BQA NCQF QUALIFICATION TEMPLATE

SECTION A:	QUALIFICATION DETAILS		
QUALIFICATION DEVELOPER (S)	University of Botswana		
TITLE	Doctor of Philosophy in Industrial Design	**NCQF LEVEL**	10
STRANDS (where applicable)	N/A		
FIELD	Culture, Arts and Crafts	**CREDIT VALUE**	390
SUB FIELD	Design Studies		

New Qualification		Legacy Qualification	✓	Renewal Qualification	
				Registration Code	

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 Botswana's social and economic needs and that of the region, especially in engineering and built environment areas. It is aligned to the key strategic sectors of manufacturing, construction, built environment, creative industries, research, innovation, science, and technology identified by the Human Resource Development Council, which requires a high workforce demand to transform Botswana into a knowledge-based and circular economy. The qualification's core mandate is to produce researchers in various engineering and built environment

fields. The qualification is in congruence with the Faculty of Engineering and Technology's vision of being the leading centre of excellence in engineering and the built environment in the world. The qualification contributes toward 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; HRDC, Priority Skills 2023-2024, Botswana Science, Technology, and Innovation Foresight, 2023). Furthermore, this qualification is commensurate with three pillars of Vision 2036 of producing 'sustainable economic development, human and social development, and sustainable environment' and key future imperatives of research, innovation, and sustainability. Please note that the above cited documents allude to the promotion of innovation in Botswana which is primarily driven by industrial design

Qualification Purpose

The purpose of this qualification is to produce graduates with most advanced knowledge, skills and competence to:

1. Critique design methodologies for rigorous studies, gather and analyse data, and interpret findings to contribute new knowledge and innovate design solutions to address complex industrial design challenges.
2. Apply highly advanced expertise at the frontier of Industrial Design in designing sustainable products, systems, and environments, incorporating principles of environmental stewardship, social responsibility, and economic viability into their design practices to promote a more sustainable future.
3. Demonstrate highest levels of specialised skills to effectively communicate, collaborate, and integrate research findings, design processes, and outcomes to diverse audiences across disciplines including academic scholars, industry professionals, policymakers, and the public, through scholarly publications, presentations, exhibitions, and other forms of dissemination.

MINIMUM ENTRY REQUIREMENTS (including access and inclusion)

- Master's Degree, NCQF Level 9 in a relevant field.
- Recognition of prior learning and credit accumulation and transfer shall be considered for entry.

SECTION B QUALIFICATION SPECIFICATION

GRADUATE PROFILE (LEARNING OUTCOMES)	ASSESSMENT CRITERIA
1. Demonstrate comprehensive understanding of the most advanced theories and concepts in industrial design.	1.1 Engages in most advanced critical analysis of design theories and concepts, evaluating their strengths, limitations, and relevance to contemporary design practice. 1.2 Shows evidence of in-depth study and research into specific theoretical frameworks and their applications in industrial design practice. 1.3 Synthesises theoretical concepts with practical design examples, illustrating how theoretical insights can inform and enrich design practice. 1.4 Applies theoretical concepts effectively to real-world design challenges, demonstrating how theoretical insights can inform design decisions and solutions.
2. Develop advanced strategic leadership skills necessary to lead design teams, projects, and initiatives in industrial settings, fostering innovation, collaboration, and effective communication among team members to achieve project objectives.	2.1 Demonstrates strategic leadership skills and the ability to collaborate with other researchers, designers, educators, and stakeholders in the field of Industrial Design. 2.2 Leads diverse and inclusive research teams, projects, organising conferences or workshops, or working with industry partners to bridge the gap between academia and practice. 2.3 Serve in corporate boards, national task forces or technical committees, and engage in special invitations to key stakeholder's engagements (conferences, seminars, workshops, policy forums, etc.). 2.4 Addresses conflicts and disagreements within the team constructively, facilitating open dialogue and finding mutually acceptable solutions. 2.5 Promote a positive team culture that encourages collaboration, creativity, and open communication.
3. Acquire the highest level of expertise in a range of qualitative quantitative and mixed research methods commonly used in industrial design research and demonstrate proficiency in selecting and	3.1 Demonstrates a highly comprehensive understanding of a range of qualitative, quantitative, and mixed research methods commonly used in industrial design research.

applying appropriate methods to investigate complex design problems.	3.2 Shows a high level of proficiency in selecting and justifying the choice of research methods based on the research questions, objectives, and contextual factors. 3.3 Develops research plans and protocols that outline clear research objectives, methodologies, data collection procedures, and analysis techniques. 3.4 Demonstrates a high level of proficiency in interpreting research results, identifying patterns, trends, and insights that contribute to a deeper understanding of the design problem under investigation. 3.5 Communicates research findings effectively to stakeholders through clear, concise, and compelling presentations, reports, and visualisations. 3.6 Engages in continuous learning and professional development to stay abreast of emerging research methods, tools, and best practices in industrial design research.
4. Develop highest level of specialised skills to critically evaluate design solutions, both their own and others and provide constructive feedback to improve design outcomes.	4.1 Applies design principles systematically to evaluate design solutions, identifying strengths, weaknesses, and areas for improvement. 4.2 Analyses design solutions critically, breaking them down into their constituent elements to assess their effectiveness in addressing user needs and project objectives. 4.3 Considers the broader context in which the design solution will be implemented, including user preferences, cultural factors, technological constraints, and market dynamics. 4.4 Respects diverse viewpoints and perspectives within the team, valuing constructive criticism as a catalyst for innovation and improvement.
5. Demonstrate highest level of specialized written skills when publishing research articles and oral communication skills during public presentations.	5.1 Writes international standard scholarly and original articles which are well-organised, flows logically, with smooth transitions between ideas and concepts, conveying complex ideas clearly and accurately.

	5.2 The article demonstrates highest level of critical thinking skills, with a thorough analysis of relevant literature and research. 5.3 The research article presents original insights or contributions to the field, advancing existing knowledge or proposing novel approaches. 5.4 Presentations are well-structured and uses visual aids to enhance understanding and reinforce key messages. 5.5 The presentation adheres to the allocated time limit, with appropriate pacing to cover all key points without rushing or exceeding the time allotted. 5.6 The presenter demonstrates awareness of the audience's time and maintains a respectful attitude towards their schedule. 5.7 The presenter handles unexpected questions or challenges from the audience with grace and professionalism, demonstrating flexibility and adaptability.
6. Demonstrate highly specialised understanding of cultural factors influencing design preferences, behaviours, and practices across different regions and societies, and apply this knowledge to design culturally sensitive and inclusive solutions for diverse global markets.	6.1 Demonstrates a nuanced understanding of cultural diversity, recognising that design preferences, behaviours, and practices vary across different regions, societies, and demographic groups. 6.2 Localises design elements and features to resonate with local customs, traditions, and sensibilities, while maintaining brand identity and integrity. 6.3 Incorporates principles of inclusive design to ensure that products, services, and environments are accessible and usable by people from diverse cultural backgrounds, abilities, and socio-economic statuses. 6.4 Collaborates effectively with multidisciplinary teams and stakeholders from diverse cultural backgrounds, fostering an inclusive and respectful work environment.
7. Develop highest level of specialised skills in identifying opportunities for innovation in industrial design, translating ideas into viable products or services, and navigating	7.1 Demonstrates highest level of creativity in identifying unmet needs, emerging trends, and market gaps that present opportunities for innovation in industrial design.

the entrepreneurial process that includes intellectual property management, market analysis, and business planning.	7.2 Conducts highly comprehensive market research and analysis to evaluate the potential demand, competition, and feasibility of proposed design innovations. 7.3 Develops strategic plans and roadmaps outlining the vision, goals, objectives, and milestones for bringing design innovations to market. 7.4 Apply the most advanced understanding of the principles of intellectual property (IP) protection to protect original innovations. 7.5 Develops financial projections, budgets, and investment plans for design innovation projects, considering costs, revenue projections, and return on investment. 7.6 Identifies potential risks and develop mitigation strategies to challenges associated with design innovation projects, including technical, market, regulatory, and financial risks.
8. Demonstrate most advanced knowledge and understanding on the ethical implications of design decisions on individuals, communities, and the environment, and develop strategies to integrate ethical considerations, sustainability principles, and social responsibility into their design practice, promoting ethical and sustainable design solutions.	8.1 Demonstrates a deep understanding of ethical principles, values, and frameworks relevant to design practice, including but not limited to integrity, fairness, respect, and accountability. 8.2 Exhibits most advanced knowledge of sustainability principles, life cycle assessment, and environmental impact analysis, applying them to minimize the environmental footprint of design solutions. 8.3 Incorporates principles of social responsibility, equity, and inclusivity into design practice, advocating for designs that promote social justice, equality, and human rights. 8.4 Conducts ethical analyses of design decisions, weighing competing values, interests, and priorities to make informed and ethically defensible choices. 8.5 Advocates for ethical and sustainable design practices within the design profession and broader society, raising awareness of ethical issues and promoting ethical standards and guidelines.

	8.6 Evaluates the ethical and sustainability impact of design solutions through rigorous assessment methodologies.

SECTION C	QUALIFICATION STRUCTURE				
COMPONENT	TITLE	Credits Per Relevant NCQF Level			Total Credits
		Level [ ]	Level [ ]	Level [ ]	
FUNDAMENTAL COMPONENT Subjects/ Courses/ Modules/Units	**Research Methods**		**30**		
	Research proposal		60		

CORE COMPONENT Subjects/Courses/ Modules/Units	Journal Articles		60		
	Thesis		240		
	Research proposal		60		
STRANDS/ SPECIALIZATION	Subjects/ Courses/ Modules/Units	**Credits Per Relevant NCQF Level**			**Total Credits**
		Level [ ]	**Level [ ]**	**Level [ ]**	
1.					
	N/A				
2.					

Electives	**N/A**				

SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL	
TOTAL CREDITS PER NCQF LEVEL	
NCQF Level	**Credit Value**
10	**390**
TOTAL CREDITS	**390**

Rules of Combination:

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

A candidate will obtain the qualification by:

i. Completing the fundamental coursework (research methods module - 30 credits) and Core coursework (research proposal - 60 credits and a thesis - 240 credits).

ii. Publishing at least two (2) journal articles in reputable journals recognised by the university (60 credits)

iii. Total credits: 390

ASSESSMENT ARRANGEMENTS

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

Formative assessment

Formative assessment (research proposal) will contribute 23% towards the award of the final standing.

Summative assessment

Summative assessment will contribute 77% to the final standing.

MODERATION ARRANGEMENTS

The qualification shall have an internal and external moderator following applicable policies and regulations for quality assurance to ensure fairness, validity, reliability, and consistency of assessments. The moderator shall be registered and accredited by the Botswana Qualifications Authority and/or equivalent accreditation board.

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 System shall be used for credit transfer between institutions of higher learning following the available Credit Accumulation and Transfer Policy of the University of Botswana which will be aligned to the National Credit Accumulation Transfer Policy.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Horizontal Articulation (related qualifications of a similar level (NCQF Level 10) that graduates may progress to):

- PhD in Research
- PhD in Design
- PhD in Design Products

- PhD in Product Design
- PhD in Global Innovation Design
- PhD in Innovation Design
- PhD in Experience Design

Vertical Articulation (NCQF Level 10) qualifications to which the holder may progress to:

This is the highest educational qualification, but candidates can proceed to do: Postdoctoral in various design disciplines, etc.

Employment

- Researchers
- Industrial designers
- Consultants
- Design policymakers
- Product director
- Design entrepreneur
- Design innovator

QUALIFICATION AWARD AND CERTIFICATION

Minimum standards of achievement for the award of the qualification

To be awarded a Doctor of Philosophy in Industrial Design, a learner should have satisfied all exit learning outcomes and met the minimum credit requirements (390 credits), fundamental and core components as indicated in the qualification structure.

Certification

For a leaner to be awarded a Doctor of Philosophy in Industrial Design qualification, he/she should have achieved a minimum of 390 credits. After satisfying all the requirements, a learner will be awarded a Doctor of Philosophy in Industrial Design certificate.

SUMMARY OF REGIONAL AND INTERNATIONAL COMPARABILITY

A comparability of the current qualifications was conducted against qualifications at the University of Johannesburg, South Africa (https://www.uj.ac.za/wp-content/uploads/2022/04/industrial-pg-brochure-2021.pdf), Queensland University of Technology, Australia (https://www.qut.edu.au/research/study-with-us/phdand Umeå University, Sweden, (https://www.umu.se/en/umea-institute-of-design/education/programmes/phd-programme/).

The duration of the PhD in Industrial Design qualification from the benchmarked qualifications ranges from 3-5 years full-time and 4-7 years part-time study. The https://www.qut.edu.au/research/study-with-us/phd levels in Australia and South Africa are the same at Level 8, and Sweden is at Level 8. However, the credits for the benchmarked qualifications were not stated, except for Sweden, which is 240 credits.

The entry requirements for a PhD qualification are similar to the benchmarked qualifications, as one needs to possess a minimum of a master's degree in the relevant field.

The learning domains for PhD qualifications are similar in knowledge, skills, and competencies, for example, developing and defending a research proposal, writing a thesis and research publication.

The exit learning outcomes of this qualification compare well with those of the benchmarked qualifications, for example, making an original and substantial contribution to knowledge in a specific field or learning and successfully defending a thesis at an oral examination.

The modules are comparable as there is a taught module in the foundation year on research methodologies and other professional development activities such as conducting seminars. All qualifications require learners to conduct research and publications.

The assessment strategies in all the qualifications include submitting an original research thesis, completing coursework and a doctoral defense (viva voce). A PhD is awarded to a learner who produces substantial original research that contributes to new knowledge in the field of study.

Employment pathways include researcher, industrial designer, consultant, design policymaker, product director, design entrepreneur and design innovator.

The Doctor of Philosophy in Industrial Design qualification aligns well with qualifications offered in South Africa, Sweden, and Australia. Therefore, the qualification provides for the international mobility of graduates. It prepares graduates for research and teaching careers in higher education, government and research institutes, and industry, especially in research, development, and innovation.

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**	