QUALIFICATION SPECIFICATION SECTION A								
QUALIFICATION DEVELOPER	Botswana University of Agriculture and Natural Resources							
TITLE	Master of Science in Integrated Land Use Planning					**NCQF LEVEL**	9	
FIELD	Agriculture and Nature Conservation		**SUB-FIELD**			Land Use Planning		
New qualification	√	Review of existing qualification						
SUB-FRAMEWORK	General Education		TVET			Higher Education	√	
QUALIFICATION TYPE	Certificate		Diploma			Bachelor		
	Bachelor Honours		Master	√		Doctor		
CREDIT VALUE	240							

RATIONALE AND PURPOSE OF THE QUALIFICATION

Rationale

The recent HRDC Plan report (HRDC, 2019) has identified skills in high demand at MSc level in the country for Architects, Planners, Surveyors and Designers. The Report forecasts a shortfall of 230 - 324 skilled personnel per year for this group during the period 2019 - 2028. The Needs Assessment Survey carried out by the Department of Agricultural and Biosystems Engineering (of BUAN) in June-August 2018 across Botswana showed that the Land Use Planning skill was favored by 30% of the stakeholders (AEL, 2018). Similar situation has been found across African continent where number of registered planners is between 1-3 per 100,000 people which is far below compared to developed world where this number varies from 10-40 per 100,000 inhabitants (UN HABITAT, 2012, 2020). This makes a strong case that in Botswana, Masters in LUP should also cater for a minimum of 15-20% of international enrolments, in order to contribute to continental and regional shortage, and to diversify Education and Training Providers (ETP's) income generation pathways.

The National Development Plan 11 has also identified the lack of qualified personnel in Land use Planning, as being one of the bottlenecks to the implementation of agricultural policies and development projects (Republic of Botswana, 2016). These plans have also identified planned land use as being an area essential for improving agricultural production.

This demand can be met, in planned phases, through MSc (Integrated Land Use Planning) training.

Purpose

The purpose of the qualification is to develop human resources with in-depth knowledge and skills in Integrated Land Use Planning and Management. The MSc (Integrated Land Use Planning) is specifically designed to equip graduates with ability to:

1. Demonstrate in-depth knowledge of Land Resources Systems and Conditions.
2. Demonstrate in-depth knowledge in Land Evaluation Analyses and Modelling.
3. Demonstrate in-depth knowledge in preparation of Integrated Land Use Plans.
4. Demonstrate in-depth professional skills in managing Land Use Planning Projects.
5. Demonstrate in depth-knowledge of the research methodology for preparation of master theses.
6. Demonstrate in depth-knowledge of land laws, policies, standards, land and natural resources economics.
7. Apply in-depth knowledge of advanced Geoinformation Technologies.
8. Demonstrate in-depth knowledge of soil, water and land use planning in Semi-Arid Environment Climate change conditions.

ENTRY REQUIREMENTS (including access and inclusion)

The qualifying learners that will be admitted into the qualification must possess at least one of the following prior learning qualifications:

Bachelor's Degree (NCQF Level 7) in a related fields such as agriculture, soil science, forestry, mining, geology, hydrology, geography, environmental science, urban and regional planning, GIS and remote sensing, surveying, landscape architecture, information science, economics, real estate, law, civil engineering, meteorology, botany, zoology, archaeology, transportation planning and engineering, etc.

Or

There is provision for entry through RPL and CAT in line with institutional and national policies.

QUALIFICATION SPECIFICATION

SECTION B

GRADUATE PROFILE (LEARNING OUTCOMES)	ASSESSMENT CRITERIA
1 Demonstrate in-depth knowledge of Land Resources Systems and Conditions	1.1 Review the Physiographic Framework of Africa and Botswana semi-arid Environment 1.2 Describe the Land and Natural Resources form and function in land use planning (understanding natural and built environment) 1.3 Characterize baseline natural land resource systems and conditions (slopes, aspects, elevation and topography, climate, geology, soils, water, land cover, wildlife habitats, vegetations, aspect, elevation, etc.) 1.4 Develop land and natural resources inventory and land use classification systems and statistics 1.5 Understand the human impacts on natural environment and resources 1.6 Assess appropriate options for sustainable use of land resources systems and conditions 1.7 Propose sustainable solutions to problems of land resource degradation, natural and man made hazards
2 Demonstrate in-depth knowledge in Land Evaluation Analyses and Modelling	2.1 Describe principles for different types of land evaluation analyses 2.2 Perform and Interpret soil inventory analysis 2.3 Perform Land cover analysis 2.4 Perform land capability and land suitability analysis 2.5 Perform multi-criteria analysis 2.6 Perform “What If” Alternative Scenarios analysis 2.7 Land use build-out analysis
3 Demonstrate in-depth knowledge in preparation of Integrated Land Use Plans	3.1 Describe Integrated Land Use Planning: concept, principles, content and scale.

	3.2 Review land use planning theories and paradigms (landscape tradition, garden and city beautiful, regionalism, advocacy and equity, environmentalism, bio-regionalism, renewal & new urbanism, green movement, smart growth and sustainability) 3.3 Review Land Use Planning for the built environment (landscapes, sites, neighborhoods, districts, cities and villages, regions) 3.4 Review Land Use Planning for the natural environment (planning for sustainable water supply and quality; planning for sustainable agricultural landscapes; planning for sustainable forestry and range landscapes; planning for mining; planning for protected areas; planning for wildlife habitats; planning for wetlands; planning for river and coastal zones; planning for energy; planning for transportation and infrastructure; planning for soil reclamation; planning for solid waste and recycling; planning for natural hazards and natural disasters) 3.5 Review Land Use Planning in Botswana 3.6 Describe Land Use Planning methodology (scoping, identification of issues, opportunities, concerns, objectives, criteria; analysis of planning situation; formulation of alternatives; assessment of impacts; evaluation and selection of plan; implementation, monitoring, evaluation and modification; and the role of public, communities, professional bodies)
4 Demonstrate in-depth professional skills in managing Land Use Planning Projects	4.1 Apply public participation skills in formulating LUP projects 4.2 Apply project management skills in executing LUP projects 4.3 Use ethical and professional skills to make informed judgments

	4.4 Use effective team approaches for collective decision making 4.5 Illustrate critical awareness of the need to work in a collaborative and inclusive manner at the workplace and community 4.6 Practice land use disputes' resolution through negotiations and facilitation
5 Apply Research Methodology in Land Use Studies	5.1 Demonstrate ability to identify priority research areas 5.2 Formulate a detailed research proposal 5.3 Communicate the research proposal coherently 5.4 Analyze research information 5.5 Present research outputs in workshops and conferences 5.6 Publish research findings in high ranking local / international journals
6 Demonstrate in depth-knowledge of land laws, policies, standards, land and natural resources economics	6.1 Apply international, regional and local legislation frameworks for sustainable utilization of land and natural resources. 6.2 Apply strict legal and ethical codes in land use matters, and during the processes of land use plans preparation, implementation, monitoring and review. 6.3 Apply land use standards, norms and criteria for restrictive and non-restrictive land use zoning, consolidation, sub-divisions, etc. 6.4 Apply land and natural resource economics accounting and valuation methods, projections, rates, financial models, stocks, flows, expenditures, indicators, etc.
7 Apply advanced Geo-spatial and Geoinformation Technology	7.1 Use advanced GIS technologies in land use planning focused on GIS hybrid systems, multimedia/hypermedia systems, knowledge-based systems, GIS land use planning decision support systems, virtual land use planning GIS, web-based GIS, 3-D models, etc.) 7.2 Use selected advanced Remote Sensing technologies such as optical remote sensing, infrared remote sensing,

	microwave remote sensing, radar remote sensing, satellite remote sensing, airborne remote sensing, acoustic and near-acoustic remote sensing. 7.3 Use Precision Agriculture technologies [e.g. GPS/GNSS, unmanned aerial vehicles (UAV), mobile devices, robotics, precise irrigation systems, internet of things, sensors, VRA seeding, weather modelling, nitrogen modeling, ISOBUS standardization, etc.] in agricultural land use planning and management
8 Demonstrate in-depth knowledge of soil, water and land use planning in Semiarid Environment Climate change	8.1 Review improved water management in rainfed and irrigated agricultural systems at different scales (i.e., farm level, catchment level and river basin level) 8.2 Examine Conservation Agriculture and Climate Smart Agriculture technologies to achieve the multiple objectives of productivity, food security, adaptation and mitigation of land uses in semiarid environments 8.3 Employ landscape and ecosystem approaches to integrate sustainable management of ecosystems and natural resources with livelihood considerations.

	Title	Level	Credits
FUNDAMENTAL COMPONENT Subjects / Units / Modules /Courses	Land and Natural Resources Systems	9	15
	Land Statistic and Informatics (Data acquisition, control and management)	9	15
CORE COMPONENT Subjects / Units / Modules /Courses	Land Evaluation and Modelling	9	15
	Integrated Land Use Planning	9	15
	Research Methodology	9	15
	Master Theses Report	9	**90**
ELECTIVE COMPONENT Subjects / Units / Modules /Courses **NB: Select one course from each set.**	Set 1 The Legal, Normative and Economic aspects		
	Land Use Laws and Policies	9	15
	Land Use Standards, Norms & Criteria	9	15
	Land and Natural Resources Economics	9	15
	Set 2 Advanced Geo-Information Technologies		
	GIS for Land Use Planning	9	15
	Remote Sensing for Land Use Planning	9	15
	Precision Agriculture for Land Use Planning	9	15
	Set 3 Specific aspects of Land Use Planning in Semi-Arid Environments		
	Hydrology and Water Resources in Semi-Arid Environment	9	15
	Soil and Water Conservation in Semi-Arid Environment	9	15
	Land Use Planning for Climate Change in Semi-Arid Environments	9	15
		Total	**45**
		Total Credits	**240**

Rules of combinations, Credit distribution (where applicable):

A student shall take courses of specified credits as shown in the components:

- Fundamental Component: 30 credits
- Core Component: 45 credits

- Master Theses Component:
- Elective Component: 45 credits
- All modules are at Level 9

- The total Credits: 240

ASSESSMENT ARRANGEMENTS

Formative assessment

Formative assessment is 70%.

Summative assessment

Summative assessment is 30%.

Research Project: Students will undertake a research project as partial fulfilment of the award of the qualification.

Assessment will be carried out by BQA Accredited Assessors. This will be in accordance with Institutional and National Policies.

MODERATION ARRANGEMENTS

Internal and External moderation will be carried out by BQA Accredited Moderators. This will be in accordance with Institutional and National Policies.

RECOGNITION OF PRIOR LEARNING

Due to restrictions by the Town and Country Planning Act (2013) of Botswana, RPL in this qualification is restricted.

CREDIT ACCUMULATION AND TRANSFER

Students seeking to transfer from another recognized institution may be credited with up to a maximum of one-third of the total number of credits required for the qualification.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Learning progression Pathways

Horizontal:

i. Master of Science in Land and Water Resources Management
ii. Master of Science in Land Use Planning and Management
iii. Master of Science in Land & Water Engineering

Vertical:

i. Doctor of Philosophy (PhD) in Land Use Planning
ii. Doctor of Philosophy (PhD) in Land Use Planning and Management
iii. Doctor of Philosophy (PhD) in Land and Water Resources Management
iv. Doctor of Philosophy (PhD) in Land & Water Engineering

Employment Pathways

i. Researchers in Land Use Planning
ii. Consultants in Land Use Planning
iii. Professional managers in Land Use Planning

QUALIFICATION AWARD AND CERTIFICATION

- Candidates meeting minimum 240 credits requirement will be awarded the MSc (Land Use Planning)
- There will be issuance of a certificate and transcript at award.

REGIONAL AND INTERNATIONAL COMPARABILITY

The proposed qualification compares well with similar qualifications from regional and international ETPs. The duration (of two years) is the same across the board.

The credit value of the MSc qualification ranges from 180 credits (at University of Pretoria) to 240 credits (at Trier University).

The structure of the proposed MSc qualification is identical across ETPs, comprising of Fundamental, Core and Elective courses.

In summary, the MSc (Land Use Planning) qualification compares favourably with regional and international ETPs in terms of exit outcomes, structure, credit loading and duration.

REVIEW PERIOD

5 years