

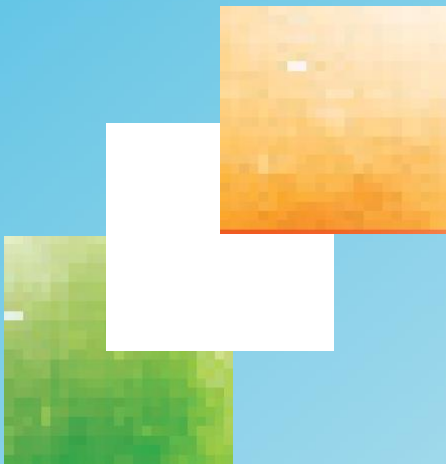


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Ministry of Education
New Delhi

National Higher Education Qualifications Framework (NHEQF)



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National Higher Education Qualifications Framework (NHEQF)



ज्ञान-विज्ञान विमुक्तये

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ज्ञान-विज्ञान विमुक्तये

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FOREWORD

The National Education Policy (NEP) announced in 2020 marks a shift towards student centric approaches. Multidisciplinary education, multiple entry and exit system, integration with vocational education, and ensuring mobility between streams, and institutions, are some of the reforms envisioned in the NEP 2020. Classification of qualifications according to learning outcomes is central to many of these reforms. “Qualifications Framework,” which provides for arranging the qualifications based on learning outcomes, is a method practiced worldwide to facilitate comparability and transparency. The formulation of the National Higher Education Qualifications Framework (NHEQF), accordingly, is a key recommendation of the NEP 2020 to move towards developing a nationally accepted and internationally comparable and acceptable qualifications framework.

The UGC constituted an expert committee to formulate NHEQF to enable prospective students, parents, higher education providers, and other stakeholders to understand the nature and level of the expected learning outcomes and competencies associated with higher education qualifications. With much pleasure, I present the National Higher Education Qualifications Framework to higher educational institutions for adoption.

I take this opportunity to thank the Chairman of the Expert Committee, Prof. V. S. Chauhan, and the members for drafting the NHEQF. I also thank the committee headed by Dr. N.S. Kalsi for integrating the levels of NHEQF with the National Credit Framework (NCrF). The contributions made by the officers from UGC are also acknowledged.


(Prof. M. Jagadesh Kumar)



Section 1

1.1. Introduction

The National Education Policy (NEP) 2020 (hereafter referred to as NEP or the policy) envisages a new and forward-looking vision for India's higher education system. It recognizes that higher education plays an extremely important role in promoting human as well as societal well-being and in developing India as envisioned in its Constitution - a democratic, just, socially conscious, cultured, and humane nation upholding liberty, equality, fraternity, and justice for all. The NEP 2020 notes that "higher education significantly contributes towards sustainable livelihoods and economic development of the nation" and "as India moves towards becoming a knowledge economy and society, more and more young Indians are likely to aspire for higher education."

The NEP 2020 also states that "given the 21st century requirements, quality higher education must aim to develop good, thoughtful, well-rounded, and creative individuals" and... "must enable an individual to study one or more specialized areas of interest at a deep level, and also develop character, ethical and Constitutional values, intellectual curiosity, scientific temper, creativity, spirit of service, and twenty-first-century capabilities across a range of disciplines including sciences, social sciences, arts, humanities, languages, as well as professional, technical, and vocational subjects." It also states that "a quality higher education must enable personal accomplishment and enlightenment, constructive public engagement, and productive contribution to the society" and must "prepare students for more meaningful and satisfying lives and work roles and enable economic independence."

The NEP 2020 also points out that at the societal level, higher education must enable the development of an enlightened, socially conscious, knowledgeable, and skilled nation that can find and implement robust solutions to its own problems. Higher education is expected to form the basis for knowledge creation and innovation thereby contributing to a growing national economy. It highlights that, "the purpose of quality higher education is more than the creation of greater opportunities for individual employment," and that higher education, "represents the key to more vibrant, socially engaged, cooperative communities and a happier, cohesive, cultured, productive, innovative, progressive, and prosperous nation."

The NEP 2020 envisages the formulation of expected learning outcomes for all higher education programmes. It states that "A National Higher Education Qualifications Framework (NHEQF) will

be formulated” and “it shall be in sync with the National Skills Qualifications Framework (NSQF) to ease the integration of vocational education into higher education.” Additionally, it points out that “higher education qualifications leading to a degree/diploma/certificate shall be described by the NHEQF in terms of such learning outcomes.” The Policy also envisages the setting up of facilitative norms for issues, such as credit transfer, and equivalence, through the NHEQF. The NEP 2020 also mandates relevant agencies, “to identify specific skills that students must acquire during their academic programmes, with the aim of preparing well-rounded learners with 21st century skills.”

1.2. Policy directions that have implications for the structure of higher education institutions

The NEP 2020 calls for a complete overhaul and re-energizing of the higher education system to deliver high-quality higher education with equity and inclusion. The policy’s vision includes several key changes to the current system such as:

- moving towards a higher educational system consisting of large, multidisciplinary universities and colleges, with at least one in or near every district, and with more higher education institutions (HEIs) across India that offer the medium of instruction or programmes in local/Indian languages;
- moving towards a more multidisciplinary undergraduate education; and
- revamping curriculum, pedagogy, assessment, and student support for enhanced student experiences.

The main thrust of the policy regarding higher education is to transform HEIs into large multidisciplinary universities, colleges, and HEI clusters/Knowledge Hubs. This is expected to help build vibrant communities of scholars and peers, enable students to become well-rounded across disciplines including artistic, creative, and analytic subjects as well as sports, develop active research communities across disciplines including cross-disciplinary research, and increase resource efficiency, both material and human, across higher education. Moving towards a large multidisciplinary university and HEI clusters with a more multidisciplinary undergraduate and graduate education is thus the major recommendation of the policy regarding the structure of higher education.

The proposed vision of higher education envisages a new conceptual perception/understanding for what constitutes a higher education institution (HEI), i.e., a university or a college. The term university is used to refer to a multidisciplinary institution of higher learning that offers undergraduate and graduate programmes, with high-quality teaching, research, and community engagement. This definition of ‘university’ thus allows a spectrum of institutions that range from:

- those that place equal emphasis on teaching and research referred to as research-intensive universities;
- those that place greater emphasis on teaching but still conduct significant research, referred to as teaching-intensive universities; and
- autonomous degree-granting colleges, which are large multidisciplinary institutions of higher learning that could award undergraduate degrees and are primarily focused on undergraduate teaching though it would not be restricted to teaching alone.

Over a period, it is envisaged that every college would develop into either an Autonomous degree-granting College or a constituent college of a university. With appropriate accreditations, autonomous degree-granting Colleges could evolve into Research-intensive or Teaching-intensive Universities, if they so aspire. Thus, the three broad types of institutions are not in any natural way a rigid, exclusionary categorization, but are along a continuum. HEIs will have the autonomy and freedom to move gradually from one category to another, based on their plans, actions, and effectiveness, and the focus of their goals and work. The accreditation system will develop and use appropriately different and relevant norms across this range of HEIs.

The NHEQF envisages increased flexibility and choice of courses of study by students, particularly at the undergraduate level. A wide choice of subjects and courses, from year to year, will be the new distinguishing feature of undergraduate education. Students who wish to change one or more of the opted courses within the programme (s) of study that they are pursuing may do so at the beginning of each year, as long as they are able to demonstrate the required prerequisites and the capability to attain the defined learning outcomes after going through the chosen programme and course (s) of study.

1.3. Policy directions pertaining to the thrust of education and curricular structures

The NEP 2020 envisages a holistic and multidisciplinary education system that would aim to develop all capacities of human beings - intellectual, aesthetic, social, physical, emotional, ethical, and moral - in an integrated manner. Such education is expected to help develop well-rounded individuals that possess critical 21st century capacities in fields across the arts, humanities, languages, sciences, social sciences, and professional, technical, and vocational fields; an ethic of social engagement; soft skills, such as communication, discussion, and debate; and rigorous specialization in a chosen field or fields. Even engineering institutions are expected to move towards more holistic and multidisciplinary education with more arts, humanities, and social sciences. Students of arts and humanities are expected to learn more science, and all will try to incorporate more vocational subjects and soft skills. Such a holistic education shall be, in the long term, the

approach of all undergraduate programmes, including those in professional, technical, and vocational disciplines. This implies developing an enhanced higher education system consisting of large, multidisciplinary universities and colleges, and moving towards holistic and multidisciplinary education characterized by flexibility in curriculum and course options that would be on offer to students, in addition to rigorous specialization in the chosen disciplinary areas of study and work/vocation or professional practice. A holistic and multidisciplinary education is considered essential to lead the country into the 21st century and to prepare the students to respond to the requirements of the fourth industrial revolution.

The NEP 2020 envisages flexible curricular structures to enable creative combinations of disciplinary areas for study in multidisciplinary contexts, including vocational courses. It also envisages multiple entry and exit points and re-entry options, thus, creating new possibilities for life-long learning. Graduate-level, master's, and doctoral programmes of study in multidisciplinary universities, while providing rigorous research-based specialization, would also provide opportunities for multidisciplinary work, including in academia, government, and industry. Flexibility in curriculum and novel and engaging course options will be on offer to students, in addition to rigorous specialization in a chosen disciplinary area or areas of study, work/vocation, or professional practice. This will be encouraged by increased faculty and institutional autonomy in setting curricula. The pedagogy will have an increased emphasis on communication, discussion, debate, research, and opportunities for cross-disciplinary and interdisciplinary thinking.

Towards the attainment of such a holistic and multidisciplinary education, the flexible and innovative curricula of all HEIs shall include credit-based courses and projects in the areas of community engagement and service, environmental education, and value-based education. Environment education will include areas such as climate change, pollution, waste management, sanitation, conservation of biological diversity, management of biological resources and biodiversity, forest and wildlife conservation, and sustainable development and living. Value-based education will include the development of humanistic, ethical, constitutional, and universal human values of truth, righteous conduct, peace, love, nonviolence, scientific temper, citizenship values, and life- skills; lessons in service and participation in community service programmes will be considered an integral part of the holistic education. Global Citizenship Education and education for sustainable development will form an integral part of the curriculum to empower learners to become aware of and understand global and sustainable development issues and to become active promoters of more peaceful, tolerant, inclusive, secure, and sustainable societies. As part of holistic education, students at all HEIs will also be provided with opportunities for internships with local industries, businesses, artists, crafts persons, and so on, as well as research internships with faculty and

researchers at their own or other HEIs/research institutions, so that students may actively engage with the practical side of their learning and, as a by-product, further improve their employability.

1.4. Policy directions guiding the structure and duration of degree programmes

India has entered a stage of massification of higher education. In 2019-2020 the country had 1,043 universities and 42,343 colleges. In addition, there were 11,779 stand-alone institutions. HEIs in India vary in terms of the content and level at which courses are offered. Of the universities, 307 were affiliating universities having colleges affiliated with them. The total number of universities included 396 universities that were privately managed, 420 universities located in rural areas, and 17 universities exclusively for women. There existed one Central Open University, 14 State Open Universities, and one State Private Open University. There are 522 general, 177 technical, 63 agriculture and allied institutions, 66 medical, 23 law, 12 Sanskrit, 11 language universities, and 145 universities in other categories. The total enrolment in higher education was around 38.5 million in 2019-2020, the Gross Enrolment Ratio (GER) for the population in the age group 18-23 years being 27.1 (male: 26.9; female: 27.3). Enrolment in distance education programmes constituted about 11.1% of the total enrolment in higher education. About 79.5% of the students were enrolled in undergraduate-level programmes.

The structure and duration of undergraduate programmes of study proposed by the NEP 2020 include:

- Undergraduate programmes of either 3 or 4-year duration, with multiple entry and exit options, with appropriate certifications:
- a certificate after completing 1 year (2 semesters) of study in the chosen discipline or field, including vocational and professional areas;
- a diploma after 2 years (4 semesters) of study;
- a Bachelor's degree after a 3-year (6 semesters) programme of study;
- a Bachelor's degree with honours after a 4-year (eight semesters) programme of study;
- a Bachelor's degree 'Honours with research' after a 4-year (eight semesters) programme of study if the student completes a rigorous research project in her/his major area(s) of study as specified by the HEI.

The 4-year multidisciplinary Bachelor's degree programme is considered as the preferred option since it would allow the opportunity to experience the full range of holistic and multidisciplinary education in addition to a focus on the chosen major and minors as per the choices of the student. An Academic Bank of Credit (ABC) has been established which would digitally store the academic credits earned from various recognized HEIs so that the degrees from an HEI can be awarded taking into account the credits earned.

The NEP 2020 envisages flexibility in the designs and duration of Master's degree programmes: The structure and duration of master's programmes of study proposed by the NEP 2020 include:

- a 2-year Master's programme (with the option of having the second year devoted entirely to research) for those who have completed a 3-year Bachelor's programme;
- a 1-year Master's programme for students who have completed a 4-year Bachelor's degree; and
- an integrated 5-year Bachelor's/Master's programme.
- A Ph.D. programme shall require a Master's degree or a 4-year Bachelor's degree.



Section 2

2.1. National Qualifications Frameworks: Global Initiatives

Qualifications are formal ‘awards’ such as a certificate, diploma, or a degree. Qualifications are awarded by a competent authority such as a college or university in recognition of the attainment by students of the expected learning outcomes on the successful completion of a particular programme of study. They are awarded after an assessment and evaluation of learning levels conducted by a competent body that determines the achievement by students of the expected learning outcomes to given standards. Qualifications in the traditional sense imply that someone has successfully completed a prescribed programme of study or training programme offered by an educational institution. Qualifications can also signify the competence to follow an occupational practice.

The university form was first conceived and perfected in ancient India, during this period, eighteen major institutional innovations were introduced at various points. These included the teaching of all subjects, creation of residential facilities, global interaction, secular education, peer review, case based reasoning, financial assistance, degrees, the introduction of libraries, codification of academic freedom, strict admission standards, public funding, endowments, competition amongst centres, autonomy, centralized academic administration, and women's education. Despite all the turbulence that India experienced during this time the system of universities nonetheless lasted over 1800 years.

A National Qualifications Framework (NQF) is an instrument for the classification of qualifications according to a set of criteria for specified levels of learning achieved, which would integrate and coordinate the qualifications from each education and training sector into a single comprehensive qualification framework. It is a way of structuring existing and new qualifications, which are defined by learning outcomes reflecting the graduate profile/attributes, programme learning outcomes, and course learning outcomes: i.e., statements of what the learner is expected to know, understand and/or be able to do and demonstrate on the successful completion of an approved programme of study/learning. The NQF helps: (a) improve the transparency of individual qualifications through the defined learning outcomes; (b) enhance the understanding of the education and training systems; (c) promote credit accumulation and transfer within and between programmes of study; (d) provide an instrument of accountability of the education and training systems; (e) make education and training systems more demand-focused and user friendly; (f) reduce the ‘mismatch’ between education and the labour market; and (g) facilitate the recognition of prior learning.

Qualification specifications are general statements of the typical achievement of learners who have been

awarded a qualification on successful completion of a programme of study leading to the award of qualifications such as a Certificate, Diploma, Bachelor's degree, Master's degree, and Doctoral degree. Competency-based education and training, and outcome-based learning constitute important aspects of a Qualifications Framework (QF). In the context of the Qualifications Framework, the knowledge, skills, values, and attitudes acquired/possessed by the individual student are more important than the mode(s) of acquiring them. It helps employers compare the diverse nature of qualifications through certain performance criteria that are to be considered while deciding on the learning outcomes for competency-based education and training. This principle was accepted by many countries and consequently many of them have been engaged in ways and means to improve the quality and relevance of education and training programmes to reflect competencies possessed by the graduates of different programmes of study. A qualifications framework provides a systematic description of the full range of qualifications in an education and training system. Qualifications need to be described in such a way as to help stakeholders understand the relationship between qualifications and the knowledge, skills, values, and attitudes that are expected to be acquired and demonstrated by an individual. QF is also intended to explain how different qualifications relate to each other and identify pathways within and across education and training sectors for vertical and horizontal mobility.

One of the factors that contributed to the initiatives for the development of the NQF was the evolution of the outcome-based approach to education and training introduced in the 1980s and early 1990s in some countries. The NQFs in these countries were in response to the demand by employers for greater participation in skill formation and to shape the content of education and training programmes. This resulted in a shift from the provider-defined curricula and qualifications to user-defined qualifications and curricula for education and training programmes. The movement to develop NQFs gained momentum in the late 1990s with the initiatives in several countries.

The NQFs differ from country to country with minor modifications that directly affect programmes of study but maintain the broad structure of the overarching framework. Among the international efforts, the Bologna Process, perhaps, is the most elaborate involving more countries than anywhere else. The Bologna process is an overarching framework under the European Higher Education Area (EHEA) for developing NQFs in European Union countries. A parallel development relating to the NQFs has been the efforts aimed at formulating the Regional Qualifications Frameworks (RQFs) in many regions of the world.

The European Qualifications Framework (EQF) was developed to compare and correlate and establish the diverse qualification systems of the European countries. The EQF also facilitates the translation or comparison of qualification levels, so that there is no difficulty in the identification of skills, inter-country comparisons and mobility of learners and workers between countries. One of the important elements of

the Bologna framework is the Qualification descriptors called the Dublin descriptors. The Dublin descriptors are general statements about the learning outcomes that are achieved by students after completing a curriculum of studies and obtaining a qualification. They are neither meant to be prescriptive rules, nor represent benchmarks or minimal requirements, since they are not comprehensive. The descriptors are conceived to describe the overall nature of the qualification. Furthermore, they are not limited to specific academic or professional areas. The Dublin Descriptors consists of five elements: i) Knowledge and understanding; ii) Applying knowledge and understanding; iii) Making judgments; iv) Communication skills; and v) Learning skills.

Qualifications that signify completion of the Bachelor's degree, as per the learning outcomes that are aligned to the Dublin descriptors, are awarded to students who: i) have demonstrated knowledge and understanding in a field of study that builds upon their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study; ii) can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study; iii) have the ability to gather and interpret relevant data (usually within their field of study) to inform judgments that include reflection on relevant social, scientific or ethical issues; iv) can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences; v) have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy.

Qualifications that signify completion of the Master's degree, as per the learning outcomes that are aligned to the Dublin descriptors, are awarded to students who: i) have demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with the first cycle, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context; ii) can apply their knowledge and understanding, and problem solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study; iii) have the ability to integrate knowledge and handle complexity, and formulate judgments with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments; iv) can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously; v) have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous.

Qualifications that signify completion of the doctoral degree, as per the learning outcomes that are aligned to the Dublin descriptors, are awarded to students who: i) have demonstrated a systematic understanding

of a field of study and mastery of the skills and methods of research associated with that field; ii) have demonstrated the ability to conceive, design, implement and adapt a substantial process of research with scholarly integrity; iii) have made a contribution through original research that extends the frontier of knowledge by developing a substantial body of work, some of which merits national or international refereed publication; iv) are capable of critical analysis, evaluation and synthesis of new and complex ideas; v) can communicate with their peers, the larger scholarly community and with society in general about their areas of expertise; vi) can be expected to be able to promote, within academic and professional contexts, technological, social or cultural advancement in a knowledge based society.

The Washington Accord originally signed among six countries in 1989, represents an International Agreement among bodies responsible for accrediting undergraduate engineering degree programme. It recognizes the substantial equivalency of programmes accredited by those bodies and recommends that graduates of programmes accredited by any of the signatory bodies be recognized by the other bodies as having met the academic requirements for entry to the practice of engineering in the area of their jurisdiction. The Washington Accord facilitates the mobility of engineering graduates and professionals at the international level. As of now, there are 21 nations that are members of the Washington Accord. India became a permanent member on 13th June 2014. On completion of six years, the status of the National Board of Accreditation (NBA) as a permanent signatory to the Washington Accord was extended for the next six years in June 2020 after a detailed review by an International Review Team appointed by the International Engineering Alliance, the Secretariat of Washington Accord. The membership of the Washington Accord is an international recognition of the quality of undergraduate engineering education offered by the member country and is an avenue to bring it into the world-class category. It encourages and facilitates the mobility of engineering graduates and professionals at the international Level. The NBA-accredited programmes offered by the Tier-I Institutions are eligible for recognition of the programmes by other signatories of the Washington Accord.

Section 3

3.1. National Qualifications Framework in India

India recognized the need for NQF both for general education and for vocational education and training (VET). The Ministry of Labour and Employment developed the National Vocational Qualifications Framework (NVQF) and the Ministry of Human Resource Development (renamed as Ministry of Education, after NEP 2020 recommendations) developed the National Vocational Education Qualifications Framework (NVEQF). These two frameworks were considered and used while developing the National Skills Qualifications Framework (NSQF) notified in 2013.

3.1.1. National Vocational Education Qualifications Framework (NVEQF)

The NVEQF provided a descriptive framework that organized qualifications according to a series of levels of knowledge along with skills. These levels were defined in terms of learning outcomes i.e., the competencies that the learners must possess through the qualification system. The NVEQF attempted to provide a nationally integrated education and competency-based skills framework that provided for multiple pathways both within vocational education and between general and vocational education to link one level of learning to another higher level and enable learners to progress to higher levels from any starting point in the education and/or skill system. It was organized as a series of levels of competency/skills arranged in ascending order of complexity from levels 1 to 10. Each level on NVEQF was described by statements of learning called level descriptors. Qualifications were made up of occupation standards for specific areas of learning units for the job roles or occupations in the various sectors. This provides an opportunity to the stakeholders, such as the learners, education and skill training providers and employers to gain information about the broad equivalence of qualifications across specific skill sectors.

3.1.2. National Skills Qualifications Framework (NSQF)

The NSQF organizes qualifications according to a series of levels of knowledge, skills, and aptitude. This framework represents increasing levels of complexity in terms of the knowledge, competence, and autonomy that must be demonstrated by the learner. The levels are defined by descriptors in the form of learning outcomes. Each level is defined by five parameters:

- i) Process, comprising a general summary of the other four domains corresponding to the level.
- ii) Professional knowledge that the learner needs to have at that level of the field of study/learning or work. Professional knowledge is what a learner should know and

understand with reference to the subject and/or field of knowledge. It is described in terms of depth, breadth, kinds of knowledge, and complexity. Depth of knowledge can be general or specialized; breadth of knowledge can range from a single topic to a multidisciplinary area of knowledge; kinds of knowledge range from concrete to abstract, from segmented to cumulative; and complexity of knowledge refers to the combination of kinds, depth, and breadth of knowledge.

- iii) Professional skills which include what a learner should be able to do. These are described in terms of the kinds and complexity of skills and include (a) Cognitive and creative skills involving the use of intuitive, logical, and critical thinking; (b) Communication skills involving written, oral, literacy, and numeracy skills; (c) Interpersonal skills and generic skills that a learner should possess to perform a task or a job competently, productively, and independently and also as part of a team.
- iv) Core skills which include basic skills involving dexterity and the use of methods, materials, tools, and instruments used for performing the job, including information technology (IT) skills, needed for a given level of study and work.
- v) Responsibility that the learner can be entrusted with, on their own, the degree of supervision that a person needs when doing a job or the degree of supervision a person is capable of exercising over others, that is the level at which the learner can supervise others. The responsibility aspect of the NSQF determines a) the nature of working relationships, b) the level of responsibility for self and others, c) managing change, and d) accountability for actions.

The NSQF represents a nationally recognized competency-based framework that provides for multiple pathways of learning, horizontal as well as vertical, including vocational education, vocational training, general education, and technical education, thus linking one level of learning to another. This enables a person to acquire the desired competency levels, transit to the job/employment market, and acquire additional skills required to further upgrade his/her competencies later. It facilitates the awarding of credit and supports credit transfer and progression routes within the Indian education and training system. The NSQF links the various elements of vocational education and training with those of skills required by businesses and industry so that the vocational pass-outs can exit with employment-related skills. It envisages close partnership with the industry in the design, development, delivery, assessment, and certification of skills content.

More specifically, the objectives of the NSQF are to provide a framework that:

- (i) accommodates the diversity of the Indian education and training systems; (ii) allows the development

of a set of qualifications for each level, based on outcomes that are accepted across the nation; (iii) provides a structure for the development and maintenance of progression pathways which provide access to qualifications and assist people to move easily and readily between different education and training sectors and between those sectors and the labour market; (iv) gives individuals an option to progress through education and training and gain recognition for their prior learning and experiences; v) underpins national regulatory and quality assurance arrangements for education and training; and vi) supports and enhances the national and international mobility of persons with NSQF-compliant qualifications through increased recognition of the value and comparability of Indian qualifications.

Section 4

4.1. National Higher Education Qualifications Framework (NHEQF)

The variation in types of HEIs in India results in a lack of comparability of outcomes associated with different qualifications across institutions. It constrains the mobility of students and their employability. Further, some of the Indian qualifications are not recognized abroad. Similarly, some of the qualifications from abroad are not recognized in India. It has been felt that given the size of the higher education system and the diversity of institutions and programmes of study in India, the country needs to move towards developing a nationally accepted and internationally comparable and acceptable qualifications framework to facilitate transparency and comparability of higher education qualifications at all levels. The NHEQF is an attempt in this direction.

The NHEQF is an instrument for the development, classification, and recognition of qualifications along a continuum of levels from 4.5 to 8, with levels 1 to 4 in school education. Each level is structured based on the defined learning outcomes, i.e., statements of what the learner is expected to know, understand, and/or be able to do on the successful completion of an approved programme of study/learning at a specified level. Students on completion of the chosen programme(s) of study under the NHEQF must possess and demonstrate the graduate attributes defined in terms of the expected learning outcomes, whether they were acquired through one mode of learning or the other, or through a combination of different modes of learning such as direct in-person/face-to-face instruction, open and distance learning, online education, and hybrid/blended modes.

4.1.1. The characteristics and purposes of the NHEQF

The fundamental premise underlying the NHEQF is that higher education qualifications such as a certificate, diploma, and degree are awarded based on the demonstrated achievement of learning outcomes and academic standards expected of graduates of a programme of study. As in the case of all Qualifications Frameworks, the NHEQF is also an instrument for the classification of qualifications according to a set of criteria for specified levels of learning achieved along a continuum of agreed levels. It is a way of structuring existing and new qualifications, defined by expected learning outcomes which are used as reference points for formulating qualification specifications/descriptors. They provide general guidance for articulating the essential learnings associated with a programme of study and courses within that programme of study. The NHEQF represents a comprehensive framework that classifies qualifications based on a set of performance criteria, approved nationally and comparable with international quality standards. It specifies qualification types and framework levels and the expected learning outcomes corresponding to these

qualification types. Qualification type refers to the broad discipline-free nomenclature such as a Certificate, Diploma, Bachelor's degree, Master's Degree, and Doctoral Degree used in the NHEQF to describe each category of NHEQF qualification. Each qualification is aligned to an academic credit system based on the attainment of defined learning outcomes and the academic workload of students who complete the chosen programme(s) of study. The main purposes of the NHEQF are to:

- Provide an integrated national framework for recognizing and accrediting qualifications offered by different types of institutions engaged in higher education, including vocational education and training, and technical/professional education in India.
- Furnish higher education providers with points of reference when setting and assessing academic standards, designing curricula, teaching-learning-assessment strategies, and periodic review of programmes.
- Enable prospective students, parents, higher education providers, employers, and other stakeholders to understand the nature and level of the expected learning outcomes (knowledge, skills, attitudes, values, and competencies) and defined graduate attributes/profiles associated with the qualifications concerning higher education.
- Assist in the identification of potential progression pathways from one level of education to the higher level of education, including through multiple entry, exit, and re-entry points/options, particularly in the context of lifelong learning.
- Help ensure the confidence of the public in higher education qualifications and academic standards by facilitating public understanding of the defined learning outcomes, graduate attributes/profile, and academic achievements expected of students completing specific programmes of study.
- Maintain national standards and international comparability of learning outcomes and academic standards to ensure global competitiveness, and to facilitate student mobility.
- Support the development and maintenance of pathways that provide access to qualifications and assist people to move between different education and training sectors and between those sectors and the labour market.
- Support individuals' lifelong learning goals and processes by providing the basis for their progression in education and training and gaining recognition for their prior learning and experiences.
- Guide quality assurance arrangements for education and training offered by higher education institutions.
- Support and enhance the national and international mobility of graduates and workers through increased recognition of the value and comparability of the qualifications

concerning higher education in India.

4.1.2. Scope and coverage of the NHEQF

The NHEQF envisages the award of qualifications based on the demonstrated achievement of the expected learning outcomes that specify what students completing a particular programme of study associated with the chosen fields of learning, work/vocation, or professional practice are expected to know, understand and be able to do at the end of their programme of study. In the context of the NHEQF, a ‘field of learning’ refers to the chosen disciplinary/interdisciplinary areas of learning in a broad multi-/inter-/transdisciplinary context, work or technical and vocational education and training, or an area of professional practice.

NHEQF incorporates the qualifications from each education and training sector, including Technical and Vocational Education and Training (TVET) and professional and technical education programmes (except those relating to medical education and legal education), into a single comprehensive qualifications framework. The NHEQF reflects the learning outcomes and academic standards that the holders of the relevant qualification are expected to demonstrate.

It may be noted that the NHEQF is not intended to promote a uniform curriculum or national common syllabus for a programme of study or to prescribe a set of approaches to the teaching-learning process and assessment of student learning levels. The purpose is to bring up/elevate all HEIs to a common level of benchmarking to ensure that all institutions are providing quality education. The framework is intended to allow for flexibility and innovation in (i) the design of the programme of study and syllabi development, (ii) the teaching-learning process, (iii) assessment of students’ learning levels, and (iv) periodic review of the programme(s)/courses of study within a broad framework of agreed expected programme/course learning outcomes and academic standard.

The NHEQF recognizes that each student has his/her own characteristics in terms of previous learning levels and experiences, life experiences, learning styles, and approaches to future career-related actions. The quality, depth, and breadth of the learning experiences made available to the students help develop their characteristic attributes. The graduate attributes reflect disciplinary knowledge, understanding, and skills related to the chosen field(s) of learning, generic learning outcomes that all students enrolled in different programmes of study should acquire/achieve and demonstrate. The institutions of higher education will have the autonomy to frame their own curriculum, including the syllabi, pedagogical approaches, and learning assessment procedures/ practices based on the NHEQF.

The NHEQF will be applicable to all the modes of learning along with regular face-to-face modes and would ensure both comparability and transferability not only between institutions but also across different delivery modes.

4.2. Types and title/nomenclature of qualifications

The NHEQF is an outcome-based framework for qualifications of different types. The qualification types and examples of title/nomenclature for qualifications within each type are indicated in Table 1.

Table 1: Types of qualifications and qualification title/nomenclature

Type of qualification	Qualification title/nomenclature and programme duration
Undergraduate Certificate	Undergraduate Certificate (Field of study/discipline). (Programme duration: First year (first two semesters) of the undergraduate programme, followed by an exit 4-credit skills-enhancement course(s).
Undergraduate Diploma	Undergraduate Diploma (Field of study/discipline). (Programme duration: First two years (first four semesters) of the undergraduate programme, followed by an exit 4-credit skills-enhancement course(s).
Bachelor's degree	Bachelor of (Field of study/discipline) the undergraduate programme Examples: • Bachelor of Arts (B.A.), Bachelor of Science (B.Sc.), Bachelor of Commerce (B.Com.), Bachelor of Vocation (B. Voc.), Bachelor of Business Administration (BBA), Bachelor of Physical Education Programme duration: Three years (six semesters). • Bachelor of Education (B.Ed): Programme duration: Two years (four semesters) after completing a Bachelor's degree programme • Bachelor of Education (B.Ed.). Programme duration: One year (two semesters) after completing a Bachelor's degree (Honours/ Honours with Research) programme or Master's degree.
Bachelor's degree (Honours/ Honours with Research)	• Bachelor of (Field of study/discipline) (Honours/ Honours with Research). • 4-year dual-major Integrated Teacher Education Programme (ITEP): Programme duration: Four years (eight semesters). • Bachelor of Engineering (B.E), Bachelor of Technology (B.Tech.). Programme duration: Four years (eight semesters). • Bachelor of Architecture (B.Arch.): Five years (ten semesters). • Bachelor of Pharmacy (B.Pharm): Four years (eight semesters).
Post-Graduate Diploma	Post-Graduate Diploma in (Field of study/discipline). Programme duration: One year (two semesters) in the case of those who exit after successful completion of the first year (two semesters) of the 2-year master's degree programme

Type of qualification	Qualification title/nomenclature and programme duration
Master's degree	Master of (Field of study/discipline). Programme duration: Two years (four semesters) for those who have obtained a 3-year/6-semester bachelor's degree, or successfully completed a 4-year bachelor's degree (e.g. B.E., B. Tech., etc.) or a 4-year dual-major integrated teacher education programme with a B.A. B.Ed degree or B.Sc. B.Ed degree, or B.Com. B.Ed. degree. Master of (Field of study/discipline): Programme duration: One year (two semesters) in the case of those who have obtained a 4-year/8-semester Bachelor's (Honours/ Honours with Research) degree Examples • Master of Arts (M.A), Master of Commerce (M.Com.), Master of Science (M.Sc.), Master of Vocation (M.Voc.), Master of Business Administration (MBA). Programme duration: Two years (Four semesters) after obtaining a Bachelor's degree). • Integrated Bachelor's - Master's degree programmes. Programme duration: five years (ten semesters) after successfully completing secondary education (Grade 12 of school education) • Master of Education (M.Ed.). Programme duration: Two years (four semesters) after completing a 2-year/4-semester B.Ed. degree programme or a 4-year (8 semester) dual-degree integrated teacher education programme. • Integrated B.Ed. - M.Ed. programme. Programme duration: Three years (six semesters) after obtaining a Bachelor degree). • Master of Arts (Education). Programme duration: Two years (Four semesters) after completing a Bachelor's degree programme) • Master of Engineering (M.E), Master of Technology (M.Tech.). Programme duration: Two years (four semesters) after obtaining a Bachelor's degree in engineering/technology. • Master of Architecture. Programme duration: Two years (four semesters) after obtaining a B. Arch degree
Doctoral degree	• Doctor of Philosophy (Ph.D.)

4.2.1. NHEQF levels

The NHEQF levels represent a series of sequential stages expressed in terms of a range of learning outcomes against which typical qualifications are positioned/located. NHEQF level 4.5 represents learning outcomes appropriate to the first year (first two semesters) of the undergraduate programme of study, while Level 8 represents learning outcomes appropriate to the doctoral-level programme of study (Table 2).

Table 2: Higher education qualifications at different levels on the NHEQF

NHEQF level	Examples of higher education qualifications located within each level
Level 4.5	Undergraduate Certificate. Programme duration: First year (first two semesters) of the undergraduate programme, followed by an exit 4-credit skills-enhancement course(s).
Level 5	Undergraduate Diploma. Programme duration: First two years (first four semesters) of the undergraduate programme, followed by an exit 4-credit skills-enhancement course(s) lasting two months.
Level 5.5	Bachelor's Degree. Programme duration: First three years (Six semesters) of the four-year undergraduate programme.

NHEQF level	Examples of higher education qualifications located within each level
Level 6	Bachelor's Degree (Honours/ Honours with Research). Programme duration: Four years (eight semesters).
Level 6	Post-Graduate Diploma. Programme duration: One year (two semesters) for those who exit after successful completion of the first year (two semesters) of the 2-year master's programme.
Level 6.5	Master's degree. (e.g. M.A., M.Com., M.Sc., etc.) Programme duration: Two years (four semesters) after obtaining a 3- year Bachelor's degree (e.g. B.A., B.Sc., B.Com. etc.).
Level 6.5	Master's degree. (e.g. M.A., M.Com., M.Sc., etc.) Programme duration: One year (two semesters) after obtaining a 4 -year Bachelor's degree (Honours/ Honours with Research) (e.g. B.A., B.Sc., B.Com. etc.).
Level 7	Master's degree.(e.g. M.E./M.Tech. etc.) Programme duration: Two years (four semesters) after obtaining a 4-year Bachelor's degree. (e.g. B.E./B.Tech. etc.)
Level 8	Doctoral Degree

4.2.2. Expected graduate attributes at different levels on NHEQF

The NHEQF envisages that students on completion of a programme of study must possess and demonstrate the expected graduate attributes acquired through one or more modes of learning, including direct in-person or face-to-face instruction, open and distance learning, online learning, and hybrid/blended modes. The graduate attributes indicate the quality and features or characteristics of the graduate of a programme of study, including learning outcomes relating to the disciplinary area(s) relating to the chosen field(s) of learning and generic learning outcomes that are expected to be acquired by a graduate on completion of the programme(s) of study.

The graduate profile/attributes include capabilities that help widen the current knowledge base and skills, gain and apply new knowledge and skills, undertake future studies independently, perform well in a chosen career, and play a constructive role as a responsible citizen in society. The graduate profile/attributes are acquired incrementally and describe a set of competencies that are transferable beyond the study of a particular subject/disciplinary area and programme contexts in which they have been developed. Graduate attributes are fostered through meaningful learning experiences made available through the curriculum and learning experience, the total college/university experience, and a process of critical and reflective thinking.

Graduate attributes include learning outcomes that are specific to disciplinary areas relating to the chosen field(s) of learning within broad multidisciplinary/interdisciplinary/ transdisciplinary contexts and generic learning outcomes that graduates of all programmes of study should acquire and demonstrate (Table 3).

Table 3: Graduate attributes

Type of learning outcomes	The Learning Outcomes Descriptors
Learning outcomes that are specific to disciplinary/interdisciplinary areas of learning	Graduates should be able to demonstrate the acquisition of:
	a comprehensive knowledge and coherent understanding of the chosen disciplinary/interdisciplinary areas of study in a broad multidisciplinary context, their different learning areas, their linkages with related fields of study, and current and emerging developments associated with the chosen disciplinary/interdisciplinary areas of learning.
	Practical, professional, and procedural knowledge required for carrying out professional or highly skilled work/tasks related to the chosen field(s) of learning, including knowledge required for undertaking self-employment initiatives, and knowledge and mindset required for entrepreneurship involving enterprise creation, improved product development, or a new mode of organization.
	skills in areas related to specialization in the chosen disciplinary/interdisciplinary area(s) of learning in a broad multidisciplinary context, including wide-ranging practical skills, involving variable routine and non-routine contexts relating to the chosen field(s) of learning.
	capacity to extrapolate from what has been learnt, translate concepts to real-life situations and apply acquired competencies in new/unfamiliar contexts, rather than merely replicate curriculum content knowledge, to generate solutions to specific problems.
Generic learning outcomes	Complex problem-solving: The graduates should be able to demonstrate the capability to: • solve different kinds of problems in familiar and non-familiar contexts and apply the learning to real-life situations.
	Critical thinking: The graduates should be able to demonstrate the capability to: • apply analytic thought to a body of knowledge, including the analysis and evaluation of policies, and practices, as well as evidence, arguments, claims, beliefs, and the reliability and relevance of evidence, • identify relevant assumptions or implications; and formulate coherent arguments, • identify logical flaws and holes in the arguments of others, • analyze and synthesize data from a variety of sources and draw valid conclusions and support them with evidence and examples.
	Creativity: The graduates should be able to demonstrate the ability to: • create, perform, or think in different and diverse ways about the same objects or scenarios, • deal with problems and situations that do not have simple solutions, • innovate and perform tasks in a better manner, • view a problem or a situation from multiple perspectives, • think ‘out of the box’ and generate solutions to complex problems in unfamiliar contexts, • adopt innovative, imaginative, lateral thinking, interpersonal skills and emotional intelligence.

	Communication Skills: The graduates should be able to demonstrate the skills that enable them to: • listen carefully, read texts and research papers analytically, and present complex information in a clear and concise manner to different groups/audiences, • express thoughts and ideas effectively in writing and orally and communicate with others using appropriate media, • confidently share views and express herself/himself, • construct logical arguments using correct technical language related to a field of learning, work/vocation, or an area of professional practice, • convey ideas, thoughts, and arguments using language that is respectful and sensitive to gender and other minority groups.
	Analytical reasoning/thinking: The graduates should be able to demonstrate the capability to: • evaluate the reliability and relevance of evidence; • identify logical flaws in the arguments of others; • analyze and synthesize data from a variety of sources; • draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints.
	Research-related skills: The graduates should be able to demonstrate: • a keen sense of observation, inquiry, and capability for asking relevant/ appropriate questions, • the ability to problematize, synthesize and articulate issues and design research proposals, • the ability to define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inferences based on the analysis and interpretation of data, and predict cause-and-effect relationships, • the capacity to develop appropriate methodology and tools of data collection, • the appropriate use of statistical and other analytical tools and techniques, • the ability to plan, execute and report the results of an experiment or investigation, • the ability to acquire the understanding of basic research ethics and skills in practicing/doing ethics in the field/ in personal research work, regardless of the funding authority or field of study.
	Coordinating/collaborating with others: The graduates should be able to demonstrate the ability to: • work effectively and respectfully with diverse teams, • facilitate cooperative or coordinated effort on the part of a group, • act together as a group or a team in the interests of a common cause and work efficiently as a member of a team.
	Leadership readiness/qualities: The graduates should be able to demonstrate the capability for: • mapping out the tasks of a team or an organization and setting direction. • formulating an inspiring vision and building a team that can help achieve the vision, motivating and inspiring team members to engage with that vision. • using management skills to guide people to the right destination.
	‘Learning how to learn’ skills: The graduates should be able to demonstrate the ability to: • acquire new knowledge and skills, including ‘learning how to learn’ skills, that are necessary for pursuing learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social, and cultural objectives, and adapting to changing trades and demands of the workplace, including adapting to the changes in work processes in the context of the fourth industrial revolution, through knowledge/ skill development/reskilling,

	• work independently, identify appropriate resources required for further learning, • acquire organizational skills and time management to set self-defined goals and targets with timelines. • inculcate a healthy attitude to be a lifelong learner,
	Digital and technological skills: The graduates should be able to demonstrate the capability to: • use ICT in a variety of learning and work situations, • access, evaluate, and use a variety of relevant information sources, • use appropriate software for analysis of data. Multicultural competence and inclusive spirit: The graduates should be able to demonstrate: • the acquisition of knowledge of the values and beliefs of multiple cultures and a global perspective to honour diversity, • capability to effectively engage in a multicultural group/society and interact respectfully with diverse groups, • capability to lead a diverse team to accomplish common group tasks and goals. • gender sensitivity and adopt gender-neutral approach, as also empathy to the less advantaged and the differently-abled including those with learning disabilities. Value inculcation: The graduates should be able to demonstrate the acquisition of knowledge and attitude that are required to: • embrace and practice constitutional, humanistic, ethical, and moral values in life, including universal human values of truth, righteous conduct, peace, love, nonviolence, scientific temper, citizenship values, • practice responsible global citizenship required for responding to contemporary global challenges, enabling learners to become aware of and understand global issues and to become active promoters of more peaceful, tolerant, inclusive, secure, and sustainable societies, • formulate a position/argument about an ethical issue from multiple perspectives • identify ethical issues related to work, and follow ethical practices, including avoiding unethical behaviour such as fabrication, falsification or misrepresentation of data, or committing plagiarism, and adhering to intellectual property rights, • recognize environmental and sustainability issues, and participate in actions to promote sustainable development. • adopt objective, unbiased, and truthful actions in all aspects of work, • instill integrity and identify ethical issues related to work, and follow ethical practices. Autonomy, responsibility, and accountability: The graduates should be able to demonstrate the ability to: • apply knowledge, understanding, and/or skills with an appropriate degree of independence relevant to the level of the qualification, • work independently, identify appropriate resources required for a project, and manage a project through to completion, • exercise responsibility and demonstrate accountability in applying knowledge and/or skills in work and/or learning contexts appropriate for the level of the qualification, including ensuring safety and security at workplaces.

	Environmental awareness and action: The graduates should be able to demonstrate the acquisition of and ability to apply the knowledge, skills, attitudes, and values required to take appropriate actions for: • mitigating the effects of environmental degradation, climate change, and pollution, • effective waste management, conservation of biological diversity, management of biological resources and biodiversity, forest and wildlife conservation, and sustainable development and living.
	Community engagement and service: The graduates should be able to demonstrate the capability to participate in community-engaged services/ activities for promoting the well-being of society. Empathy: The graduates should be able to demonstrate the ability to identify with or understand the perspective, experiences, or points of view of another individual or group, and to identify and understand other people's emotions.

4.2.3. NHEQF level descriptors

Each NHEQF level is structured based on the defined learning outcomes which lead to the expected graduate attributes/profile. The level descriptors reflect the expected outcomes of learning that should be achieved and demonstrated by graduates of a specific programme of study leading to a qualification at a specific NHEQF level.

4.2.3.1. Learning outcomes descriptors for qualification at level 4.5 on the NHEQF

An Undergraduate Certificate is awarded to students who have demonstrated the achievement of the outcomes located at level 4.5 on the NHEQF.

Table 4: Descriptors for qualifications at levels 4.5 on the NHEQF

Element of the Descriptor	NHEQF level descriptors relating to undergraduate certificate
Knowledge and understanding	The graduates should be able to demonstrate the acquisition of: • knowledge of facts, concepts, principles, theories, and processes in broad multidisciplinary learning contexts within the chosen fields of learning in broad multidisciplinary learning, • understanding of the linkages between the learning areas within and across the chosen fields of study, • procedural knowledge required for performing skilled or paraprofessional tasks associated with the chosen fields of learning.

General, technical and professional skills required to perform and accomplish tasks	The graduates should be able to demonstrate the acquisition of: • a range of cognitive and technical skills required for accomplishing assigned tasks relating to the chosen fields of learning in the context of broad multidisciplinary contexts. • cognitive skills required to identify, analyze and synthesize information from a range of sources. • cognitive and technical skills required for selecting and using relevant methods, tools, and materials to assess the appropriateness of approaches to solving problems associated with the chosen fields of learning.
Application of knowledge and skills	The graduates should be able to demonstrate the ability to: • apply the acquired operational or technical and theoretical knowledge, and a range of cognitive and practical skills to select and use basic methods, tools, materials, and information to generate solutions to specific problems relating to the chosen fields of learning.
Generic learning outcomes	The graduates should be able to demonstrate the ability to: • listen carefully, read texts related to the chosen fields of study analytically, and present information in a clear and concise manner to different groups/audiences. • express thoughts and ideas effectively in writing and orally and present the results/findings of the experiments carried out in a clear and concise manner to different groups.
	The graduates should be able to demonstrate the ability to: • meet one's own learning needs relating to the chosen fields of learning. • pursue self-directed and self-managed learning to upgrade the knowledge and skills required for a higher level of education and training.
	The graduates should be able to demonstrate the ability to: • gather and interpret relevant quantitative and qualitative data to identify problems, • critically evaluate principles and theories associated with the chosen fields of learning.
	The graduates should be able to demonstrate the ability to: • make judgment and take decisions, based on analysis of data and evidence, for formulating responses to issues/problems associated with the chosen fields of learning, requiring the exercise of some personal responsibility for action and outputs/outcomes.
Constitutional, humanistic, ethical, and moral values	The graduates should be able to demonstrate the willingness to: • practice constitutional, humanistic, ethical, and moral values in one's life, and practice these values in real-life situations, • put forward convincing arguments to respond to the ethical and moral issues associated with the chosen fields of learning.

Employability and job-ready skills, and entrepreneurship skills and capabilities/qualities and mindset	The graduates should be able to demonstrate the acquisition of: • knowledge and a basket of essential skills, required to perform effectively in a defined job relating to the chosen fields of study, • ability to exercise responsibility for the completion of assigned tasks and for the outputs of own work, and to take some responsibility for group work and output as a member of the group.
Credit requirements	• The successful completion of the first year (two semesters) of the undergraduate programme of minimum 40 credit hours followed by an exit 4-credit skills-enhancement course;
Entry requirements	• Certificate obtained after successful completion of Grade 12 or equivalent state of education. • Admission to the first year of the undergraduate programme will be open to those who have met the entrance requirements, including specified levels of attainment, in the programme admission regulations. Admission will be based on the evaluation of documentary evidence (including the academic record and/or evidence relating to the assessment and validation of prior learning outcomes) of the applicant's ability to pursue an undergraduate programme of study.

4.2.3.2. Learning outcomes descriptors for qualifications at level 5 on the NHEQF

An Undergraduate Diploma is awarded to students who have demonstrated the achievement of the outcomes located at level 5 on the NHEQF.

Table 5: Descriptors for qualifications at levels 5 on the NHEQF

Element of the Descriptor	NHEQF level descriptors
Knowledge and understanding	The graduates should be able to demonstrate the acquisition of: • theoretical and technical knowledge in broad multidisciplinary contexts within the chosen fields of learning, • deeper knowledge and understanding of one of the learning areas and its underlying principles and theories, • procedural knowledge required for performing skilled or paraprofessional tasks associated with the chosen fields of learning.
Skills required to perform and accomplish tasks	The graduates should be able to demonstrate the acquisition of: • cognitive and technical skills required for performing and accomplishing complex tasks relating to the chosen fields of learning, • cognitive and technical skills required to analyze and synthesize ideas and information from a range of sources and act on information to generate solutions to specific problems associated with the chosen fields of learning.

Application of knowledge and skills	The graduates should be able to demonstrate the ability to: • apply the acquired specialized or theoretical knowledge, and a range of cognitive and practical skills to gather quantitative and qualitative data, • select and apply basic methods, tools, materials, and information to formulate solutions to problems related to the chosen field(s) of learning.
Generic learning outcomes	The graduates should be able to demonstrate the ability to: • listen carefully, read texts related to the chosen fields of learning analytically, and present complex information in a clear and concise manner to different groups/audiences, • communicate in writing and orally the information, arguments, and results of the experiments and studies conducted accurately and effectively to specialist and non-specialist audiences. • meet one's own learning needs relating to the chosen field(s) of learning, work/vocation, and an area of professional practice, • pursue self-paced and self-directed learning to upgrade knowledge and skills required for pursuing a higher level of education and training. • critically evaluate the essential theories, policies, and practices by following a scientific approach to knowledge development. • make judgement and take decision, based on the analysis and evaluation of information, for determining solutions to a variety of unpredictable problems associated with the chosen fields of learning, taking responsibility for the nature and quality of outputs.
Constitutional, humanistic, ethical, and moral values	The graduates should demonstrate the willingness and ability to: • embrace the constitutional, humanistic, ethical, and moral values, practice these values in life, and take a position regarding these values, • formulate arguments in support of actions to address issues relating the ethical and moral issues relating to the chosen fields of learning, including environmental and sustainable development issues, from multiple perspectives.
Employability and job-ready skills, and entrepreneurship skills and capabilities/qualities and mindset	The graduates should be able to demonstrate the acquisition of knowledge and essential skill sets that are necessary to: • take up job/employment relating to the chosen fields of study or professional practice requiring the exercise of full personal responsibility for the completion of tasks and for the outputs of own work, and full responsibility for the group task/work as a member of the group/team. • exercise self-management within the guidelines of study and work contexts. • supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities.
Credit requirements	The successful completion of the first two years (four semesters) of the undergraduate programme involving a minimum of 80 credit hours followed by an exit 4-credit skills-enhancement course.

Entry requirements	Continuation of study or lateral entry in the second year of the undergraduate programme will be possible for those who have met the entrance requirements, including specified levels of attainment, specified in the programme regulations. The continuation of the study will be based on the evaluation of documentary evidence (including the academic record and/or evidence relating to the assessment and certification of prior learning) of the applicant's ability to pursue an undergraduate programme of study. Lateral entry into the programme of study at NHEQF level 5 will be based on the validation of prior learning outcomes achieved, including those achieved outside of formal learning or through learning and training in the workplace or in the community, through continuing professional development activities, or through independent/self-directed learning activities.
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4.2.3.3. Learning outcomes descriptors for a higher education qualification at level 5.5 on the NHEQF

The Bachelor's degree is awarded to students who have demonstrated the achievement of the outcomes located at level 5.5 on the NHEQF.

Table 6: Descriptors for qualifications at levels 5.5 on the NHEQF

Element of the descriptor	NHEQF level descriptors
Knowledge and understanding	The graduates should be able to demonstrate the acquisition of: - comprehensive, factual, theoretical, and specialized knowledge in broad multidisciplinary contexts with depth in the underlying principles and theories relating to one or more fields of learning. - knowledge of the current and emerging issues and developments within the chosen field(s) of learning. - procedural knowledge required for performing and accomplishing professional tasks associated with the chosen fields of learning.
General, technical and professional skills required to perform and accomplish tasks	The graduates should be able to demonstrate the acquisition of: - cognitive and technical skills required for performing and accomplishing complex tasks relating to the chosen fields of learning. - cognitive and technical skills required to evaluate and analyze complex ideas, - cognitive and technical skills required to generate solutions to specific problems associated with the chosen fields of learning.
Application of knowledge and skills	The graduates should be able to demonstrate the ability to: - apply the acquired specialized technical or theoretical knowledge, and cognitive and practical skills to gather and analyze quantitative/qualitative data to assess the appropriateness of different approaches to solving problems, - employ the right approach to generate solutions to problems related to the chosen fields of learning.

Generic learning outcomes	The graduates should be able to demonstrate the ability to: • listen carefully, to read text related to the chosen fields of learning analytically and present complex information in a clear and concise manner to different groups/audiences. • communicate in writing and orally the constructs and methodologies adopted for the studies undertaken relating to the chosen fields of learning, • make coherent arguments to support the findings/results of the study undertaken to specialist and non-specialist audiences. • meet one's own learning needs relating to the chosen field(s) of learning, • pursue self-paced and self-directed learning to upgrade knowledge and skills that will help adapt to changing demands of the workplace and pursue higher level of education and training. • critically evaluate evidence for taking actions to generate solutions to specific problems associated with the chosen fields of learning based on empirical evidence. • make judgement and take decisions based on the analysis and evaluation of information for formulating responses to problems, including real-life problems, • exercise judgement across a broad range of functions based on empirical evidence, for determining personal and/or group actions to generate solutions to specific problems associated with the chosen fields of learning.
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Element of the descriptor	NHEQF level descriptors
Constitutional, humanistic, ethical, and moral values	The graduates should be able to demonstrate the willingness and ability to: • Embrace constitutional, humanistic, ethical, and moral values, and practice these values in life. • identify ethical issues related to the chosen fields of study, • formulate coherent arguments about ethical and moral issues, including environmental and sustainable development issues, from multiple perspectives. • follow ethical practices in all aspects of research and development, including avoiding unethical practices such as fabrication, falsification or misrepresentation of data or committing plagiarism.
Employability and job-ready skills, and entrepreneurship skills and capabilities/ qualities and mindset	The graduates should be able to demonstrate the acquisition of: • knowledge and essential skills set and competence that are necessary to take up a professional job relating to the chosen field of learning and professional practice, • entrepreneurship skills and mindset required for setting up and running an economic enterprise or pursuing self-employment requiring the exercise of full personal responsibility for the outputs of own work, and full responsibility for the output of the group, • the ability to exercise management and supervision in the contexts of work or study activities involving unpredictable work processes and working environments.
Credit requirements	The successful completion of the first three years (six semesters) of the undergraduate programme involving a minimum of 120 credit hours
Entry requirements	Continuation of study or lateral entry into the third year of the undergraduate programme will be possible for those who have met the specified levels of attainment, specified in the programme admission regulations. The continuation of the study will be based on the evaluation of documentary evidence (including the academic record and/or evidence relating to the assessment and certification of prior learning) of the applicant's ability to pursue and complete the undergraduate programme of study. Lateral entry into the programme of study at NHEQF level 5.5 will be based on the validation of prior learning outcomes, including those achieved outside of formal learning or through learning and training in the workplace or in the community, through continuing professional development activities, or through independent/self-directed learning activities.

4.2.3.4. Learning outcomes descriptors for a higher education qualification at level 6 on the NHEQF

The Bachelor's degree (Honours/ Honours with Research) or the Post-Graduate Diploma is awarded to students who have demonstrated the achievement of the outcomes located at level 6 on the NHEQF.

Table 7: Descriptors for qualifications at levels 6 on the NHEQF

Element of the descriptor	NHEQF level descriptors
Knowledge and understanding	The graduates should be able to demonstrate the acquisition of: • advanced knowledge about a specialized field of enquiry, with depth in one or more fields of learning within a broad multidisciplinary/ interdisciplinary context. • a coherent understanding of the established methods and techniques of research and enquiry applicable to the chosen fields of learning. • an awareness and knowledge of the emerging developments and issues in the chosen fields of learning, • procedural knowledge required for performing and accomplishing professional tasks associated with the chosen fields of learning.
General, technical and professional skills required to perform and accomplish tasks	The graduates should be able to demonstrate the acquisition of: • a range of cognitive and technical skills required for performing and accomplishing complex tasks relating to the chosen fields of learning, • cognitive and technical skills relating to the established research methods and techniques, • cognitive and technical skills required to evaluate complex ideas and undertake research and investigations to generate solutions to real-life problems, • generate solutions to complex problems independently, requiring the exercise of full personal judgement, responsibility, and accountability for the output of the initiatives taken as a practitioner.
Application of knowledge and skills	The graduates should be able to demonstrate the ability to: • apply the acquired advanced technical and/or theoretical knowledge and a range of cognitive and practical skills to analyze the quantitative and qualitative data gathered drawing on a wide range of sources for identifying problems and issues relating to the chosen fields of learning, • apply advanced knowledge relating to research methods to carry out research and investigations to formulate evidence-based solutions to complex and unpredictable problems.
Generic learning outcomes	The graduates should be able to demonstrate the ability to: • listen carefully, read texts and research papers analytically, and present complex information in a clear and concise manner to different groups/ audiences, • communicate technical information and explanations, and the findings/ results of the research studies relating to specialized fields of learning, • present in a concise manner one's views on the relevance and applications of the findings of research and evaluation studies in the context of emerging developments and issues. • meet own learning needs relating to the chosen fields of learning, • pursue self-paced and self-directed learning to upgrade knowledge and skills that will help accomplish complex tasks and pursue a higher level of education and research.

Element of the descriptor	NHEQF level descriptors
	The graduates should be able to demonstrate: • a keen sense of observation, enquiry, and capability for asking relevant/ appropriate questions, • the ability to problematize, synthesize and articulate issues and design research proposals, • the ability to define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inferences based on the analysis and interpretation of data, and predict cause-and-effect relationships, • the capacity to develop appropriate tools for data collection, • the ability to plan, execute and report the results of an experiment or investigation, • the ability to acquire the understanding of basic research ethics and skills in practicing/doing ethics in the field/ in own research work, regardless of the funding authority or field of study, • examine and assess the implications and consequences of emerging developments and issues relating to the chosen fields of study based on empirical evidence. • make judgement in a range of situations by critically reviewing and consolidating evidence, • exercise judgement based on evaluation of evidence from a range of sources to generate solutions to complex problems, including real-life problems, associated with the chosen field(s) of learning requiring the exercise of full personal responsibility and accountability for the initiatives undertaken and the outputs/outcomes of own work as well as of the group as a team member.
Constitutional, humanistic, ethical, and moral values	The graduates should be able to demonstrate the willingness and ability to: • Embrace and practice constitutional, humanistic, ethical, and moral values in life. • adopt objective, unbiased, and truthful actions in all aspects of work related to the chosen field(s) of learning and professional practice. • present coherent arguments in support of relevant ethical and moral issues. • participate in actions to address environmental and sustainable development issues. • follow ethical practices in all aspects of research and development, including avoiding unethical practices such as fabrication, falsification, or misrepresentation of data or committing plagiarism.
Employability and job-ready skills, and entrepreneurship skills and capabilities/qualities and mindset	The graduates should be able to demonstrate the acquisition of knowledge and skills required for: • adapting to the future of work and to the demands of the fast pace of technological developments and innovations that drive a shift in employers' demands for skills, particularly with respect to the transition towards more technology-assisted work involving the creation of new forms of work and rapidly changing work and production processes.

Element of the descriptor	NHEQF level descriptors
	- managing complex technical or professional activities or projects, requiring the exercise of full personal responsibility for the output of own work as well as for the outputs of the group as a member of the group/team. - exercising supervision in the context of work having unpredictable changes.
Credit requirements	Successful completion of the 4-year (eight semesters) undergraduate programme involving a minimum of 160 credits, with a minimum of 40 credits each at level 4.5, 5, 5.5, and 6 of the NHEQF. A 1-year/2-semester Post-Graduate Diploma programme builds on a 3-year/6-semester bachelor's degree and requires a minimum of 40 credits for individuals who have completed a Bachelor's programme.
Entry requirements	- An individual seeking admission to the bachelor's degree (Honours/ Honours with Research) in a specified field of learning would normally have completed all requirements of the relevant 3-year Bachelor's degree. (After completing the requirements of a 3-year bachelor's degree, candidates who meet a minimum 75% marks or its equivalent grade will be allowed to continue studies in the fourth year of the undergraduate programme leading to the bachelor's degree (Honours with Research). - Continuation of undergraduate programme leading to the bachelor's degree (Honours/ Honours with Research) will be open to those who have met the entrance requirements, including specified levels of attainment, in the programme admission regulations. Continuation of the programme of study will be based on the evaluation of documentary evidence (including the academic record and/or evidence relating to the assessment and certification of prior learning) of the applicant's ability to pursue study during the fourth year (semesters 7 & 8) of the 4-year Bachelor's degree (Honours/ Honours with Research) programme. Lateral entry into the programme of study at NHEQF level 6 will be based on the validation of prior learning outcomes, including those achieved outside of formal learning or through learning and training in the workplace, through continuing professional development activities, or through independent/self-directed/self-managed learning activities.

4.2.3.5. Learning outcomes descriptors for a higher education qualification at level 6.5 on the NHEQF

The Master's degree (e.g. M.A., M.Com., M.Sc., etc.) is awarded to students who have demonstrated the achievement of the outcomes located at level 6.5 on the NHEQF.

Table 8: Descriptors for qualifications at levels 6.5 on the NHEQF

Element of the descriptor	NHEQF level descriptors
Knowledge and understanding	The graduates should be able to demonstrate the acquisition of: • advanced knowledge about a specialized field of enquiry with a critical understanding of the emerging developments and issues relating to one or more fields of learning, • advanced knowledge and understanding of the research principles, methods, and techniques applicable to the chosen field(s) of learning or professional practice, • procedural knowledge required for performing and accomplishing complex and specialized and professional tasks relating to teaching, and research and development.
General, technical and professional skills required to perform and accomplish tasks	The graduates should be able to demonstrate the acquisition of: • advanced cognitive and technical skills required for performing and accomplishing complex tasks related to the chosen fields of learning. • advanced cognitive and technical skills required for evaluating research findings and designing and conducting relevant research that contributes to the generation of new knowledge. • specialized cognitive and technical skills relating to a body of knowledge and practice to analyze and synthesize complex information and problems.
Application of knowledge and skills	The graduates should be able to demonstrate the ability to: • apply the acquired advanced theoretical and/or technical knowledge about a specialized field of enquiry or professional practice and a range of cognitive and practical skills to identify and analyze problems and issues, including real-life problems, associated with the chosen fields of learning. • apply advanced knowledge relating to research methods to carry out research and investigations to formulate evidence-based solutions to complex and unpredictable problems.

Generic learning outcomes	The graduates should be able to demonstrate the ability to: • listen carefully, read texts and research papers analytically and present complex information in a clear and concise manner to different groups/audiences, • communicate, in a well-structured manner, technical information and explanations, and the findings/results of the research studies undertaken in the chosen field of study, • present in a concise manner view on the relevance and applications of the findings of recent research and evaluation studies in the context of emerging developments and issues. • evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints. • meet one's own learning needs relating to the chosen fields of learning, work/vocation, and an area of professional practice, • pursue self-paced and self-directed learning to upgrade knowledge and skills, including research-related skills, required to pursue a higher level of education and research. • problematize, synthesize, and articulate issues and design research proposals, • define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inferences based on the analysis and interpretation of data, and predict cause-and-effect relationships, • develop appropriate tools for data collection for research, • the ability to use appropriate statistical and other analytical tools and techniques for the analysis of data collected for research and evaluation studies, • plan, execute, and report the results of an investigation, • follow basic research ethics and skills in practicing/doing ethics in the field/ in one's own research work. • make judgements and take decisions regarding the adoption of approaches to solving problems, including real-life problems, based on the analysis and evaluation of information and empirical evidence collected.
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Element of the descriptor	NHEQF level descriptors
	make judgement across a range of functions requiring the exercise of full responsibility and accountability for personal and/or group actions to generate solutions to specific problems associated with the chosen fields/subfields of study, work, or professional practice.
Constitutional, humanistic, ethical, and moral values	The graduates should be able to demonstrate the willingness and ability to: - embrace and practice constitutional, humanistic, ethical, and moral values in one's life, - adopt objective and unbiased actions in all aspects of work related to the chosen fields/subfields of study and professional practice, - participate in actions to address environmental protection and sustainable development issues, - support relevant ethical and moral issues by formulating and presenting coherent arguments, - follow ethical principles and practices in all aspects of research and development, including inducements for enrolling participants, avoiding unethical practices such as fabrication, falsification or misrepresentation of data or committing plagiarism.
Employability and job-ready skills, and entrepreneurship skills and capabilities/qualities and mindset	The graduates should be able to demonstrate the acquisition of knowledge and skill sets required for: - adapting to the future of work and responding to the demands of the fast pace of technological developments and innovations that drive the shift in employers' demands for skills, particularly with respect to the transition towards more technology-assisted work involving the creation of new forms of work and rapidly changing work and production processes. - exercising full personal responsibility for the output of own work as well as for group/team outputs and for managing work that is complex and unpredictable requiring new strategic approaches.
Credit requirements	- A 1-year/2-semester master's programme builds on a bachelor's degree with Honours/ Honours with Research and requires a minimum of 40 credits for individuals who have completed a Bachelor's degree (Honours/ Honours with Research). - The 2-year/4-semester Master's programme builds on a 3-year/6-semester bachelor's degree and requires a total of a minimum of 80 credits from the first and second years of the programme, with a minimum of 40 credits in the first year and minimum of 40 credits in the second year of the programme at level 6.5 on the NHEQF.
Entry requirements	- A 3-year Bachelor's degree for the 2-year/4-semester Master's degree programme (e.g. M.A., M.Com., M.Sc., etc.). - A 4-year Bachelor's Degree for the 1-year/2-semester Master's programme (e.g. M.A., M.Com., M.Sc., etc.).

Element of the descriptor	NHEQF level descriptors
	Admission to a programme of study leading to the Master's degree is open to those who have met the entrance requirements, including specified levels of attainment, specified in the programme admission regulations. Admission will be based on the evaluation of documentary evidence (including the academic record and/or evidence relating to the assessment and certification of prior learning) indicating the applicant's ability to pursue postgraduate study.

4.2.3.6. Learning outcomes descriptors for a higher education qualification at level 7 on the NHEQF

The Master's degree (e.g. M.E./M.Tech. etc.) is awarded to students who have demonstrated the achievement of the outcomes located at level 7 on the NHEQF.

Table 8: Descriptors for qualifications at levels 7 on the NHEQF

Element of the Descriptor	NHEQF level descriptors
Knowledge and understanding	The graduates should be able to demonstrate the acquisition of: - advanced knowledge about a specialized field of enquiry with a critical understanding of the emerging developments and issues relating to one or more fields of learning, - advanced knowledge and understanding of the research principles, methods, and techniques applicable to the chosen field(s) of learning or professional practice, - procedural knowledge required for performing and accomplishing complex and specialized and professional tasks relating to teaching, and research and development.
General, technical and professional skills required to perform and accomplish tasks	The graduates should be able to demonstrate the acquisition of: - advanced cognitive and technical skills required for performing and accomplishing complex tasks related to the chosen fields of learning. - advanced cognitive and technical skills required for evaluating research findings and designing and conducting relevant research that contributes to the generation of new knowledge. - specialized cognitive and technical skills relating to a body of knowledge and practice to analyze and synthesize complex information and problems.

Application of knowledge and skills	The graduates should be able to demonstrate the ability to: • apply the acquired advanced theoretical and/or technical knowledge about a specialized field of enquiry or professional practice and a range of cognitive and practical skills to identify and analyze problems and issues, including real-life problems, associated with the chosen fields of learning. • apply advanced knowledge relating to research methods to carry out research and investigations to formulate evidence-based solutions to complex and unpredictable problems.
Generic learning outcomes	The graduates should be able to demonstrate the ability to: • listen carefully, read texts and research papers analytically, and present complex information in a clear and concise manner to different groups/audiences, • communicate, in a well-structured manner, technical information and explanations, and the findings/results of the research studies undertaken in the chosen field of study, • present in a concise manner view on the relevance and applications of the findings of recent research and evaluation studies in the context of emerging developments and issues. • evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints. • meet one's own learning needs relating to the chosen fields of learning, work/vocation, and an area of professional practice, • pursue self-paced and self-directed learning to upgrade knowledge and skills, including research-related skills, required to pursue higher level of education and research. • problematize, synthesize, and articulate issues and design research proposals, • define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inferences based on the analysis and interpretation of data, and predict cause-and-effect relationships, • develop appropriate tools for data collection for research, • the ability to use appropriate statistical and other analytical tools and techniques for the analysis of data collected for research and evaluation studies, • plan, execute, and report the results of an investigation, • follow basic research ethics and skills in practicing/doing ethics in the field/ in one's own research work. • make judgements and take decisions regarding the adoption of approaches to solving problems, including real-life problems, based on the analysis and evaluation of information and empirical evidence collected.

Element of the Descriptor	NHEQF level descriptors
	make judgement across a range of functions requiring the exercise of full responsibility and accountability for personal and/or group actions to generate solutions to specific problems associated with the chosen fields/subfields of study, work, or professional practice.
Constitutional, humanistic, ethical, and moral values	The graduates should be able to demonstrate the willingness and ability to: - embrace and practice constitutional, humanistic, ethical, and moral values in one's life, - adopt objective and unbiased actions in all aspects of work related to the chosen fields/subfields of study and professional practice, - participate in actions to address environmental protection and sustainable development issues, - support relevant ethical and moral issues by formulating and presenting coherent arguments, - follow ethical principles and practices in all aspects of research and development, including inducements for enrolling participants, avoiding unethical practices such as fabrication, falsification or misrepresentation of data or committing plagiarism.
Employability and job-ready skills, and entrepreneurship skills and capabilities/qualities and mindset	The graduates should be able to demonstrate the acquisition of knowledge and skills set required for: - adapting to the future of work and responding to the demands of the fast pace of technological developments and innovations that drive shift in employers' demands for skills, particularly with respect to the transition towards more technology-assisted work involving the creation of new forms of work and rapidly changing work and production processes. - exercising full personal responsibility for the output of own work as well as for group/team outputs and for managing work that are complex and unpredictable requiring new strategic approaches.
Credit requirements	The 2-year/4-semester Master's programme (e.g., M.E., M.Tech. etc.) builds on a 4-year/8-semester bachelor's degree (e.g. B.E., B.Tech. etc.) and requires a total of minimum of 80 credits from the first and second years of the programme, with minimum of 40 credits in the first year and minimum of 40 credits in the second year of the programme at level 6 on the NHEQF.
Entry requirements	A 4-year Bachelor's degree (e.g. B.E., B.Tech. etc.) for the 2-year/4-semester Master's programme (e.g. M.E., M. Tech. etc.).

Element of the descriptor	NHEQF level descriptors
	Admission to a programme of study leading to the Master's degree is open to those who have met the entrance requirements, including specified levels of attainment, specified in the programme admission regulations. Admission will be based on the evaluation of documentary evidence (including the academic record and/or evidence relating to the assessment and certification of prior learning) indicating the applicant's ability to pursue postgraduate study.

4.2.3.6. Learning outcomes descriptors for a higher education qualification at level 8 on the NHEQF

Doctoral Degree is awarded to students who have demonstrated the achievement of the outcomes located at level 8 on the NHEQF.

Table 9: Descriptors for qualifications at level 8 on the NHEQF

Element of the descriptor	NHEQF level descriptors
Knowledge and understanding	The graduates should be able to demonstrate the acquisition of: - highly specialized knowledge, including knowledge at the most advanced frontiers of the chosen fields of study. - mastery of the established research methods and techniques applicable to the chosen fields of learning. - procedural knowledge required by personnel engaged in complex research and development activities.
General, technical and professional skills required to perform and accomplish tasks	The graduates should be able to demonstrate the acquisition of: - most advanced and highly specialized cognitive and technical skills required for performing and accomplishing complex tasks related to research and development that make original contributions to knowledge, professional practice, and innovations. - cognitive and technical skills required for conceptualizing, designing, and implementing fundamental and/or applied research at the forefront of the chosen field(s) of learning to generate original knowledge. - cognitive and technical skills required for doing transdisciplinary research.
Application of knowledge and skills	The graduates should be able to demonstrate the ability to: apply the acquired highly specialized knowledge, skills, and methods of research to design and conduct original and high quality disciplinary or multidisciplinary or interdisciplinary research to generate evidence-based solutions to complex problems, including real-life problems, relating to the chosen field(s) of study.

Element of the descriptor	NHEQF level descriptors
Generic learning outcomes	The graduates should be able to demonstrate the ability to: • listen carefully, read texts and research papers analytically, and present complex information in a clear and concise manner to non-specialist and specialist groups/audiences. • present, in a well-structured and logical manner, technical information and explanations pertaining to the results/findings of research studies undertaken. • present views on the relevance and application of recent research and their applications in the context of the emerging developments and issues related to the chosen field(s) of study or professional practice. • meet own learning needs relating to research and investigations in the chosen fields of study. • pursue self-paced and self-directed learning to upgrade knowledge and skills, including research-related skills, required to pursue higher level of research related to new frontiers of knowledge. • critically analyze and synthesize a body of knowledge in their major and allied fields, identify critical gaps and ask new questions, develop new tools and techniques of data gathering and analysis, and at the end of it be able to conduct research independently. • evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples and addressing opposing viewpoints. • make judgements and take decisions regarding the formulation of responses to problems, including real-life problems, based on the analysis and evaluation of information and empirical evidence relating to the problems. • make significant judgment across a broad range of functions requiring the exercise of responsibility for determining personal and/or group actions to generate solutions to specific problems associated with the chosen field(s) of study, work/vocation, or professional practice.
Constitutional, humanistic, and ethical and moral values	The graduates should be able to demonstrate the willingness and ability to: • practice constitutional, humanistic, ethical, and moral values in life, adopt objective and unbiased actions in all aspects of work, • identify ethical issues related to the chosen fields of research, including those relating to environmental and sustainable development issues, • follow ethical practices in all aspects of research and development, including avoiding practices such as fabrication, falsification or misrepresentation of data or committing plagiarism, and not adhering to intellectual property rights, • acquire the understanding of basic research ethics and skills in practicing/doing ethics in the field/in own research work, regardless of the funding authority or field of study.

Element of the descriptor	NHEQF level descriptors
Employability and job-ready skills, and entrepreneurship skills and capabilities/ qualities and mindset	The graduates should be able to demonstrate the acquisition of knowledge and essential skill sets required for: • adapting to the future of work and responding to the demands of the fastpace of technological developments and innovations that drive shift in skill needs relating to work and professional practices, including those relating to teaching, research, and development, • exercising full personal responsibility for outputs/outcomes of own work and outputs/outcomes of group efforts, • exercising substantial authority, innovation, autonomy, professional integrity, and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research.
Credit requirements	• The major feature of all doctorate degrees is original research. The body of work that leads to the award of a doctorate degree will include coursework and a thesis with published work and/or creative work (for example, in the case of visual or performing arts).
Entry requirements	• A graduate of a 1-year/2-semester Master's programme, or a 2-year/4-semester Master's programme, or a 4-year/8- semester Bachelor's degree • Admission to a programme of study leading to the doctoral degree is open to those who have met the entrance requirements, including specified levels of attainment, in the programme admission regulations. Admission will be based on the evaluation of documentary evidence (including the academic record and/or evidence relating to the assessment and certification of prior learning) of the applicant's ability to pursue study for a doctoral degree relating to a specialized field of enquiry.

4.2.4. NHEQF level descriptors as a learning continuum

Each NHEQF level represents a different level of complexity in learning outcomes. Level 4.5 of the NHEQF represents learning outcomes appropriate to the first year of the undergraduate programme of study, while Level 8 represents learning outcomes with the greatest complexity appropriate to the doctoral-level programme of study (Annexure I). The qualifications within each NHEQF level involve different volumes of learning as well as differences in the range of expected outcomes of learning related to the chosen fields of learning within broad multi-/inter-/transdisciplinary contexts. NHEQF levels reflect the relative complexity and/or depth of achievement and the autonomy required of graduates to demonstrate that achievement. The learning outcomes descriptors for a higher education qualification at different levels on the NHEQF reflect the developmental and learning continuum from NHEQF levels 4.5 to 8.

4.2.5. The NHEQF qualification specifications

The NHEQF qualification specifications (Table 10) for the certificate, diploma, and degree programmes inform the design and accreditation of qualifications used by the standard-setting and accrediting authorities in the higher education sub-sector, industry, and professional bodies, regulatory bodies, students, and employers.

Table 10. NHEQF Qualification specifications

Qualification type	Purpose of the qualification
Undergraduate Certificate	The certificate (in a field of learning or a disciplinary area) qualifies students who can apply technical and theoretical concepts and specialized knowledge and skills in a broad range of contexts to undertake skilled or paraprofessional work and/or to pursue further study/learning at higher levels.
Undergraduate Diploma	The diploma (in a field of learning or a disciplinary area) qualifies students who can apply specialized knowledge in a range of contexts to undertake advanced skilled or paraprofessional work and/or to pursue further learning/study at higher levels.
Bachelor's degree	The bachelor's degree qualifies students who can apply a broad and coherent body of knowledge and skills in a range of contexts to undertake professional work and/or for further learning.
Bachelor's degree (Honours/ Honours with Research)	Bachelor's degree (Honours): Prepare individuals who can apply a body of knowledge in a specific context to undertake professional work and for research and further learning.
	Bachelor's degree (Honours with Research): Prepare individuals who can apply an advanced body of knowledge in a range of contexts to undertake professional work and apply specialized knowledge and skills for research and scholarship, and/or for further learning relating to the chosen field(s) of learning, work/vocation, or professional practice.
Post-Graduate Diploma	The Post-Graduate Diploma qualifies students who can apply a body of advanced knowledge and skills in a range of contexts to undertake professional or highly skilled work and/or further learning.
Master's degree(1 year/2 semesters of study)	The Master's degree qualifies students who can apply an advanced body of knowledge in a range of contexts for professional practice, research, and scholarship and as a pathway for further learning. Graduates at this level are expected to possess and demonstrate specialized knowledge and skills for research, and/or professional practice and/or for further learning.
Master's degree(2 years /4 semesters of study)	The Master's degree qualifies students who can apply an advanced body of knowledge in a range of contexts for professional practice, research, and scholarship and as a pathway for further learning. Graduates at this level are expected to possess and demonstrate specialized knowledge and skills for research, and/or professional practice and/or for further learning. Master's degree holders are expected to demonstrate the ability to apply the established principles and theories to a body of knowledge or an area of professional practice.
Doctoral degree	The Doctoral degree qualifies students who can ask relevant and new questions and develop appropriate methodologies and tools for collecting information in pursuit of generating new knowledge and new data sets; and apply a substantial body of knowledge to undertake research and investigations to generate new knowledge, in one or more fields of inquiry, scholarship or professional practice. Graduates at this level is expected to have a systematic and critical understanding of a complex field of learning and specialized research skills for the advancement of knowledge and/or professional practice and making a significant and original contribution to the creation of new knowledge relating to a field of learning or in the context of an area of professional practice.

4.2.6. Linkage between NHEQF Level Descriptors and Programme Learning Outcomes

The outcomes described in NHEQF level descriptors are attained by students through learning acquired on the completion of a programme of study relating to the chosen fields of learning, work/vocation, or an area of professional practice. The term ‘programme’ refers to the entire scheme of study followed by learners leading to a qualification. Individual programmes of study will have defined learning outcomes that must be attained for the award of a specific certificate/diploma/degree.

The curriculum development agencies are responsible for ensuring that individual programme learning outcomes align with the relevant qualification descriptor in the relevant NHEQF level. Programme learning outcomes (PLOs) include outcomes that are specific to disciplinary areas of learning associated with the chosen field (s) of learning, work/vocation, or professional practice. They also include generic learning outcomes, including transferable skills and competencies, that graduates of all programmes of study should acquire and be able to demonstrate for the award of the Certificate/Diploma/Degree. The programme learning outcomes would also focus on knowledge and skills that prepare students for further study, employment, and responsible citizenship. They would help ensure comparability of learning levels and academic standards across colleges/universities in India and provide a broad picture of the level of competence of graduates of a given programme of study. A programme of study may be related to monodisciplinary, multidisciplinary or interdisciplinary—areas of learning; work or vocational education; or technical/professional education or an area of professional practice. Some exemplar PLOs are given in Annexure II.

4.2.7. Course Learning Outcomes (CLOs)

The programme learning outcomes are attained by learners through the essential learnings acquired on the completion of selected courses of study within a programme of study. The term ‘course’ is used to mean the individual courses of study that make up the scheme of study for a programme. The curriculum development agencies are expected to consider the relevant programme learning outcomes when setting the course learning outcomes for the undergraduate certificate/diploma, Bachelor’s degree, Bachelor’s degree with honours/ honours with research or master’s degree programmes.

Course learning outcomes are specific to the learning for a given course of study related to a disciplinary or interdisciplinary/multi-disciplinary—area of learning. Some courses of study are highly structured, with a closely laid down progression of compulsory/core courses to be taken at different phases/stages of learning. The NHEQF envisages programmes that would allow learners much more freedom to take a combination of courses of study within the multidisciplinary contexts according to the preferences of the individual student that may be very different from the courses of study pursued by another student of the same programme.

Course-level learning outcomes are expected to be aligned with relevant programme learning outcomes. At the course level, each course may well have links to some but not all graduate attributes as these are developed through the totality of student learning experiences across the period/ semesters of their study. Some examples, of course, learning outcomes are given in Annexure I.

4.3. Academic credit framework for different types of qualifications within the NHEQF

The NHEQF facilitates the awarding of academic credit and supports credit transfer and progression routes within the Indian education and training system. It seeks to help everyone involved in education and training to make comparisons between qualifications offered by different types of higher education institutions in the country and to understand how these relate to each other. The workload is described in terms of credits and the credit is defined mostly in terms of learner-engaged time. A course is measured in terms of credit hours based on the amount of workload and learner-engaged time. A credit framework indicates the time invested, and the workload for each of the credits earned by the individual. The credit framework will facilitate credit accumulation and transfer.

A credit is a unit by which the coursework is measured. It determines the number of hours of instruction required per week over the duration of a semester. For example, a three credit lecture course in a semester means three one-hour lectures per week with each one-hour lecture counted as one credit. In a semester of 15 weeks duration, a three credit lecture course is equivalent to 45 hours of teaching. A one credit of tutorial work means one-hour engagement per week. In a semester of 15 weeks duration, a one credit tutorial in a course is equivalent to 15 hours of engagement. A one credit course in practicum or lab work, community engagement and services, and field work in a semester means two-hour engagement per week. In a semester of 15 weeks duration, a one credit practicum in a course is equivalent to 30 hours of engagement. A one credit of Seminar or Internship or Studio activities or Field practice/projects or Community engagement and service means two-hour engagement per week. Accordingly, in a semester of 15 weeks duration, a one credit in these courses is equivalent to 30 hours of engagement.

The NHEQF envisages different modes in which the programmes of study at undergraduate and post-graduate levels can be offered. These include direct in-person/face-to-face instruction, open and distance learning, online education, and hybrid/blended modes. The credit framework would facilitate all these modes of learning. A student will receive the credits linked to a course on the successful completion of a programme of study in an academic term of 15-16 weeks (for example, a semester) and not less than 10 weeks (for example, a trimester) and based on the number of hours of teaching/guidance specified below, in any of the approved modes of study.

4.4. Components of programmes of study

The following types of courses/activities may be used to build programmes of study. Each of them will require specific number of hours of teaching/guidance/practicum, in any of the modes of learning, and laboratory/studio/workshop activities, field-based learning/projects, and internships/ community engagement and service.

- Lecture courses: Courses involving lectures relating to a field or discipline by an expert or qualified personnel in a field of learning, work/vocation or professional practice
- Laboratory/Practicum work/ studio/workshop-based activities: A course requiring students to participate in a project or practical or lab activity that applies previously learned/studied principles/theory related to the chosen field of learning, work/vocation or professional practice under the supervision of an expert or qualified individual in the field of learning,

work/vocation or professional practice.

- Field-based learning/projects, internships, and community engagement and service:
- Courses requiring students to participate in field-based learning/projects generally under the supervision of an expert of the given external entity.
- Community Engagement: -
- Courses requiring students to participate in field-based learning/projects generally under the supervision of an expert of the given external entity. The curricular component of ‘community engagement and service’ will involve activities that would expose students to the socio-economic issues in society so that the theoretical learnings can be supplemented by actual life experiences to generate solutions to real-life problems.

Table 11: Qualification Type and Credit Requirements

NHEQF levels	Qualification title/nomenclature	Credit Requirements (Minimum)
Level 4.5	Undergraduate Certificate (in the field of learning/discipline) for those who exit after the first year (2 semesters) of the undergraduate programme. (Programme duration: First year or 2 semesters of the undergraduate programme)	40 credits
Level 5	Undergraduate Diploma (in the field of learning/discipline) for those who exit after the first two years (4 semesters) of the undergraduate programme (Programme duration: First two years or 4 semesters of the undergraduate programme)	80 credits
Level 5.5	Bachelor’s Degree (examples: Bachelor of Arts; Bachelor of Science; Bachelor of Commerce; Bachelor of Physical Education; Bachelor of Business Administration, etc. (Programme duration: Three years or 6 semesters).	120 credits
Level 5.5	Bachelor of Vocation (B.Voc). (Programme duration: 3 years or 6 semesters).	120 credits
Level 6	Bachelor of Engineering (B.E.); Bachelor of Technology (B.Tech.) (Programme duration: Four years or 8 semesters.	160 credits
Level 6	B.A., B.Ed.; B.Sc., B.Ed.; B.Com., B.Ed. (4-year dual-degree Integrated Teacher Education Programme)	160 credits)
Level 6	Bachelor’s Degree (Honours/ Honours with Research). (Programme duration: Four years or 8 semesters).	160 credits
Level 6	Post-Graduate Diploma. For those who exit after successful completion of the first year or two semesters of the 2-year master’s programme). (Programme duration: One year or 2 semesters).	40 credits
Level 6.5	Master’s degree. (e.g. M.A.; M.Com., M.Sc.; etc.) (Programme duration: Two years or four semesters after obtaining a 3-year Bachelor’s degree).	80 credits

NHEQF levels	Qualification title/nomenclature	Credit Requirements (Minimum)
Level 6.5	Master's degree (e.g. M.A.; M.Com., M.Sc.; etc.) (Programme duration: One year or 2 semesters after obtaining a 4- year Bachelor's degree (Honours/ Honours with Research).	40 credits
Level 7	Master's degree (e.g. M.E.; M.Tech. etc.) (Programme duration: Two years or four semesters after obtaining a Bachelor's degree (e.g. B.E., B.Tech.etc.).	80 credits
Level 8	Doctoral degree	Credits for courseworkand, a thesis and published work

Table 12. Letter Grades and Grade Points

Letter Grade	Grade Point
O (outstanding)	10
A+ (Excellent)	9
A (Very good)	8
B+ (Good)	7
B (Above average)	6
C (Average)	5
P (Pass)	4
F (Fail)	0
Ab (Absent)	0

For non-credit courses ‘Satisfactory’ or ‘Unsatisfactory’ will be indicated instead of the letter grade and this will not be counted for the computation of SGPA/CGPA. The universities or the autonomous colleges can decide on the grade or percentage of marks required to pass in a course and the CGPA required to qualify for a Certificate/Diploma/Degree taking into consideration the recommendations of the relevant standard setting body.

4.5. Credit accumulation and redemption

The NHEQF helps facilitate multiple entry, multiple exit, and re-entry options for students at the undergraduate and master's levels. It would facilitate credit accumulation through the facility created by the Academic Bank of Credit (ABC) scheme in the “Academic Bank Account” opened by students across the country to transfer and consolidate the credits earned by them by undergoing courses in any of the eligible (HEIs). The ABC allows for credit redemption through the process of commuting the accrued credits in the Academic Bank Account maintained in the ABC for the

purpose of fulfilling the credits requirements for the award of Certificate/Diploma/ Degree by the authorized HEIs such as the universities or the autonomous colleges. However, the validity of credits earned and kept in the Academic Credit Account will be to a maximum period of seven years or as specified by the ABC for different disciplinary or fields of learning to allow the redemption of credits after the date of earning such credits. After seven years, re-entry into a programme of study will be based on the validation of prior learning outcomes. Lateral entry into the programme of study at a particular NHEQF level will be based on the validation of prior learning outcomes, including those achieved outside of formal learning or through learning and training in the workplace or in the community, through continuing professional development activities, or through independent/self-directed/self-managed learning activities.

4.6. Quality assurance mechanism

A quality assurance framework is integral to the integrity of the programmes of study evolved based on the NHEQF, and the recognition of the qualifications listed on it. The Indian higher education sub-sector has put in place a mechanism and approach to quality assurance. The approach seeks to support the development and enhancement of a quality culture in HIEs. There is a strong emphasis on: focusing on learner achievement and outcomes for learners; the use of evidence to improve outcomes for learners and other stakeholders; accountability through a tertiary education organization being able to demonstrate that what it is doing is effective.

The National Assessment and Accreditation Council (NAAC) was established by the UGC in 1994 for evaluating the performance of the universities and colleges in the country. NAAC's mandate includes the task of performance evaluation, assessment, and accreditation of universities and colleges in the country. The philosophy of NAAC is based on objective and continuous improvement rather than being punitive or judgemental so that all institutions of higher learning are empowered to maximize their resources, opportunities, and capabilities. Assessment is a performance evaluation of an institution and /or its units and is accomplished through a process based on self-study and peer review using defined criteria. Accreditation refers to the certification given by NAAC which is valid for a period of five years.

In pursuance of its Action Plan for performance evaluation, assessment and accreditation, and quality up-gradation of institutions of higher education, the NAAC envisages that every accredited HEI should establish an Internal Quality Assurance Cell (IQAC) as a post-accreditation quality sustenance measure. Since quality enhancement is a continuous process, the IQAC functions as a part of the institution's system and works towards realization of the goals of quality enhancement and sustenance. The prime task of the IQAC is to develop a system for conscious, consistent, and catalytic improvement in the overall

performance of institutions.

The guidelines provided in the following pages will guide and facilitate the institution in the creation and operation of the Internal Quality Assurance Cell (IQAC). The work of the IQAC is the first step towards the internalization and institutionalization of quality enhancement initiatives. Its success depends upon the sense of belongingness and participation it can inculcate in all the constituents of the institution. It will not be yet another hierarchical structure or a record-keeping exercise in the institution. It will be a facilitative and participative voluntary system/unit/organ of the institution. It has the potential to become a vehicle for ushering in quality enhancement by working out planned interventionist strategies to remove deficiencies and enhance quality like the “Quality Circles” in industries. The primary objectives of the IQAC is to develop a system for conscious, consistent and catalytic action to improve the academic and administrative performance of the institution, and to promote measures for institutional functioning towards quality enhancement through the internalization of quality culture and institutionalization of best practices.

The key functions of the IQAC include the development and application of quality benchmarks/parameters for various academic and administrative activities of the institution; arrangement for feedback response from students, parents, and other stakeholders on quality-related institutional processes; dissemination of information on various quality parameters of higher education; organization of inter-and intra-institutional workshops, seminars on quality related themes and promotion of quality circles; documentation of the various programmes/ activities leading to quality improvement; acting as a nodal agency of the institution for coordinating quality-related activities, including the adoption and dissemination of best practices; and the development and maintenance of institutional database through Management Information System for the purpose of maintaining /enhancing the institutional quality; and the development of a Quality Culture in the institution.

Definitions of terminologies/terms that are applicable to the NHEQF

Academic credit or credit: Recognition of the verified achievement of learning outcomes indicating that a learner has successfully completed a prior programme/course of learning relating to the chosen programme (s) of study associated with a field of learning, work, or professional practice corresponding to a qualification at a specified level. Academic credit or credit is a unit by which the course work is measured. It determines the number of hours of instructions required per week. For example- a three credit course in a semester means three one-hour lectures per week with each one-hour lecture counted as one credit.

Academic standards: The standards that individual certificate/diploma/degree-awarding bodies set for the award of their academic credits or qualifications. They include the standards of performance that a student needs to demonstrate to achieve a particular level of qualification. Letter grades on a 9-point scale such as O (outstanding), A+ (Excellent), A (Very good), B+(Good), B (Above average), C (Average), P (Pass), F (Fail) and Ab (Absent) represents an index of the performance of students in a specific course of study.

Accountability: The extent to which an individual is required to account for his or her performance in work or learning contexts, for the outputs/outcomes of the initiatives taken, and/or for the application of knowledge and/or skills to generate solutions to problems that are appropriate for the level of the qualification.

Accreditation: The process for approval by an accrediting authority of a programme of study leading to a qualification indicated in the NHEQ, using the quality assurance standards specified for the relevant education and training sector.

Accrediting authority: An authority that is either authorized under legislation or has been given the responsibility to accredit programmes of study leading to qualifications indicated in the NHEQF.

Advanced knowledge and/or skills: Knowledge and skills that have been acquired beyond the attainment of a previous learning and qualification level.

Application of knowledge, understanding, and/or skills: The use of the acquired knowledge, understanding and skills related to the chosen fields/subfields of study, work, or professional practice to solve a problem involving the exercise of autonomy, personal responsibility and accountability for the completion of a task or an activity and for the outputs/outcome of own work.

Area of learning or work: A sub-category of a field of learning or work.

Assessment: The process of determining a student's achievement of expected learning outcomes involving the use of a range of methods and practices.

Autonomy in the application of knowledge, understanding, and/or skills: The ability to apply knowledge, understanding and/or skills with an appropriate degree of independence relevant to the level of the qualification.

Award of a qualification: Award of qualification occurs when a student has met the requirements of the qualification and the qualification is certified by a competent body the provision of qualification.

Basic knowledge and/or skills: The knowledge and/or skills that form a starting point or basis for pursuing a programme of learning related to a field/subfield of study/learning, work, or professional practice.

Body of knowledge: The complete set of concepts, principles, theories, processes, methods, techniques, and activities that make up a field of study/learning, work, or professional practice.

Broad knowledge and/or skills: A general or extensive area of learning related to a field/ subfield of

study, work, or professional practice.

Certificate/Diploma/Degree-awarding bodies: A higher education provider (typically an autonomous college or university or a stand-alone institution in the Indian Context) with the power to award Certificates/Diplomas/Degrees.

Cognitive skills: The mental skills and processes that are used in the acquisition and application of knowledge. Cognitive processes include mental processes such as recognition, recall, seeing relationships, citing examples, distinguishing, classifying, interpreting, generalizing, reasoning, formulating and establishing hypotheses, inferring, predicting cause and effect relationships etc.

Coherent knowledge and/or skills: Knowledge and/or skills that are logically ordered, sound, and/or integrated.

Communication skills: The skills that enable a person to listen carefully, to read texts and research papers analytically; to present/communicate information in writing and orally in a concise manner to different groups/audiences; and to construct logical arguments using correct technical language related to a field of study/learning, work, or practice.

Competence: The proven ability to use human capacities related to intellectual, physical, social, emotional, ethical, and moral reasoning in the discharge of responsibility roles and doing a job related to the chosen fields/subfields of study/learning, work, or professional practice.

Comprehensive knowledge and/or skills: Knowledge or skills that cover a complete area of a field/sub field of study/learning, work, or professional practice.

Creative skills: Skills that may lead to innovative, imaginative, and artistic outputs.

Credit transfer: A process that provides students with agreed and consistent credit outcomes for components of a qualification based on identified equivalence in content and learning outcomes between matched qualifications.

Cumulative Grade Point Average (CGPA): A measure of the overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all semesters. It is expressed up to two decimal places.

Depth of knowledge/skills: Knowledge/skills involving an advanced degree of difficulty or complexity.

Exit qualification: A qualification that may be awarded on completion of an intermediate point of studies, that is after two semesters or four semesters of study in a six-semester Bachelor's degree programme or after two semesters of study in a four-semester Master's degree programme.

Expert knowledge and/or skills: The highest level of knowledge and skills underpinned by the ability based on research, experience, or occupation in a particular area of study.

Field of learning: The focus of activities relating to a programme of study, work/vocation or professional practice. In the context of the NHEQF, a field of learning involves a programme of study relating to chosen disciplinary/interdisciplinary area(s) of study, work or technical and vocational education and training, or an area of professional practice.

Framework levels: A series of sequential stages expressed in terms of a range of outcomes against which typical higher education qualifications can be positioned. NHEQF levels reflect the relative complexity and/or

depth of learning achievement and the competence required for taking responsibility and exercising autonomy required of graduates to demonstrate that achievement. The NHEQF is characterized by seven levels, with level 4.5 having the lowest complexity and level 8 having the highest complexity.

Generic learning outcomes: The transferrable, non-discipline specific skills that students of all programmes of study need to achieve through the appropriate learning experience. Generic learning outcomes include those that have application in the study, work, professional practice, and life contexts. Some of the generic learning outcomes include complex problem solving, critical thinking, creativity, coordinating/collaborating with others and capacity to work in teams; judgment and decision making; service orientation; negotiation skills; cognitive flexibility; learning skills including “Learning to learn capability”; communication skills; digital literacy and skills; leadership readiness/skills; capability for self-directed work and self-management, making judgements; capability for functioning effectively in multicultural and multilingual contexts and ethical and moral awareness and reasoning.

Grade Point: A numerical weightage allotted to each letter grade on a 10-point scale. Letter Grade represents an index of the performance of students in a specific course.

Graduate: A person who has been awarded a qualification by an authorized organization.

Graduate attributes: The quality and feature or characteristics of an individual, including the knowledge, skills, attitudes, and values that are expected to be acquired by a graduate through studies at the HEI such as a college or university. The graduate attributes include capabilities that help strengthen abilities for widening current knowledge base and skills, gaining new knowledge and skills, undertaking future studies, performing well in a chosen career, and playing a constructive role as a responsible citizen in society. The graduate attributes also describe a set of characteristics/competencies that are transferable beyond the study of a particular subject area and programme contexts in which they have been developed. Graduate attributes are fostered through meaningful learning experiences made available through the curriculum, the total college/university experiences, and a process of critical and reflective thinking.

Knowledge: The outcome of the learning process indicating what a learner should demonstrate in terms of the recognition and recall of facts, concepts, principles, theories, and practices related to the chosen fields of study and/or work or professional practice. Knowledge could be theoretical and/or factual. It can be described in terms of (a) depth of knowledge that can be general or specialized, (b) breadth of knowledge that can range from a single disciplinary area to multidisciplinary areas of learning, (c) kinds of knowledge ranging from concrete to abstract, or from segmented to cumulative, and (d) complexity of knowledge involving a combination of kinds, depth, and breadth of knowledge.

Learning outcomes: Statements of what a learner knows, understands, and is able to do on completion of a learning process and a programme/course of study.

Level descriptors: A statement of the generic outcomes of learning at a specific level of a qualifications framework.

Mastery of knowledge: The attributes of a graduate who demonstrates comprehensive knowledge and understanding of a field of study/learning, work, or professional practice.

Minimum acceptable level of academic standards: The minimum acceptable level of achievement that a student must demonstrate to be eligible for the award of academic credit or qualification for example, Grade P (Pass) in a grade classification criteria/system involving grades O (Outstanding), A+ (Excellent), A (Very good), B+ (Good), B (Above average), C (Average), P (pass), F (Fail), and Ab (Absent).

For equivalent qualifications, the acceptable level of achievement needs to be agreed upon across HEIs in India.

National qualifications system: The institutional arrangements, mechanisms and processes related to the quality assurance, assessment and recognition of learning that leads to the award of qualifications.

National qualifications framework: An instrument for the classification of qualifications according to a set of criteria for specified levels of learning achieved, which would integrate and coordinate the qualifications from each education and training sector into a single comprehensive qualification framework.

NHEQF qualification: The result of an accredited programme of study/learning that leads to formal certification that a graduate has achieved the learning outcomes as specified in the NHEQF.

Practical knowledge and skills: Knowledge and skills that are concrete in nature, also referred to as hands-on knowledge and skills.

Programme learning outcomes: Statements of what a learner is expected to know, understand and/or be able to do after completion of a designated programme of study/ learning which leads to the award of a qualification. Programme learning outcomes include subject-specific and generic learning outcomes, the achievement of which the students of a specific programme of study/learning should be able to demonstrate for the award of a certificate/Diploma/Degree, as well as the knowledge and skills that prepare students for further study, employment, and responsible citizenship. Programme learning outcomes help ensure comparability of learning levels and academic standards across colleges/universities and provide a broad picture of the level of competence of graduates of a given programme of study. A programme of study may be monodisciplinary, multi-disciplinary, inter-disciplinary or transdisciplinary.

Programme of study/learning: The entire scheme of study, including research programmes, that provide a coherent learning experience leading to the attainment of defined learning outcomes that are required for the award of a qualification such as a certificate, diploma, or a degree. The outcomes described in qualification descriptors are attained by students through learning acquired on completion of a programme of study. Individual programmes of study will have defined learning outcomes, which must be attained by a student for the award of a specific certificate/diploma/degree.

Qualification: A certificate, diploma or a degree awarded by a competent authority such as a college or university in recognition of the attainment by students of the expected learning outcomes on successful completion of a particular higher education programme of study and awarded after an assessment and evaluation of learning levels conducted by a competent body that determines that a student has achieved the expected learning outcomes to given standards.

Qualification types: Sequential levels of qualifications such as the Certificate (Higher education) awarded on completion of the first year of undergraduate education programme, Diploma (Higher education) awarded on completion of the second year of undergraduate education programme, 3-year Bachelor's degree, 4-year Bachelor's degree (Honours/ Honours with Research), Post-Graduate Diploma awarded on completion of the first year of 2-year master's degree programme, 1-year Master's degree awarded to those who have undergone a 4-year Bachelor's degree (Honours/ Honours with Research) programme, 2-year Master's degree awarded to those who have undergone a 3-year Bachelor's degree programme, 2-year Master's degree (e.g. M.E., M.Tech. etc.) awarded to those who have undergone a 4-year Bachelor's degree programme (e.g. B.E., B.Tech. etc.) and doctoral degrees.

Qualification descriptor: Generic statements of the defined outcomes that the holders of a specific qualification are expected to attain and demonstrate after successfully completing a programme of study

leading to the qualification.

Quality assurance: The process for checking that the academic standards and quality of higher education provision meet agreed expectations.

Recognition of Prior Learning (RPL): A process that involves the assessment of an individual's relevant prior learning (including through formal, informal, and non-formal learning).

Responsibility in the application of knowledge and/or skills: The degree of accountability in applying knowledge and/or skills in work and/or learning contexts appropriate for the level of the qualification.

Skills: Skills refer to what a graduate can do. The ability to use the acquired knowledge and know-how to perform and accomplish the assigned tasks related to the chosen field(s) of study and/or work or professional practice. It refers to what a learner should be able to do. Skills could be described in terms of their kinds and complexity such as (a) cognitive and creative skills involving the use of logical, intuitive, and critical thinking; (b) practical skills involving manual dexterity and the use of methods, materials, tools and instruments that are required to complete the tasks associated with the chosen fields of study, work or professional practice, including basic skills involving dexterity and the use of methods, materials, tools, and instruments used for performing the job, including digital literacy and skills needed for that level; (c) communication skills involving the ability to listen, read texts analytically and present ideas and thoughts in writing and orally; (d) interpersonal skills; (e) soft skills that enable an individual to fit in at a workplace, and (f) generic skills (high-order transferable skills) that are common to almost all complex endeavours and apply across all specific fields of study.

Specialized knowledge and/or skills: Specialized knowledge and/or skills refer to the depth and specificity of knowledge and/or skills required at a particular NHEQF level.

Systematic knowledge and/or skills: The knowledge and/or skills that are coherent and well-ordered/sequenced

Technical skills: The operational skills necessary to perform certain tasks/work and learning activities.

Theoretical knowledge and concepts: Knowledge requirements relating to or having the character of theory rather than practical application

Understanding: The mastery of facts, concepts, principles, theories, and practices that are related to the chosen fields of study, work, or professional practice. Understanding involves the demonstration of mental processes such as seeing relationships, citing examples, discriminating/ distinguishing, classifying/grouping/categorizing, interpreting, and generalizing.

Learning Outcomes Descriptors for higher education qualification at levels 4.5-8 on the NHEQF

(Certificate/Diploma/Degree is awarded to students who have demonstrated the achievement of the outcomes associated with the specific NHEQF level)

Elements of the descriptor	Level 4.5 Undergraduate Certificate	Level 5 Undergraduate Diploma	Level 5.5 Bachelor's Degree
The graduates should be able to demonstrate the acquisition of:			
Knowledge and understanding	- knowledge of facts, concepts, principles, theories, and processes in broad multidisciplinary learning contexts within the chosen fields of learning, - understanding of the linkages between the learning areas within and across the chosen fields of study, - procedural knowledge required for performing skilled or paraprofessional tasks associated with the chosen fields of learning.	- theoretical and technical knowledge in broad multidisciplinary contexts within the chosen fields of learning, - deeper knowledge and understanding of one of the learning areas and its underlying principles and theories, - procedural knowledge required for performing skilled or paraprofessional tasks associated with the chosen fields of learning.	- comprehensive, factual, theoretical, and specialized knowledge in broad multidisciplinary contexts with depth in the underlying principles and theories relating to one or more fields of learning. - knowledge of the current and emerging issues and developments within the chosen fields of learning. - procedural knowledge required for performing and accomplishing professional tasks associated with the chosen fields of learning.
The graduates should be able to demonstrate the acquisition			
Skills required to perform and accomplish tasks	- a range of cognitive and technical skills required for accomplishing assigned tasks relating to the chosen fields of learning in the context of broad multidisciplinary contexts. - cognitive skills required to identify, analyze and synthesize information from a range of sources. - cognitive and technical skills required for selecting and using relevant methods, tools, and materials to assess the appropriateness of approaches to solving problems associated with the chosen fields of learning.	- cognitive and technical skills required for performing and accomplishing complex tasks relating to the chosen fields of learning. - cognitive and technical skills required to analyze and synthesize ideas and information from a range of sources. - act on information to generate solutions to specific problems associated with the chosen fields of learning.	- cognitive and technical skills required for performing and accomplishing complex tasks relating to the chosen fields of learning. - cognitive and technical skills required to evaluate and analyze complex ideas. - cognitive and technical skills required to generate solutions to specific problems associated with the chosen fields of learning.

Level 6 Bachelor's Degree (Honours/ Honours with Research)	Level 6.5 Master's Degree	Level 7 Master's Degree (M.Tech./M.E.)	Level 8 Doctoral Degree
The graduates should be able to demonstrate the acquisition of:			
- advanced knowledge about a specialized field of enquiry, with depth in one or more fields of learning within a broad multidisciplinary/interdisciplinary context. - a coherent understanding of the established methods and techniques of research and enquiry applicable to the chosen fields of learning. - an awareness and knowledge of the emerging developments and issues in the chosen fields of learning. - procedural knowledge required for performing and accomplishing professional tasks associated with the chosen fields of learning.	- advanced knowledge about a specialized field of enquiry with a critical understanding of the emerging developments and issues relating to one or more fields of learning, - advanced knowledge and understanding of the research principles, methods, and techniques applicable to the chosen fields of learning or professional practice, - procedural knowledge required for performing and accomplishing complex and specialized professional tasks relating to teaching, and research and development.	- advanced knowledge about a specialized field of enquiry with a critical understanding of the emerging developments and issues relating to one or more fields of learning, - advanced knowledge and understanding of the research principles, methods, and techniques applicable to the chosen fields of learning or professional practice, - procedural knowledge required for performing and accomplishing complex and specialized professional tasks relating to teaching, and research and development.	- Highly specialized knowledge, including knowledge at the most advanced frontiers of the chosen fields of study. - mastery of the established research methods and techniques applicable to the chosen fields of learning. - procedural knowledge required for complex research and development activities.
The graduates should be able to demonstrate the acquisition of:			
- a range of cognitive and technical skills required for performing and accomplishing complex tasks relating to the chosen fields of learning, - cognitive and technical skills relating to the established research methods and techniques, - cognitive and technical skills required to evaluate complex ideas and undertake research and investigations to generate solutions to real-life problems, - generate solutions to complex problems independently, requiring the exercise of full personal judgement, responsibility, and accountability for the output of the initiatives taken as a practitioner.	- advanced cognitive and technical skills required for performing and accomplishing complex tasks related to the chosen fields of learning, - advanced cognitive and technical skills required for evaluating research findings and designing and conducting relevant research that contributes to the generation of new knowledge, - specialized cognitive and technical skills relating to a body of knowledge and practice to analyze and synthesize complex information and problems.	- advanced cognitive and technical skills required for performing and accomplishing complex tasks related to the chosen fields of learning, - advanced cognitive and technical skills required for evaluating research findings and designing and conducting relevant research that contributes to the generation of new knowledge, - specialized cognitive and technical skills relating to a body of knowledge and practice to analyze and synthesize complex information and problems.	- most advanced and highly specialized cognitive and technical skills required for performing and accomplishing complex tasks related to research and development that make original contribution to knowledge, professional practice, and innovations, - cognitive and technical skills required for conceptualizing, designing, and implementing fundamental and/or applied research at the forefront of the chosen field(s) of learning to generate original knowledge. - cognitive and technical skills required for doing transdisciplinary research.

Elements of the descriptor	Level 4.5 Undergraduate Certificate	Level 5 Undergraduate Diploma	Level 5.5 Bachelor's Degree
The graduates should be able to demonstrate the acquisition of:			
Application of knowledge and skills	apply the acquired operational or technical and theoretical knowledge, and a range of cognitive and practical skills to select and use basic methods, tools, materials, and information to generate solutions to specific problems relating to the chosen fields of learning.	- apply the acquired specialized or theoretical knowledge, and a range of cognitive and practical skills to gather quantitative and qualitative data, - select and apply basic methods, tools, materials, and information to formulate solutions to problems related to the chosen field(s) of learning.	- apply the acquired specialized technical or theoretical knowledge, and cognitive and practical skills to gather and analyze quantitative/ qualitative data to assess the appropriateness of different approaches to solving problems, - employ the right approach to generate solutions to problems related to the chosen fields of learning.
The graduates should be able to demonstrate the ability to:			
Generic learning outcomes	- listen carefully, read texts related to the chosen fields of study analytically and present information in a clear and concise manner to different groups/audiences. - express thoughts and ideas effectively in writing and orally and present the results/findings of the experiments carried out in a clear and concise manner to different groups.	- listen carefully, read texts related to the chosen fields of learning analytically and present complex information in a clear and concise manner to different groups/audiences, - communicate in writing and orally the information, arguments, and results of the experiments and studies conducted accurately and effectively to specialist and non-specialist audience.	- listen carefully, to read text related to the chosen fields of learning analytically and present complex information in a clear and concise manner to different groups/audiences. - communicate in writing and orally the constructs and methodologies adopted for the studies undertaken relating to the chosen fields of learning, - make coherent arguments to support the findings/ results of the study undertaken to specialist and non-specialist audience.
	- meet own learning needs relating to the chosen fields of learning. - pursue self-directed and self-managed learning to upgrade knowledge and skills required to pursue higher level of education and training.	- meet own learning needs relating to the chosen field(s) of learning, work/ vocation, and an area of professional practice, - pursue self-paced and self-directed learning to upgrade knowledge and skills required for pursuing higher level of education and training.	- meet own learning needs relating to the chosen field(s) of learning, - pursue self-paced and self-directed learning to upgrade knowledge and skills that will help adapt to changing demands of workplace and pursue higher level of education and training.

Level 6 Bachelor's Degree (Honours/ Honours with Research)	Level 6.5 Master's Degree	Level 7 Master's Degree (M.Tech./M.E.)	Level 8 Doctoral Degree
Graduates should demonstrate the ability to:			
• apply the acquired advanced technical and/or theoretical knowledge and a range of cognitive and practical skills to analyze the quantitative and qualitative data gathered drawing on a wide range of sources for identifying problems and issues relating to the chosen fields of learning, • apply advanced knowledge relating to research methods to carryout research and investigations to formulate evidence-based solutions to complex and unpredictable problems.	• apply the acquired advanced theoretical and/or technical knowledge about a specialized field of enquiry or professional practice and a range of cognitive and practical skills to identify and analyze problems and issues, including real-life problems, associated with the chosen fields of learning. • apply advanced knowledge relating to research methods to carryout research and investigations to formulate evidence-based solutions to complex and unpredictable problems.	• apply the acquired advanced theoretical and/or technical knowledge about a specialized field of enquiry or professional practice and a range of cognitive and practical skills to identify and analyze problems and issues, including real-life problems, associated with the chosen fields of learning. • apply advanced knowledge relating to research methods to carryout research and investigations to formulate evidence-based solutions to complex and unpredictable problems.	• apply the acquired highly specialized knowledge, skills, and methods of research to design and conduct original and high quality disciplinary or multidisciplinary or interdisciplinary research to generate evidence-based solutions to complex problems, including real-life problems, relating to the chosen field(s) of study.
The graduates should be able to demonstrate the ability to:			
• listen carefully, read texts and research papers analytically and present complex information in a clear and concise manner to different groups/ audiences, • communicate technical information and explanations, and the findings/results of the research studies relating to specialized fields of learning, • present in a concise manner one's views on the relevance and applications of the findings of research and evaluation studies in the context of emerging developments and issues.	• listen carefully, read texts and research papers analytically and present complex information in a clear and concise manner to different groups/audiences, • communicate, in a well-structured manner, technical information and explanations, and the findings/ results of the research studies undertaken in the chosen field of study, • present in a concise manner one's views on the relevance and applications of the findings of recent research and evaluation studies in the context of emerging developments and issues.	• listen carefully, read texts and research papers analytically and present complex information in a clear and concise manner to different groups/audiences, • communicate, in a well-structured manner, technical information and explanations, and the findings/ results of the research studies undertaken in the chosen field of study, • present in a concise manner one's views on the relevance and applications of the findings of recent research and evaluation studies in the context of emerging developments and issues.	• listen carefully, read texts and research papers analytically and present complex information in a clear and concise manner to non-specialist and specialist groups/ audiences. • present, in a well-structured and logical manner, technical information and explanations pertaining to the results/findings of research studies undertaken. • present views on the relevance and application of recent research and their applications in the context of the emerging developments and issues related to the chosen field(s) of study or professional practice.

• meet one's own learning needs relating to the chosen fields of learning, • pursue self-paced and self-directed learning to upgrade knowledge and skills that will help accomplish complex tasks and pursue higher level of education and research.	• meet one's own learning needs relating to the chosen fields of learning, work/vocation, and an area of professional practice, • pursue self-paced and self-directed learning to upgrade knowledge and skills, including research-related skills, required to pursue higher level of education and research.	• meet one's own learning needs relating to the chosen fields of learning, work/vocation, and an area of professional practice, • pursue self-paced and self-directed learning to upgrade knowledge and skills, including research-related skills, required to pursue higher level of education and research.	• meet one's own learning needs relating to research and investigations in the chosen fields of study. • pursue self-paced and self-directed learning to upgrade knowledge and skills, including research-related skills, required to pursue higher level of research related to new frontiers of knowledge.
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Elements of the descriptor	Level 4.5 Undergraduate Certificate	Level 5 Undergraduate Diploma	Level 5.5 Bachelor's Degree
The graduates should be able to demonstrate the acquisition of:			
	• gather and interpret relevant quantitative and qualitative data to identify problems, • critically evaluate principles and theories associated with the chosen fields of learning.	• critically evaluate the essential theories, policies, and practices by following scientific approach to knowledge development.	• critically evaluate evidence for taking actions to generate solutions to specific problems associated with the chosen fields of learning based on empirical evidence.
	• make judgement and take decision, based on analysis of data and evidence, for formulating responses to issues/problems associated with the chosen fields of learning, requiring the exercise of some personal responsibility for action and outputs/outcomes.	• make judgement and take decision, based on the analysis and evaluation of information, for determining solutions to a variety of unpredictable problems associated with the chosen fields of learning, taking responsibility for the nature and quality of outputs.	• make judgement and take decisions based on the analysis and evaluation of information for formulating responses to problems, including real-life problems, • exercise judgement across a broad range of functions based on empirical evidence, for determining personal and/or group actions to generate solutions to specific problems associated with the chosen fields of learning.

Level 6 Bachelor's Degree (Honours/ Honours with Research)	Level 6.5 Master's Degree	Level 7 Master's Degree (M.Tech./M.E.)	Level 8 Doctoral Degree
The graduates should be able to demonstrate the acquisition of:			
• Demonstrate a keen sense of observation, inquiry, and capability for asking relevant and appropriate questions, • problematize, synthesize and articulate issues and design research proposals, • define problems, formulate appropriate and relevant research questions, • formulate hypotheses, test hypotheses using quantitative and qualitative data, and establish hypotheses, make inference based on the analysis and interpretation of data, and predict cause-and-effect relationships, • develop appropriate tools for data collection, • examine and assess the implications and consequences of emerging developments and issues relating to the chosen fields of study based on empirical evidence.	• problematize, synthesize and articulate issues and design research proposals, • define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inference based on the analysis and interpretation of data, and predict cause-and- effect relationships, • develop appropriate tools for data collection for research, • use appropriate statistical and other analytical tools and techniques for analysis of data collected for research and evaluation studies, • plan, execute and report the results of an investigation, • follow basic research ethics and skills and practice ethics in the field/ in one's own research work.	• problematize, synthesize and articulate issues and design research proposals, • define problems, formulate appropriate and relevant research questions, formulate hypotheses, test hypotheses using quantitative and qualitative data, establish hypotheses, make inference based on the analysis and interpretation of data, and predict cause-and- effect relationships, • develop appropriate tools for data collection for research, • use appropriate statistical and other analytical tools and techniques for analysis of data collected for research and evaluation studies, • plan, execute and report the results of an investigation, • follow basic research ethics and skills and practice ethics in the field/ in one's own research work.	• critically analyze and synthesize a body of knowledge in their major and allied fields, identify critical gaps and ask new questions, • develop new tools and techniques of data gathering and analysis, and at the end of it be able to conduct research independently.

• make judgement in a range of situations by critically reviewing and consolidating evidences, • exercise judgement based on evaluation of evidence from a range of sources to generate solutions to complex problems, including real-life problems, associated with the chosen fields of learning requiring the exercise of full personal responsibility and accountability for the initiatives undertaken and the outputs/ outcomes of own work as well as of the group as a team member.	• make judgements and take decisions regarding the adoption of approaches to solving problems, including real-life problems, based on the analysis and evaluation of information and empirical evidence collected. • make judgement across a range of functions requiring the exercise of full responsibility and accountability for personal and/ or group actions to generate solutions to specific problems associated with the chosen fields/subfields of study, work, or professional practice.	• make judgements and take decisions regarding the adoption of approaches to solving problems, including real-life problems, based on the analysis and evaluation of information and empirical evidence collected. • make judgement across a range of functions requiring the exercise of full responsibility and accountability for personal and/ or group actions to generate solutions to specific problems associated with the chosen fields/subfields of study, work, or professional practice.	• make judgements and take decisions regarding the formulation of responses to problems, including real-life problems, based on the analysis and evaluation of information and empirical evidence relating to the problems. • make significant judgement across broad range of functions requiring the exercise of responsibility for determining personal and/or group actions to generate solutions to specific problems associated with the chosen field(s) of study, work, or professional practice.
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Elements of the descriptor	Level 4.5 Undergraduate Certificate	Level 5 Undergraduate Diploma	Level 5.5 Bachelor's Degree
The graduates should be able to demonstrate the acquisition of:			
Constitutional, humanistic, ethical and moral values	- embrace constitutional, humanistic, ethical, and moral values in one's life, and practice these values in real-life situations, - put forward convincing arguments to respond to the ethical and moral issues associated with the chosen fields of learning.	- embrace constitutional, humanistic, ethical, and moral values, and practice these values in life, - take a position regarding these values, - formulate arguments in support of actions to address issues relating the ethical and moral issues relating to the chosen fields of learning, including environmental and sustainable development issues, from multiple perspectives.	- embrace the constitutional, humanistic, ethical, and moral values, and practice these values in life. - identify ethical issues related to the chosen fields of study, - formulate coherent arguments about ethical and moral issues, including environmental and sustainable development issues, from multiple perspectives. - follow ethical practices in all aspects of research and development, including avoiding unethical practices such as fabrication, falsification or misrepresentation of data or committing plagiarism.
The graduates should be able to demonstrate the acquisition of:			
Employment-ready skills, and entrepreneurship skills and mindset	- knowledge and a basket of essential skills, required to: - perform effectively in a defined job relating to the chosen fields of study, - ability to exercise responsibility for the completion of assigned tasks and for the outputs of own work, and to take some responsibility for group work and output as a member of the group.	- knowledge and essential skills set that are necessary to: - take up job/employment relating to the chosen fields of study or professional practice requiring the exercise of full personal responsibility for the completion of tasks and for the outputs of own work, and full responsibility for the group task/work as a member of the group/ team. - exercise self-management within the guidelines of study and work contexts. - supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities.	- knowledge and essential skills set and competence that are necessary to: take up a professional job relating to the chosen field of learning and professional practice, - entrepreneurship skills and mindset required for setting up and running an economic enterprise or pursuing self-employment requiring the exercise of full personal responsibility for the outputs of own work, and full responsibility for output of group, - exercise management and supervision in the contexts of work or study activities involving unpredictable work processes and working environment.

Level 6 Bachelor's Degree (Honours with Research/Honours)	Level 6.5 Master's Degree	Level 7 Master's Degree (M.Tech./M.E.)	Level 8 Doctoral Degree
The graduates should be able to demonstrate the ability to:			
- embrace and practice constitutional, humanistic, ethical, and moral values in one's life. - adopt objective, unbiased, and truthful actions in all aspects of work related to the chosen field(s) of learning and professional practice. - present coherent arguments in support of relevant ethical and moral issues. - participate in actions to address environmental and sustainable development issues. - follow ethical practices in all aspects of research and development, including avoiding unethical practices such as fabrication, falsification or misrepresentation of data or committing plagiarism.	- embrace and practice constitutional, humanistic, ethical and moral values in one's life, - adopt objective and unbiased actions in all aspects of work related to the chosen fields/subfields of study and professional practice, - participate in actions to address environmental protection and sustainable development issues, - support relevant ethical and moral issues by formulating and presenting coherent arguments, - follow ethical principles and practices in all aspects of research and development, including inducements for enrolling participants, avoiding unethical practices such as fabrication, falsification or misrepresentation of data or committing plagiarism.	- embrace and practice constitutional, humanistic, ethical and moral values in one's life, - adopt objective and unbiased actions in all aspects of work related to the chosen fields/subfields of study and professional practice, - participate in actions to address environmental protection and sustainable development issues, - support relevant ethical and moral issues by formulating and presenting coherent arguments, - follow ethical principles and practices in all aspects of research and development, including inducements for enrolling participants, avoiding unethical practices such as fabrication, falsification or misrepresentation of data or committing plagiarism.	- practice constitutional, humanistic, ethical, and moral values in conducting one's life, - adopt objective and unbiased actions in all aspects of work, - identify ethical issues related to the chosen fields of research, including those relating to environmental and sustainable development issues, - follow ethical practices in all aspects of research and development, including avoiding practices such as fabrication, falsification or misrepresentation of data or committing plagiarism, and not adhering to intellectual property rights, - acquire the understanding of basic research ethics and skills in practicing/doing ethics in the field/in one's own research work, regardless of the funding authority or field of study.

The graduates should be able to demonstrate the acquisition of:

knowledge and skills set and competencies required for: • adapting to the future of work and to the demands of the fast pace of technological developments and innovations that drive shift in employers' demands for skills, particularly with respect to transition towards more technology-assisted work involving the creation of new forms of work and rapidly changing work and production processes. • managing complex technical or professional activities or projects, requiring the exercise of full personal responsibility for output of own work as well as for the outputs of the group as a member of the group/team. • exercising supervision in the context of work having unpredictable changes.	knowledge and essential skills set required for: • adapting to the future of work and responding to the demands of the fast pace of technological developments and innovations that drive shift in employers' demands for skills, particularly with respect to transition towards more technology-assisted work involving the creation of new forms of work and rapidly changing work and production processes. • exercising full personal responsibility for output of own work as well as for group/ team outputs and for managing work that are complex and unpredictable requiring new strategic approaches.	knowledge and essential skills set required for: • adapting to the future of work and responding to the demands of the fast pace of technological developments and innovations that drive shift in employers' demands for skills, particularly with respect to transition towards more technology-assisted work involving the creation of new forms of work and rapidly changing work and production processes. • exercising full personal responsibility for output of own work as well as for group/ team outputs and for managing work that are complex and unpredictable requiring new strategic approaches	knowledge and essential skills set required for: • adapting to the future of work and respond to the demands of the fast pace of technological developments and innovations that drive shift in skill needs relating to work and professional practices, including those relating to teaching, research, and development, • exercising full personal responsibility for outputs/ outcomes of own work and outputs/outcomes of group efforts, • exercising substantial authority, innovation, autonomy, professional integrity, and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research.
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Exemplar Programme Learning Outcomes (PLOs)

Element/ Dimension	Programme learning outcomes
Knowledge and understanding	Psychology: Demonstrate a fundamental/coherent understanding of the disciplinary area of psychology, its different learning areas and its linkages with related disciplinary areas/subjects such as biological psychology, Developmental psychology, social psychology, and applications.
	Psychology: Demonstrate a coherent understanding of the biological bases of human and non-human animal behaviour, hormones and behaviour, behavioural genetics, neuroscience, neuro psychology, comparative, and evolutionary psychology.
	Economics: Demonstrate a fundamental/coherent understanding of economic concepts and principles (microeconomic concepts, macroeconomic principles) and tools, and their application; distinctive economic theories, interpretations and modelling approaches and their competent use, the workings of economic systems; the history and development of economic ideas and the differing methods of analysis that have been and are used by economists.
	Economics: Recognize the importance of mathematical modeling and computing, and the role of approximation and mathematical approaches to describing the physical world.
	Physics: Demonstrate a fundamental/coherent understanding of the academic field of physics, its different learning areas (mechanics, heat, electricity, sound etc.) and applications, and its linkages with related disciplinary areas/subjects.
	Chemistry: Demonstrate a fundamental/coherent understanding of fundamental concepts, principles and processes underlying the academic field of chemistry, its different subfields (analytical, inorganic, organic and physical), and its linkages with related disciplinary areas.
	Procedural knowledge Physics: Undertake hands on lab work and practical activities which help prepare students effectively for professional employment relating to the area of Physics, including research and development, teaching and government/public service, private/NGO sectors.
	Procedural knowledge Economics: Undertake practical activities and projects which help prepare students effectively for professional employment relating to the area of Economics.
Skills related to one's specialization	Chemistry: Demonstrate skills involving the constructive use of knowledge in the subfields of chemistry (analytical, inorganic, organic and physical), and other related fields of study in a range of settings, including for pursuing higher studies related to the chosen area of specialization within chemical sciences.

Element/ Dimension	Programme learning outcomes
Application of knowledge and skills	Physics: Identify and apply appropriate physical principles and methodologies to solve different types of physics-related problems with well-defined solutions.
	Chemistry: Apply standard chemistry-related methodologies to conduct chemical syntheses, analyses or other chemical investigations to seek solutions to problems that emerge from the subfields of chemistry as well as from broader interdisciplinary subfields relating to chemistry.
	Chemistry: Use appropriate methodologies to conduct chemical syntheses, analyze or other chemical investigations to seek solutions to problems that emerge from the subfields of chemistry as well as from broader interdisciplinary subfields relating to chemistry.
	Developmental psychology: Apply knowledge of typical and atypical development across the lifespan of an individual including childhood, adolescence, social relations, cognitive and language development, and cultural development to design developmentally appropriate curriculum for school education.
	Economics: Apply economics principles/theories to design, guide and interpret commercial, economic, social, and environmental policy; and apply relevant economic reasoning and methods of analysis to a variety of applied topics relating to economics.
Generic learning outcomes	Communication skills: Physics: Communicate accurately the findings of the experiments/investigations while relating the conclusions/findings to relevant theories of Physics.
	Communication skills Chemistry: Read texts and research papers analytically and present complex chemistry-related information and the findings of the experiments/investigations while relating the conclusions to relevant principles in chemistry.
	Communication skills Economics: Articulate, communicate and present economic arguments to both specialist and non-specialist audiences.
	Critical thinking Physics: Analyze experimental results/findings and construct logical arguments using correct technical language related to physics.
	Critical thinking Chemistry: Analyze and evaluate advances at the forefront of the chemical sciences, especially those relating to the four basic areas of chemistry (analytical, inorganic, organic, and physical) and construct logical arguments using correct technical language related to chemistry.
	Critical thinking Economics: Analyze/examine the effectiveness government's economic policy and evaluate the economic performance of select economies.



ज्ञान-विज्ञान विमुक्तये

प्रा. मनिष र. जोशी
सचिव

Prof. Manish R. Joshi
Secretary



सत्यमेव जयते



विश्वविद्यालय अनुदान आयोग
University Grants Commission
(शिक्षा मंत्रालय, भारत सरकार)
(Ministry of Education, Govt. of India)

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(Manish Joshi)

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