QUALIFICATION SPECIFICATION							SECTION A
QUALIFICATION DEVELOPER	Botswana University of Agriculture and Natural Resources						
TITLE	Bachelor of Science in Agronomy				**NCQF LEVEL**	7	
FIELD	Agriculture and Nature Conservation		**SUB-FIELD**	Agronomy			
New qualification	✔		Review of existing qualification				
SUB-FRAMEWORK	General Education		TVET		Higher Education	✔	
QUALIFICATION TYPE	Certificate		Diploma		Bachelor	✔	
	Bachelor		Masters		Doctor		
CREDIT VALUE					528		

RATIONALE AND PURPOSE OF THE QUALIFICATION

Rational

According to the Human Resource Development Council of Botswana (HRDC), agriculture is the main source of livelihood in Botswana as 40% of the population lives in rural areas and derive their subsistence from crop production and related agricultural activities. However, crop production in Botswana is severely hampered by low and erratic rainfall, endemic droughts, high summer temperatures, low soil fertility and high incidence of pests, diseases and weeds. Lack of technology adoption by farmers, poor research-extension linkages and limited human resources have also been blamed as contributing to poor performance of the crop sector. The need for Crop Scientist equipped with adequate knowledge and skills to serve the emerging crop sector in Botswana is strong. A country-wide needs assessment survey was conducted in February and March, 2003. An overwhelming majority of the respondents (96.9%) indicated that they require graduates in Crop Science in their organizations and therefore requested that the Department of Crop Science and Production should introduce the proposed BSc Crop Science programme. The streams in Agronomy and Horticulture were designed to provide specialized knowledge in field and horticultural crop production, respectively. Special emphasis has been placed on production of cereals, legumes and oilseeds, fibre and industrial crops, root and tubers as well as fruits, vegetables, ornamentals, controlled environment horticulture and irrigation. Also, according to the HRDC's agricultural sector plan of August 2015, there is the need for human capital and skills development for technology transfer to raise the productivity of both small and large scale farmers. There is also the need to improve the quality of the agricultural training by improving its relevance and practical training component to produce, among others, agronomists, breeders and horticulturalists; these have been identified as occupations in high demand in Botswana. Furthermore, among the six pillars of the National Development Plan 11 (NDP 11) are human capital development and sustainable use of natural resources.

Purpose

The purpose of this qualification is to produce graduates:

- skilled in agronomy.
- able to drive change that can lead to increased crop productivity in conditions of Botswana.
- industry ready and can be self-employed.

ENTRY REQUIREMENTS (including access and inclusion)

Minimum entry requirement for this qualification is a:

- NCQF Level IV (eg. BGCSE) or its equivalent with Passes in Mathematics, Physics, Chemistry and Biology.
- NCQF Level V or equivalent.

Recognition of Prior Learning (RPL):

- There will be access through Recognition of Prior Learning (RPL) and Credit Accumulation and Transfer (CAT) in accordance with the RPL and CAT National Policies.

QUALIFICATION SPECIFICATION SECTION B

GRADUATE PROFILE (LEARNING OUTCOMES)	ASSESSMENT CRITERIA
1. Demonstrate ability to assess bio-resources and identify crops suitable for growing in various environments.	• Identify and assess the bio-resource potential of Botswana and make recommendations for their suitability for different crops and cropping systems and advice Government, farmers and other stakeholders on crop suitability for various parts of the country.
2. Demonstrate competence in information computer technology.	• Apply computer technology for storage and analysis of data, written and graphic works, as well as presentations.
3. Possess proficiency to plan and execute research studies and demonstrations in the area of crop production.	• Plan, design and layout scientific experiments, collect, store and analyze data effectively using valid instruments, and communicate effectively with peers with scientific reports.
4. Gain scientific knowledge and understanding of discipline specific theories related to advance field, industrial, horticultural and forage crop production and understanding of sustainable agriculture and its use as a vehicle for food security and safety.	• Design long term cropping systems and field practices to produce field, industrial, horticultural and forage crops on a sustainable basis. • Demonstrate understanding of the concepts of sustainable agriculture.
5. Interpret and execute relevant Government policies and Acts related crop production.	• Demonstrate ability to understand and interpret Government policies critically

	and extend them to farmers for improved crop productivity.
6. Demonstrate understanding of crop production systems in controlled environment conditions.	• Operate and manage different controlled environment systems like greenhouses, tunnels and hydroponics for both large- and small-scale crop production.
7. Demonstrate understanding of the effect of global climate change on crop production and mitigation strategies such as climate smart agriculture.	• Execute climate smart crop production practices.
8. Establish and manage agribusiness profitably.	• Manage agribusiness enterprise and devise creative problem-solving strategies.
9. Demonstrate ability to manage major pests, disease and weeds during crop production.	• Identify the major pests, diseases and weeds that constrain crop production. • Apply suitable and appropriate control measures of these pests and diseases to enhance crop yield on a sustainable basis.
10. Manage soil in a sustainable manner, to enhance crop production.	• Sample soil, do laboratory analyses for physical and chemical properties and make recommendations for application of nutrients and other soil amendments for increased crop yields and quality.
11. Apply appropriate extension methods to support farmer practices of growing crops to obtain economic yields.	• Demonstrate knowledge of extension principles methods. • Demonstrate deep knowledge of crop production and impart this effectively to farmers.
12. Demonstrate good leadership capabilities and organize appropriate staff development activities.	• Initiate ideas and lead staff in the area of integrated crop production and management.
13. Establish and manage large- and small-scale field and horticultural crop production enterprises profitably.	• Gain ability to grow crops, manage crop fields and access market for the produce. • Demonstrate ability to calibrate and use farm implements like planters, sprayers, soil cultivating equipment for grow crops.
14. Demonstrate knowledge of post-harvest crop management systems.	• Manage storage facilities to preserve field crops, fruits and vegetables to maintain their quality.

QUALIFICATION STRUCTURE SECTION C			
FUNDAMENTAL COMPONENT Subjects / Units / Modules /Courses	**Title**	**Level**	**Credits**
	Mathematics	5	24
	Chemistry	5	24
	Physics	5	24
	Biology	5	24
	Computer Skills	6	16
	Communication Skills	6	24
CORE COMPONENT Subjects / Units / Modules /Courses			
	Genetics and plant breeding	6	16
	Biometry	7	16
	Biochemistry	7	8
	Soil Science	6	24
	Crop Protection	6	24
	Agricultural Economics, Extension and Agribusiness	8	28
	Crop Production	7	24
	Industrial Attachment	8	24
	Farm mechanization and irrigation	7	24
	Research Project	8	16

	Title	Level	Credits
CORE COMPONENT Subjects / Units / Modules /Courses	Agroforestry	7	12
	Field Crop Production	7	48
	Crop Protection	7	36
	Entrepreneurship	7	12
	Harvest and postharvest technology of field crops	7	24
ELECTIVE COMPONENT Subjects / Units / Modules /Courses	Soil-Plant Relationships	7	12
	Horticulture Crop Production	7	12
	Farm Structures/Harvest technology	8	12
	Animal Science/Food Science & Technology	8	20

Rules of combinations, Credit distribution (where applicable):

Rules of Combinations

Fundamental (F) + Core (C) + Elective (E)
= 136 + 332 + 60
= 528

Fundamentals = 136 = 25.76%
Core = 336 = 63.64%
Elective = 56 = 10.61%

Credit Distribution

Level	Total Credits
5	96
6	104
7	228
8	100
TOTAL	528

ASSESSMENT AND MODERATION ARRANGEMENTS

ASSESSMENT ARRANGEMENTS

All assessments, formative and summative, leading/contributing to the award of credits or qualification will be based on learning outcomes and/or sub-outcomes.

Formative assessment

The contribution of formative assessment to the final grade is 50%.

Summative assessment

The contribution of summative assessment to the final grade is 50%.

Research Project: Leaners will undertake a research project as partial fulfillment of the award of the qualification.

MODERATION ARRANGEMENTS

The purpose of the moderation is to ensure that assessment and marking across all Modules is fair, valid, and reliable. It also ensures that the assessment tool is aligned to the learning outcomes, that it is set at appropriate level of study and, that the process of marking is consistent.

Internal and external moderators to be engaged will be BQA accredited subject specialists in relevant fields with relevant industry experience and academic qualifications.

Both internal and external moderation shall be done in accordance with applicable policies and regulations.

RECOGNITION OF PRIOR LEARNING (if applicable)

Recognition of prior learning shall be used as an entry pathway into the qualification.

There will be provision for Recognition of Prior Learning (RPL); thus knowledge and skills acquired through formal and informal methods shall be used in the assessment of RPL.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Graduates upon completion of the qualification can proceed to do Masters followed by Doctor of Philosophy qualifications in a related area nationally, regionally and internationally.

Vertical Progression

Holders of the qualification can further their studies as follows:

- Bachelor of Science Honours,
- Master of Science and
- Doctor of Philosophy in Agriculture or related fields.

Horizontal Progression

Holders of the qualification can also further their studies in other BSc qualifications such as follows:

- BSc in Agriculture,
- BSc in Agricultural Extension,
- BSc in Animal Health.

Employment Pathways

Holders of the qualification can serve as:

- Agriculture Business Managers,
- Researchers,
- Plant Breeders,
- Agronomists,
- Professionals in the Ministries and municipalities,
- Advisors in Non-Governmental Organisations,

- Consultants,
- Commercial farmers
- and entrepreneurs.

QUALIFICATION AWARD AND CERTIFICATION

A minimum of 528 credits should be attained in addition to satisfying all qualification requirements for graduates to be awarded the Bachelor of Science in Agronomy.

REGIONAL AND INTERNATIONAL COMPARABILITY

The qualification is comparable to similar ones offered in the SADC region and beyond based on content and credit requirements.

Regionally, it is comparable to the SAQA BSc Agriculture qualification. Specifically, it is comparable to qualification the following SAQA registered qualifications*:

NQF Sub-framework	Qualification ID	Qualification title	NQF level	Minimum credits	Institution	
HEQSF	**81138**	**BSc Agriculture: Crop Science**	**8**	**512**	**In South Africa**	
HEQSF	**81143**	**BSc Agriculture: Horticulture Science**	**8**	**512**	**In South Africa**	
HEQSF	**-**	**BSc Agriculture; Agronomy**			**In South Africa**	
-	**-**	**Bachelor of Agricultural Science**			**University in Australia**	

The qualifications are of four-year durations with 512 credits.

Internationally, it is comparable to the four-year Bachelor of Science in Agriculture qualification of the Universities in Australia which have a minimum of 480 credits for graduation.

REVIEW PERIOD

The qualification shall be reviewed every 5 years.