NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Curriculum Framework



CURRICULUM FRAMEWORK

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ABBREVIATIONS AND ACRONYMS

Abbreviations	Meaning
ET	Emerging Technologies
LMS	Learning Management System
NDP	Namibia Development Plan
NQA	Namibia Qualifications Authority
NQF	National Qualifications Framework for Namibia
NUST	Namibia University of Science and Technology
QMF	Quality Management Framework
TLA	Teaching, Learning and Assessment
TLAF	Teaching, Learning and Assessment Framework

Acronym	Meaning
ADS	Academic Development and Support: Programme Development and Quality Assurance .
DACUM	Developing a curriculum
NUST	Namibia University of Science and Technology
PAC	Programme Advisory Committee
STEM	Science, Technology, Engineering and Mathematics
WIL	Work Integrated Learning

DEFINITIONS

Term	Definition /
20/80 Rule	The 20/80 Rule is applied when reviewing courses and programmes. According to this rule, a course or programme is considered new if at least 20% of its content is modified. However, a change in the title alone will qualify a course or programme as new, regardless of any content modifications.
Assessment	A general term that embraces all methods used to evaluate the performance of students against a set of criteria. It is the process of collecting evidence of students' performance and effort to measure and make judgments about the achievement or non-achievement of specified National Qualifications Framework (NQF) standards, level descriptors or qualification outcomes.
Benchmarking	A process through which a programme is evaluated and compared against national, international, and external reference points for accountability and improvement.
Course	A cohesive piece of learning in a subject or cognate area designed to contribute to the student's achievement of the learning outcomes of the qualification enrolled for.
Curriculum	A set of courses with their content, set standards, delivery methods and assessment strategies as offered on a programme.
Curriculum design	The strategic process of informed and deliberate construction of a programme to enable students to achieve the appropriate level and scope of discipline, skills, knowledge and understanding on completing a unit of study.
Curriculum development	The process through which an educational programme is planned, designed and approved for delivery.
e-learning	Learning facilitated by means of the use of ICT, social technology, communication technology, online learning platforms and other multimedia devices, to allow flexible, online learning.
Employability skills	A range of essential abilities, including communication, teamwork, problem-solving, and adaptability, that enable individuals to succeed and thrive in the workplace.
Entrepreneurial skills	A set of abilities, including problem-solving, leadership, financial literacy, adaptability, risk-taking, networking, sales and marketing, and decision-making, that enable individuals to identify opportunities, take risks, and create or manage successful ventures.
Graduate attributes	The qualities, skills and levels of understanding students should develop while at the institution. These attributes go beyond disciplinary expertise or technical knowledge that traditionally form the core of most university courses. This includes elements of creativity, global citizenship, critical thinking, Internet of Things (IoT), emerging technologies and cognitive

Term	Definition /
	computation, augmented and virtual reality, computation in the clouds, and reducing the carbon footprint.
Internationalisation of the curricula	The integration of global perspectives, cultures, and concepts into educational programmes to enhance students' understanding of the world and prepare them for a globalised workforce.
Learning outcomes	Statements of what students should be able to do upon completion of a specific course. These are described in capability terms and include statements related to knowledge, skills and attributes.
Learning-centred	An approach that focuses on designing and delivering education with the learner's needs, interests, and active participation at the core, aiming to promote deeper understanding, critical thinking, and skills development.
Multidisciplinary approach	A method of combining or involving several academic disciplines or professional specialisations in an approach to a topic, problem and/or programme.
Notional Hours	The learning time that it should take an average student to meet defined learning objectives. This includes concepts such as contact time, time spent in structured learning, individual learning, assessment and workplace learning.
NQF credits	The weighting of the learning time required to meet the prescribed outcomes. This includes contact time, structured learning, workplace learning and self-study. One (1) NQF credit equates to 10 notional hours of learning.
Open Educational Resources (OERs)	Learning materials that are freely available (largely online) for use, remixing and redistribution. These include learning content, tools and implementation resources. One of the most important role players is Creative Commons, which governs OERs through different licences.
Outcomes of learning	Statements that describe what students should know and be able to do upon completion of a specific course. These are described in capability terms and include statements related to knowledge, skills, attitudes and personal attributes.
Professional body	A body of expert practitioners in an organised profession (for example, Accounting, Medicine, Engineering, Architecture or Quantity Surveying) that certifies successful completion of its requirements and thereupon awards a licence and bestows a recognised appellation such as Chartered Accountant, Engineer or Architect.
Programme	A learning pathway constructed by the institution to enable a student to achieve the outcomes of a specific qualification or set of qualifications. It consists of a comprehensive description of the outcomes to be achieved; the courses in that programme; the teaching, learning and assessment strategies to be used in the programme; and any special arrangements applicable to the programme. Programmes may be discipline-based, professional, career-focused or trans-, inter- or multidisciplinary in nature. A programme has recognised entry and exit points.

Term	Definition /
Programme Advisory Committee (PAC)	A committee whose members are knowledgeable about and have expertise in a specific industry and/or discipline. The members may be drawn from industry, alumni, current students, faculty from other education and training providers, professional bodies, and line ministry (etc.).
Qualification	An award which represents the attainment, following robust assessment processes, of a coherent cluster of specified outcomes of learning to prescribed standards of performance.
Qualification designator	Describes a generic field of study, discipline or profession as stated in the NQF qualification nomenclature; for example, Bachelor of Science, with 'Science' being the designator.
Stakeholder	Any individual, organisation or statutory body that performs an active role within a specified academic programme.
Student-centred learning	A paradigm for teaching, learning and curriculum development that places students at the centre of the learning process. The aim is for students to actively participate in their own learning process, incorporating their interests and skills, thereby ensuring ownership in their learning.
Work-Integrated Learning (WIL)	A structured form of work in a learning programme that focuses on the application of theory in the context of an authentic or simulated setting. It addresses the specific competencies identified for the acquisition of a qualification; is linked to the acquisition of credits; and supports the development of a range of skills that will render the qualifying student employable.

1. PREAMBLE

The Namibia University of Science and Technology (NUST) Curriculum Framework (CF) provides guidance for the development, review, implementation, monitoring and evaluation of all new and existing undergraduate and postgraduate curricula. The goal is to enhance students' learning experience by equipping them with advanced knowledge, skills, and attributes, thereby enabling them to excel in a global market.

The framework is aligned with the processes for programme design, approval, implementation, monitoring and review as manadated by institutional, national and international quality assurance guidelines. This document should be read in conjunction with all relevant institutional, national, and international quality assurance frameworks. These include the NUST Act (Act No. 7 of 2015), NUST's Integrated Strategic Business Plan, Programme Development and Review Policy, Policy on Cooperative Education, Teaching, Learning and Assessment Framework (TLAF), Quality Management Framework (QMF), and the Faculty Yearbooks. Additionally, it aligns with the Namibia Industrial Policy, the Namibia Green Industrialisation Policy, Agenda 2063: *The Africa We Want*, the Africa Quality Policy (AQP), and the African Standards and Guidelines for Quality Assurance (ASG-QA). It also considers the SADC Qualifications Framework (SADCQF), the Protocol on Education and Training, the Education and Skills Development Programme, and the standards set by the International Network for Quality Assurance Agencies in Higher Education (INQAAHE).

The CF serves as:

a. a **reference** and a **guide** for the process of curriculum transformation, and review that is responsive to current and future developments in Higher Education (HE) both nationally and internationally;

b. a roadmap for academics, administrators and stakeholders to the enhance quality of education, promoting employability and fostering global citizenship among graduates;

c. a **living framework**, allowing flexibility and adjustments for new developments during implementation;

d. a **policy instrument** for curriculum design, development and implementation, monitoring and evaluation;

e. a **response** to the changing demands of society, including the imperatives of the Fourth Industrial Revolution (4IR) and beyond; and

f. an **instrument** that focuses on learning-centredness for promoting NUST graduate attributes.

1.1 Background

The framework is reviewed to reflect the changed context in which the university now operates. This document defines the institution's imperatives, aligns university goals with national development priorities, programme attributes, and teaching, learning, and assessment (TLA), and serves as a unified guide for curriculum design, and development.

A Curriculum is a set of courses with their content, set standards, delivery methods and assessment strategies as offered on a programme. Therefore, this Curriculum Framework (CF) sets the basis for teaching, learning and assessment and provides the foundation for how academic and professional programmes should be developed monitored and implemented.

Curriculum design and development, and the delivery of higher education are critical national priorities in Namibia. In response, the government established *The Regulations Setting-Up the National Qualifications Framework for Namibia* to guide, regulate, and enhance the effectiveness of all qualifications. In Namibia, all qualification developers must adhere to the requirements of the National Qualifications Framework (NQF). To ensure the relevance of its programmes and qualifications, the University aligns all its policies and frameworks with the country's higher education quality assurance systems. Accordingly, this Curriculum Framework (CF) is aligned with the University's vision, mission, and values, as well as the NQF requirements. The CF enables educators to integrate key elements of programme development, including pedagogical innovation, student success, and industry feedback, to design programmes that equip graduates with the necessary knowledge, skills, and competencies for employability in the economy.

1.2 Objectives

The objectives of the framework are to:

a. set-out the philosophies and academic principles that underpin NUST's programmes;

b. ensure that NUST's graduate attributes and teaching, learning, and assessment (TLA) practices are fully integrated and prioritised throughout the curriculum's design, development, implementation, monitoring, and review processes;

c. ensure that academic and professional programmes developed and/or revised are relevant, research-informed, demand-driven, and responsive to current and emerging needs in Namibia and beyond;

d. ensure the development of inclusive, multidisciplinary curricula and learning pathways embrace internationalisation, sustainability, innovation, creativity, entrepreneurship, learning-centred learning and systems thinking;

e. stimulate advanced thinking among curriculum developers to design programmes that empower students to reach their full potential, regardless of their social, economic or regional background;

f. guide curriculum developers in designing flexible programmes that foster equity, inclusiveness, and diversity while ensuring alignment with NUST's academic goals, financial sustainability, infrastructural capacity, and cultural diversity;

g. facilitate the active involvement of all relevant stakeholders in the development and review of NUST's programmes, ensuring their feedback and evaluations are effectively incorporated; and

h. ensure that programmes align with national and international quality assurance standards and requirements.

2. PHILOSOPHIES UNDERPINNING THE CURRICULUM FRAMEWORK AT A UNIVERSITY OF SCIENCE AND TECHNOLOGY

This Curriculum Framework (CF) is grounded in transformative, constructivist, and humanistic philosophies that drive excellence in teaching, learning, and assessment; as well as in research, innovation, technology integration, community engagement, and strategic partnerships. All these efforts are directed towards advancing science, technology, and socio-economic development. The framework upholds the core principles established by the NUST Act 7 of 2015, ensuring alignment with the guiding standards that govern the university's core functions. The following principles, which translate the philosophy of the CF into a practical framework, serve as the foundation for ensuring the effectiveness of curriculum design, implementation, monitoring, evaluation, and review.

2.1 Alignment and Coherence

Alignment and coherence in curriculum development and review consider that whatever is taught and learnt in any educational setting does not exist in isolation.

Alignment of curricula happens at various levels: supra, macro, meso, micro and nano. At the supra level, the process must ensure that curricula are aligned with international, continental, regional, national, institutional, and classroom priorities to revitalise higher education and address the demands of the Fourth Industrial Revolution (4IR). At the macro level, it is essential to align with national requirements, including Namibia's Vision 2030, the National Development Plan, the Namibia Green Industrialisation Plan, the NUST Act 7 of 2015, the National Science, Innovation, and Technology Policy 2020-2023, as well as the regulations governing higher education. At meso level, all programmes must be consistent with the University's Mission, Vision and Values. At micro level, coherence among programme graduate attributes must be ensured. At the nano level, there must be alignment between the intended learning outcomes, teaching and learning strategies, and assessment methods. The teaching methods and activities, as well as the assessment approaches, must be carefully designed to align with and achieve the stated learning outcomes.

Curricula must be thoughtfully organised and sequenced to eliminate unnecessary duplication, with all learning materials grounded in a consistent and coherent set of learning outcomes. As outlined in the Teaching, Learning and Assessment Framework (TLAF), curricula should incorporate a variety of teaching, learning, and assessment methods that consistently support student success.

2.2 Relevance

By integrating theory and practice into curriculum design and development with the involvement of Programme Advisory Committees (PACs), curricula should remain responsive to the current and future needs of industry and the workplace, including emerging trends. Programmes requiring professional accreditation and/or registration must attain the necessary credentials to ensure quality and industry relevance. Engaging external stakeholders in teaching and research should be actively encouraged to enrich learning experiences and foster collaboration. Additionally, curricula should be aligned with students' current and potential future interests by providing meaningful engagement opportunities and platforms that challenge and inspire them to expand their thinking and realise their full potential.

Specifically, curriculum relevance within this framework should be evaluated according to the following eight distinct sub-principles.

a. Learning-Centred in Teaching and Learning

The teaching focus shifts towards addressing students' individual needs by placing learning at the core of the teaching and learning process. This approach fosters greater student responsibility and engagement, allowing learners to take an active role in shaping their own educational journey. Lessons are driven by curiosity and inquiry, encouraging students to explore and question. The fundamental rationale for this shift is the recognition that knowledge cannot simply be transmitted; rather, it must be actively constructed by individuals in a manner unique to their experiences and understanding. The University has embraced a learning-centred approach, in which students play an active role in their own learning. This approach is embedded in both existing and emerging methodologies, including inquiry-based, problem-based, project-based, community-based, and case-based learning, as well as systems thinking.

These pedagogical methods should equip students with the graduate attributes expected by the institution upon the successful completion of their studies. Consequently, curricula should prioritise the acquisition and application of knowledge to foster continuous learning and innovation. Additionally, curricula should cultivate students' critical, creative, and innovative thinking skills through meaningful and effective assessment practices, both within and beyond the classroom.

Curricula should support students in educating themselves through self-directed research on unfamiliar topics. Therefore, both self-directed and guided learning should be included in the notional hours prescribed in the curriculum. This means that curricula should create opportunities for students to connect formal and informal learning. Curricula should also encourage students to take responsibility for monitoring their own progress towards achieving the required graduate attributes and learning outcomes for the world of work.

b. Multidisciplinarity

The multidisciplinary approach acknowledges that no subject can be fully mastered in isolation. A NUST student specialising in one field needs foundation courses from other disciplines that provide essential knowledge for success in a globalised world. This approach promotes collaboration among faculty members, faculties, and departments. For example, students in the Bachelor of Engineering in Mechanical Engineering programme can take elective courses from other faculties for non-degree purposes.

Multidisciplinarity is key to shaping NUST graduate outcomes, fostering 21st-century skills, and advancing national development goals. It also prepares students for the opportunities and challenges of the Fourth Industrial Revolution (4IR) and beyond.

A multidisciplinary curriculum further empowers students by engaging them with professionals tackling complex, real-world issues. These interactions expose students to various career paths and help them build valuable networks. Figure 1 below illustrates the range of disciplines encouraged.

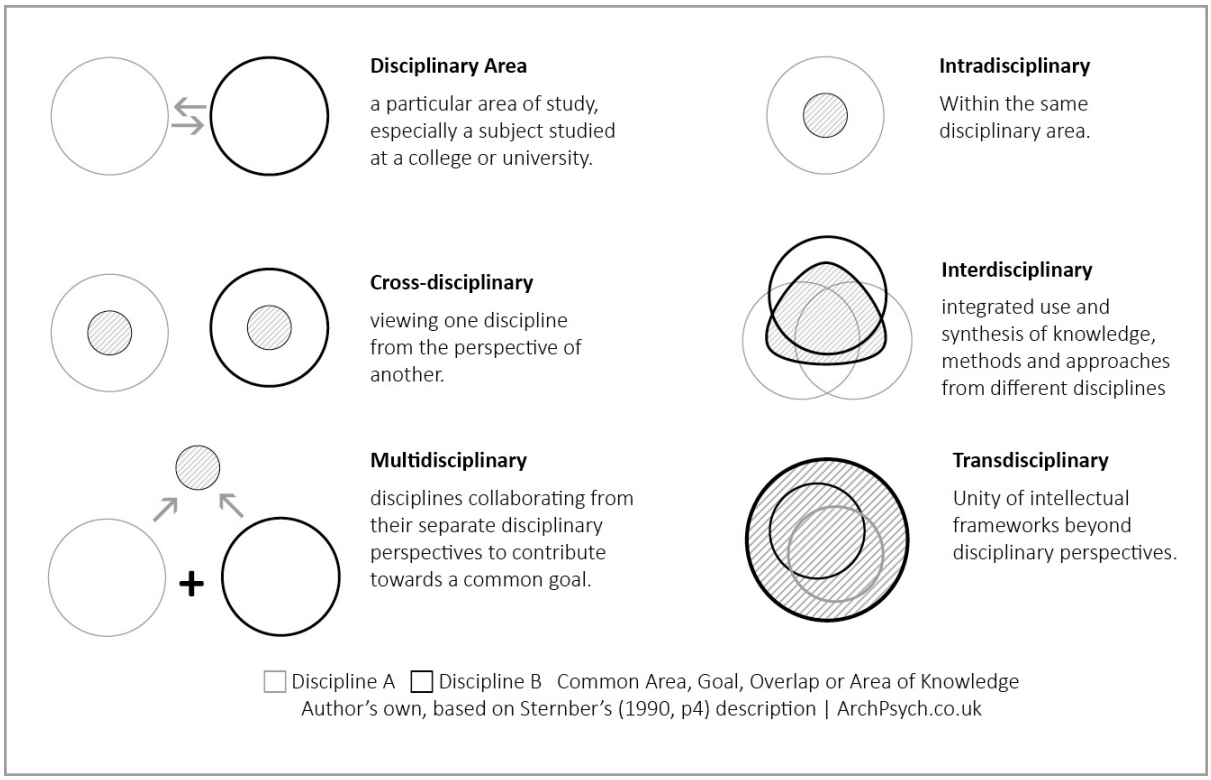


Fig. 1 Disciplinary illustration as developed by Stember's 1990 and demonstrated by Chris Huff, 2022

d. Inclusive and flexible learning and teaching

Inclusive teaching and learning create an equitable and accessible environment for all students. Education should be diverse, participatory, and free of barriers, addressing the needs of both lecturers and students.

Many students today balance work and study. To support them, academic programmes should adopt flexible hybrid teaching and learning approaches. These approaches ensure accessibility and accommodate diverse learning needs.

e. Internationalisation and Global Competitiveness

The framework promotes the internationalisation and competitiveness of curricula. It prepares graduates to live and work effectively and ethically in a globalised world. Curricula should accommodate students from diverse backgrounds by integrating international and intercultural dimensions in their design, delivery, and outcomes. Regular benchmarking against similar programmes at peer institutions ensures continuous improvement, standardisation, and academic mobility. This can be achieved through student exchange programmes, online collaborations, cross-border education initiatives, and joint or dual degree programmes. Where possible, programmes should pursue international accreditation or validation.

e. Technology-Enhanced Learning

Advancements in technology and shifts in the nature of work are reshaping how students learn and how universities deliver education. Course content and teaching methods should align with the specific demands of each field while remaining appropriate for students' academic level and future professional needs.

Higher education worldwide is increasingly adopting Emerging Technologies (ET) and Open Educational Resources (OERs). All curricula should integrate available institutional technologies to support the teaching, learning, and assessment methods outlined in the TLAF. Effective technology integration requires blended learning and other relevant delivery modes.

The current University's Integrated Strategic Business Plan (ISBP) 2021-2025 recommends that all faculties develop flexible hybrid online courses using available e-learning facilities, as outlined in the Flexible Hybrid Learning Policy. Learning Management Systems (LMS), plagiarism detection software, and virtual classroom applications are essential for providing access to university resources, promoting deep learning, and ensuring effective assessment and academic integrity, as detailed in the Teaching, Learning, and Assessment Policy.

g. Research and Innovation

The university equips students for employability by providing opportunities to engage in innovative and creative projects, work-based learning, internships, and other work-related experiences. These experiences bridge the gap between theory and practice, enhancing students' professional readiness and adaptability in dynamic job markets.

The Curriculum Framework (CF) ensures that teaching, learning, and assessment are research-inspired, informed by relevant, current research, scholarship, and professional practice. It actively promotes student engagement with the research process and its real-world applications, fostering critical thinking and problem-solving skills.

Additionally, the CF integrates the United Nations Sustainable Development Goal 4 (SDG 4): Quality Education to instill ethical and environmental responsibility. It encourages students to develop a broad understanding of sustainability, encompassing social, economic, and environmental dimensions, preparing them to contribute meaningfully to global and local challenges.

g. Continuous Monitoring and Annual Evaluation

Programme courses undergo continuous monitoring and annual evaluation to ensure content remains current and is delivered using effective pedagogical approaches. Review findings must be reported to the Curriculum Development Committee, which oversees progress in learning outcomes. As per NQF procedures, the 20/80 rule should guide all changes to course structure and outcomes. Every five years, each programme undergoes a comprehensive evaluation using the Programme Quality Assurance Tool to assess performance, identify strengths and weaknesses, and implement improvements.

An annual evaluation should be conducted for major curriculum changes exceeding 20%, particularly those that significantly impact course learning outcomes, structure, organisation, delivery, accreditation, or NQF registration. This review should follow a standard process and include input from all relevant stakeholders to ensure quality, relevance, and compliance.

h. Curriculum Transformation Paradigm

The NUST Curriculum Framework integrates elements of transformative teaching, learning, and assessment through the incorporation of relevance alongside student-centred learning, inclusivity, diversity, equity, inter-disciplinarity, multidisciplinarity, and technology-enhanced learning. The modern educational transformation builds curricula relevant to industry needs while supporting diversity in learning by using technology to create adaptable programmes that support continuous learning. Therefore, this transformative element must be considered when developing the curricula of a programme offered by NUST.

The NUST Curriculum Framework embraces a curriculum transformation paradigm to ensure teaching, learning, and assessment remain relevant, inclusive, and future-focused. This transformation prioritises learning-centredness, diversity, equity, inter-disciplinarity, and technology-enhanced education. By aligning curricula with industry needs, the university prepares graduates for dynamic career landscapes while fostering adaptability and continuous learning. Integrating these transformative elements into all programme curricula ensures that NUST remains at the forefront of innovative, responsive, and high-quality education.

3. GRADUATE ATTRIBUTES AND EMPLOYABILITY SKILLS

NUST strives to develop graduates who embody the following six key attributes:

3.1 Problem-Solving Skills: The ability to analyse complex issues, identify critical factors, and develop effective solutions—essential for addressing real-world challenges in science and technology.

3.2 Critical Thinking and Analytical Skills: The ability to analyse data, interpret results, and evaluate hypotheses to make informed, evidence-based decisions.

3.3 Technical Proficiency: A comprehensive mastery of specialised knowledge, tools, and methodologies pertinent to their field of study, such as software development, engineering, biotechnology, or other disciplines, enabling effective problem-solving and innovation.

3.3.1 Collaboration and Teamwork: In science and technology, success often relies on working within multidisciplinary teams. Graduates should be adept at effective communication, fostering collaboration with colleagues, and making meaningful contributions to collective goals.

3.3.2 Communication Skills: The ability to articulate complex technical concepts clearly and effectively to diverse audiences—including peers, stakeholders, and the general public—is crucial for professional success.

3.3.3 Adaptability and Lifelong Learning: Given the rapid advancements in science and technology, graduates must remain agile, continuously updating their knowledge and skills to stay at the forefront of their field.

These attributes ensure that graduates are well-prepared to excel and drive innovation in their respective fields.

Graduate attributes should be embedded in curricula and actively assessed, demonstrated, and integrated into teaching, learning, assessment, research, and Work-Integrated Learning (WIL) practices. They encompass employability skills—a combination of attributes, competencies, and knowledge essential for the labour market. To maintain alignment between intended graduate attributes and academic content, curricula should be systematically mapped against these attributes. Furthermore, curriculum development should involve industry stakeholders to ensure that each course aligns with relevant employability outcomes. Figure 2 below illustrates the NUST graduate attributes.

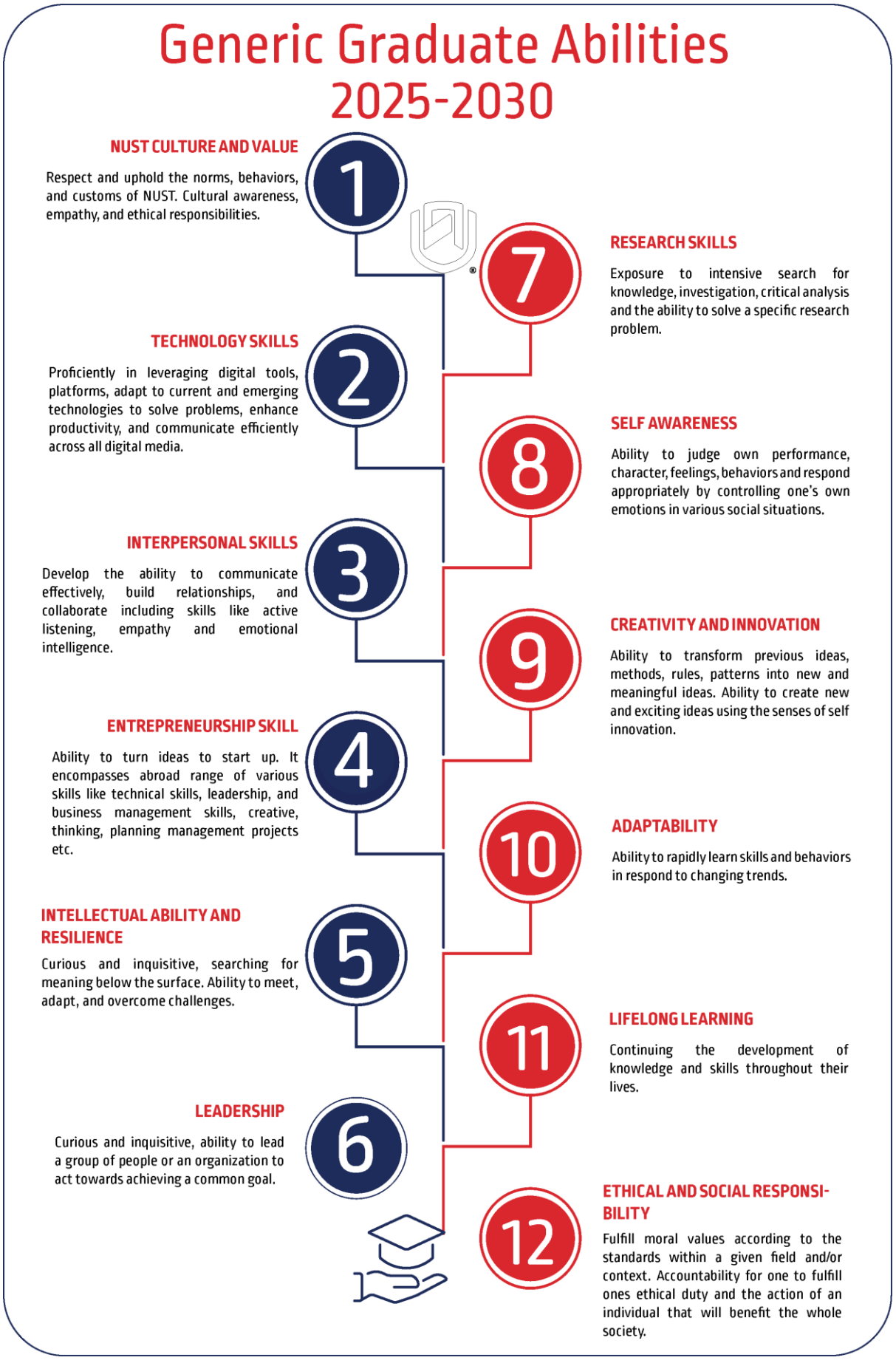


Figure 2: NUST Graduate Attributes

4. CHARACTERISTICS OF NUST PROGRAMMES

Curricula are designed and developed to foster meaningful learning experiences, ensuring students achieve programme learning outcomes and graduate attributes aligned with their discipline and profession.

NUST's curricula for taught and research-based programmes should:

a. ensure learning outcomes are appropriately aligned with NQF levels for the subject, discipline, or profession, while achieving NUST graduate attributes;
b. include a well-defined assessment and feedback strategy;
c. Facilitate meaningful collaborative learning experiences by:
    i. allowing students to take courses from other programmes for non-degree purposes.
    ii. promoting group projects, peer learning, facilitated discussions, interdisciplinary approaches, and reflective feedback through flipped classrooms.
d. for undergraduate programmes:
    i. provide opportunities for inquiry-based learning through projects or other appropriate modalities.
    ii. incorporate Work-Integrated Learning (WIL) with a minimum of 36 NQF credits.
e. for postgraduate programmes:
    i. integrate inquiry-based learning projects, such as capstone projects, action research, design thinking, industry-based initiatives, community engagement, and prototype development.
    ii. incorporate a research component that addresses current and emerging local, regional, and global challenges (excluding postgraduate certificates and diplomas).

5. NUST QUALIFICATION TYPES

NUST qualifications must conform to the Regulations Governing the National Qualifications Framework. NUST provides for the following qualifications.

5.1 Undergraduate Qualifications

NUST sets out the guidelines for the minimum credits for its qualifications, thus setting their standards. Unless specified by a professional body or national authority for a particular occupation, the total credits for a bachelor's degree should not exceed 20% above the minimum credit requirement. The minimum credit that can be transferred from other programmes should not exceed 50% of the programme's total credits.

NUST establishes guidelines for the minimum credit requirements for its qualifications, setting the standards for each programme. Unless otherwise specified by a professional body or national authority for a specific occupation, the total credits for a bachelor's degree should not exceed 20% above the minimum credit requirement. Additionally, the maximum number of credits that can be transferred from other programmes should not exceed 50% of the total credits required for the programme.

5.1.1 Certificate

Certificates are awarded at NQF Levels 4 to 7 and require a minimum of 60 NQF credits, along with demonstrated competence in a coherent set of learning outcomes related to a specific work role or a recognised milestone in education and training. The exit level must always be indicated in the certificate title.

5.1.2 Diploma

Diplomas are registered at NQF Levels 5 to 7 and require a minimum of 120 NQF credits. They acknowledge demonstrated ability to apply knowledge and exercise judgment across a broad range of educational or vocational fields, as well as in technical, professional, and/or managerial roles. The exit level must always be specified in the diploma title.

5.1.3 Bachelor Degree

The bachelor's degree is registered at NQF Level 7 and requires a minimum of 360 NQF credits, including at least 72 credits at Level 7. It provides a structured, comprehensive, and coherent foundation in the subject area, fostering self-directed learning, intellectual independence, critical thinking, analytical rigour, and advanced communication and collaboration skills. The bachelor's degree enables vertical articulation into a Bachelor Honours degree or a Postgraduate Diploma programme, which should align with the area of specialisation or the major pursued during the undergraduate study.

5.1.4 Integrated Bachelor Honours Degree

The Integrated Bachelor Honours Degree is registered at NQF Level 8 and requires a minimum of 480 credits. It serves as an initial higher education qualification designed for careers and fields that demand advanced training beyond a bachelor's degree but are not regulated by a nationally recognised professional body. When designing this programme, a minimum of 120 credits must be at Level 8, with at least 30 credits allocated to research. The Integrated Bachelor Honours Degree provides vertical articulation into a cognate master's degree, typically aligned with the area of specialisation or the major discipline pursued in the programme.

5.1.5 Professional Bachelor Degree

The Professional Bachelor's Degree is registered at NQF Level 8 and requires a minimum of 480 credits. It is designed to meet the educational requirements for professional registration in fields regulated by nationally recognised professional bodies. When developing this programme, a minimum of 120 credits must be at Level 8, including at least 30 credits dedicated to research. The Professional Bachelor's Degree enables vertical articulation into a cognate master's degree, typically aligned with the area of specialisation or the major discipline pursued in the programme.

5.2 Postgraduate Qualifications

5.2.1 Postgraduate Certificate

A Postgraduate Certificate is awarded at Level 8, which is a higher level than that of a Bachelor's Degree. It recognises ongoing professional development in the same field as a previously earned degree. The certificate is designed to broaden, enhance, and deepen students' existing knowledge and skills. The Postgraduate Certificate requires a minimum of 60 NQF credits.

5.2.2 Postgraduate Diploma

A Postgraduate Diploma is awarded at Level 8, which is higher than the level of a Bachelor's Degree. It aims to deepen the student's knowledge in a specific discipline or profession. The primary purpose is to support working professionals in advanced reflection and development through a systematic

exploration of current thinking, practices, and research methods in their area of specialisation. This qualification requires a high level of theoretical engagement and intellectual independence, and may include an inquiry-based project or other appropriate assessments. The Postgraduate Diploma requires a minimum of 120 NQF credits and articulates into a master's degree, typically in the same area of specialisation.

5.2.3 Bachelor Honours Degree

The Bachelor Honours Degree is the initial postgraduate specialisation qualification that builds on a Bachelor Degree in the same cognate area. It prepares students for postgraduate research. The degree consolidates and deepens students' understanding of a particular discipline and develops their research skills, with a focus on the methodologies and techniques relevant to the field. The degree requires a high level of theoretical engagement and intellectual independence..

Bachelor Honours programmes require students to conduct and report on research under supervision, in line with the conventions of the discipline. A Bachelor Honours Degree requires a minimum of 120 NQF credits (all at Level 8), with at least 25% (30 credits) dedicated to research. The degree articulates into a master's Degree, typically in the same area of specialisation.

5.2.4 Master's Degree

Master's Degrees are designed to prepare researchers who can contribute to advanced knowledge development and/or equip graduates for specialised employment. A Master's Degree requires 240 NQF credits (all at Level 9) and must include a substantial research component. Where applicable, core curriculum courses should be developed. Master's graduates should be able to approach complex issues systematically and creatively, make informed judgments using available data, and communicate their findings clearly to both specialist and non-specialist audiences.

5.2.4.1 There are two variant Master's degrees:

(a) Master's Degree by Coursework and Research

This Master's Degree can be completed either through coursework and thesis or coursework and mini-thesis. The programme includes theoretical courses, a research project, and, in some cases, practical work, a design project, and an internship. Students are required to complete an individual research project that forms the basis of a treatise, which must be submitted as part of the degree requirements. For Master's Degrees with a thesis or mini-thesis component, the research portion must account for at least 40% of the total credits required for the degree. Students who complete the Master's Degree through coursework and wish to pursue a PhD or Doctorate by research may be eligible to undertake additional research credits or gain industry experience for non-degree purposes to meet the prerequisites for doctoral studies.

(b) Master's degree by Research

A Master's Degree by research involves an advanced research project with a defined scope and duration. The research is typically submitted in written form; however, in certain disciplines and where approved by the Faculty, the degree requirements may be partially or fully fulfilled through a portfolio of original artworks, artifacts, conceptualisations, compositions, installations, or performances. The Master's Degree serves as a pathway to a Doctoral Degree, which is generally pursued in a closely related area of specialisation.

5.2.5 Doctoral Degree

A candidate for a Doctoral Degree must demonstrate advanced research skills and make a significant, original contribution to the body of knowledge within their discipline or field. This degree requires the completion of 360 NQF credits, all at Level 10, and involves conducting research at an advanced academic level, culminating in the submission, defense, and acceptance of a thesis. The research must meet high standards of quality, satisfying peer review and being worthy of publication. NUST offers the following Doctoral Degrees in alignment with the NQF:

a. Pure research (by thesis)

b. Practice-oriented degree: a Named Doctorate or Professional Doctorate

6. UNDERGRADUATE PROGRAMME STRUCTURE

Undergraduate programmes include NUST core courses, faculty core courses, and electives (or optional courses). The curriculum follows the NQF credit system, providing flexibility in course selection. Figure 2 illustrates the structure of both 3-year and 4-year undergraduate degree programmes, including Integrated Bachelor Honours and Professional Bachelor programmes.

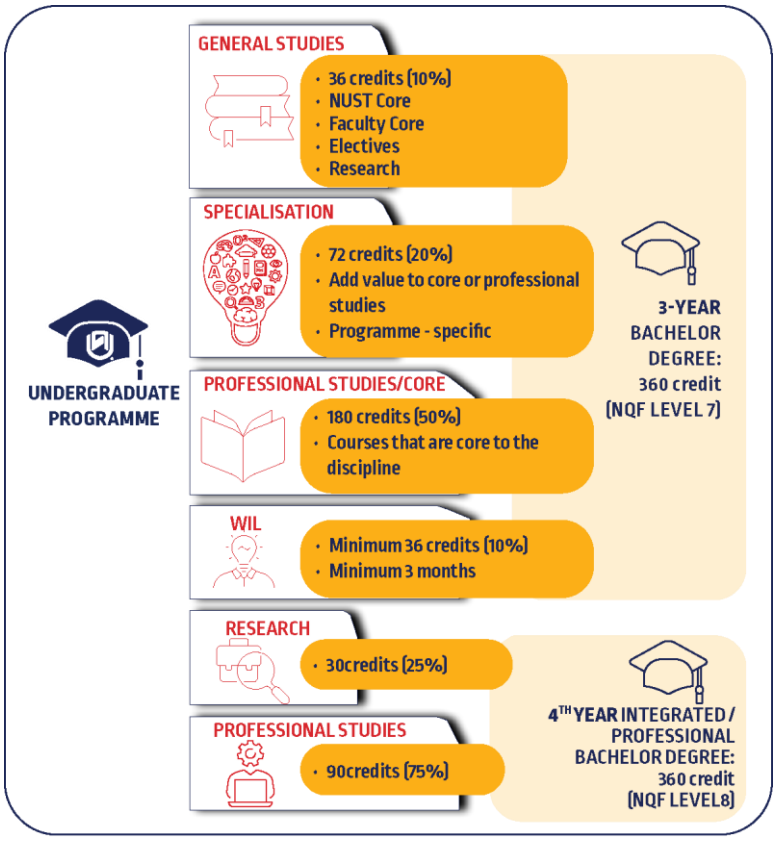


Figure 3: Structure of the Undergraduate Programmes

(All 3-year Bachelor's degrees include a mandatory Research Methodology course at Level 7)

7. GENERAL STUDIES

7.1 NUST Core: approximately 36 credits

The NUST undergraduate curriculum is designed to adapt to rapid advancements in science and technology by providing a broad range of skills that go beyond what specialised disciplines can offer. Consequently, the structure of every undergraduate programme at NUST includes courses, content, and learning activities that focus on developing the following core skill sets:

a. **English and Communication**: At the appropriate level, this course focuses on enhancing language proficiency, academic writing, public relations and media writing, communication ethics, and critical thinking. It also covers media literacy, literature, cross-cultural studies, interpersonal and professional and business communication, storytelling and narrative techniques, and digital literarcy and communication skills. ± 2.5% (± 9 credits);

b. **Entrepreneurship**: At the appropriate level, this course focuses on cultivating an entrepreneurial mindset, generating innovative business ideas, and developing business plans and strategies. It covers key areas such as managing innovation, understanding finance, marketing, and legal aspects, promoting sustainability, maintaining ethical practices, scaling businesses, leveraging technology, and exploring entrepreneurial ecosystems. ± 2.5% (± 9 credits);

c. **Technology Innovation**: At the appropriate level, this course fosters the integration of scientific principles and technological applications across various educational stages. It covers

the fundamentals of science, technology policy and ethics, research and development (R&D) for innovation, engineering principles, computer science, civic education, artificial intelligence and machine learning for innovation, data analytics, and interdisciplinary collaboration to address real-world challenges. ± 5% (±18 credits).

The development of these core skills can be achieved through the inclusion of existing NUST courses in the curriculum or by incorporating them into discipline-specific courses, teaching strategies, and learning activities. Students may also be granted exemptions based on prior learning, knowledge, competencies, or admission requirements as determined by the Senate. The Unit responsible for overseeing curriculum development must ensure that these core competencies are effectively integrated into all undergraduate programmes.

7.1.1 Faculty core courses: approximately 18 credits

Faculty core courses provide the foundational knowledge in the programme's main field of study, ensuring that all students within a Faculty have a shared academic experience and gain broad exposure to related disciplines. These courses are selected by each Faculty based on their specific requirements.

7.1.2 Elective courses: approximately 18 credits

Elective courses are designed to broaden students' experiences, providing a well-rounded education and equipping graduates with a global perspective. Faculties must thoughtfully select these electives to ensure students gain the diverse experiences necessary for a comprehensive education.

7.1.3 Professional studies/core courses: minimum 180 credits

Professional studies/core courses constitute the foundation of a programme's subject, profession, or career field. They form the majority of the curriculum and are designed to ensure that students develop the essential graduate competencies in both the subject matter and specific technological areas.

7.2 Specialisation: minimum 72 credits

Specialisation courses are designed to complement major courses and enhance competency in a specific subject area or professional/technical practice. These courses are programme-specific and may be offered as electives.

7.3 Work-Integrated Learning (WIL): minimum 36 credits

Work-Integrated Learning (WIL) is a key component of undergraduate Bachelor's degree programmes. However, when required by industry or professional bodies, Diplomas and Certificates may also include a WIL component. WIL focuses on integrating knowledge and skills into professional practice through real or simulated work environments. While students are ideally placed in real-world work settings, the undergraduate degree requirement can also be fulfilled through alternative WIL approaches such as Service Learning, remote internships, Problem-based Learning, Project-based Learning (both in-person or virtual), or participation in simulated work environments and entrepreneurship hubs.

The learning areas and outcomes of WIL are aligned with the relevant undergraduate degree programme and industry practices. Within the curriculum, the WIL course should be appropriately positioned and assessed at the correct NQF level. Activities aimed at integrating work-related practice

with academic learning should include pre-WIL readiness programmes, reflection on learning during WIL, development of a Portfolio of Evidence, and the preparation of a report and presentation on the learning experience. These activities should include monitoring and evaluation through both formative and summative assessments during student placements. Further details on the implementation of WIL can be found in the Policy on Cooperative Education.

7.4 Research/Creative Work/Professional Project: minimum 30 credits

At NUST, Research Output, Creative Work, or Professional Project Work is a requirement at Level 8 of both the Professional Bachelor's and Integrated Bachelor Honours degree programmes.

8. POSTGRADUATE PROGRAMMES STRUCTURE

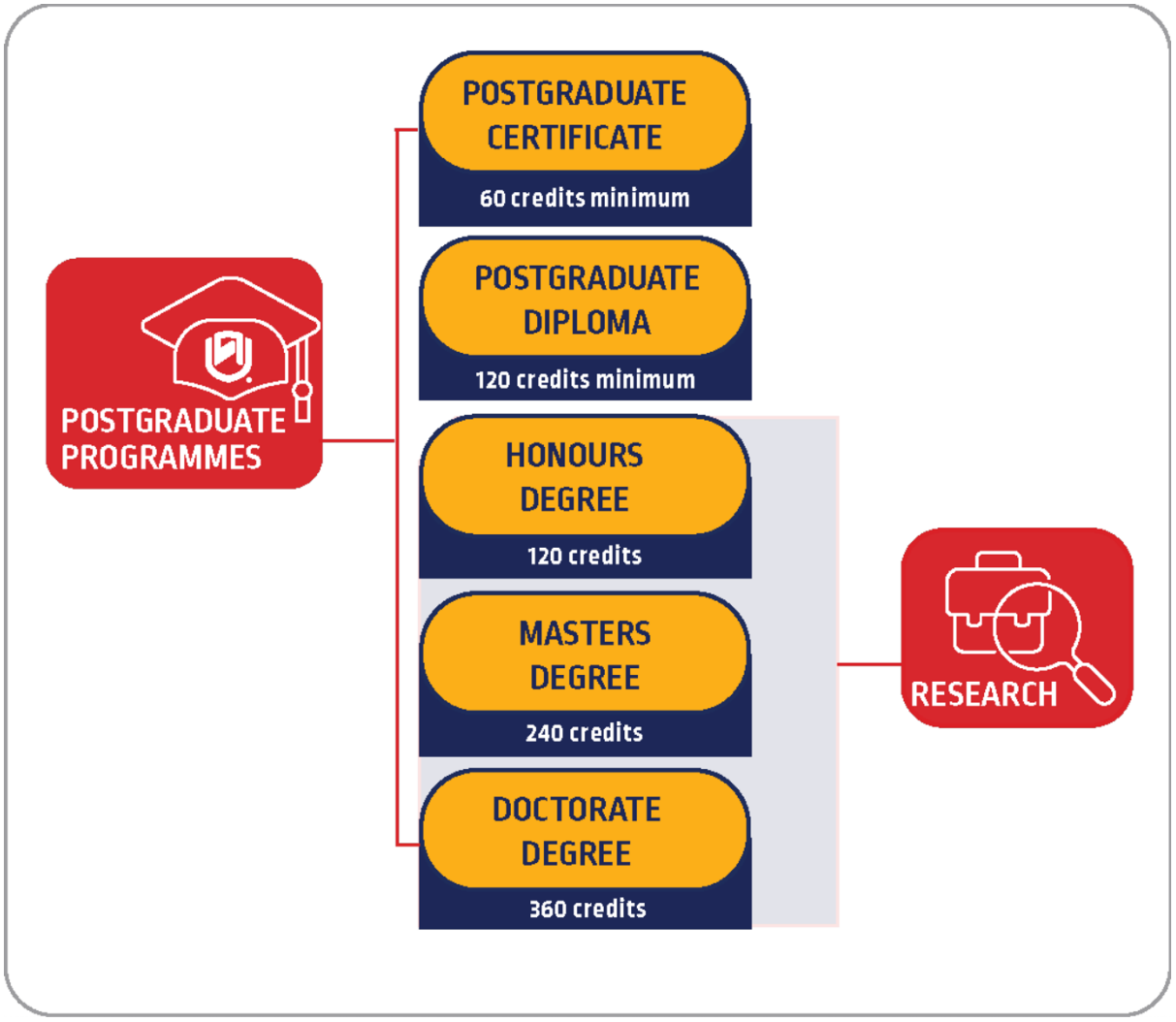


Figure 4: Structure of the Postgraduate Programmes

9. NAMING OF DEGREES

In accordance with the NQF, the qualification type for e.g., Certificate, Diploma, Bachelor Degree, etc, is the initial title given to a qualification.

The "Designator" is the second title given to a qualification, to designate its broad area of study, discipline or profession. All degrees have designators; however, designators are not used for certificates and diplomas qualification types. The linking word between the qualification type and the designator is of (e.g., Bachelor of Social Science), and once abbreviated, the 'of' is omitted (e.g., BS of Sci).

The third title given to a qualification type is the "Qualifier". Qualifiers may be used in all qualification types in order to stipulate a field of specialisation. The linking word between the qualification type or its designator and the qualifier is always in (e.g., Bachelor of Science in Mathematics, Bachelor of Engineering in Electrical Power Engineering). The in is dropped when abbreviated, and the qualifier is placed in brackets (e.g., BSc (Mathematics), BEng (Electrical Power Engineering)). A Bachelor's degree may include a Sub-qualifier. The Sub-qualifier qualifies the first Qualifier. For instance, a Bachelor of

Engineering in Mechanical in Mechatronics. The in is dropped when abbreviated, and the qualifiers are placed in brackets, e.g., BEng (Mech) (Mechatronics). Where the qualification does not have a designator, the qualifier follows immediately after the qualification type (e.g., Postgraduate Certificate in Business) and may be abbreviated as follows: PG Cert (Business).

The fourth title given to a qualification type is the "Sub-qualifier", which may be reflected with the word in as the linking word to the sub-qualifier (e.g., Postgraduate Diploma in Business Operations Management, and may be abbreviated as PG Cert (Business) (Operations Management). To use a qualifier, at least 50% of the minimum total credits for the qualification and at least 50% of the minimum credits at the qualification's exit level must be in the field of specialisation represented by the qualifier. Similarly, to use a sub-qualifier, at least 50% of the minimum total credits for the qualification and at least 50% of the minimum credits at the qualification's exit level must be in the field of specialisation represented by the sub-qualifier.

The use of the qualification designator Science at NUST, as in Bachelor of Science, is restricted to degrees that contain at least 50% of their *Professional/Core courses* in the Science, Technology, Engineering and Mathematics (STEM) fields. All other Bachelor's Degrees should use the appropriate professional or technical designation.

Degrees that do not meet these requirements shall use an appropriate designator reflecting the field of study followed by a qualifier and sub-qualifier, as appropriate, which aligns closely with the outcomes of the programme: e.g., Bachelor of Human Resource Management. The short version of this degree name will be B. HRM.

NUST may offer major, minor or double-major specialisations, provided they meet the requirements of the NQF, the professional body (where applicable) and the NUST CF. The major should constitute at least 50% of the total credits associated with the subject area of the highest-level learning outcomes. The minor should constitute, at most, 20% of the total credits.

10. CURRICULUM DEVELOPMENT AND REVIEW

DACUM (Developing A Curriculum) is a structured job analysis methodology used to design and develop curricula, particularly in vocational and technical education. However, its application extends to higher education, including universities of science and technology such as NUST. By engaging subject-matter experts—including industry professionals, faculty members, and practitioners—DACUM systematically identifies the essential competencies, skills, knowledge, and attributes required for success in specific fields. Through facilitated workshops, it ensures that curriculum content remains industry-relevant, competency-based, and aligned with evolving professional and technological standards.

At NUST, DACUM supports the development of curricula that reflect the institution's transformative, constructivist, and humanistic educational philosophies. The transformative approach ensures that programmes empower students with critical thinking, innovation, and problem-solving abilities to address real-world challenges. The constructivist paradigm fosters experiential and inquiry-based learning, allowing students to actively engage with knowledge and develop skills through hands-on application in laboratories, industry collaborations, and project-based assignments. The humanistic perspective ensures that curriculum development considers students' holistic growth, integrating ethical, social, and professional competencies to produce well-rounded graduates.

As a university of science and technology, NUST benefits from DACUM by ensuring that its programmes are designed with a strong emphasis on applied learning, technological advancements,

and interdisciplinary approaches. Given the rapid evolution of fields such as artificial intelligence, renewable energy, data science, and engineering, DACUM enables continuous curriculum adaptation to keep pace with industry demands. Moreover, DACUM strengthens Work-Integrated Learning (WIL) initiatives by embedding practical skills, entrepreneurship, and industry-driven competencies into academic programmes, enhancing students' readiness for the workforce.

Figure 5 below outlines the curriculum development and review process. This figure should be read in conjunction with the detailed Programme Development and Review Process appended to this document.

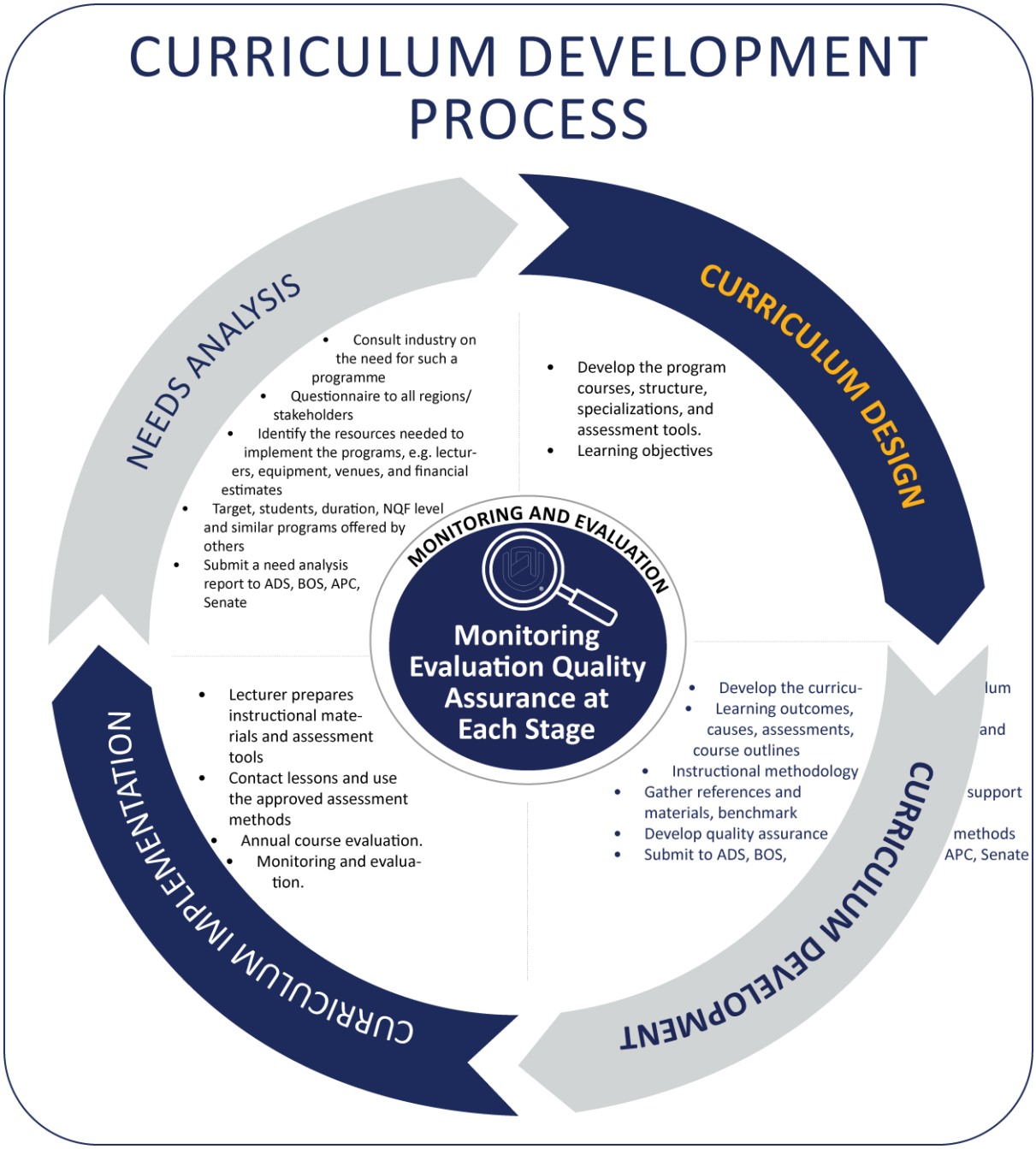


Figure: 5 Stages of Curriculum Development and Review

11. RESPONSIBILITY FOR THE IMPLEMENTATION OF THE CURRICULUM FRAMEWORK

Table 1: The DVC: Academic is the overall responsible for ensuring the implementation of this Framework.

Academic Development and Support (ADS: PDQA): Programme Development and Programme Quality Assurance Department	This department offers guidance in the design, development, and review of the programmes. It further offers assistance and guidelines in the programme accreditation process. The department coordinates and oversees the quality assurance activities related to course design, development and review. It collects data on the course implementation process and provides feedback to the Faculties, highlighting areas for improvement.
Curriculum Development Committee	Designs new courses and monitor any new changes to academic courses. Leads the review of courses and support, advises and helps the course coordinators with any subject-related matters.
Course Coordinators	Lead the administration, delivery and evaluation of the course under their care. Present the course and programme at various committees for approval.
Head of Departments (HODs)	Support and guide Programme Coordinators and other relevant departmental staff in programme design, development, implementation and review processes.
Executive Deans	Initiate, lead programme development and review activities. Appoint program coordinators, the curriculum development committee, and staff for the design and review of programmes. Establish and ensure quality assurance in the design, development, implementation and review of courses/programmes in the Faculty. Maintain records of all courses/programmes in the Faculty and lead programme/course evaluation by approving the annual evaluation reports of all programmes in the Faculty.

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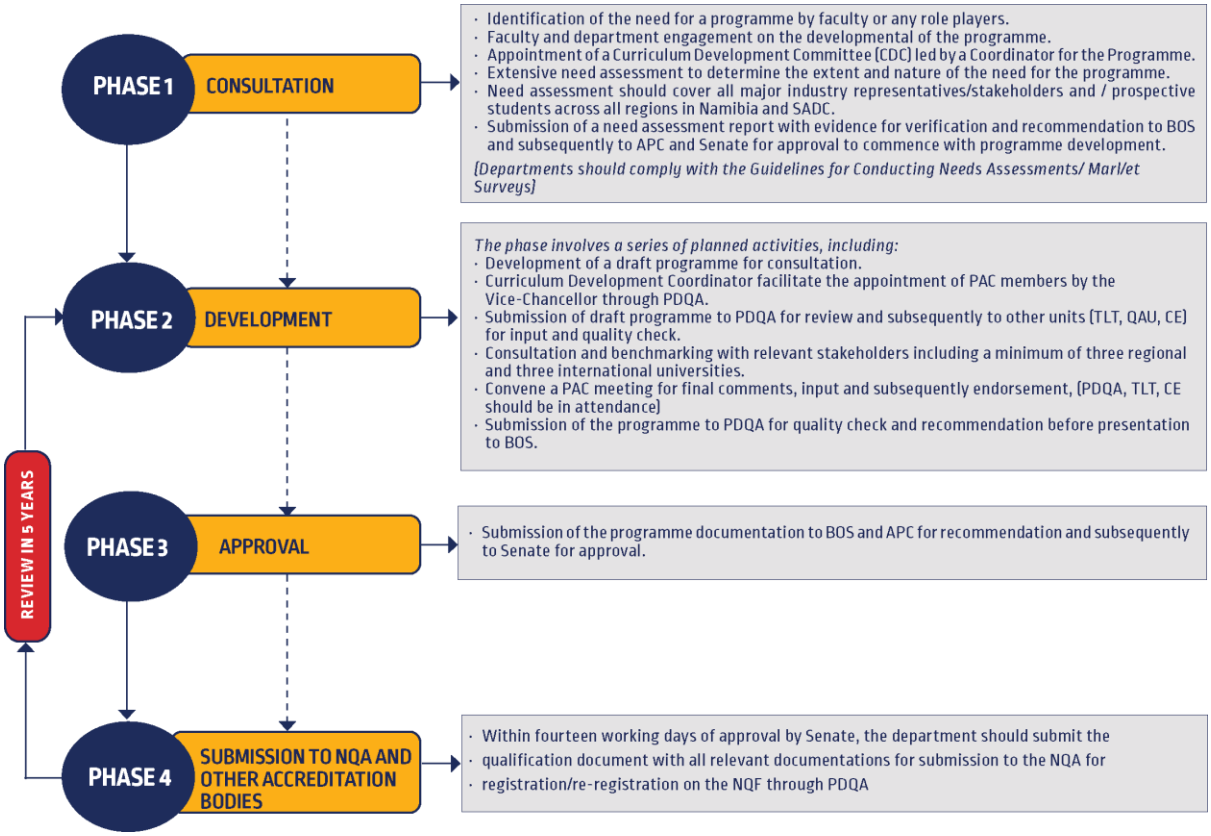
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APPENDIX A



APPENDIX B: GUIDE TO PROGRAMME AND CURRICULUM REVIEW

APPENDIX C – Checklist for Adherence to Programme Development 2024

APPENDIX D – PAC Terms of Reference

APPENDIX E - Template-for-Programme-Documentation

APPENDIX F –



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