SECTION A:	QUALIFICATION DETAILS				
QUALIFICATION DEVELOPER (S)	University of Botswana				
TITLE	Bachelor of Design (Honours) in Industrial Design			NCQF LEVEL	8
STRANDS (where applicable)	N/A				
FIELD	Manufacturing, Engineering & Technology	SUB-FIELD	Manufacturing and processing	CREDIT VALUE	652

New Qualification	✓	Legacy 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: The qualification has been designed to respond to the social and economic needs of Botswana and that of the region, especially in areas that deal with design, technology, creativity, and innovation to provide the society with innovators and designers. This is important in order to support the growth of

the manufacturing industry as design is a direct input of manufacturing. The qualification is also aligned to the key strategic sectors of creative industries; research, innovation, science and technology, and manufacturing as identified by Human Resource Development Council of Botswana (2023), which requires a high demand of manpower to transform Botswana into a creative and knowledge-based economy. The qualification's core mandate is to train secondary school leavers to be industrial designers and entrepreneurs to fill the gap of applied design innovation and applied design research in the economy. Industrial Design has been identified as one of the top occupations in demand in Botswana (HRDC, 2019; 2023-2024). Skills which are traditional industrial design skills have also been identified as future skills by the World Economic Forum (2016; 2018) and HRDC (2019). The enabling technical and soft skills required for this core mandate are as identified and reported by the Human Resources Council of Botswana (2019, p.24 and 2023-2024, p.35). The qualification is in congruence with the Faculty of Engineering and Technology's vision of being the leading centre of excellence in engineering, design and the built environment in the world. The Bachelor of Design (Industrial Design) qualification has been developed in line with outcome-based learning principles. The development of the qualification has been informed by the accreditation requirements of the Institution of Engineering Designers. The qualification contributes towards the strategic role of meeting the country's development needs through advancing human resource development and developing research and innovation capacity (Towards a knowledge Society. Tertiary Education Policy, 2010; Revised National Policy of Education 1994; National Human Resource Development Plan, 2009-2022, Education and Training Sector Strategic Plan, 2015, National Development Plan 11, 2017 and HRDC, 2019 top occupations priority area - manufacturing). Furthermore, this qualification is considered to be commensurate with three of the pillars of Vision 2036 of producing 'sustainable economic development, human and social development and sustainable environment', as well as two key future imperatives of 'innovation and sustainability'.

PURPOSE: (itemise exit level outcomes)

The purpose of this qualification is to produce graduates with Knowledge, Skills, and Competences to:

- Apply design research skills to identify opportunities to solve real life problems.
- Apply industrial design highly specialised knowledge and skills and design research techniques in other sectors of the economy such as finance, agriculture, tourism, mining, and the public service.

- Design and manufacture versatile, disruptive, innovative, and creative products, systems and services using advanced manufacturing processes that solve real-life problems in the society.
- Manage a design studio/workshop in selecting appropriate materials, production processes, business strategy, and prevailing social, commercial, or aesthetic attitudes when designing products and services.
- Provide solutions for problems of form, function, usability, ergonomics, marketing, brand development, sustainability, and sales to the user.
- Apply highly specialised knowledge and skills of industrial design to entrepreneurial solutions.

MINIMUM ENTRY REQUIREMENTS (including access and inclusion)

The minimum requirement for entrance to the Bachelor of Design (Honours) Industrial Design shall be:

- Certificate IV, NCQF Level 4 (BGCSE or equivalent).
- Recognition of Prior Learning (RPL) and Credit Accumulation and Transfer (CAT) shall be considered according to the policies for access aligned with BQA/National policies.

SECTION B	***QUALIFICATION SPECIFICATION***
GRADUATE PROFILE (LEARNING OUTCOMES)	***ASSESSMENT CRITERIA***
1. Exercise autonomy to apply design principles to solve complex industrial design problems. (Design principles).	1.1 Use the appropriate Mathematical, Science and Engineering principles to a given design task/problem. 1.2 Apply research methodologies and techniques relevant to industrial design to solve complex problems. 1.3 Demonstrate mastery of design skills in managing the design process during complex problem solving

	1.4 Demonstrate capacity to individually conduct design research and critically evaluate and synthesise design information towards a solution.
2. Critically apply engineering design analysis in solving industrial design problems creatively and innovatively. (Design analysis and Creativity and innovation).	2.1 Conduct research, select, evaluate, manipulate, and manage information relevant to the analysis and synthesis of design and technology solutions. 2.2 Apply analytical skills in relation to designed objects against their context. 2.3 Undertake visual analysis during the deconstruction of complex design problems. 2.4 Use a systematic approach to problem-solving using appropriate design tools and techniques.
3. Apply design practice principles in practising industrial design through a creative innovation process of critical analysis and independent evaluation of design information involving decision making gates. (Design practice and Creativity and innovation).	3.1 Create new processes or products through a synthesis of ideas based on material selection principles. 3.2 Practise collaborative and independent work to realise a range of practical, creative, and theoretical projects. 3.3 Initiate projects, meet deadlines, liaise with industrial collaborators, and make presentations. 3.4 Conduct research and synthesize information, produce reports, and evaluate designs. 3.5 Analyse problems of a creative nature and provide appropriate solutions.

	3.6 Apply intellectual property rights (IPR) including patent search and principles of copyright and design registration. 3.7 Use engineering design codes of practice and industry standards, with some knowledge of design factors and requirements for safe operation. 3.8 Demonstrate awareness of management and quality assurance issues in product design. 3.9 Work effectively as part of a group with respect for the dignity, rights and needs of others. 3.10 Manage time and projects in professional practice. 3.11 Use information and communication technology (digital skills) in data collection. 3.12 Evaluate technical risks and address risk in design methodology. 3.13 Write design reports and present design ideas.
4. Demonstrate specialised knowledge and understanding of economic, social, and environmental context in the practice of industrial design (Design principles and Design practice).	4.1 Manage the design process through a decision-making matrix guided by design tools and methods. 4.2 Demonstrate an awareness of financial, economic, social legislative and environmental factors of relevance to industrial design. 4.3 Use sustainable design principles in solving problems.
5. Demonstrate mastery of professional practice in the design of products, services, and systems as per the user	5.1 Evaluate design solutions against relevant constraints and criteria.

needs (Design analysis and The designer and society).	5.2 Address human needs using research, anthropometric data, and ergonomic principles. 5.3 Provide design solutions according to customer and user requirements. 5.4 Generate product design specifications. 5.5 Use product design cost drivers and appreciate the cost implications of different production volumes. 5.6 Generate a wide range of design ideas, concepts, and proposals independently and in teams in response to set or self-generated design briefs. 5.7 Select and test materials and manufacturing processes in the synthesis of product design solutions. 5.8 Create logical and innovative design solutions. 5.9 Select and use the appropriate manual drawing/construction/CAD, communication, and technological media in the realisation of design ideas. 5.10 Use visual literacy and drawing ability appropriate to the practice of product design. 5.11 Develop concepts to provide manufacturing instructions and specifications. 5.12 Design through computer modelling and visualisation. 5.13 Integrate design and technology education aspects including form texture and colour.

6. Demonstrate proficiency in professional and technical communication, and the use of digital skills in complex problem-solving (Design practice).	6.1 Present academic, professional ideas orally, visually, and textually to a range of audiences. 6.2 Offer creative insights, rigorous interpretations and solutions to problems and issues appropriate to the context. 6.3 Research, analyse, organize data, and retrieve information using ICT /digital skills. 6.4 Demonstrate sound sketching, drawing and computer-aided and computer-aided manufacturing skills in designing products, services, and systems. 6.5 Manage and present information in a variety of formats using ICT/digital skills.
7. Practise design professionalism by taking responsibility and accountability for own work output and of others in the design profession (The designer and society).	7.1 Apply ethical considerations when designing sustainable products, services, and systems. 7.2 Identify and address ethical issues in design and technology education. 7.3 Take full responsibility for own work, decision-making and use of resources. 7.4 Adhere to industrial design ethics during design research.
8. Demonstrate an advanced knowledge and understanding of entrepreneurship with a sense of identification with design-led businesses and the integrity of design as business (The designer and society).	8.1 Build and present a design business plan for an identified need. 8.2 Discuss available funding options, entrepreneurial finance, and marketing strategies. 8.3 Manage enterprises using design techniques and processes. 8.4 Apply entrepreneurial skills needed by the creative and innovative leader.

9. Engage in Continuous Professional Development activities to enhance own performance and practice to maintain a sense of identification with the design profession (Design practice).	9.1 Develop a personal Professional Development Plan (PDP) in the field of Industrial Design. 9.2 Identify accredited education and training providers to be considered in relation to own PDP. 9.3 Initiate arrangements for supporting the implementation of the PDP. 9.4 Evaluate own actions or performance and make judgements about what to do to improve. 9.5 Initiate ideas and seek support to improve performance.
10. Demonstrate an advanced application of design research knowledge and skills in managing the design process when designing products, services, strategy and systems (The designer and society and design analysis)	10.1 Conduct advanced design research to solve a societal challenge and create a design-driven economy. 10.2 Design a solution to an identified need at individual, community, national and international level. 10.3 Make a prototype that satisfies the need identified. 10.4 Organise a design exhibition to showcase the solution to stakeholders. 10.5 Document the research processes into a design research report to inform policy directions, practice, and education.

SECTION C	***QUALIFICATION STRUCTURE***				
COMPONENT	***TITLE***	***Credits Per Relevant NCQF Level***			***Total Credits***
		Level [6]	***Level [7]***	***Level [8]***	
FUNDAMENTAL COMPONENT *Subjects/ Courses/ Modules/Units*	Geometrical Optics & Mechanics, Vibrations Waves	10			10
	Design Mathematics	10			10
	Computer Skills Fundamentals	10			10
	Introduction to Communication & Academic Literacy Skills	6			6
	Electricity, Magnetism & Elements of Modern Physics	10			10
	Academic and Professional Communication	9			9

CORE COMPONENT *Subjects/Courses/ Modules/Units*	Elements & Principles of Design.	10			10
	Design Fundamentals	10			10
	Design Materials & Processes.	16			16
	Graphical Communication.	16			16
	Design for Sustainability.	10			10
	History of Art & Design.	9			9
	Product Design Studio: Electronics.	10			10
	Design Studio; Textile Design	9			9
	Graphical Communication & Multimedia.	10			10
	Product Styling.	10			10
	Physical Ergonomics.	10			10

	Design Studio: Structures & Mechanisms.	10			10
	Principles of Marketing.	9			9
	Industrial Design Attachment	8			8
	Design Futures.		12		12
	Intellectual Property Rights.		12		12
	Computer-Aided Design Fundamentals.		12		12
	Design Research.		12		12
	Product Design & Analysis.		12		12
	Occupational Health and Safety in Design.		12		12
	Computer-Aided Design & Manufacture.		14		14
	Design Control Technology I.		12		12

	Integrated Design Practice.		15		15
	Design Studio: Cognitive Ergonomics.		15		15
	Service Design for Sustainability.		12		12
	Design & Entrepreneurship.		12		12
	Design Studio: Teamwork Projects.		16		16
	Interior Product Design		12		12
	Small Business Management.		12		12
	Design Studio: Design for all		18		18
	Branding & Packaging Design.		12		12
	Major Design Research Project I: Research & Conceptualization.			40	40
	Emerging Issues in Design.			16	16

	Advanced Design Research			20	20
	Major Design Research Project II: Prototyping.			40	40
STRANDS/ SPECIALIZATION	*Subjects/ Courses/ Modules/Units*	***Credits Per Relevant NCQF Level***			***Total Credits***
		Level [6]	***Level [7]***	***Level [8]***	
1.					
	N/A				
2.	***N/A***				
Electives	Design for Print Media.		12		12
	Small Business Management		12		12

	Design Control Technology II			16	16
	Microcomputers Control for Designers.		10		10
	Advanced Computer Aided Design.			12	12
	Ceramic Design.		12		12
	System Design for Sustainability.			16	16
	Interactive Design.		12		12
	Advanced Ceramic Design.			16	16
	Entrepreneurship & New Business Formation.			16	16
	Environmental Communication Design.		12		12
	Interior Product Design II			16	16

SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL	
TOTAL CREDITS PER NCQF LEVEL	
NCQF Level	***Credit Value***
NCQF Level 6	202
NCQF Level 7	270
NCQF Level 8	180
TOTAL CREDITS	***652***

Rules of Combination:

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

A candidate will obtain the qualification by completing the:

i. Level 6 modules: 202 credits
ii. Level 7 modules: 270 credits
iii. Level 8 modules: 180 credits
iv. Electives/Options Level 7+8: 94 credits (Learners opt for 4 elective components at Level 7 and another 4 at Level 8 to satisfy the qualification requirements).

Total credits: 652 credits

ASSESSMENT ARRANGEMENTS

All assessments, formative and summative, leading/contributing to the award of credits or qualification should be based on learning outcomes and/or sub-outcomes. All assessors shall be registered with Botswana Qualifications Authority to ensure that assessors meet the regulatory requirement that practitioners performing this function have the capacity to do so.

Formative assessment

Formative assessment will contribute 60% towards the award of the final mark.

Summative assessment

Summative assessment will contribute 40% to the final mark.

MODERATION ARRANGEMENTS

The qualification shall have internal and external moderation following applicable policies and regulations for quality assurance to ensure fairness, validity, reliability, and consistency of assessments. The moderators shall be registered and accredited by the Botswana Qualifications Authority. Moderators accredited by other authorities equivalent in mandate to BQA shall subject the qualification to external quality assurance standards as required for external examination and professional accreditation by bodies resident outside Botswana. For example, The Institution of Engineering Designers in the United Kingdom is so far the only reputable professional body which this qualification is aligned to its professional ethos.

RECOGNITION OF PRIOR LEARNING

Learners may submit evidence of prior learning and current competence and/or undergo appropriate forms of RPL assessment for the award of credits towards the qualification in accordance with applicable RPL policy, credit accumulation and transfer system and relevant national-level policy and legislative framework.

CREDIT ACCUMULATION AND TRANSFER

The Credit Accumulation and Transfer is for award of the qualification as per the regulations and policies of the provider and the awarding body in line with national policies.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Horizontal Articulation related qualifications of a similar level (**NCQF Level 8**) that graduates may progress to:

Bachelor Arts (Hons) Industrial Design & Technology; Bachelor Arts (Hons) Product design; Bachelor Arts (Hons) Design Products; Bachelor Arts (Hons) Sustainable Product Design; Bachelor Arts (Hons) Design for Industry; Bachelor Arts (Hons) Furniture & Product Design; Bachelor of Science (Hons) Product Design & Technology; Bachelor of Design (Hons) Industrial Design; Bachelor of Design (Hons) Product Design; Bachelor of Fine Arts (Hons) Industrial Design; Bachelor of Fine Arts (Hons) Product Design.

Vertical Articulation (NCQF Level 9)

Masters Arts Industrial Design & Technology; Masters Arts Product design; Masters Arts Design Products; Masters Arts Sustainable Product Design; Masters Arts Design for Industry; Masters Arts Furniture & Product Design; Masters of Science Product Design & Technology; Masters of Design Industrial Design; Masters of Design Product Design; Masters of Fine Arts Industrial Design; Masters of Fine Arts Product Design.

Employment:

Design consultants; self-employed designers/manufacturers; design researchers in R&D institutions; Industrial designers; product designers; design managers; user experience manager/designer; graphic designers; design educators; entrepreneurs; furniture designers; interior designers; jewellery designers; staff development fellows; occupational health and safety officers; service designers; social innovators; model makers; illustrators, etc.

QUALIFICATION AWARD AND CERTIFICATION

Minimum standards of achievement for the award of the qualification

To be awarded a Bachelor of Design (Honours) Industrial Design a learner should have satisfied all exit learning outcomes, met the minimum credit requirements (652 credits) which is made up of fundamental/core/elective components as indicated in the qualification structure.

Certification

For a leaner to be awarded a Bachelor of Design (Honours) Industrial Design qualification, he/she should have achieved a minimum of 652 credits. After satisfying all the requirements, a learner will be awarded,

Bachelor of Design (Honours) Industrial Design certificate.

SUMMARY OF REGIONAL AND INTERNATIONAL COMPARABILITY

Similarities

- The credits are more or less equal, depending on the qualification framework being used.
- Employability pathways are more or less the same even though more articulated in UK institutions, for instance product design, manufacturing, design safety etc.
- Assessment is practically oriented and outcome - based.

- All qualifications are Honours Degrees in compliance with the national regulatory authority in the country they have been registered.
- This qualification is comparable with the Bachelor of Arts (Honors) Industrial Design and Bachelor of Arts (Honors) Product and Industrial Design both in UK, and Bachelor of Industrial Design (Honours) in Australia registered qualifications (The Framework of Higher Education Qualifications of Degree-Awarding Bodies in England, Wales, and Northern Ireland – FHEQ, and Australian Qualifications Framework – AQF). The 4 qualifications are very articulate in terms of detailed outcomes regarding how they relate to adaptability, flexibility, ability to cope with the dynamics in the world of work, and exercising initiative in the enterprising world of industrial design practice. Further, there is a balance between practice and research.

Differences

- Qualifications frameworks differ. A UK FHEQ Level 6 is comparable to Australian AQF Level 8 qualifications. Botswana and Australia use the 10 levels qualifications framework. However, the

credit loading appears to be different as an AQF Level qualification can have between 385 and 400 units, while in Botswana, NCQF Level 8, the qualification should have around 600 credits.

- Australian qualifications have strong and more pronounced research with a practice focus in the Honours year while UK ones have technical solid and practice focus.

- However, more pronounced foci in the Honours year vary. While in the UK qualifications, design research is applied and integrated into the courses, in the Australian qualifications, the integrated applied design research also comes with more pronounced research courses. The Bachelor of Design (Honours) in Industrial Design qualification aligns and compares more with the 2 UK qualifications, especially in terms of the combination of a technical focus (Engineering and Science principles) and the art of design and sustainability with applied design research in the Honours year. This is a distinct feature for this qualification in the region and provides for international mobility of graduates since this is the future direction for industrial design.

- The qualification caters to the vertical articulation to masters in industrial/product design, design management, design strategy, manufacturing, design, and business. It prepares graduates for similar careers with the benchmark qualifications, with an additional advantage of potential employment in the service industry due to the service design for sustainability aspect of the qualification. The proposed Bachelor of Industrial Design (Honours) compares favourably with international qualifications regarding depth, pathways, and complexity.

REVIEW	***PERIOD***
The qualification will be reviewed every five years	

For Official Use Only:

CODE (ID)			
REGISTRATION STATUS	**BQA DECISION NO.**	**REGISTRATION START DATE**	**REGISTRATION END DATE**

LAST DATE FOR ENROLMENT		**LAST DATE FOR ACHIEVEMENT**	