT121S	Statistics 1B      SIT121S	
Internet Programming	INP310S	Internet Server Programming, Advanced Internet Technologies	ISP110S, AIT410S
Software Engineering 2	SEN311S	Software Engineering 2	SEN210S
Database Application Development	DBD320S		
Process Management*			
Introduction to Systems Administration	ISA110S	Introduction to Systems Administration	ISA110S
Experiential Training	SEP320S	Experiential Training	SEP120S
Database Administration (Elective)	DSA220S	Database Administration	DSA410S
Component Based Development (Elective)*	CBD320S		

## CURRICULUM

### Second Year

#### Semester 3

Course Title	Course Code	Prerequisite	NQF Level	NQF Credits
Procedural Programming	PPR210S	Introduction to Programming	5	12
Object Oriented Programming	OOP210S	Introduction to Programming	6	12
Software Analysis and Design	SED210S	Introduction to Software Engineering	6	12
Introduction to Databases 1A	IDB210S	Computer User Skills	5	6
Introduction to Databases 1B	IDB220S	Computer User Skills	6	12
Project Management	PTM210S	None	6	12

#### Semester 4

Internet Technology	INT220S	Object Oriented Programming	6	12
User Interface Design	UID220S	None	6	12
Software Quality and Testing	SQT220S	Introduction to Software Engineering	6	12
Database Programming	DBP220S	Introduction to Databases 1B	7	12
Statistics for IT 1B	SIT121S	None	5	12

### Third Year

#### Semester 5

Internet Programming	INP310S	Internet Technology	7	12
Software Engineering 2	SEN311S	Software Analysis and Design Software Quality and Testing Project Management	7	12
Database Application Development	DBD310S	Database Programming	7	12
Process Management	PMT310S	Software Analysis and Design	7	12
Introduction to Systems Administration	ISA210S	Computer Organisation & Computer Hardware	6	12

#### Semester 6

Software Development Project in Industry	SEP320S	ND (IT)	7	40
<b>Electives (choose any two):</b>				
Database Administration	DSA320S	Introduction to Databases 1B Database Programming	7	12
Component-Based Development	CBD320S	Object Oriented Programming	7	12
<b>*Electives</b>				
International Software Engineering Project	ISP710S	Project Management, Object-Oriented Programming & Software Quality and Testing	7	12

*\*This Elective is only offered in semester 5.*

Any other course on NQF Level 7 (with appropriate credits) from any other study programme as approved by HOD: Faculty of Engineering.



**BACHELOR OF COMPUTER SCIENCE (SYSTEMS ADMINISTRATION, COMMUNICATION NETWORKS OR SOFTWARE DEVELOPMENT)****07BACS****NQF Level: 7****NQF Credits: 365****NQF Qualification ID: Q0513****Description**

The Bachelor of Computer Science aims at providing educational opportunities for students who are interested in and motivated to work as Computer Scientists, Software Developers, Systems Administrators or Networks Specialists. This programme is purposefully designed to provide skillful, competent and motivated graduates for the increasing and numerous challenging tasks of Computing and Information Technology (CIT) in the country and the Khomas region at large. Students will have the opportunity to develop the required cognitive/intellectual skills, practical as well as key transferable skills, and apply these to address/solve CIT related problems/challenges in the context of an organisation, or the community. Overall, this degree specifically aims at:

- Providing students with a sound foundation in the fundamental concepts, theories, frameworks and problem-solving techniques of CIT;
- Developing the ability of students to analyse information from a wide range of sources;
- Equipping students with the requisite skills to work effectively as individuals and as members of a team;
- Enabling students to communicate effectively in the workplace.

The programme intends to provide a diverse range of skills and competencies that are both discipline-specific and job-related. The curriculum is structured to facilitate specialisation in the areas of Systems Administration, Communication Networks and Software Development. The programme also intends to facilitate the development of highly generic cognitive and intellectual skills that would enable graduates to apply their knowledge and learnt competencies to the practices of CIT taking into consideration international generally accepted practices.

**Admission Requirements**

Candidates may be considered for admission to the Bachelor of Computer Science if they meet the University's General Admission Requirements (GI2.1 in Part 1 of the Yearbook). In addition, students must have a minimum D-symbol in NSSC Mathematics at Ordinary Level, or equivalent. The Faculty reserves the right to filter candidates who have a D-symbol in NSSC Mathematics at Ordinary Level, or equivalent through other relevant criteria.

The Faculty reserves the right to consider other relevant criteria in the selection of some cases of applicants with a D-symbol in Mathematics.

**Articulation Arrangements**

Transfer of credits will be dealt with according to the University's regulations on Recognition of Prior Learning. These provide for course-by-course credits as well as credit transfer by volume under certain academic conditions. Maximum credit that can be granted is 50 % of the credits for a qualification.

Upon successful completion of the Bachelor of Computer Science, students will ordinarily be able to pursue further studies in the same, or a related cognate area of learning, at NQF Level 8.

**CURRICULUM****Year 1****Semester 1**

<b>Course Code</b>	<b>Course Title</b>	<b>Prerequisites</b>	<b>NQF Levels</b>	<b>NQF Credits</b>
BSC410S	Basic Science	None	4	8
MIT112S	Mathematics for IT 1A	None	5	10
PRG510S	Programming 1	None	5	10
LIP411S	Language in Practice	None	4	NCB

MNS511S	Management Information Systems	None	5	10
COA511S	Computer Organisation and Architecture	None	5	10
<b>Semester 2</b>				
OOP521S	Object Oriented Programming	Programming 1	5	10
ICT521S	Information Competence	None	5	10
MIT122S	Mathematics for IT 1B	Mathematics for IT 1A	5	10
WDF521S	Web Development Fundamentals	None		
EPR 511S	English in Practice	Language in Practice, or Language in Practice A, or Module 2, or Exemption	5	NCB
OSN521S	Intro. to Operating Systems & Networks	Computer Organisation and Architecture	5	10
<b>Year 2</b>				
<b>Semester 3</b>				
EAP511S	English for Academic Purposes	English in Practice, or Language in Practice B, or Module 3, or Exemption	5	14
ISS610S	IT Systems Security	Introduction to Operating Systems and Networks	6	12
DSA610S	Data Structures and Algorithms	None	6	12
DBF510S	Database Fundamentals	None	5	10
ICN511S	Introduction to Computer Networking	Introduction to Operating Systems and Networks	5	10
ASP610S	Applied Statistics & Probability for IT	Mathematics for IT 1B	9	14
<b>Semester 4</b>				
<b>ONE of the following Strands depending on specialisation:</b>				
<i>SYSTEMS ADMINISTRATION STRAND</i>				
OPS621S	Operating Systems	Introduction to Operating Systems and Networks	6	12
WTN620S	Web Technologies	Introduction to Operating Systems and Networks	6	12
SAD622S	Systems Administration	Introduction to Operating Systems and Networks	6	12
DTS620S	Distributed Systems	Introduction to Computer Networking	6	12
SAU620S	Systems Audit	IT Systems Security		
<i>COMMUNICATION NETWORKS STRAND</i>				
OPS621S	Operating Systems	Introduction to Operating Systems and Networks	6	12
CMN620S	Communication Networks	Introduction to Computer Networking	6	12
SAD622S	Systems Administration	Introduction to Operating Systems and Networks	6	12
NWS620S	Network Security	IT Systems Security; and	6	12
WLT620S	Wireless Technologies	Introduction to Computer Networking	6	12
<i>SOFTWARE DEVELOPMENT STRAND</i>				
OPS621S	Operating Systems	Introduction to Operating Systems and Networks	6	12
DSP620S	Distributed Systems Programming	Object Oriented Programming	6	12
PRG620S	Programming 2	Programming 1	6	12
SEH620S	Software Engineering 1 and HCI	Web Development Fundamentals	6	12
DPT621S	Database Programming and Techniques	Database Fundamentals	6	12

**Year 3****Semester 5**

CIS610S	Contemporary Issues	None	6	12
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**Plus ONE of the following Strands depending on specialisation, and based on choice made in Semester 4:***SYSTEMS ADMINISTRATION STRAND*

ICE712S	Innovation, Creativity & Entrepreneurship	None	7	12
IIS711S	Internet and Intranet Systems Administration	Systems Administration	7	12
CFR712S	Computer Forensics	Systems Audit	7	12
SVT710S	Systems Virtualisation	Operating Systems	7	12

*COMMUNICATION NETWORKS STRAND*

ICE712S	Innovation, Creativity & Entrepreneurship	None	7	12
IWT711S	Internet and WAN Telecommunication	Communication Networks	7	12
NDP710S	Network Design and Performance	Communication Networks	7	12
SVT710S	Systems Virtualisation	Operating Systems	7	12

*SOFTWARE DEVELOPMENT STRAND*

ICE712S	Innovation, Creativity & Entrepreneurship	None	7	12
AIG710S	Artificial Intelligence and Computer	Applied Statistics & Graphics Probability for IT;7 and Data Structures and Algorithms	7	12
DWM710S	Data and Web Mining	Database Programming and Techniques	7	12
APG710S	Advanced Programming	Data Structures and Algorithms	7	12

**Year 3****Semester 6**

WIL710S	Work Integrated Learning (WIL)	All semester 4 courses; and a maximum of 2 outstanding semester 5 courses	7	48
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**Plus ONE of the following Strands depending on specialisation, and based on choice made in previous Semesters:***SYSTEMS ADMINISTRATION AND COMMUNICATION NETWORKS STRANDS*

PTM721S	Project Management	None	7	12
DBA721S	Database Administration	Database Fundamentals; and Systems Administration		

*SOFTWARE DEVELOPMENT STRAND*

PTM721S	Project Management	None	7	12
SEN721S	Software Engineering 2	Software Engineering 1 and HCI	7	12

**Transition Arrangements**

The Bachelor of Information Technology degrees in Systems Administration and Networks, as well as Software Engineering (old curricula) will be phased out systematically until 2018 with minimal disruption to existing students' learning progression. The last intake of 1<sup>st</sup> year students for the Bachelor of Information Technology degrees in Systems Administration and Networks, as well as Software Engineering (old curricula) was in January 2013.

Students who were registered in 2013 for the 1<sup>st</sup> year of the Bachelor of Information Technology degrees in Systems Administration and Networks, as well as Software Engineering (old curricula), and who failed more than 50 % of the courses at the end of 2013, will be required to change their registration to the Bachelor of Computer Science (new curriculum) and will be granted credits on a course-by-course basis in accordance with the information in Table 1 below.

The Bachelor of Computer Science (new curriculum), took effect from January 2014 and will be completely phased in by 2016. Courses will only be offered based on the syllabi of new/revised courses in 2014 (1<sup>st</sup> year), 2015 (2<sup>nd</sup>

year) and 2016 (3<sup>rd</sup> year). Students who fail any of the courses in the old curricula will be required to repeat such failed courses based on the syllabi of new/revised corresponding courses. Please refer to Table 2, below, for detailed information on the new/revised corresponding courses to be done if courses in the old curricula are failed.

The deadline for complete phasing out of the Bachelor of Information Technology degrees in Systems Administration and Networks, as well as Software Engineering (old curricula) is 2018 after which students must automatically switch to the Bachelor of Computer Science (new curriculum).

**Table 1: 1st Year Courses to be credited**

<b>Bachelor of Information Technology (Systems Administration and Networks; and Software Engineering) (Old Courses)</b>		<b>Bachelor of Computer Science (New/Revised Equivalent Courses)</b>	
<b>Course Code</b>	<b>Course Name</b>	<b>Course Code</b>	<b>Course Name</b>
CUS411S	Computer User Skills		None
EAP511S	English for Academic Purposes	EAP511S	English for Academic Purposes
COH110S	Computer Organisation and Hardware	COA511S	Computer Organisation and Architecture
ADI111S	Introduction to Algorithm Design	DSA610S	Data Structures and Algorithms
BMA121S	Introduction to Business Management		None
MIT112S	Mathematics for IT 1A	MIT112S	Mathematics for IT 1A
BEL112S	Business Ethics and Leadership		None
IPG120S	Introduction to Programming	PRG510S	Programming 1
ISW120S	Introduction to Software Engineering		None
ICT521S	Information Competence	ICT521S	Information Competence
MIT122S	Mathematics for IT 1B	MIT122S	Mathematics for IT 1B
ONS120S	Operating Systems and Networks	OSN521S	Introduction to Operating Systems and Networks
PCO611S	Professional Communication		None

**Table 2: Corresponding Courses to be done (if failed) – This is not a credit table!**

<b>Bachelor of Information Technology (Systems Administration and Networks; and Software Engineering) (Old Courses)</b>		<b>Bachelor of Computer Science (Corresponding New/Revised Courses to be done, if failed)</b>	
<b>Course Code</b>	<b>Course Name</b>	<b>Course Code</b>	<b>Course Name</b>
COH110S	Computer Organisation and Hardware	COA511S	Computer Organisation and Architecture
ADI111S	Introduction to Algorithm Design	DSA610S	Data Structures and Algorithms
IPG120S	Introduction to Programming	PRG510S	Programming 1
ONS120S	Operating Systems and Networks	OSN521S	Introduction to Operating Systems and Networks
OOP210S	Object Oriented Programming	OOP521S	Object Oriented Programming
SED210S	Software Analysis and Design	SEH621S	Software Engineering 1 and HCI
MNS210S	Management Information Systems	MNS511S	Management Information Systems
SIT111S	Statistics for IT 1A	ASP610S	Applied Statistics & Probability for IT
IDB210S	Introduction to Databases 1A	DBF510S	Database Fundamentals
WDF220S	Web Development Fundamentals	WDF521S	Web Development Fundamentals
SIT121S	Statistics for 1B	SIT121S	Applied Statistics and Probability for IT
ENT321S	Entrepreneurship	ICE712S	Innovation, Creativity & Entrepreneurship
ESA310S	Enterprise Systems Applications	ERP720S	Enterprise Resource Planning Systems (Informatics)
PMT310S	Process Management	BAP620S	Business Analysis and Process Management
PTM210S	Project Management	PTM721S	Project Management
ISA210S	Introduction to Systems Administration	SAD622S	Systems Administration
ICN210S	Introduction to Computer Networking	ICN511S	Introduction to Computer Networking
OPS210S	Operating Systems	OPS621S	Operating Systems
IRS220S	Introduction to Routing and Switching	CMN620S	Communication Networks
SAD221S	Systems Administration	SAD622S	Systems Administration
INT220S	Internet Technology	DTS620S	Distributed Systems
DBP220S	Database Programming	DPT621S	Database Programming and Techniques

IWT310S	Internetworking and WAN Technologies	IWT711S	Internet and WAN Telecommunication
IIS310S	Internet and Intranet Systems Administration	IIS711S	Internet and Intranet Systems Administration
CFR311S	Computer Forensics	CFR712S	Computer Forensics
INP310S	Internet Programming	DSP620S	Distributed Systems Programming
IAP320S	Systems Administration Project in Industry (Experiential Learning)	WIL710S	Work Integrated Learning (WIL)
DSA320S	Database Administration	DBA720S	Database Administration
PPR210S	Procedural Programming	PRG510S	Programming 1
UID220S	User Interface Design	SEH621S	Software Engineering 1 and HCI
SQT220S	Software Quality and Testing	SEN721S	Software Engineering 2
SEN311S	Software Engineering 2	SEN721S	Software Engineering 2
DBD310S	Database Application Development		None
SEP320S	Software Development Project in Industry (Experiential Learning)	WIL710S	Work Integrated Learning (WIL)
CBD320S	Component-Based Development	DSP620S	Distributed Systems Programming

**Table 2 above, only highlights new/revised core courses in Computer Science that should be done if courses in the old curricula are failed. Service courses from other Departments are excluded, but the rules of relevant Departments apply to this programme as well.**

The following old courses do not have corresponding courses in the Bachelor of Computer Science (new curriculum) and will be offered until the Bachelor of Information Technology in Systems Administration and Networks, as well as Software Engineering (old curricula) are phased out completely in 2018:

- Introduction to Databases 1B (IDB220S)
- Electronic Commerce (ELC220S)
- Introduction to Software Engineering (ISW120S)
- International Software Engineering Project (ISP710S)
- Database Application Development (DBD310S)

Students who fail the following old courses must repeat the new/revised courses listed below:

- Introduction to Programming (IPG120S) or Procedural Programming (PPR210S), must repeat Programming 1;
- Introduction to Systems Administration (ISA210S), must repeat (SAD622S); Systems Administration (SAD622S), must repeat (SAD622S);
- Software Analysis and Design (SED210S) or User Interface Design (UID220S), must repeat Software Engineering 1 and HCI;
- Software Quality and Testing (SAD622S) or Software Engineering 2 (SEN311S), must repeat Software Engineering 2 (new course);
- Statistics for IT 1A (SIT111S) or Statistics for IT 1B (SIT121S), must repeat Applied Statistics and Probability for IT.

**BACHELOR OF COMPUTER SCIENCE IN CYBER SECURITY****07BCCS****NQF Level: 7****NQF Credits: 372****NQF Qualification ID: Q0656****Description**

The Bachelor of Computer Science in Cyber Security aims at providing educational opportunities for students who are interested in and motivated to work as Cyber Security Professionals. Cyber Security is a computing discipline that deals with digital information assurance and its security. This programme is purposefully designed to provide skilled, competent and motivated graduates for the increasing and numerous challenging tasks of Computing and Information Assurance and Security (IAS) in the country and the region at large. Students will have the opportunity to develop the required cognitive/intellectual skills, practical as well as key transferable skills, and apply these to address/solve Information Assurance and Security related problems/challenges in the context of an organisation, a country or individual end-user.

**Admission Requirements**

Candidates may be considered for admission to the Bachelor of Computer Science in Cyber Security if they meet the University's General Admission Requirements (GI2.1 in Part 1 of the NUST Yearbook). In addition, students must have a minimum C-symbol in Grade 12/NSSC Mathematics at Ordinary Level, or equivalent. The Faculty reserves the right to filter candidates who have a D-symbol in NSS Mathematics at Ordinary Level, or equivalent through other relevant criteria.

**Articulation Arrangements**

Transfer of credits will be dealt with according to the University's regulations on Recognition of Prior Learning. These provide for course-by-course credits as well as credit transfer by volume under certain academic conditions. Maximum credit that can be granted is 50 % of the credits for a qualification.

Upon successful completion of the Bachelor of Computer Science in Cyber Security, students will ordinarily be able to pursue further studies in the same, or a related cognate area of learning, at NQF Level 8.

**Mode of Delivery**

The programme will be delivered on the full-time and part-time modes in accordance with the University's rules. The e-learning mode will only be considered after the programme is deemed to have reached a certain level of maturity.

**Requirements for Qualification Award**

The Bachelor of Computer Science in Cyber Security degree will be awarded to students credited with a minimum of 372 NQF credits, and who have met the detailed requirements as set out below. In addition, students should meet the administrative and financial requirements as spelt out in Part 1 of the NUST Yearbook.

**Teaching and Learning Strategies**

Teaching and learning strategies are described in the syllabus outlines for the different courses. The requirements of the NQF underline the acquisition of cognitive skills and competencies exceeding the knowledge and understanding of subject specific knowledge items and professional/technical competencies. Thus, the qualification focuses on the engagement of students in an interactive learning process in order to provide for the development of generic cognitive and intellectual skills, key transferable skills, and, as the case may be, subject specific and/or professional/technical practical skills.

This learning process will be facilitated both in and outside the classroom, requiring specific tasks to be carried out by the student, including the following:

- Formal weekly face-to-face (interactive) contact and presentation using Power Point slides, smart boards, whiteboards and handouts;
- Formal weekly laboratory exercises and practice;
- Student portfolios;

- Formal tutorial and supervised self-study sessions;
- Self-learning through online links;
- Promotion of team learning through group projects;
- Individual and home assignments;
- Use of e-learning platform ( including emails and blog/- forum);
- Discussion and student presentations (assignment results and other activities);
- Guest lecturers with open discussion, when appropriate;
- Webinar/ Online conferencing/ excursion;
- Computer/- Web-based simulation;
- Seminars.

### Work Integrated Learning (WIL)

This programme also includes a component of Work Integrated Learning (WIL) which integrates work experiences with learning in a way traditional education cannot do. It provides students with opportunities to:

- Execute tasks related to Cyber Security at the work place;
- Network with professionals and build relationships that can help students in their future endeavours;
- Have access to companies for full-time positions after graduation once good rapport has been established between the students and the companies;
- Interact with people from diverse backgrounds and develop interpersonal skills that are not possible in a classroom environment.

The three courses that are done in the same semester as WIL, will be taught before the students go for WIL, and will be done through an accelerated teaching approach, and assessed using “Diversified Continuous Assessment” mode; some of the assessments will be carried out while the students are busy with their WIL.

### Transition Arrangements

This is a new programme which does not replace any existing programme(s). Transition arrangements are, therefore, not applicable.

### CURRICULUM

Course Code	Course Title	Prerequisites	NQF Level	NQF Credits
<b>Year 1</b>				
<b>Semester 1</b>				
BSC410S	Basic Science	None	4	8
MIT112S	Mathematics for IT 1A	None	5	10
PRG510S	Programming 1	None	5	10
LIP411S	Language in Practice	None	4	NCB
IIS511S	Introduction to Information Security	None	5	10
COA511S	Computer Organisation and Architecture	None	5	10
<b>Semester 2</b>				
OOP521S	Object Oriented Programming	Programming 1	5	10
ICT521S	Information Competence	None	5	10
MIT122S	Mathematics for IT 1B	Mathematics for IT 1A	5	10
WDF521S	Web Development Fundamentals	None	5	10
EPR 511S	English in Practice	Language in Practice, or Language in Practice A, or Module 2, or Exemption	5	NCB
OSN521S	Introduction to Operating Systems and Networks	Computer Organisation and Architecture	5	10



**Year 2****Semester 3**

EAP511S	English for Academic Purposes	English in Practice, or Language in, Practice B or Module 3, or Exemption	5	14
ISS610S	IT Systems Security	Introduction to Operating Systems and Networks	6	12
DSA610S	Data Structures and Algorithms	None	6	12
DBF510S	Database Fundamentals	None	5	10
ICN511S	Intro. to Computer Networking	Introduction to Operating Systems and Networks	5	10
ASP610S	Applied Statistics & Probability for IT	Mathematics for IT 1B	6	14

**Semester 4**

WTN620S	Web Technologies	Intro. to Operating Systems and Networks	6	12
SAD622S	Systems Administration	Intro. to Operating Systems and Networks	6	12
CMN620S	Communication Networks	Intro. to Computer Networking	6	12
ITC621S	Introduction to Cryptography	None	6	12
WLT620S	Wireless Technologies	Introduction to Computer Networking	6	12
DSP620S	Distributed Systems Programming	Object Oriented Programming	6	12

**Year 3****Semester 5**

NWS620S	Network Security	IT Systems Security; and Introduction to Computer Networking	6	12
DFC711S	Digital Forensics 1 – Forensics Computing	Introduction to Cryptography	7	12
CIS610S	Contemporary Issues	None	6	12
IWT711S	Internet and WAN Telecommunication	Communication Networks	7	12
SVT710S	Systems Virtualisation	Operating Systems	7	12

**Semester 6**

WCS721S	Work Integrated Learning (WIL)	All semester 4 courses; and a maximum of 2 outstanding Semester 5 courses	7	36
CIP721S	Critical Infrastructure Protection and Control Systems Security	Systems Administration	7	12
DFC721S	Digital Forensics 2 – Internet Forensics and Steganography	Digital Forensics 1 – Forensics Computing	7	10
IAR721S	Intrusion Analysis and Response	Network Security	7	12

**DEPARTMENT OF INFORMATICS**

**Code 23**

**QUALIFICATIONS OFFERED**

Bachelor of Information Technology in Business Computing	80BSBC
Bachelor of Informatics	07BAIF

**BACHELOR OF INFORMATION TECHNOLOGY IN BUSINESS COMPUTING  
(Phasing out from 2014 until 2018)**

**80BSBC**

**NQF Level: 7**

**NQF Credits: 394**

**NQF Qualification ID: Q0170**

**Description**

Business Computing is a branch of Information Technology that primarily deals with the question of how to use computers and computer programs most effectively for business and general purposes. Therefore, a thorough understanding of the field of business management and accounting is equally important to an excellent ability to use computers efficiently and to the limits of their capabilities. Successful candidates in Business Computing are able to select, implement and manage computer systems cost-efficiently and suitable for the intended use in business. Often, this requires research or knowledge in a wide variety of hardware and software systems (offered by commercial vendors or as “open source”), and the ability to match that knowledge to the business needs in innovative ways.

**Admission Requirements**

Applicants should have passed at least 50 % of the courses of the Diploma in Information Technology, and must have passed Communication Skills, or its equivalent, for admission to this programme. Applicants must complete the Diploma in Information Technology before they can be awarded the Bachelor’s degree. The Head of Department may approve exceptions to the admission requirements.

Students in the Bachelor degree can obtain the following credits from the old 3 year National Diploma.

**Bachelor of Business Computing**

<b>New courses</b>		<b>Credit obtainable Old diploma</b>	
<b>Course</b>	<b>Code</b>	<b>Course</b>	<b>Code</b>
Object Oriented Programming	OOP210S	Object Oriented Technology	OOT110S
Software analysis and design	SED210S	Applied Software Engineering	ASE110S
Introduction to Databases 1A	IDB210S	Introduction to Databases 1A	IDB110S
Introduction to Databases 1B	IDB220S	Introduction to Databases 1B	IDB120S
Management Information Systems	MNS210S	Management Information Systems	MNS110S
Business Accounting 1A	BAC1100	Business Accounting 1A	BAC1100
Statistics 1A	SIT110S	Statistics 1A	SIT110S
Web Development Fundamentals	WDF220S	Introduction to Web Design	IWD110S
Electronic Commerce	ELC220S	Electronic Commerce	ELC410S
Statistics 1B	SIT121S	Statistics 1B	SIT121S
Business Accounting 1B	BAC1200	Business Accounting 1B	BAC 1200
Business Operations	BSO221S	Business Management 2A	BMA211S
Enterprise Web Application Development	EWD310S	Internet Server Programming	ISP110S
Enterprise Systems Applications	ESA310S	Introduction to SAP	SAP110S
Process Management	PMT310S	None	
Introduction to Marketing & its Environment	MAT121S	None	
Project Management	PTM210S	Project Management	PJM110S
Experiential Training	CPI320S	Experiential Training	CPI 110S
Enterprise Systems Technology	EST320S	None	
Commercial Law (IT)	CLI320S	None	



Entrepreneurial Skills	ENT321S		None	
<b>Second Year</b>				
<b>Semester 3</b>				
Object Oriented Programming	OOP210S	Introduction to Programming	6	12
Software Analysis and Design	SED210S	Introduction to Software Engineering	6	12
Management Information Systems	MNS210S	None	5	12
Business Accounting 1A	BAC1100	None	5	10
Statistics for IT 1A	SIT111S	None	5	12
Introduction to Databases 1A	IDB210S	Computer User Skills	5	6
<b>Semester 4</b>				
Introduction to Databases 1B	IDB220S	Computer User Skills	6	12
Electronic Commerce	ELC220S	None	6	12
Web Development Fundamentals	WDF220S	Computer User Skills	5	12
Business Accounting 1B	BAC1200	None	5	10
Business Operations	BSO221S	None	6	12
Statistics for IT 1B	SIT121S	Statistics for IT 1A	5	12
<b>Third Year</b>				
<b>Semester 5</b>				
Enterprise Web Application Development	EWD310S	Web Development Fundamentals and Object Oriented Programming	7	12
Enterprise Systems Applications	ESA310S	Management Information Systems	6	12
Process Management	PMT310S	Software Analysis and Design	7	12
Project Management	PTM210S	None	6	12
Introduction to Marketing & Its Environment	IME511S	None	5	10
Innovation, Creativity & Entrepreneurship	ICE712S	None	7	12
<b>Semester 6</b>				
Business Computing Project in Industry	CPI320S	Diploma in Information Technology	7	24
Enterprise Systems Technology	EST320S	Enterprise Systems Applications	7	12
Commercial Law (IT)	CLI320S	None	7	12

**NB:** The student has to pass all listed courses up to semester 6 and a project in industry has to be passed between semester 3 and 6.

**BACHELOR OF INFORMATICS (Phased in 2014)**

**07BAIF**

**NQF Level: 7**

**NQF Credits: 375**

**NQF Qualification ID: Q0512**

**Description**

The Bachelor of Informatics aims at providing educational opportunities for students who are interested in and motivated to work as Informatics Specialists in Business Computing, Information Systems or related practices. This programme is purposefully designed to provide skillful, competent and motivated graduates for the increasing and numerous challenging tasks of Business Computing and Informatics in the country and the region at large. Students will have the opportunity to develop the required cognitive/intellectual skills, practical as well as key transferable skills, and apply these in order to address/solve Computing and Informatics (CI) problems/challenges in the context of an organisation.

Overall, this programme aims at:

- Providing students with a sound foundation in the fundamental concepts, theories and frameworks of Business Computing and Informatics;
- Developing the ability of students to analyse information from a wide range of sources;
- Equipping students with the requisite skills to work effectively as individuals and as members of a team;
- Enabling students to communicate effectively in the workplace.

The programme intends to provide a diverse range of skills and competencies that are both discipline-specific and job-related. The programme also intends to facilitate the development of highly generic cognitive and intellectual skills that would enable graduates to apply their knowledge and learnt competencies to the practices of Business Computing and Informatics, taking into consideration international generally accepted practices.

**Admission Requirements**

Candidates may be considered for admission to the Bachelor of Informatics if they meet the University’s General Admission Requirements (GI2.1 in Part 1 of the Yearbook). In addition, students must have a minimum C-symbol in NSSC Mathematics at Ordinary Level, or equivalent.

**Articulation Arrangements**

Transfer of credits will be dealt with according to the University’s regulations on Recognition of Prior Learning. These provide for course-by-course credits as well as credit transfer by volume under certain academic conditions. Maximum credit that can be granted is 50 % of the credit for a qualification.

Upon successful completion of the Bachelor of Informatics, students will ordinarily be able to pursue further studies in Informatics, or a related cognate area of learning, at NQF Level 8.

**CURRICULUM**

**Year 1**

**Semester 1**

<b>Course Code</b>	<b>Course Title</b>	<b>Prerequisites</b>	<b>NQF Level</b>	<b>NQF Credits</b>
BSC410S	Basic Science	None	4	8
MIT112S	Mathematics for IT 1A	None	5	10
PRG510S	Programming 1	None	5	10
LIP411S	Language in Practice	None	4	NCB
MNS511S	Management Information Systems	None	5	10
COA511S	Computer Organisation and Architecture	None	5	10

**Semester 2**

OOP521S	Object Oriented Programming	Programming 1	5	10
ICT521S	Information Competence	None	5	10
MIT122S	Mathematics for IT 1B	Mathematics for IT 1A	5	10
WDF521S	Web Development Fundamentals	None	5	10
EPR 511S	English in Practice	Language in Practice, or Language in Practice A, or Module 2, or Exemption	5	NCB
OSN521S	Introduction to Operating Systems and Networks	Computer Organisation and Architecture	5	10

**Year 2****Semester 3**

EAP511S	English for Academic Purposes	English in Practice, or Language in Practice B, or Module 3, or Exemption	5	14
ISS610S	IT Systems Security	Intro. to Operating Systems and Networks	6	12
DSA610S	Data Structures and Algorithms	None	6	12
DBF510S	Database Fundamentals	None	5	10
ICN511S	Introduction to Computer Networking	Intro. to Operating Systems and Networks	5	10
ASP610S	Applied Statistics & Probability for IT	Mathematics for IT 1B	6	14

**Semester 4**

SEH620S	Software Engineering 1 and HCI	Web Dev. Fundamentals	6	12
DPT621S	Database Programming and Techniques	Database Fundamentals	6	12
HIT620S	Health Information Systems & Technology	None	6	12
BAP620S	Business Analysis & Process Management	Management Information Systems	6	12
BAI620S	Business Accounting for Informatics	None	6	12
EWD621S	Enterprise Web Application Development	Object Oriented Programming	7	12

**Year 3****Semester 5**

IME511S	Introduction to Marketing and its Environment	None	5	10
MMA710S	Multimedia Applications	None	7	12
CSH710S	Computer Systems for Healthcare Services	Business Analysis & Process Mgmt.	7	12
CIS610S	Contemporary Issues	None	6	12
ICE712S	Innovation, Creativity & Entrepreneurship	None	7	15

**Semester 6**

WIL710S	Work Integrated Learning (WIL)	All courses up to semester 4 and a maximum of 2 outstanding semester 5 courses.	7	48
ERP720S	Enterprise Resource Planning Systems	Management Information Systems	7	12
PTM721S	Project Management	None	7	12

**Transition Arrangements**

The Bachelor of Information Technology in Business Computing (old curriculum) will be phased out systematically until 2018 with minimal disruption to existing students' learning progression. The last intake of 1<sup>st</sup> year students for the Bachelor of Information Technology in Business Computing (old curriculum) was in January 2013.

Students who were registered in 2013 for the 1<sup>st</sup> year of the Bachelor of Information Technology in Business Computing (old curriculum), and who failed more than 50 % of the courses at the end of 2013, will be required to

change their registration to the Bachelor of Informatics (new curriculum) and will be granted credits on a course-by-course basis in accordance with the information in Table 1 below.

The Bachelor of Informatics (new curriculum), took effect from January 2014 and will be completely phased in by 2016. Courses will only be offered based on the syllabi of new/revised courses in 2014 (1<sup>st</sup> year), 2015 (2<sup>nd</sup> year) and 2016 (3<sup>rd</sup> year). Students who fail any of the courses on the Bachelor of Information Technology in Business Computing (old curriculum) will be required to repeat such failed courses based on the syllabi of new/revised corresponding courses. Please refer to Table 2, below, for detailed information on the new/revised corresponding courses to be done if courses in the old curriculum are failed.

The deadline for complete phasing out of the Bachelor of Information Technology in Business Computing (old curriculum) is 2018 after which students must automatically switch to the Bachelor of Informatics (new curriculum).

**Table 1: First Year Courses to be credited**

<b>Bachelor of Information Technology: Business Computing (Old Courses)</b>		<b>Bachelor of Informatics (New/Revised Equivalent Courses)</b>	
<b>Course Code</b>	<b>Course Name</b>	<b>Course Code</b>	<b>Course Name</b>
EAP511S	English for Academic Purposes	EAP511S	English for Academic Purposes
CUS411S	Computer User Skills		None
COH110S	Computer Organisation & Hardware	COA511S	Computer Organisation and Architecture
ADI11S	Introduction to Algorithm Design	DSA610S	Data Structures and Algorithms
BMA121S	Introduction to Business Management		None
MIT112S	Mathematics for IT 1A	MIT112S	Mathematics for IT 1A
BEL112S	Business Ethics and Leadership		None
IPG120S	Introduction to Programming	PRG510S	Programming 1
ISW120S	Introduction to Software Engineering		None
ICT521S	Information Competence	ICT521S	Information Competence
MIT122S	Mathematics for IT 1B	MIT122S	Mathematics for IT 1B
ONS120S	Operating Systems and Networks	OSN521S	Introduction to Operating Systems and Networks
PCO611S	Professional Communication		None

**Table 2: Corresponding Courses to be done (if failed) - this is not a credit table!**

<b>Bachelor of Information Technology: Business Computing (Old Courses)</b>		<b>Bachelor of Informatics (Corresponding New/Revised Courses to be done, if failed)</b>	
<b>Course Code</b>	<b>Course Name</b>	<b>Course Code</b>	<b>Course Name</b>
COH110S	Computer Organisation & Hardware	COA511S	Computer Organisation & Architecture
ADI111S	Introduction to Algorithm Design	DSA610S	Data Structures and Algorithms
IPG120S	Introduction to Programming	PRG510S	Programming 1
ONS120S	Operating Systems and Networks	OSN512S	Introduction to Operating Systems and Networks
OOP210S	Object Oriented Programming	OOP521S	Object Oriented Programming
SED210S	Software Analysis and Design	SEH621S	Software Engineering 1 and HCI
MNS210S	Management Information Systems	MNS511S	Management Information Systems
SIT111S	Statistics for IT 1A	ASP610S	Applied Statistics & Probability for IT
IDB210S	Introduction to Databases 1A	DBF510S	Database Fundamentals
WDF220S	Web Development Fundamentals	WDF521S	Web Development Fundamentals
SIT121S	Statistics for IT 1B	ASP610S	Applied Statistics & Probability for IT
EWD310S	Enterprise Web Application Development	EWD621S	Enterprise Web Application Development
ESA310S	Enterprise Systems Applications	ERP720S	Enterprise Resource Planning Systems
PMT310S	Process Management	BAP620S	Business Analysis and Process Management
PTM210S	Project Management	PTM721S	Project Management
CPI320S	Business Computing Project in Industry (Experiential Learning)	WIL710S	Work Integrated Learning (WIL)
EST320S	Enterprise Systems Technology	ERP720S	Enterprise Resource Planning Systems
CLI320S	Commercial Law (IT)		None

**Table 2, above only highlights new/revised core courses in Business Computing that should be done if courses on the old curriculum are failed. Service courses from other Departments are excluded, but the rules of relevant Departments apply to this programme as well.**

The following old courses do not have corresponding courses in the Bachelor of Informatics (new curriculum) and will be offered until the Bachelor of Information Technology in Business Computing (old curriculum) is phased out completely in 2018:

- Introduction to Databases 1B (IDB220S)

- Electronic Commerce (ELC220S)
- Introduction to Software Engineering (ISW120S)

Students who fail the following old courses must repeat the new/revised courses listed below:

- Enterprise Systems Applications (ESA310S) or Enterprise Systems Technology (EST320S), must repeat Enterprise Resource Planning Systems;
- Statistics for IT 1A (SIT111S) or Statistics for IT 1B (SIT121S), must repeat Applied Statistics & Probability for IT.



**POSTGRADUATE PROGRAMMES****QUALIFICATIONS OFFERED**

	<b>CODES</b>
Bachelor of Informatics Honours	08BIFH
Bachelor of Computer Science Honours	09MCSC
Post Graduate Certificate in Informatics (Information Systems Audit)	08PGBC
Master of Informatics	09MINF
Master of Computer Science	09MCSC
Doctor of Philosophy (PhD) in Informatics	10PDIN
Doctor of Philosophy (PhD) in Computer Science	10PDCS

**DEPARTMENT OF COMPUTER SCIENCE****Code 22**

<b>BACHELOR OF COMPUTER SCIENCE HONOURS (COMMUNICATION NETWORKS)</b>	<b>08BCHC</b>
<b>BACHELOR OF COMPUTER SCIENCE HONOURS (SOFTWARE DEVELOPMENT)</b>	<b>08BCSH</b>
<b>BACHELOR OF COMPUTER SCIENCE HONOURS (MOBILE DEVELOPMENT)</b>	<b>08BCHM</b>
<b>BACHELOR OF COMPUTER SCIENCE HONOURS (INFORMATION SECURITY)</b>	<b>08BHIS</b>
<b>BACHELOR OF COMPUTER SCIENCE HONOURS (DIGITAL FORENICS)</b>	<b>08BHDF</b>

**Description**

The Bachelor of Computer Science Honours is a postgraduate specialisation degree that aims at consolidating and deepening the knowledge and skills of students in the main cognate area of learning, as well as developing their capacity to conduct supervised research of an applied nature. The programme is purposefully designed to expose students to advanced concepts, theories, tools, and methods of Computer Science. In this context, specific emphasis is placed on internationally accepted general standards and practices, as well as key attributes that would enable graduates to assume supervisory/middle management and applied research positions in the Computing industry, academia, and in the public sector in general.

The curriculum is structured to facilitate specialisation in the areas of Communication Networks, Software Development, and Mobile Development.

**Admission Requirements**

Applicants may be considered for admission to this programme if they have a Bachelor's degree in Computer Science, or a Bachelor of Information Technology (with specialisation in Software Engineering or Systems Administration and Networks) from the Namibia University of Science and Technology, or an equivalent qualification at NQF Level 7 from a recognised institution, worth at least 360 credits.

Applicants are required to submit the following documents with their applications:

- A professional resume, highlighting practical and professional Computing and IT experience, if applicable;
- A written proposal/motivation for undertaking further studies;
- A transcript of the undergraduate study.

**Articulation Requirements**

Transfer of credits will be dealt with according to the University's regulations on Recognition of Prior Learning. These provide for course-by-course credits as well as credit transfer by volume under certain academic conditions. Maximum credit that can be granted is 50 % of the credits for a qualification.

Upon successful completion of the Bachelor of Computer Science Honours, students will ordinarily be able to pursue further studies in the same, or a related cognate area of learning, at NQF Level 9.

**CURRICULUM**

**Year 1**

**Semester 1**

Course Code	Course Title	Prerequisites
RIT812S	Research Methodology	None

**PLUS one of the following Strands depending on Specialisation:**

**COMMUNICATION NETWORKS STRAND: (Register ALL courses from the strand selected)**

BBN810S	Broadband Networks	None
ECN811S	Emerging and Open Issues in Communication Networks	None
MNA810S	Mobile Networks and Architectures	None

**SOFTWARE DEVELOPMENT STRAND: (Register All the courses from the strand elected)**

ASD810S	Advanced Software Development	None
ESD811S	Emerging and Open Issues in Software Development	None
FMM810S	Formal Methods	None

**MOBILE DEVELOPMENT STRAND: (Register All the courses from the strand elected)**

MAD811S	Mobile Applications Development	None
EMD811S	Emerging and Open Issues in Mobile Development	None
MNA810S	Mobile Networks and Architectures	None

**INFORMATION SECURITY STRAND: (Register All the courses from the strand elected)**

PTS811S	Practical Network Security	None
APC811S	Applied Cryptography	None
ISM811S	Information Security Management and Assurance	None

**DIGITAL FORENSICS STRAND: (Register All the courses from the strand elected)**

PTS811S	Practical Network Security	None
DFM811S	Digital Forensics Management	None
APC811S	Applied Cryptography	None

**Semester 2**

MTH820S	Mini-thesis	Research Methodology
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**PLUS one of the following Strand Elective courses for Specialisation in Communication Networks (Choose only one course from the selected strand)**

WDS820S	Wireless Data Networks and System	None
SON820S	Simulation of Networks	None

**PLUS one of the following Strand Elective courses for Specialisation in Software Development (Choose only one course from the selected strand)**

MAD811S	Mobile Applications Development	None
PLC820S	Programming Languages and Compilers	None

**PLUS one of the following Strand Elective courses for Specialisation in Mobile Development (Choose only one course from the selected strand)**

IDE820S	Interaction Design & Evaluation	None
MPD820S	Mobile Platforms and Development Environments	None

**PLUS one of the following Strand Elective courses for Specialisation in Information Security****(Choose only one course from the selected strand)**

CIT821S	Critical Infrastructure Protection	None
DSD821S	Database Security and Data Protection	None

**PLUS one of the following Strand Elective Courses for Specialisation in Digital Forensics****(Choose only one course from the selected strand)**

CMF821S	Computer and Multimedia Forensics	None
MBF821S	Mobile Forensics	None

**Transition Arrangements**

The Bachelor of Information Technology Honours degrees in Computer Networking, as well as Software Engineering (old curricula) will be phased out systematically until 2016 with minimal disruption to existing students' learning progression. The last intake of students for the Bachelor of Information Technology Honours degrees in Computer Networking, as well as Software Engineering (old curricula) was in January 2013.

Students who were registered for the Bachelor of Information Technology Honours in Computer Networking, as well as Software Engineering (old curricula) will be allowed to transition to the Bachelor of Computer Science Honours (new curriculum), but may lose credits.

Students who were registered in 2013 for the out-phasing Bachelor of Information Technology Honours in Computer Networking, as well as Software Engineering (old curricula), and who failed more than 50 % of the courses at the end of 2013, will be required to change their registration to the Bachelor of Computer Science Honours (new curriculum) and will be granted credits on a course-by-course basis in accordance with the information in Table 1 below.

The Bachelor of Computer Science Honours (new curriculum), took effect from January 2014. Courses will only be offered based on the syllabi of new/revised courses in 2014. Students who fail any of the courses on the old curricula will be required to repeat such failed courses based on the syllabi of new/revised corresponding courses. Please refer to Table 2, below, for detailed information on the new/revised corresponding courses to be done if courses on the Bachelor of Information Technology Honours degrees in Computer Networking, as well as Software Engineering (old curricula) are failed.

The deadline for complete phasing out of the Bachelor of Information Technology Honours degrees in Computer Networking, as well as Software Engineering (old curricula) is 2016 after which students must automatically switch to the Bachelor of Computer Science Honours (new curriculum).

**Table 1: Courses to be credited**

<b>Bachelor of Information Technology Honours (Computer Networking, and Software Engineering) (Old Courses)</b>		<b>Bachelor of Computer Science Honours (New/Revised Equivalent Courses)</b>	
<b>Course Code</b>	<b>Course Name</b>	<b>Course Code</b>	<b>Course Name</b>
CTY810S	Cryptography	APC811S	Applied Cryptography
DNS810S	Data and Network Security	DSD821S	Database Security and Data Protection
RIT811S	Research Methodology (IT)	RIT812S	Research Methodology
TOC811S	Theory of Computation		None
HRP810S	Honours Research Project	MTH820S	Mini-thesis

ADR810S	Advanced Routing	BBN810S	Broadband Networks
PNS811S	Practical Network and Internet Security	PTS811S	Practical Network Security
SAM810S	Simulation and Modelling	SON820S	Simulation of Networks
SLD810S	Switching and LAN design		None
QQS810S	Queuing and Quality of Service	BBN810S	Broadband Networks
ADS811S	Architecture & Implementation of Database Management Systems		None
AIA811S	Artificial Intelligence Applications		None
AIT811S	Advanced Internet Technology		None
DAA811S	Distributed Applications & Architectures		None
ETS811S	Emerging Technologies in Software Engineering	ESD811S	Emerging and Open Issues in Software Development
HCI810S	Human Computer Interaction	IDE820S	Interaction Design and Evaluation
MAD810S	Mobile Application Development	MAD811S	Mobile Applications Development

**Table 2: Corresponding Courses to be done (if failed) – This is not a credit table!**

<b>Bachelor of Information Technology Honours (Computer Networking, and Software Engineering) (Old Courses)</b>		<b>Bachelor of Computer Science Honours (Corresponding New/Revised Courses to be done, if failed)</b>	
<b>Course Code</b>	<b>Course Name</b>	<b>Course Code</b>	<b>Course Name</b>
CTY810S	Cryptography	APC811S	Applied Cryptography
DNS810S	Data and Network Security	DSD821S	Database Security and Data Protection
RIT811S	Research Methodology (IT)	RIT812S	Research Methodology
HRP810S	Honours Research Project	MTH820S	Mini-thesis
ADR810S	Advanced Routing	BBN810S	Broadband Networks
SAM810S	Simulation and Modelling	SON820S	Simulation of Networks
ETS811S	Emerging Technologies in Software Engineering	ESD811S	Emerging and Open Issues in Software Development
HCI810S	Human Computer Interaction	IDE820S	Interaction Design and Evaluation
MAD810S	Mobile Application Development	MAD811S	Mobile Applications Development
PNS811S	Practical Network and Internet Security	PTS811S	Practical Network Security

**MASTER OF COMPUTER SCIENCE****09MCSC****(with specialisation in Communication Networks, Software Development, Mobile Development, Information Security, Forensic Computing)****NQF Level: 9****NQF Credits: 240****NQF Qualification ID: Q0504****Description**

The Master of Computer Science programme is of interdisciplinary nature and aims at students interested in, and adequately qualified and motivated, for graduate education to become scientific researchers in various fields of study related to Computer Science. In this regard, the Computing Sciences Accreditation Board (CSAB) defines Computer Science as focusing on the 'theory of computation, algorithms and data structures, programming methodology and languages, and computer elements and architecture'. In addition to these four areas, CSAB also identifies fields such as software engineering, artificial intelligence, computer networking and communication, database systems, parallel computation, distributed computation, computer-human interaction, computer graphics, operating systems, and numerical and symbolic computation as being important areas of computer science.

The programme will enable students to deepen their knowledge of a particular Computer Science speciality for application, research and/or management purposes. Possible fields of specialisation include Communication Networks, Software Development, Mobile Development, Information Security and Forensic Computing. The precise focus of the research will be determined through dialogue between the candidate and supervising staff, and will fall within the scope of the approved research clusters of the Faculty of Computing and Informatics.

Students will develop a thorough understanding of relevant methodological approaches, and develop competence in the application of qualitative, design, mixed-mode and quantitative research methods through participation in research projects under supervision of experienced staff members. The development of research competence has prime priority in the context of this programme. Students are required to design, undertake and report on research where Computer Science is the research focus and apply techniques and/or deal with a specific application problem connected with the field of interest.

**Admission Requirements**

Applicants who hold qualifications from recognised institutions at NQF level 8, or equivalent, in disciplines related to Computer Science may be considered for admission to this programme. Applicants need to provide evidence of having conducted supervised research and may be required to make-up specific deficiencies in coursework at the discretion of the Postgraduate Studies Committee. In addition, applicants may be required to attend a pre-selection interview and/or test at the discretion of the department.

Applicants from other institutions must submit detailed information on all courses in their previous qualifications, as well as contact details of three referees. The latter also applies to applicants who have been working in the field subsequent to obtaining their previous qualifications. Exceptions may be approved by the Postgraduate Studies Committee, and all admissions are at the discretion of the Postgraduate Studies Committee.

Registration prior to the approval of a research proposal is provisional and will be made official only when the proposal is approved by the Postgraduate Studies Committee. These procedures will be fully explained to each prospective student during his or her personal interview.

**Assessment Strategies**

Students are required to submit a research proposal six months after registration for approval by the Postgraduate Studies Committee. It is compulsory that students attend regular research methodology seminars until successful defense and approval of the research proposal. Students are required to present work-in-progress report every six months during research seminars for monitoring and assessment purposes. Students who fail the initial assessment of the research proposal will receive an extension of six months for re-approval.

In compliance with the general requirements of Senate, students are required to submit a thesis for evaluation, which should comply with international academic standards. The thesis requires students to work independently and to investigate their own individual research topic. Students are required to cultivate a professional work ethic to deliver the combination of research, analysis, communication and presentation demanded by their thesis. The thesis will be assessed in accordance with the rules for studies at postgraduate level.

Students will present and defend their thesis before an appropriately constituted committee in accordance with the rules for postgraduate studies at the University. The thesis will be returned to students for correction before final binding and archiving. Final marks will only be released after correction of the thesis.

#### **Transition Arrangements**

The structured/taught Master of Information Technology (MIT) programme will be phased out systematically until 2016 with no disruption to existing students' learning progression. The last intake for the MIT (09MIFT) was in 2013. The Master of Computer Science will take effect from January 2014.

**DOCTOR OF PHILOSOPHY IN COMPUTER SCIENCE (New) 10PDCS**  
**(with specialisation in Communication Networks, Software Development, Mobile Development, Information Security, Forensic Computing)**

**NQF Level: 10**

**NQF Credits: 360**

**NQF Qualification ID: Q0505**

**Description**

The PhD in Computer Science was conceptualized against the back-drop of the above imperatives in order to train scientific researchers in various fields of study related to Computer Science (e.g. Communication Networks, Software Development, Mobile Development, Information Security and Forensic Computing). Students will develop a thorough understanding of relevant methodological approaches, and develop competence in the application of qualitative, design, mixed-mode and quantitative research methodologies through participation in research projects under supervision of experienced staff members. The precise focus of the research will be determined through dialogue between the candidate and supervising staff, and will fall within the scope of the approved research clusters of the Faculty of Computing and Informatics.

The development of research competence has prime priority in the context of this PhD programme. Students are required to investigate, design, and conduct independent research, where Computer Science is the research focus, apply advanced methods and techniques and/or deal with a sophisticated application problem connected with the topic of interest. The research output, in the form of a thesis, must contribute meaningfully and substantially to the existing body of knowledge in the field/area of specialisation through comprehension, application, analysis, synthesis and evaluation of existing knowledge.

**Admission Requirements**

Applicants who hold qualifications from recognised institutions at NQF Level 9, or equivalent, in Computer Science or related cognate areas, may be considered for admission to this programme. Applicants need to provide evidence of having conducted supervised research at this level. In addition, applicants may be required to attend a pre-selection interview at the discretion of the department. The final selection and admission of candidates will be approved by the Postgraduate Studies Committee.

Registration prior to the approval of a research proposal is provisional and will be made official only when the proposal is approved by the Postgraduate Studies Committee. These procedures will be fully explained to each prospective student during his or her personal interview.

**Articulation Arrangements**

The PhD in Computer Science is a terminal qualification; hence articulation arrangements are not applicable.

**Assessment Strategies**

Students are required to submit a research proposal six months after registration for approval by the Postgraduate Studies Committee. It is compulsory that students attend regular research methodology seminars until successful defense and approval of the research proposal. Students are required to present work-in-progress report every six months during research seminars for monitoring and assessment purposes. Students who fail the initial assessment of the research proposal will receive an extension of six months for re-approval.

In compliance with the general requirements of Senate, students are required to submit a thesis for evaluation, which should comply with international academic standards. The thesis requires students to work independently and to investigate their own individual research topic. Students are required to cultivate a professional work ethic to deliver the combination of research, analysis, communication and presentation demanded by their thesis. The thesis will be assessed in accordance with the rules for studies at postgraduate level.

Students will present and defend their thesis before an appropriate constituted committee in accordance with the rules for postgraduate studies at the University. The thesis will be returned to students for correction before final binding and archiving. Final marks will only be released after correction of the thesis.

Any other special arrangements on assessments will be done in accordance with the University's rules and procedures for postgraduate studies.

**Quality Assurance Arrangements**

The final assessment of the thesis will be done by qualified academics and practitioners with Doctoral Degrees. The examiners must be knowledgeable and respected individuals in the field with experience in assessment of postgraduate scientific reports or theses, and will be appointed by Senate upon recommendation of the Postgraduate Studies Committee

**Transition Arrangements**

This is a new programme and transition arrangements are, therefore, not applicable.



**DEPARTMENT OF INFORMATICS****Code 23****POSTGRADUATE CERTIFICATE IN ICT POLICY AND REGULATION****22PCIT****Description**

The aim of this multi-disciplinary certificate programme is to address a skills gap in Namibia's ICT sector. The skills gap arises not only for particular disciplines but also across them. For example, a lawyer working in the ICT sector needs to have a basic understanding of the economic and technical aspects while an economist needs to have a grasp of the technical and legal side.

**Admission requirements**

Students are required to have at least a Bachelor Degree recognised at NQF Level 7 in a related discipline, or an equivalent qualification. Extensive professional experience in a field related to the postgraduate programme may replace this requirement, subject to approval by the University's Graduate Studies Committee.

**Programme Schedule, Progression and Academic Rules**

The Post Graduate Executive Certificate in ICT Policy and Regulation is designed at NQF level 8. It contains 720 notional hours, i.e. 72 credits, of which 120 are contact hours, and 120 hours are assigned to a research project, resulting in 462 hours for self-study and assignments.

**Table 1: Overview of Notional hours and Credits**

Module	Module Title	Credits	NQF level	Contact hours	Tests	Self study/ Assignments	Research Project	Total
1	Telecommunication Reg. & Theories of Economic Regulation	10	8	20	3	77		100
2	International ICT Trends, Organisation & Development	10	8	20	3	77		100
3	Costing & Pricing	10	8	20	3	77		100
4	Market Analysis & Research Methodology	10	8	20	3	77		100
5	Telecommunications Law	10	8	20	3	77		100
6	Telecom. & Broadcasting Technology	10	8	20	3	77		100
7	Project	12	8		3	77	120	100
<b>Totals</b>		<b>72</b>	<b>2</b>	<b>120</b>	<b>18</b>	<b>462</b>	<b>120</b>	<b>720</b>

The programme will be offered in the form of six one-week modules spread over one year, and will be rounded off with a research project. Each module is taught in one week in five 4-hour part-time sessions to allow professionals

working in industry and government to participate. Each module is followed by a test. The certificate is awarded after passing all six modules with a mark of at least 50 % and submitting a research project, which likewise requires a minimum mark of 50 %. The research project is the equivalent of 20 % of a Master thesis. Modules cannot be failed more than two times. The maximum time any student can be registered for the programme is 4 years. Students are expected to be present during all contact hours.

**Table 2: Weight of Modules and Project**

<b>Total test marks</b>	<b>Minimum to pass</b>	<b>Share of</b>	<b>final mark</b>
<b>Module 1</b>	120	60	12.5 %
Module 2	120	60	12.5 %
Module 3	120	60	12.5 %
Module 4	120	60	12.5 %
Module 5	120	60	12.5 %
Module 6	120	60	12.5 %
Module 7: Project	240	120	25 %
<b>Total</b>	<b>960</b>	<b>480</b>	<b>100 %</b>

One or more required readings will be provided for each session of each module. These are printed out and included in the programme pack. Participants are expected to complete those readings required for each session in advance, as the lecturer will assume familiarity with their content. Lecturers, who use teaching aids or provide additional material, will distribute these notes as they become available. These notes should be added to the programme file and included as part of the programme materials. It is assumed that for every 1 hour in the classroom, 20 in total per module, participants will need to spend approximately 4 additional hours in preparation. This includes reading and writing assignments.

There may be tasks to prepare for specific sessions, which will assist the student to work through the conceptual and theoretical understandings in each of the readings and begin to apply these to cases and issues. Students should read through each session outline carefully to ensure that there are no mishaps.

**Equivalences and Articulation with other Programmes**

Due to the multi-disciplinary nature of the programme there are neither equivalences nor direct articulations to other existing programmes. In case at a later stage a Master’s Programme in “ICT Policy and Regulation” should be established, the modules of the Postgraduate Executive Certificate should be considered for crediting.

**POSTGRADUATE CERTIFICATE IN INFORMATICS (INFORMATION SYSTEMS AUDIT)****08PGCI****NQF Level: 8****NQF Credits: 60****NQF Qualification ID: Q0583****Description**

The Postgraduate Certificate in Informatics (Information Systems Audit) programme is primarily designed to provide students with deeper insight, intellectual and cognitive skills related to their professional field and area of employment and help them to advance their career of choice. This programme will further expose students to advanced concepts, theories, tools, and methods of Information Systems Audit. The overarching aim of this programme is to prepare students for a career in the Information Technology (IT) audit field and for certification as an information systems auditor or information security specialist. Students will be able to take-up a certification course in this field and may become members of professional/association bodies such as the Information Systems Audit and Control Association (ISACA). The Postgraduate Certificate in Informatics (Information Systems Audit) will not lead to further academic study, but graduates would gain credit for relevant courses should they opt to register for the Bachelor of Informatics Honours.

**Admission Requirements**

Applicants must have a three-year Diploma or a Bachelor degree or an equivalent qualification on NQF Level 7 with an Information Systems emphasis from an accredited institution. Applicants should also have at least two years relevant work experience.

**Articulation Arrangements**

Transfer of credits will be dealt with in accordance with the University's regulations on Recognition of Prior Learning. These provide for course-by-course credits as well as credit transfer by volume under certain academic conditions. Maximum credit that can be granted is 50 % of the credits for a qualification.

Students who commenced a Bachelor of Informatics Honours, but discontinued their studies, may utilise academic courses passed for credit recognition in the Postgraduate Certificate in Informatics (Information Systems Audit).

Conversely, students who passed academic courses as part of this programme may utilise these for credit, if wishing ultimately, to undertake the Bachelor of Informatics Honours.

In addition, students who passed certain courses in the old Bachelor of Technology in Business Computing programme may be granted credit for such courses as follows:

<b>B. Tech.: Business Computing (Old)</b>		<b>PGC: Informatics (Information Systems Audit) [New/Revised Equivalent Courses ]</b>	
<b>Old Courses</b>		<b>New Courses</b>	
<b>Code</b>	<b>Course Name</b>	<b>Code</b>	<b>Course Name</b>
AIS410S	Accounting Information Systems	AIS822S	Accounting Information Systems
ISA410S	Information Systems Audit	ISA822S	Information Systems Audit

## CURRICULUM

### Year 1

Course Code	Course Title	Prerequisite	NQF Level	NQF
	<b>Credits</b>			
AIS822S	Accounting Information Systems	None	8	15
ISA822S	Information Systems Audit	None	8	15
PGP811S	Industry Project	Students must have passed at least one course.	8	15
ISM811S	Information Security Management and Assurance	None	8	15

### Transition Arrangements

The Postgraduate Certificate in Business Computing (Information Systems Audit) (old curriculum) will be phased out systematically until 2015 with minimal disruption to existing students' learning progression. The last intake of students for the Postgraduate Certificate in Business Computing (Information Systems Audit) (old curriculum) was in January 2014.

Students who are registered on the Postgraduate Certificate in Business Computing (Information Systems Audit) (old curriculum) will be allowed to transition to the Postgraduate Certificate in Informatics (Information Systems Audit) (new curriculum).

Students who are registered in 2014 for the Postgraduate Certificate in Business Computing (Information Systems Audit) (old curriculum), and who fail more than 50 % of the courses at the end of 2014, will be required to change their registration to the Postgraduate Certificate in Informatics (Information Systems Audit) (new curriculum) and will be granted credits on a course-by-course basis in accordance with the information in Table 1 below.

The Postgraduate Certificate in Informatics (Information Systems Audit) (new curriculum), will take effect from January 2015. Courses will only be offered based on the syllabi of new/revised courses in 2015. Students who fail any of the courses on the old curricula will be required to repeat such failed courses based on the syllabi of the new/revised corresponding courses. Please refer to Table 2 below, for detailed information on the new/revised corresponding courses to be done if courses on the Postgraduate Certificate in Business Computing (Information Systems Audit) (old curriculum) are failed.

The deadline for complete phasing out of the Postgraduate Certificate in Business Computing (Information Systems Audit) (old curriculum) is 2016 after which students must automatically switch to the Postgraduate Certificate in Informatics (Information Systems Audit) (new curriculum).

**Table 1: Courses to be credited**

Postgraduate Certificate in Business Computing (Information Systems Audit) (Old Courses)		Postgraduate Certificate in Informatics (Information Systems Audit) (New/Revised Equivalent Courses)	
Course Code	Course Name	Course Code	Course Name
AIS811S	Accounting Information Systems	AIS822S	Accounting Information Systems
ISA811S	Information Systems Audit and Control	ISA822S	Information Systems Audit
PIP810S	Industry Project	PGP811S	Industry Project
PIC810S	Industry Certification	ISM811S	Information Security Management and Assurance

**Table 2: Corresponding Courses to be done (if failed) - this is not a credit table!**

<b>Postgraduate Certificate in Business Computing (Information Systems Audit) (Old Courses)</b>		<b>Postgraduate Certificate in Informatics (Information Systems Audit) (Corresponding New/Revised Courses to be done, if failed)</b>	
<b>Course Code</b>	<b>Course Name</b>	<b>Course Code</b>	<b>Course Name</b>
AIS811S	Accounting Information Systems	AIS822S	Accounting Information Systems
ISA811S	Information Systems Audit and Control	ISA822S	Information Systems Audit
PIP810S	Industry Project	PGP811S	Industry Project
PIC810S	Industry Certification	ISM811S	Information Security Management and Assurance

**Please Note:**

Table 2 above only highlights new/revised core courses in Informatics that should be done if courses on the old curriculum are failed.

**POSTGRADUATE CERTIFICATE IN INFORMATICS (INFORMATION SYSTEMS AUDIT)  
(Phased in 2014)**

**08PGCI**

**NQF Level: 8**

**NQF Credits: 60**

**NQF Qualification ID: Q0223**

**Description**

The Postgraduate Certificate (PGC) in Business Computing (Information Systems Audit), worth 60 credits, is registered at Level 8 on the National Qualifications Framework (NQF). The need for this programme was identified in consultation with industry stakeholders and it was specifically developed to address the shortage of Information Systems professionals, especially in the area of Information Systems Audit and Control. Holders of this qualification will provide much needed competencies to the Information Technology sector in Namibia which, in turn, would contribute significantly to the achievement of national development goals and Vision 2030, especially in relation to Information and Communication Technology.

The programme primarily targets part-time students who are already in employment and intends to provide them with deeper insight, intellectual and cognitive skills related to their professional field and area of employment and help them to advance their career of choice. The overarching aim of this programme is to prepare students for a career in the Information Technology (IT) audit field and for certification as an information systems auditor. Students will be able to take a certification course in this field and may become members of professional bodies such as the Information Systems Audit and Control Association (ISACA). The Postgraduate Certificate (PGC) in Business Computing (Information Systems Audit) will not, normally, lead to further academic study, but graduates would gain credit for relevant courses should they opt to register for the Bachelor of Information Technology Honours in Business Computing.

The programme can be completed in one calendar year.

**Admission Requirements**

Applicants must have a three-year Diploma, or a Bachelor degree, or an equivalent qualification at NQF Level 7 with an Information Systems emphasis from a recognised institution, as approved by the Namibia University of Science and Technology. They should also have at least two years' work experience.

**Qualification Outcomes**

Upon completing the Postgraduate Certificate in Business Computing (Information Systems Audit), students will be able to:

- Investigate the information system(s) risks or aspects thereof at organisations, with special reference to the business implications;
- Assess and implement appropriate internal controls and other security measures in an Information System;
- Plan and implement efficient information systems architecture, technology and business processes to support business objectives in the most cost-effective way;
- Recommend and motivate systems acquisition to senior management and staff in organisations and act as information systems auditors in the implementation of new systems;
- Evaluate and integrate information systems and business requirements in order to maximise the performance of an organisation;
- Analyse the efficiency and performance of the system(s), and propose improvements where appropriate and possible;
- Apply appropriate IT governance and control frameworks, and best practices in an organisation;
- Communicate solutions and recommendations to management by means of professional presentations and reports.

### Qualification Requirements

This qualification will be awarded to candidates credited with a minimum of 60 NQF credits, at least 45 of which are at NQF Level 8, and who have met the detailed qualification requirements as outlined below. In addition, students must meet the administrative and financial requirements as spelt out in Part 1 of the NUST Yearbook.

The industry certification in this programme will be offered through a professional body, i.e. the Information Systems Audit and Control Association (ISACA). ISACA is involved with the development, adoption and use of globally accepted, industry-leading knowledge and practices for information systems. Students are required to present such certification to the Namibia University of Science and Technology for approval in order to ensure that alignment is at NQF Level 4, or above, and that it represents a minimum of 150 notional hours of learning.

### CURRICULUM

Course Code	Course Title	Prerequisites	NQF Level	NQF Credits
AIS822S	Accounting Information Systems	None	8	15
ISA822S	Information Systems Audit and Control	None	8	15
PGP811S	Industry Project	None	8	15
PGC411S	Industry Certification	None	Minimum Level 4	Minimum 15

### Credit Recognition and Transfer Arrangements

Transfer of credits will be dealt with in accordance with the University's regulations on Recognition of Prior Learning. These provide for course-by-course credits as well as credit transfer by volume under certain academic conditions. Maximum credit that can be granted is 50 % of the credits for a qualification.

Students who commenced a Bachelor of Information Technology Honours in Business Computing, but discontinued their studies, may utilise academic courses passed for credit recognition in the Post Graduate Certificate in Business Computing (Information Systems Audit).

Conversely, students who passed academic courses as part of this programme may utilise these for credit recognition, if wishing ultimately, to undertake the Bachelor of Information Technology Honours in Business Computing.

In addition, students who passed certain courses in the old Bachelor of Technology in Business Computing programme may be granted credit for such courses as follows:

B. Tech.: Business Computing (Old)		PGC: Business Computing (Information Systems Audit) [New]	
Old Courses		New Courses	
Code	Course Name	Code	Course Name
AIS410S	Accounting Information Systems	AIS811S	Accounting Information Systems
ISA410S	Information Systems Audit	ISA811S	Information Systems Audit and Control

### Arrangements for Industrial Certification Courses and Industry Projects

A student may undertake industry certification offered through ISACA. Such certification must be approved by the Namibia University of Science and Technology as being adjudged to be at NQF Level 4 or above with a minimum of 150 notional hours of learning. The certification should be valid, i.e. not older than three years. Any additional

expenses incurred by the student to obtain industry certification (e.g. professional entrance/examination fees) must be borne by the student.

To be awarded a Post Graduate Certificate in Business Computing (Information Systems Audit), the student must undertake an industry project. This project must be agreed between the industry partner, student, the Head of Department (HOD) of Business Computing, the student's academic supervisor, and the Departmental Coordinator for Work Integrated Learning. The project should involve at least 150 hours of learner effort and should represent a substantive exercise in the area of specialisation. The deliverable shall be a final report which contains recommendations for improvement or making more cost-effective uses of IT or information systems within the employer's organisation, focused on Information Systems Audits and Control.



**BACHELOR OF INFORMATICS HONOURS (WEB INFORMATICS)**  
**BACHELOR OF INFORMATICS HONOURS (BUSINESS INFORMATICS)**

**08BIFH**  
**08BIHB**

**NQF Level: 8**

**NQF Credits: 120**

**NQF Qualification ID: Q0508**

### **Description**

The Bachelor of Informatics Honours is a postgraduate specialisation degree that aims at consolidating and deepening the knowledge and skills of students in the main cognate area of learning, as well as developing their capacity to conduct supervised research of an applied nature. The programme is purposefully designed to expose students to advanced concepts, theories, tools, and methods of Informatics. In this context, specific emphasis is placed on internationally accepted general standards and practices, as well as key attributes that would enable graduates to assume supervisory/middle management and applied research positions in the Computing industry, academia, and in the public sector in general.

The curriculum is structured to facilitate specialisation in the areas of Web Informatics and Business Informatics.

### **Admission Requirements**

Applicants may be considered for admission to this programme if they have a Bachelor's degree in Informatics, or a Bachelor of Information Technology in Business Computing from the Namibia University of Science and Technology, or an equivalent qualification at NQF Level 7 from a recognised institution, worth at least 360 credits.

Applicants are required to submit the following documents with their applications:

- A professional resume, highlighting practical and professional Computing and IT experience, if applicable;
- A written proposal/motivation for undertaking further studies;
- A transcript of the undergraduate study.

### **Articulation Arrangements**

Transfer of credits will be dealt with according to the University's regulations on Recognition of Prior Learning. These provide for course-by-course credits as well as credit transfer by volume under certain academic conditions. Maximum credit that can be granted is 50 % of the credits for a qualification.

Upon successful completion of the Bachelor of Informatics Honours, students will ordinarily be able to pursue further studies in the same, or a related cognate area of learning, at NQF Level 9.

## **CURRICULUM**

### **Year 1**

#### **Semester 1**

<b>Course Code</b>	<b>Course Title</b>	<b>Prerequisite</b>
RIT812S	Research Methodology	None
EAT810S	Enterprise Architecture	None

#### **PLUS one of the following Strands depending on Specialisation: (Register ALL courses from the strand selected)**

##### *WEB INFORMATICS STRAND*

GDM810S	Graphics Design and Digital Media	None
BWM810S	Business Web and Marketing	None

##### *BUSINESS INFORMATICS STRAND*

BIN811S	Business Intelligence	None
ILM812S	IT in Logistics Management	None



HRP810S	Honours Research Project	MTH820S	Mini-thesis
SM811S	Soft Skills for IT Management		None
PMS811S	Practical Management Information Systems		None
SAM810S	Simulation and Modeling		Simulation of Networks
BIN810S	Business Intelligence	BIN811S	Business Intelligence
ILM811S	IT in Logistics Management	ILM812S	IT in Logistics Management
AIA811S	Artificial Intelligence Applications		None
APM810S	Advanced Process Management		None
AIS811S	Accounting Information Systems	AIS822S	Accounting Information Systems
MAD810S	Mobile Application Development	MAI821S	Mobile Applications in Informatics
ISA811S	Information Systems audit & Control	ISA822S	Information Systems Audit

**Table 2: Corresponding Courses to be done (if failed) - this is not a credit table!**

<b>Bachelor of Information Technology Honours in Business Computing (Old Courses)</b>		<b>Bachelor of Informatics Honours (Corresponding New/Revised Courses to be done, if failed)</b>	
<b>Course Code</b>	<b>Course Name</b>	<b>Course Code</b>	<b>Course Name</b>
RIT811S	Research Methodology (IT)	RIT812S	Research Methodology
HRP810S	Honours Research Project	MTH820S	Mini-thesis
SAM810S	Simulation and Modelling	SON820S	Simulation of Networks
BIN810S	Business Intelligence	BIN811S	Business Intelligence
ILM811S	IT in Logistics Management	ILM812S	IT in Logistics Management
AIS811S	Accounting Information Systems	AIS822S	Accounting Information Systems
MAD810S	Mobile Application Development	MAI821S	Mobile Applications in Informatics
ISA811S	Information Systems audit & Control	ISA822S	Information Systems Audit

**MASTER OF INFORMATICS  
(with specialisation in Web Informatics and Business Informatics)**

**09MINF**

**NQF Level: 9**

**NQF Credits: 240**

**NQF Registration ID: Q0506**

**Description**

The Master of Informatics programme is of interdisciplinary nature and aims at students interested in, and adequately qualified and motivated, for graduate education to become scientific researchers in various fields of study related to Informatics. In this context, Informatics is defined as the study of the structure and behaviour of natural and artificial systems that generate, process, store, and communicate information. Informatics also includes the study of the cognitive, social, legal, and economic impact of such information systems.

The programme will enable students to deepen their knowledge of a particular Informatics discipline for application, research and/or management purposes. Possible fields of specialisation include Web Informatics and Business Informatics. The precise focus of the research will be determined through dialogue between the candidate and supervising staff, and will fall within the scope of the approved research clusters of the Faculty of Computing and Informatics.

Students will develop a thorough understanding of relevant methodological approaches, and develop competence in the application of qualitative and quantitative research methods through participation in research projects under supervision of experienced staff members. The development of research competence has prime priority in the context of this programme. Students are required to design, undertake and report on research where Informatics is the research focus and apply techniques and/or deal with a specific application problem connected with the field of interest.

**Admission Requirements**

Applicants who hold qualifications from recognised institutions at NQF level 8, or equivalent, in disciplines related to Informatics may be considered for admission to this programme. Applicants need to provide evidence of having conducted supervised research and may be required to make-up specific deficiencies in coursework at the discretion of the Postgraduate Studies Committee. In addition, applicants may be required to attend a pre-selection interview and/or test at the discretion of the department.

Applicants from other institutions must submit detailed information on all courses in their previous qualifications, as well as contact details of three referees. The latter also applies to applicants who have been working in the field subsequent to obtaining their previous qualifications.

Registration prior to the approval of a research proposal is provisional and will be made official only when the proposal is approved by the Postgraduate Studies Committee. These procedures will be fully explained to each prospective student during his or her personal interview.

**Assessment Strategies**

Students are required to submit a research proposal six months after registration for approval by the Postgraduate Studies Committee. It is compulsory that students attend regular research methodology seminars until successful defense and approval of the research proposal. Students are required to present work-in-progress every every six months during research seminars for monitoring and assessment purposes. Students who fail the initial assessment of the research proposal will receive an extension of six months for re-approval.

In compliance with the general requirements of Senate, students are required to submit a thesis for evaluation, which should comply with international academic standards. The thesis requires students to work independently and to investigate their own individual research topic. Students are required to cultivate a professional work ethic to deliver the combination of research, analysis, communication and presentation demanded by their thesis. The thesis will be assessed in accordance with the rules for studies at postgraduate level.

Students will present and defend their thesis before an appropriate constituted committee in accordance with the rules for postgraduate studies at the University. The thesis will be returned to students for correction before final binding and archiving. Final marks will only be released after correction of the thesis.

**Transition Arrangements**

The structured/taught Master of Information Technology (MIT) programme will be phased out systematically until 2016 with no disruption to existing students' learning progression. The last intake for the MIT (09MIFT) was in 2013. The Master of Informatics will take effect from January 2014.

**DOCTOR OF PHILOSOPHY IN INFORMATICS  
(with specialisation in Web Informatics and Business Informatics)**

**10PDIN**

**NQF Level: 10**

**NQF Credits: 360**

**NQF Registration ID: Q0507**

**Description**

The PhD in Informatics was conceptualised against the back-drop of the above imperatives in order to train scientific researchers in various fields of study related to Informatics (e.g. Business Informatics and Web Informatics). Students will develop a thorough understanding of relevant methodological approaches, and develop competence in the application of qualitative, design, mixed-mode and quantitative research methodologies through participation in research projects under supervision of experienced staff members. The precise focus of the research will be determined through dialogue between the candidate and supervising staff, and will fall within the scope of the approved research clusters of the Faculty of Computing and Informatics.

The development of research competence has prime priority in the context of this PhD programme. Students are required to investigate, design, and conduct independent research, where Informatics is the research focus, apply advanced methods and techniques and/or deal with a sophisticated application problem connected with the topic of interest. The research output, in the form of a thesis, must contribute meaningfully and substantially to the existing body of knowledge in the field/area of specialisation through comprehension, application, analysis, synthesis and evaluation of existing knowledge.

**Admission Requirements**

Applicants who hold qualifications from recognised institutions at NQF level 9, or equivalent, in Informatics or related cognate areas, may be considered for admission to this programme. Applicants need to provide evidence of having conducted supervised research at this level. In addition, applicants may be required to attend a pre-selection interview at the discretion of the department. The final selection and admission of candidates will be approved by the Postgraduate Studies Committee.

Registration prior to the approval of a research proposal is provisional and will be made official only when the proposal is approved by the Postgraduate Studies Committee. These procedures will be fully explained to each prospective student during his or her personal interview.

**Articulation Arrangements**

The PhD in Informatics is a terminal qualification hence articulation arrangements are not applicable.

**Assessment Strategies**

Students are required to submit a research proposal six months after registration for approval by the Postgraduate Studies Committee. It is compulsory that students attend regular research methodology seminars until successful defense and approval of the research proposal. Students are required to present work-in-progress report every six months during research seminars for monitoring and assessment purposes. Students who fail the initial assessment of the research proposal will receive an extension of six months for re-approval.

In compliance with the general requirements of Senate, students are required to submit a thesis for evaluation, which should comply with international academic standards. The thesis requires students to work independently and to investigate their own individual research topic. Students are required to cultivate a professional work ethic to deliver the combination of research, analysis, communication and presentation demanded by their thesis. The thesis will be assessed in accordance with the rules for studies at postgraduate level.

Students will present and defend their thesis before an appropriate constituted committee in accordance with the rules for postgraduate studies at the University of Science and Technology. The thesis will be returned to students for correction before final binding and archiving. Final marks will only be released after correction of the thesis.

Any other special arrangements on assessments will be done in accordance with the University's rules and procedures for postgraduate, namely PhD studies.

**Quality Assurance Arrangements**

The final assessment of the thesis will be done by qualified academics and practitioners with Doctoral Degrees. The examiners must be knowledgeable and respected individuals in the field with experience in assessment of postgraduate scientific reports or theses, and will be appointed by Senate upon recommendation of the Postgraduate Studies Committee.

**Transition Arrangements**

This is a new programme and transition arrangements are, therefore, not applicable.