ज्ञान-विज्ञान विमुक्तये

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सचिव

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Secretary

सत्यमेव जयते

G20 भारत 2023 INDIA

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

**D.O.F. No 15-2/2021(QIP)** **11th May, 2023/ 21 वैशाख,1945**

Subject: - National Higher Education Qualifications Framework (NHEQF)

Dear Madam/ Sir,

One of the important recommendations of National Education Policy 2020 is the formulation of the National Higher Education Qualifications Framework (NHEQF), to describe higher education qualifications leading to a degree/diploma/certificate in terms of learning outcomes.

University Grants Commission has formulated the "National Higher Education Qualifications Framework (NHEQF)" to facilitate transparency and comparability of higher education qualifications at all levels. A copy of the same is enclosed herewith for adoption by higher education institutions.

With kind regards,

Yours sincerely,

(Manish Joshi)

Encl: As above.

To:
1. Vice Chancellors of all Universities
2. Principals of all Colleges



Government of India
Ministry of Education
Department of Higher Education

University Grants Commission
Ministry of Education
New Delhi

# National Higher Education Qualifications Framework (NHEQF)

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Bahadur Shah Zafar Marg
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# National Higher Education Qualifications Framework (NHEQF)

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Chairman

सत्यमेव जयते

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

**20th April, 2023/**
**चैत्र 30, 1945**

## 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.

M Jagadesh Kumar

(Prof. M. Jagadesh Kumar)

## 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:<br>• Bachelor of Arts (B.A.), Bachelor of Science (B.Sc.), Bachelor of Commerce (B.Com.), Bachelor of Vocation (B. Voc.), Bachelor ofBusiness Administration (BBA), Bachelor of Physical Education Programme duration: Three years (six semesters).<br>• Bachelor of Education (B.Ed): Programme duration: Two years (four semesters) after completing a Bachelor's degree programme<br>• 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).<br>• 4-year dual-major Integrated Teacher Education Programme (ITEP): Programme duration: Four years (eight semesters).<br>• Bachelor of Engineering (B.E), Bachelor of Technology (B.Tech.). Programme duration: Four years (eight semesters).<br>• Bachelor of Architecture (B.Arch.): Five years (ten semesters).<br>• 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.<br><br>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<br><br>Examples<br>• 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).<br>• Integrated Bachelor's - Master's degree programmes. Programme duration: five years (ten semesters) after successfully completing secondary education (Grade 12 of school education)<br>• 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.<br>• Integrated B.Ed. - M.Ed. programme. Programme duration: Three years (six semesters) after obtaining a Bachelor degree).<br>• Master of Arts (Education). Programme duration: Two years (Four semesters) after completing a Bachelor's degree programme)<br>• 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.<br>• 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 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,

(14)

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.

*Annexure I*

## 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<br>Undergraduate Certificate | Level 5<br>Undergraduate Diploma | Level 5.5<br>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,<br>• understanding of the linkages between the learning areas within and across the chosen fields of study,<br>• 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,<br>• deeper knowledge and understanding of one of the learning areas and its underlying principles and theories,<br>• procedural knowledge required for performing skilled or paraprofessional tasksassociated 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.<br>• knowledge of the current and emerging issues and developments within the chosen fields of learning.<br>• 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.<br>• cognitive skills required to identify, analyze and synthesize information from a range of sources.<br>• 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.<br>• cognitive and technical skills required to analyze and synthesize ideas and information from a range of sources.<br>• 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.<br>• cognitive and technical skills required to evaluate and analyze complex ideas.<br>• 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.<br>• a coherent understanding of the established methods and techniques of research and enquiry applicable to the chosen fields of learning.<br>• an awareness and knowledge of the emerging developments and issues in the chosen fields of learning,<br>• 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,<br>• advanced knowledge and understanding of the research principles, methods, and techniques applicable to the chosen fields of learning or professional practice,<br>• 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,<br>• advanced knowledge and understanding of the research principles, methods, and techniques applicable to the chosen fields of learning or professional practice,<br>• 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.<br>• mastery of the established research methods and techniques applicable to the chosen fields oflearning.<br>• 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,<br>• cognitive and technical skills relating to the established research methods and techniques,<br>• cognitive and technical skills required to evaluate complex ideas and undertake research and investigations to generate solutionsto real-life problems,<br>• 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,<br>• advanced cognitive and technical skills required for evaluating research findings and designing and conducting relevant research that contributes to the generation of new knowledge,<br>• 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,<br>• advanced cognitive and technical skills required for evaluating research findings and designing and conducting relevant research that contributes to the generation of new knowledge,<br>• 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,<br>• 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.<br>• cognitive and technical skills required for doing transdisciplinary research. |

*Annexure I*

## 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<br>Undergraduate Certificate | Level 5<br>Undergraduate Diploma | Level 5.5<br>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,<br>• understanding of the linkages between the learning areas within and across the chosen fields of study,<br>• 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,<br>• deeper knowledge and understanding of one of the learning areas and its underlying principles and theories,<br>• procedural knowledge required for performing skilled or paraprofessional tasksassociated 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.<br>• knowledge of the current and emerging issues and developments within the chosen fields of learning.<br>• 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.<br>• cognitive skills required to identify, analyze and synthesize information from a range of sources.<br>• 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.<br>• cognitive and technical skills required to analyze and synthesize ideas and information from a range of sources.<br>• 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.<br>• cognitive and technical skills required to evaluate and analyze complex ideas.<br>• 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.<br>• a coherent understanding of the established methods and techniques of research and enquiry applicable to the chosen fields of learning.<br>• an awareness and knowledge of the emerging developments and issues in the chosen fields of learning,<br>• 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,<br>• advanced knowledge and understanding of the research principles, methods, and techniques applicable to the chosen fields of learning or professional practice,<br>• 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,<br>• advanced knowledge and understanding of the research principles, methods, and techniques applicable to the chosen fields of learning or professional practice,<br>• 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.<br>• mastery of the established research methods and techniques applicable to the chosen fields oflearning.<br>• 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,<br>• cognitive and technical skills relating to the established research methods and techniques,<br>• cognitive and technical skills required to evaluate complex ideas and undertake research and investigations to generate solutionsto real-life problems,<br>• 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,<br>• advanced cognitive and technical skills required for evaluating research findings and designing and conducting relevant research that contributes to the generation of new knowledge,<br>• 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,<br>• advanced cognitive and technical skills required for evaluating research findings and designing and conducting relevant research that contributes to the generation of new knowledge,<br>• 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,<br>• 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.<br>• cognitive and technical skills required for doing transdisciplinary research. |

| Elements of the descriptor | Level 4.5<br>Undergraduate Certificate | Level 5<br>Undergraduate Diploma | Level 5.5<br>Bachelor's Degree |
|---|---|---|---|
| **The graduates should be able to demonstrate the acquisition of:** | | | |
| Application of knowledge andskills | • 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,<br>• 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,<br>• 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.<br>• 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,<br>• 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.<br>• communicate in writing and orally the constructs and methodologies adopted for the studies undertaken relating to the chosen fields of learning,<br>• 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.<br>• 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,<br>• 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,<br>• 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<br>Bachelor's Degree (Honours/ Honours with Research) | Level 6.5<br>Master's Degree | Level 7 Master's Degree<br>(M.Tech./M.E.) | Level 8<br>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,<br>• 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.<br>• 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.<br>• 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,<br>• communicate technical information and explanations, and the findings/results of the research studies relating to specialized fields of learning,<br>• 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,<br>• 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,<br>• 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,<br>• 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,<br>• 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.<br>• present, in a well-structured and logical manner, technical information and explanations pertaining to the results/findings of research studies undertaken.<br>• present views on the relevance and application of recent research and their applications in the context of the emerging developments and issues relatedto the chosen field(s) of study or professional practice. |

| | | | |
|---|---|---|---|
| • meet one's own learning needs relating to the chosen fields of learning,<br>• 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,<br>• 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,<br>• 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.<br>• 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. |

| Elements of the descriptor | Level 4.5<br>Undergraduate Certificate | Level 5<br>Undergraduate Diploma | Level 5.5<br>Bachelor's Degree |
|---|---|---|---|
| **The graduates should be able to demonstrate the acquisition of:** | | | |
| | • gather and interpret relevant quantitative and qualitative data to identify problems,<br>• 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,<br>• 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<br>Bachelor's Degree<br>(Honours/ Honours with Research) | Level 6.5<br>Master's Degree | Level 7 Master's Degree<br>(M.Tech./M.E.) | Level 8<br>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,<br>• problematize, synthesize and articulate issues and design research proposals,<br>• define problems, formulate appropriate and relevant research questions,<br>• 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,<br>• develop appropriate tools for data collection,<br>• 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,<br>• 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,<br>• develop appropriate tools for data collection for research,<br>• use appropriate statistical and other analytical tools and techniques for analysis of data collected for research and evaluation studies,<br>• plan, execute and report the results of an investigation,<br>• 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,<br>• 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,<br>• develop appropriate tools for data collection for research,<br>• use appropriate statistical and other analytical tools and techniques for analysis of data collected for research and evaluation studies,<br>• plan, execute and report the results of an investigation,<br>• 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,<br>• 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,<br>• 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.<br>• 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.<br>• 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.<br>• 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. |

| Elements of the descriptor | Level 4.5<br>Undergraduate Certificate | Level 5<br>Undergraduate Diploma | Level 5.5<br>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,<br>• 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,<br>• take a position regarding these values,<br>• 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.<br>• identify ethical issues related to the chosen fields of study,<br>• formulate coherent arguments about ethical and moral issues, including environmental and sustainable development issues, from multiple perspectives.<br>• 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:<br>• perform effectively in a defined job relating to the chosen fields of study,<br>• 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:<br>• 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.<br>• exercise self- management within the guidelines of study and work contexts.<br>• 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,<br>• 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,<br>• 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.<br>• adopt objective, unbiased, and truthful actions in all aspects of work related to the chosen field(s) of learning and professional practice.<br>• present coherent arguments in support of relevant ethical and moral issues.<br>• participate in actions to address environmental and sustainable development issues.<br>• 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,<br>• adopt objective and unbiased actions in all aspects of work related to the chosen fields/subfields of study and professional practice,<br>• participate in actions to address environmental protection and sustainable development issues,<br>• support relevant ethical and moral issues by formulating and presenting coherent arguments,<br>• 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,<br>• adopt objective and unbiased actions in all aspects of work related to the chosen fields/subfields of study and professional practice,<br>• participate in actions to address environmental protection and sustainable development issues,<br>• support relevant ethical and moral issues by formulating and presenting coherent arguments,<br>• 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,<br>• adopt objective and unbiased actions in all aspects of work,<br>• identify ethical issues related to the chosen fields of research, including those relating to environmental and sustainable development issues,<br>• 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 propertyrights,<br>• 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:<br>• 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.<br>• 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.<br>• exercising supervision in the context of work having unpredictable changes. | knowledge and essential skills set required for:<br>• 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.<br>• 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:<br>• 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.<br>• 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:<br>• 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,<br>• exercising full personal responsibility for outputs/ outcomes of own work and outputs/outcomes of group efforts,<br>• 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. |

*Annexure II*

**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<br>***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<br>***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 withwell-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 varietyof applied topics relating to economics. |
| Generic learning outcomes | ***Communication skills:***<br>***Physics:*** Communicate accurately the findings of the experiments/ investigations while relating the conclusions/findings to relevant theories of Physics. |
| | Communication skills<br>***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<br>***Economics:*** Articulate, communicate and present economic argumentsto both specialist and non-specialist audiences. |
| | Critical thinking<br>***Physics:*** Analyze experimental results/findings and construct logical arguments using correct technical language related to physics. |
| | Critical thinking<br>***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<br>***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

भारत 2023 INDIA
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