| ***SECTION A:*** | ***QUALIFICATION DETAILS*** | | | | |
|---|---|---|---|---|---|
| ***QUALIFICATION DEVELOPER (S)*** | UNIVERSITY OF BOTSWANA | | | | |
| ***TITLE*** | *BACHELOR OF BUSINESS (INFORMATION SYSTEMS)* | | | ***NCQF LEVEL*** | *7* |
| ***FIELD*** | Information and Communication Technology | ***SUB-FIELD*** | *INFORMATION SYSTEMS* | ***CREDIT VALUE*** | *496* |
| *New Qualification* | ✓ | *Review of Existing Qualification* | | | |
| ***SUB-FRAMEWORK*** | *General Education* | | *TVET* | | *Higher Education* ✓ |
| ***QUALIFICATION TYPE*** | *Certificate* | *I* | *II* | *III* | *IV* | *V* | *Diploma* | *Bachelor* ✓ |
| | *Bachelor Honours* | | *Post Graduate Certificate* | | *Post Graduate Diploma* | |
| | *Masters* | | *Doctorate/ PhD* | | | |

## *RATIONALE AND PURPOSE OF THE QUALIFICATION*

***RATIONALE:***

Strategic development of essential skills is pertinent in achieving the national vision of Botswana, VISION 2036, especially pillar 1 and 2 which address Sustainable Economic Development and Human and Social Development (Human Resource Development Council, 2015). The Botswana Education and Training Sector Strategic Plan (ETSSP 2015-2022) advocates for efforts to achieve a knowledge-based economy.

Also, Included in the 2016 HRDC report on the top occupations in demand are the following: Database Designers and Administrators 2511 Systems Analysts; ICT Sales Professionals; Software Developers; Web and Multimedia Developers; Data Centre Managers; Systems Administrators; ICT Security Managers; IT Service Managers; Applications Programmers. Furthermore, as a nation we aspire to "leverage leading information communication technology (ICT) as a key contributor to economic growth and employment whilst also enabling an efficient private and public section" (Vision 2036, pp. 16). This degree programme seeks to addresses these demands and aspirations by producing graduates who grounded in the both business studies and ICT, and are therefore able to use ICT to solve challenges that business problems, as well as take advantage of opportunities

in the internal and external business environment. To achieve this, the programme offers a balanced menu of courses from the business and organizational studies (Accounting, Marketing, Psychology) as well as appropriate ICT courses (Database Design, Programming etc.). These labour and social needs are also informed by national priorities as outlined in the VISION 2036, National Development Plan (NDP 11) and long-term strategies of the different sectors of the economy (Human Resource Development Council, 2015).

***PURPOSE:***

The purpose of this qualification is to produce a graduate with competencies in Information Systems development, web design, programming, network administration etc. The qualification aims to provide qualifying students with a broad knowledge base and a wide range of skills to have the capacity and ability to understand the impact and use of information technology to provide innovative business solutions to organizations. More specifically the qualification seeks to ;

- To provide students with the analytical and conceptual skills necessary to understand the nature and dynamics of a changing technological and business world.
- To provide students with the tools to work solutions to specific social problems in local, national and global contexts
- To consolidate a thorough foundation in both systems development and acquisition together with the SDLC process required to achieve the above.
- To provide the student with the ability to gather the system requirements and be able to design, plan, and implement a solution based on a client's requirements.
- To introduce the student to a broad range of disciplinary perspectives and substantive areas in Business and Information Systems.
- To allow students to specialize in a particular substantive area within Information Systems.
- To enhance the knowledge, skills, capacity and marketability of the student to enter the labor market or to continue with further academic studies.

***ENTRY REQUIREMENTS (including access and inclusion)***

- Certificate IV (NCQF level 4), Botswana General Certificate of Secondary Education with a minimum of 36 points or equivalent. All candidates for admission must have a minimum of credit in English Language and Mathematics.
- There is provision for Recognition of Prior Learning (RPL) and Credit Accumulation and Transfer (CAT) in accordance with institutional Policies in line with National Policies.

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| ***SECTION B*** | ***QUALIFICATION SPECIFICATION*** |
|---|---|
| ***GRADUATE PROFILE (LEARNING OUTCOMES)*** | ***ASSESSMENT CRITERIA*** |
| LO 1.0 Demonstrate specialised knowledge and analytical skills required in the application of information systems to support organizations in the conduct of their business. | 1.1 Demonstrate knowledge of Value Creation by identifying opportunities to create value for business and society.<br>1.2 Demonstrate knowledge and understanding of Innovation by exploiting possibilities offered by the emerging technologies and market trends.<br>1.3 Show understanding of synthesizing knowledge across domains Information Systems areas of concentration.<br>1.4 Describe application of Information Systems solutions to solve business problems.<br>1.5 Demonstrate knowledge of building applications through harnessing computing and information technologies and systems. |
| LO 2.0 Examine the technological and organizational issues impacting on the design and implementation of business solutions requirements. | 2.1 Describe core business processes and understand how these processes are implemented in IS.<br>2.2 Understanding the risks and key issues in implementing IS in businesses<br>2.3 Describe some of the best practices in e-Business that are currently available to managers<br>2.4 Understand the process of developing information systems and the SDLC<br>2.5 Describe the key components of Enterprise Information Systems such as Enterprise Resource Planning, Customer Relationship Management, Supplier Relationship Management and Business Intelligence. |
| LO 3.0 Demonstrate possession of analytical, logical and critical thinking abilities necessary to analyze the requirements of various business users and to design, develop and implement appropriate and effective information systems solution. | 3.1. Deduce the feasibility of a proposed information systems project<br>3.2. Apply information-gathering techniques towards the documentation of requirements for an information system solution<br>3.3. Develop Use Case Diagrams for new, modified systems<br>3.4. Develop Class Diagrams and Interaction Diagrams<br>3.5. Deduce the process of developing information |

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| | systems using the System Development Life Cycle(SDLC)<br>3.6. Adopt Use Case tools to draw systems design diagrams<br>3.7. Distinguish between structured design methodologies and modelling techniques<br>3.8. Design user interface, database, and security features of a proposed system<br>3.9. Advice on systems acquisition, implementation and testing of an IS project.<br>3.10. Produce system documentation and Carry out a Systems Review. |
| LO 4.0 Demonstrate skills for managing relationships with technology providers, business units and customer requirements. | 4.1 Understand what you want to achieve and what it will take to achieve that, build strong relationships with stakeholders<br>4.2 Identify issues and have an open mind to address them as and when they arise<br>4.3 Evaluate mutually satisfying goals between organization and customers such as wants and needs of both parties |
| LO 5.0 Show ability to assist in planning, implementing and monitoring long-range information systems for businesses. | 5.1 Conceptualize the need for monitoring long term IS<br>4.4 Communicate clearly the reasons for planning to monitor long range Information systems<br>1.5 Design a strategic plan to monitor a long range IS business.<br>1.6 Develop a long term IS monitoring plan<br>1.7 Implement the long term IS monitoring plan for the business<br>1.8 Document the findings of the monitoring plan<br>Review the monitoring plan |
| LO 6.0 Demonstrate knowledge and understanding of computer operating systems and applications in the manipulation of controls and performance of information management tasks | 6.1 Use computer applications to perform information and knowledge management functions<br>6.2 Monitor information about the computer |

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| | 6.3 Install, maintain, update and uninstall Applications<br>6.4 Use User account control for security<br>6.5 Carry out troubleshooting to solve minor computer problems. |
| LO 7.0 Use ICTs to perform day to day information and knowledge management functions within the work environment. | 7.1 Use computers effectively on a day-to-day basis to perform specific information and knowledge management tasks.<br>7.2 Research, access and retrieve and archive information using ICT.<br>7.3 Gather, analyse, synthesize, organise and present data and information using ICT<br>7.4 Organize and manipulate files and folders and work with desktop settings.<br>7.5 Work with word processors like Microsoft Office Word and notepad.<br>7.6 Create spreadsheets using applications like Microsoft Office Excel.<br>7.7 Use presentation software like Microsoft Office PowerPoint to create presentations.<br>7.8 Use the Internet and other information resources to meet information needs and manage information. |
| LO 8.0 Design and implement dynamic Information Systems in heterogeneous environments. | 8.1 Apply Basic Database Concepts to design and develop databases<br>8.2 Create database using applications like Microsoft Office Access, Microsoft SQL Server, MySQL to create databases<br>8.3 Apply Normalization to Database Design<br>8.4 Use SQL For Data Manipulation and Administration |
| LO 9.0 Design and develop IT solutions to address problems associated with Information and Knowledge Management | 9.1 Identify problems or limitations of existing solution, theory, model, technique, architecture or system<br>9.2 Develop or improve a theory, solution, model, technique, architecture or system to address an identified need.<br>9.3 Explore alternative solutions to a problem and identify the most appropriate option, taking into account cost implications, performance and applicability of the solution<br>9.4. Identify factors influencing cost, performance or applicability of a solution. |

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| | 9.5 Analyse tradeoffs associated with the chosen solution<br>9.6 Produce a prototype or model to test and confirm the viability of the proposed solution. |
| LO 10.0 Apply knowledge and understanding of concepts and principles of project management planning to develop and implement project plans to achieve set goals and objectives. | 10.1 Articulate theories, concepts and principles associated with project management.<br>10.2 Identify factors influencing project management<br>10.3 Use the Network Plan approach or Work package planning method to plan projects<br>10.4 Use available Software packages to build and analyze Network Plans<br>10.5 Create Programme Evaluation and Review Technique (PERT) chart or Critical Path Method (CPM) chart.<br>10.6 Develop a project plan detailing the main tasks and sub tasks to be carried out, completion dates, people responsible and resources needed from other departments or organizations.<br>10.7 Construct bar chart or Gantt chart to illustrate the development of a project with time<br>10.8 Audit a project management plan to ascertain feasibility in relation to the proposed time frame and resources availability.<br>10.9 Implement project control mechanisms to ensure adherence to proposed schedule and mitigate challenges, if any.<br>10.10 Produce a work package variance reports |
| LO 11.0 Carry out research and have strong foundation for postgraduate research in information and knowledge management. | 11.1 Formulate research problem<br>11.2 Select and refine a research problem<br>11.3 Assemble a theoretical base appropriate to the topic involving a critical analysis of literature and proper use of citation within arguments.<br>11.4 Select appropriate research methods and associated research design<br>11.5 Apply analytical, critical and creative thinking skills |

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| | to solve problems.<br>11.6 Draw appropriate inferences and conclusions<br>11.7 Produce a substantial report giving an honest account of research undertaken<br>11.8 Disseminate research findings to expert and non-expert audience |
| LO 12.0 Develop a Program using an interpreted Language such as Python 3 | 12.1 Demonstrate understanding of problems to be solved by developed programs by writing down lists of requirements or sketching diagrams to identify any potential errors or missing information.<br>12.2 Use Python 3 syntax to write code that is procedural, object-oriented or functional.<br>12.3 Develop algorithms which outline finite, unambiguous, effective series of steps which terminate.<br>12.4 Show evidence of algorithm analysis by conducting time complexity and space complexity comparisons<br>12.5 Write text-only programs which have a command-line interface (CLI)<br>12.6 Save Python files appropriately using the suffix.py<br>12.7 Use IDLE or any other integrated development environment (IDEs) to lookup documentation, inspect objects, compile and run the code<br>12.8 Use python language syntax and punctuations appropriately<br>12.9 Use rules appropriately when forming identifiers<br>12.10 Show consistency in naming conventions<br>12.11 Define variables appropriately<br>12.12Use global variables and local variables appropriately |

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| | 12.13 Use flow of control and selection control statements appropriately<br>12.14 Create programs with a graphical user interface or GUI using tinker |
| LO 13.0 Demonstrate knowledge and understanding of the concept of risk management as it pertains to information and Knowledge Management | 13.1 Demonstrate an understanding of the importance of information security in organisations.<br>13.2 Identify vulnerabilities and potential risks to data and information and develop and implement appropriate risk management strategies<br>13.3 Identify key elements and functions of an information security program.<br>13.4 Develop and implement Data Loss Prevention and risk treatment strategies in accordance with ACAT and ISO 31000 standards<br>13.5 Apply the Confidentiality, integrity and availability (CIA) model to inform formulation of policies on Information Security. |
| LO 14.0 Communicate with clients, colleagues and others using appropriate methods and techniques. | 14.1 Use written, verbal and non-verbal communication appropriate to the audience<br>14.2 Use existing ICTs to source information to meet information needs<br>14.3 Interpret and follow stipulated instructions or requirements<br>14.4 Ask questions to establish and confirm requirements.<br>14.5 Apply information acquired in the performance of tasks or discussions with other people.<br>14.6 Communicate and collaborate locally and globally using ICT in accordance with established codes of practice.<br>14.7 Organise and synthesize information using ICT.<br>14.8 Present information in a variety of formats using ICT. |
| LO 15.0 Demonstrate capabilities of working in teams and appreciate other people's culture. | 15.1 Work with people from diverse social, cultural and ethnic backgrounds and with varying abilities and needs<br>15.2 Demonstrate tolerance to other view points<br>15.3 Participate actively in discussions and meetings<br>15.4 Provide assistance and encouragement to other |

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| | team members<br>15.5 Identify and utilize the strengths of team members to enhance own knowledge and performance.<br>15.6 Initiate and encourage improvements in team performance<br>15.7 Coordinate actions and tasks to support and promote work outputs.<br>15.8 Manage conflicts. |
| LO 16.0 Generate entrepreneurial initiatives. | 16.1 Identify user needs<br>16.2 Identify windows of business opportunities<br>16.3 Draw up a business plan<br>16.4 Create information products and marketing plans |

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| ***SECTION C*** | ***QUALIFICATION STRUCTURE*** | | | | |
|---|---|---|---|---|---|
| ***COMPONENT*** | ***TITLE*** | ***Credits Per Relevant NCQF Level*** | | | ***Total*** ***(Per** Subject/ Course/ Module/ Units)* |
| | | ***Level [ ]*** | ***Level [ ]*** | ***Level [ ]*** | |
| ***FUNDAMENTAL COMPONENT*** *Subjects/ Courses/ Modules/Units* | Information Systems Foundation I | | 6 | | ***10*** |
| | Communication and Academic Literacy Skills | 5 | | | ***8*** |
| | Basic Microeconomics | 5 | | | ***8*** |
| | Principles of Management | 5 | | | ***8*** |
| | Introduction to Psychology | 5 | | | ***8*** |
| | Mathematics for Business and Social Sciences I | | 6 | | ***10*** |
| | Information Systems Foundation II | 5 | | | ***8*** |
| | Introduction to Programming | | 6 | | ***10*** |
| | Professional Communication (Business) | *5* | | | ***8*** |
| | Introduction to Accounting | | 6 | | ***10*** |
| | Mathematics for Business and Social Sciences II | | | ***7*** | ***12*** |

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| | Business Statistics I | | | 7 | ***12*** |
| ***CORE COMPONENT***<br>*Subjects/Courses/ Modules/Units* | Intermediate Programming | | | 7 | ***12*** |
| | Data & Information. Management I | | | 7 | **12** |
| | Foundations of Business Law | | | 7 | **12** |
| | Quantitative Methods | | | 7 | **12** |
| | Business Finance | | | 7 | **12** |
| | Information Technology Tools and Productivity | | | 7 | **12** |
| | Advanced Programming | | | 7 | ***12*** |
| | Basic Macroeconomics | | | 7 | ***12*** |
| | Principles of Marketing | | | 7 | ***12*** |
| | Introduction to Systems Architecture | | | 7 | **12** |
| | Introduction to Systems Architecture | | | 7 | **12** |
| | Data and information Management II | | | 7 | **12** |
| | Information Systems Analysis | | | 7 | **12** |
| | Network Management | | | 7 | **12** |
| | Decision Support Systems | | | 7 | ***12*** |
| | Business Web Application | | | 7 | **12** |

| | | | | | |
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| | Development I | | | | |
| | Information Systems Design & Implementation | | | 7 | **12** |
| | Systems Administration | | | 7 | **12** |
| | Information Systems Security | | | 7 | **12** |
| | Business Enterprise Information Systems | | | 7 | **12** |
| | Information Systems Research | | | 7 | **12** |
| | Information Systems Project Management | | | 7 | **12** |
| | Industrial Attachment | | | 7 | **12** |
| | Strategic Information Systems Management | | | 7 | **12** |
| | Information Systems and Society | | | 7 | **12** |
| | Business Systems Project | | | 7 | **16** |
| ***ELECTIVE/ OPTIONAL COMPONENT***<br>*Subjects/Courses/ Modules/Units*<br>From the pool of elective courses the learner is supposed to | Marketing Information Systems | | | 7 | ***12*** |
| | Accounting Information Systems | | | 7 | **12** |
| | Electronic Business | | | 7 | ***12*** |
| | Information Systems Auditing | | | 7 | ***12*** |

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| choose 3 courses from itemised courses offered by the Department of Accounting and other 2 courses from outside the department or vice versa. | Business Web Applications Development II | | | 7 | ***12*** |
| | Business Enterprise Information Systems | | | 7 | ***12*** |
| | Advanced Business Programming | | | *7* | ***12*** |
| | Advanced Databases | | | *7* | ***12*** |
| | Information Technology in Forensic Accounting | | | *7* | ***12*** |
| | Business Intelligence and Data Analytics | | | *7* | ***12*** |
| | Introduction to Supply Chain Management | | | 7 | ***12*** |
| | Elective 1 | | *6* | | ***10*** |
| | Elective 2 | | *6* | | ***10*** |

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| ***SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL*** | |
|---|---|
| ***TOTAL CREDITS PER NCQF LEVEL*** | |
| ***NCQF Level*** | ***Credit Value*** |
| 5 | 48 |
| 6 | 60 |
| 7 | 388 |
| ***TOTAL CREDITS*** | **496** |

***Rules of Combination:***

***(Please Indicate combinations for the different constituent components of the qualification)***

The rules of combination for this qualification will be fundamentals, core and elective courses as follows:

| | |
|---|---|
| Fundamental courses | 112 |
| Core courses | 316 |
| Optional/Elective courses | 68 |
| Total | 496 |

From the pool of optional courses the learner is supposed to choose 4 courses from itemised courses offered by the Faculty of Business and other 2 courses from outside the faculty as Electives.

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| ***ASSESSMENT ARRANGEMENTS*** |
|---|
| Both formative and summative assessments will be used with the latter being higher than the former. |
| ***MODERATION ARRANGEMENTS*** |
| Both internal and external moderation will be conducted in accordance with applicable policies and regulations and this will be carried out by BQA registered and accredited Moderators. |
| ***RECOGNITION OF PRIOR LEARNING*** |
| Recognition of prior learning is applicable for this qualification. |
| ***CREDIT ACCUMULATION AND TRANSFER*** |
| Credit accumulation and transfer is applicable for this qualification. |
| ***PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)*** |

*1.* ***Horizontal Articulation*** (related qualifications of similar level that graduates may consider)

- Bachelor of Computer Information Systems
- Bachelor of Information Systems (Information Management)
- Bachelor of Information and Knowledge Management
- Bachelor of Information Systems (Business or Computer Science)

*2.* ***Vertical Articulation*** (qualifications to which the holder may progress to)

Qualifiers of Bachelor of Business (Information Systems) can progress academically and/or professionally to:

- Master's in Business Administration,
- Master of Science in Computer Information Systems,
- Masters in Executive Entrepreneurship
- Masters in Library and Information Studies
- Masters in Archives and Records Management
- MPhil in Information Technology
- Masters of Advanced Networking

**3. *Employment***

Qualifiers of Bachelor of Business (Information Systems) can secure employment in Commerce and Industry, Public Practice, Government and non-profit organisations as

- Certified Information Systems Auditor
- Business Information Systems Security Specialist
- Information Officers
- Information Management officers
- IT Support
- Teaching assistants in Information Management and Information Technology
- Database Designers and Administrators
- Data Centre Managers
- Systems Administrators
- Systems Analysts
- Science and Technology Research Assistants
- Web and Multimedia Developers

## *QUALIFICATION AWARD AND CERTIFICATION*

- To be awarded the Bachelor of Business (Information Systems) degree, a candidate is required to achieve a minimum of 496 credits.
- Candidates meeting prescribed requirements will be issued with the Bachelor of Business (Information Systems) degree and official transcripts.

## *REGIONAL AND INTERNATIONAL COMPARABILITY*

In developing the Bachelor of Business (Information Systems) degree qualification we benchmarked with the following regional and international qualifications:

University of Cork Business School offers an Honours Bachelor Degree in Business Information Systems at level 8 NQF, with 6 months internship. This is a 4 year program and the students do more Accounting & Finance courses until fourth year which is similar to our program. The graduates of this course show competence in a wide range of information technologies including problem solving through design and development of innovative information systems. They also have to demonstrating analytical and problem solving skills associated with effective practice as well as professional effective communication.

Regionally, University of Cape Town offers a similar program titled Bachelor of Commerce (Information Systems), this is a four program though not all the details were available on the program description. The graduates are expected to read, critically understand and integrate technical, organisational, management and behavioural data and reports relevant to the field of IS. They are also required to evaluate the commercial, social and other implications of IS developments, policies and actions. Amongst these, the graduate are expected to appreciate the significance of IS-related data, reports and analyses to the

maintenance of the ethics and values of communities, individual and professional associations, so as to be competent to verbally present and demonstrate computer systems and user requirements to meetings, as required in the IS industry, Lastly the graduates are expected to use information technology and applied problem-solving skills to analyse users' IS requirements, design solutions to these, and write appropriate programmes; thus producing systems, user and project documentation suitable for system operation and maintenance.

Auckland University of Technology offers Bachelor of Business-Business Information Systems in their faculty of Business in the Department of Law and Economics; the program has 360 credits at Level 7, the assumption is that their graduates had done A-levels. This is a three year program with one semester internship and it has similar options as our programs. Upon completion of the program the graduates are expected to Design, develop and implement an information system which meets specified user requirements. They are also expected to collect, analyse, organise and critically evaluate information through identifying and specifying user requirements for a business information system.

Other qualifications offered in countries such as United Kingdom, Australia and Other South African Universities generally emphasize development of competencies in research on economic and market trends, trade and investments, labour market observatory, international trade and emphasis on industrial attachments which can go up to 1 year. Although the qualifications examined generally follow similar structures and standards, there are minor differences in that the modules are not offered at identical levels of the degree and that module credits are not the same from different universities, some universities are offering three year programs while others are offering four year program like this BIS program.

The proposed qualification has, therefore, been benchmarked against information systems and information management awards. The qualification, generally, compares well with all the qualifications studied since the exit outcomes cover similar scope and depth and are aligned to exit-level descriptors typical of this level and type of qualification as well as competencies required for registration and accreditation with professional bodies such as ISACA, Botswana IT Society and College and University Professional Association for Human Resources CUPA-HR.

**Comparability and articulation of the proposed qualification with the ones examined**

The Bachelor of Information Systems qualification generally compares well with the three qualifications studied in terms of content, scope, learning hours and exit outcomes. All qualifications horizontally articulate to Master's degree and/or professional qualifications.

***REVIEW PERIOD***

The qualification will be reviewed after every five years.

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