BEST PRACTICES

Implementation of New Education Policy-2020 at Rajiv Gandhi University, Central University, Arunachal Pradesh

Submitted by:

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Rono Hills, Doimukh, Arunachal Pradesh, INDIA

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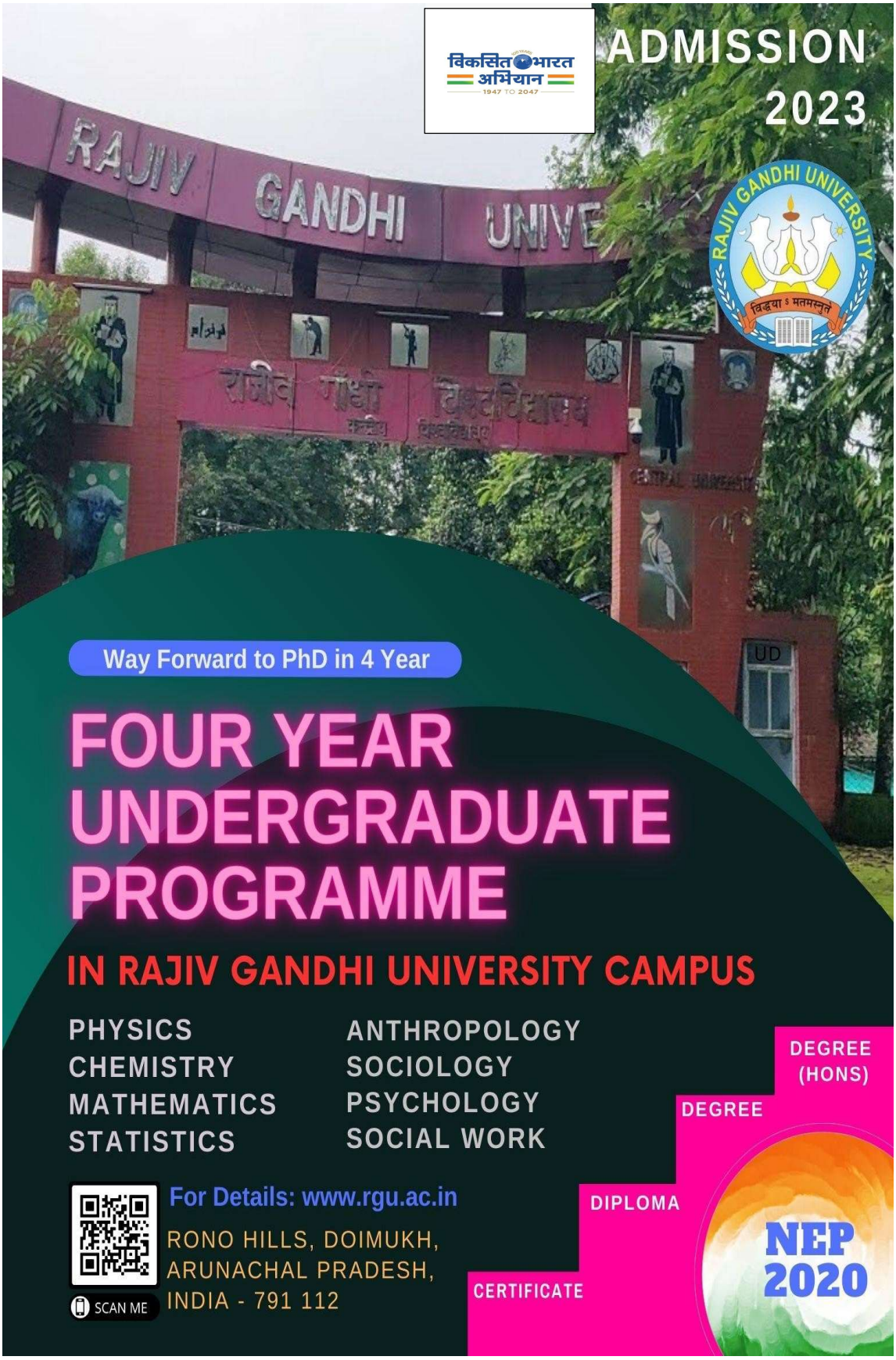
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Part I:
NEP-2020: Background and Salient Features

1.1 Background: *Evolving Facets of Education Policy in India*

Education is a fundamental tool for achieving complete human potential with a view to promote an equitable and just society as well as national development. It always works as effective device for economic growth, equality, social justice, and scientific advancement. It paves the way for national integration, and cultural preservation. Universal high-quality education is the best way forward for developing and maximizing our country's rich talents and resources for the good of the individual, the society, the country, and the world. Education, being one of the chief instruments to bring change and improvement in the society, needs to receive highest priority. Thus, after independence, Government of India started taking initiatives to improve quality education in the country. However, the two commissions namely,

University Education Commission (1948-49), also known as Radhakrishnan Commission and Secondary Education Commission (1952-53), also known as Mudaliar Commission were established to bring reforms in University Education and Secondary Education respectively. Subsequently, the Government of India led formation of National Education Commission (1964-66), popularly known as Kothari Commission on 14th July 1964 with a view to examine all aspects of education and to advise guidelines for the development of education in India. To revamp country's education system, the commission had recommended comprehensively in all key areas of education. Based on the recommendations of the Kothari Commission (1964-66), the first National Policy on Education was announced in 1968 to provide equal educational opportunities in order to achieve national integration and greater cultural and economic development. The policy called for fulfilling compulsory education for all children up to the age of 14, specialized training and qualification of teachers, learning of regional languages, implementation of three language formula in secondary education, and increase in grants for education to six percent of the national income.

As society is a dynamic entity, the policies and programmes need to be evolved continuously and introduce new policies and programmes to meet the changing needs and demands of people in the society. Hence, in 1986, another new National Policy on Education was introduced by the government, which is popularly known as National Policy on Education (NPE) – 1986. This policy emphasized on the removal of disparities and to equalize educational opportunity, especially for Indian women, Scheduled Tribe (ST) and the Scheduled Caste (SC) communities, child-centered approach in primary education, and "Operation Blackboard" to improve primary schools nationwide, introduction of non-formal education; NIOS and IGNOU and many other important measures. In 1992, NPE- 1986 was modified and Programme of Action was decided for effective implementation of NPE- 1986 with a view to introduce change and address the issues of existing Indian education system. After the long

gap of three decades, the Government of India declared another National Education Policy in 2020. National Education Policy (NEP) 2020 was approved by the Union Cabinet of India on 29th July, 2020. This policy ensures equitable access to the highest-quality education for all learners regardless of socio- economic background which is need for the present generation.

1.2. Vision of NEP-2020: *Salient Features*

Policy document of National Education Policy 2020, emphasizes the following three elements in the context of revolutionizing educational outcomes especially those of school education in India:

i. **Flexible, Holistic and High-Quality Education**: Framing holistic education system that contributes to an equitable and vibrant knowledge society by providing high-quality education to all.

ii. **Awareness on Constitutional Values, Roles and Responsibilities**: Developing a deep sense of respect towards the fundamental rights, duties and constitutional values, bonding with one's country, and a conscious awareness of one's role and responsibilities in a changing world.

iii. **Universal Access, Employability and Multi-Disciplinarity:** Instilling skills, values, and disposition that support responsible commitment to human rights, sustainable development and living, and global well-being, thereby reflecting a truly global citizen.

1.3. Key Principles of NEP-2020: *Creativity, Diversity, Equity & Technology*

Following key principles as highlighted in National Education Policy, 2020 demand the immediate and long-term attention of key stakeholders:

i. **Foundational Literacy and Numeracy**: Achieving Foundational Literacy and Numeracy by all students by Grade 3 as the highest priority;

ii. **Light but Tight Regulatory Framework**: Ensuring integrity, transparency, and resource efficiency of the educational system through audit and public disclosure while encouraging innovation and out-of-the-box ideas through autonomy, good governance, and empowerment;

iii. **Acknowledgement of Rich Cultural Knowledge of India**: A rootedness and pride in India, and its rich, diverse, ancient and modern culture and knowledge systems and traditions;

iv. **Higher Order Thinking**: Creativity and critical thinking to encourage logical decision-making and innovation;

v. **Continuous Assessment**: Continuous review of progress based on sustained action research and regular assessment by educational experts; teachers are expected to act as reflective practitioners in this regard.

vi. **Value Based Education**: Developing ethical, human and constitutional values like empathy, respect for others, cleanliness, courtesy, democratic spirit, spirit of service, respect for public property, scientific temper, liberty, responsibility, pluralism, equality, and justice;

vii. **Education as a Basic Right**: Education is a public service; hence, access to quality education must be considered a basic right of every child;

viii. **Use of Technology**: Extensive use of technology in teaching and learning, removing language barriers, increasing access for Divyang students (differently-abled), and educational planning and management;

ix. **Meaningful Learning**: Emphasis on conceptual understanding rather than rote learning and learning-for-exams;

x. **Flexibility**: Flexibility for students to choose their learning trajectories and programmes according to their talents and interests;

xi. **Formative Assessment in Contrast to Coaching Culture**: Focus on regular formative assessment for learning rather than the summative assessment that encourages coaching culture;

xii. **Equity and Inclusion**: Full equity and inclusion as the cornerstone of all educational decisions to ensure that all students are able to thrive in the education system;

xiii. **Life Skill Education**: Life skills such as self-awareness, empathy, intra and interpersonal relations, communicative competence, cooperation, teamwork, and resilience etc.;

xiv. **Multidisciplinary and Holistic Education**: Multidisciplinary and a holistic education across the sciences, social sciences, arts, humanities, and sports in order to ensure the unity and integrity of all knowledge;

xv. **Elimination of Harmful Hierarchies**: No hard separations between arts and sciences, between curricular and extra-curricular activities, between vocational and academic streams, etc. in order to eliminate harmful hierarchies among, and silos between different areas of learning;

xvi. **Significance of Research**: Outstanding research as a co-requisite for outstanding education and development;

xvii. **Multilingualism**: Promoting multilingualism and the power of language in teaching and learning;

xviii. **Holistic Development of Learners**: Recognizing, identifying, and fostering the unique capabilities of each student, by sensitizing teachers as well as parents to promote each student's holistic development in both academic and non-academic spheres;

xix. **Local Priorities**: Respect for diversity and respect for the local context in all curriculum, pedagogy, and policy, always keeping in mind that education is a concurrent subject;

xx. **Synergy in Curriculum:** Across all levels of education from early childhood care and education to school education to higher education;

xxi. **Public-Private Partnership**: Substantial investment in a strong, vibrant public education system as well as the encouragement and facilitation of true philanthropic private and community participation.

xxii. **Continuous Professional Development of Educators**: Teachers and faculty as the heart of the learning process – their recruitment, continuous professional development, positive working environments and service conditions;

1.4. NEP-2020: Affordable and Quality Education for All

In order to attain the goal of education with excellence and the corresponding multitude of benefits to this Nation and its economy, this Policy unequivocally endorses and envisions a substantial increase in public investment in education by both the Central government and all State Governments. The Centre and the States will work together to increase the public investment in Education sector to

reach 6% of GDP at the earliest In particular, financial support will be provided to various critical elements and components of education, such as ensuring universal access, learning resources, nutritional support, matters of student safety and well-being, adequate numbers of teachers and staff, teacher development, and support for all key initiatives towards equitable high-quality education for underprivileged and socioeconomically disadvantaged groups.

In addition to one-time expenditures, primarily related to infrastructure and resources, this Policy identifies the following key long-term thrust areas for financing to cultivate an education system: (a) universal provisioning of quality early childhood care education; (b) ensuring foundational literacy and numeracy; (c) providing adequate and appropriate resourcing of school complexes/clusters; (d) providing food and nutrition (breakfast and midday meals); (e) investing in teacher education and continuing professional development of teachers; (f) revamping colleges and universities to foster excellence; (g) cultivating research; and (h) extensive use of technology and online education.

1.5 Indian Knowledge System

With the development of Science and Technology as well as Education, there is more emphasis on imparting professional skills and developing intellectual knowledge, most of the institutions are ignoring the indigenous practices and holistic development. India has a rich heritage of knowledge system that was practiced from our ancient times. Various forms of ancient practices such as yoga, meditation and spiritual healing practices exist in our ancient knowledge system. It also includes tribal knowledge, indigenous and traditional ways of learning various subjects like agriculture, medicine, art, architecture, culture, games, sports, polity, indigenous medical practices, forest management, organic farming, natural farming, handicrafts, textile and tribal literature.

Part II:

Roadmap to NEP-2020 Implementation: Existing Practices and Innovative Best Methods Adopted by Rajiv Gandhi University

2.1 Background Note on Rajiv Gandhi University

The Inception

Rajiv Gandhi University (RGU), formerly Arunachal University nestled atop Rono Hills on a picturesque table land of 302 acres is a premier institution of higher education in Arunachal Pradesh and has completed thirty-eight years of its existence. Late Smt. Indira Gandhi, the then Prime Minister of India, laid the foundation stone of the University on 4th February, 1984 at Rono Hills, Doimukh. The University was converted into a Central University with effect from 9th April, 2007 as per the notification of the erstwhile Ministry of Human Resource Development, Government of India. Since then, Rajiv Gandhi University has carved a niche for itself in the educational scenario of the country. Prof. C.L. Anand appointed in 1987 was the first Vice-Chancellor of the university whereas Shri A P Srivastava was the first Registrar of this University who served from 1985 till 1988. Currently, Prof. Saket Kushwaha is serving as the Seventeenth Vice-Chancellor of this university and Dr. N T Rikam is the Twenty Second Registrar of Rajiv Gandhi University serving from 2020.

The University received academic recognition under section 2(f) from the University Grants Commission on 28th March, 1985 and started functioning from 1st April, 1985. It received financial recognition under section 12B of the UGC on 25th March, 1994. The University started its academic journey in the year 1988 with 48 students, 18 faculty members, and three departments namely History, Political Science, and Education. B.Ed. programme was started in the current campus whereas post graduate programmes in History and Political Science initiated with Jawaharlal Nehru College (JNC), Pasighat.

Teaching and Research

The teaching and research programmes of the University are designed to play a leading role in the socio-economic and cultural development of the state as well as the nation. The University has been consistently and effectively catering to the educational needs of the state of Arunachal Pradesh and the neighbouring states in the North East Region (NER) since its inception. The University has been extending educational facilities to the students from all over India.

Currently, the University offers Under Graduate, Post Graduate, Doctor of Philosophy (Ph.D.) and other skill-based Certificate and PG Diploma programmes through its Forty-Four (44) Departments, Two (02) Institutes and One (01) Centre. RGU is also offering graduate, post graduate and many certificate courses through distance education. We are also reaching out to the

remotest locations through forty-five affiliated colleges spread across Arunachal Pradesh.

There has been exponential growth in the number of students over the years in various departments of the university and in its affiliated colleges. Currently, a total of 3349 students are enrolled with university in which 205 students are enrolled in Diploma/Certificates Courses, and 558 and 2076 students in undergraduate and post graduate programmes, respectively. A total of 620 PhD scholars are registered with the University. University has a near equal ratio of male and female students over the years.

Currently the University has nearly 250 highly acclaimed regular faculty members and 67 guest/contract faculty members. 29 new regular faculty members have been recruited during the year 2021. 69 faculty members have been promoted under CAS at different level. The faculty members are actively engaged in research activities with financial support from the UGC, DST-SERB, DBT, CSIR, ICSSR, NCW, Govt. of Arunachal Pradesh and other funding agencies. Number of faculty members of the university have been awarded with prestigious fellowships by national and international agencies of repute. This year nearly half a dozen faculty members of the university have successfully got registered for their patents. Also, the university has more than two hundred administrative and other non-teaching full time staff. The University for its Academic Expansion has entered into MoU with several institutions. Rajiv Gandhi University has also been closely working with state government of Arunachal Pradesh in research, innovations and other constructive ways. The departments of the university regularly organise capacity building programmes, seminars, workshops and conferences as part of their commitment towards academic excellence. Apart from the enthusiastic conduct and observance of Republic Day, Independence Day, International Day of Non-Violence (Commemorating the birth-anniversary of Mahatma Gandhi) the Rajiv Gandhi University had organized many flagship programmes of the central government such as –

1. Unveiling of the 'Wall of Heroes' Portraits in RGU under *Vidya Veerta Abhiyan* – An initiative under the aegis of Ministry of Human Resource Development (erstwhile MHRD), Govt. of India;
2. International Day of Yoga - An initiative of UGC (MoE, GOI);
3. *Swachchta Hi Sewa Hai* – *Swachch Bharat* Mission, GOI;
4. Run for Unity - The *Rashtriya Ekta Diwas* on the occasion of Birth Anniversary of Sardar Vallabhbhai Patel;
5. Cyclothon & Walkathon - Under Fit India Movement initiative of the GoI;
6. *Unnat Bharat Abhiyan* (UBA) - Under UBA RGU has adopted five villages in different parts of the State. Regular outreach programmes are being organised in these villages;

7. *Ek Bharat Shrestha Bharat* (EBSB) - Under EBSB MoU has been signed with *Aligarh Muslim* University and BHU (Uttar Pradesh) and NEHU (Meghalaya). Several programmes have been organised wherein visit to *Uttar Pradesh* two teams and one team to *Meghalaya* for cultural exchange programme have been conducted besides webinar diagolue on *Yuva Sangeet Samaroh* (Aligarh and RGU students), *Dekho Apna Desh*, and Meghalaya. Culture exchange programme to BHU;
8. National Service Scheme (NSS) - RGU NSS Cell has been organising regular activities and annual special camp programmes. Near about 350 volunteers are registered. Two of the NSS volunteers from RGU have been recognized with State Best NSS award. And one volunteer has been honoured with National NSS award during 2019. NSS park has been set up in the university;
9. National Cadet Corps (NCC) - RGU NCC unit is organising regular NCC programmes. A mega NCC camp was organised at RGU where 600 cadets participated;
10. *Beti Bachao Beti Padhao*; and
11. Skill India and Fit India.

The university has also completed its academic and administrative audit (AAA) for 2020. To improve performance and achievement, the University has decided to implement and conduct Academic and Administrative Audit annually. It not only facilitates and helps respective Departments/ Centres but also prepares the University for better grading by the NAAC Evaluations and Accreditation.

Affiliated Colleges

Presently university has about forty-five (45) affiliated colleges comprising of nineteen (19) Government Degree Colleges, Nine (09) private degree colleges, One (01) Government Medical College (TRIHMS), One (01) Government Law College, Two (02) Government Nursing Colleges, One (01) private Law College, Nine (09) private Teacher Education Colleges, Two (02) private Nursing Colleges and a (01) private Homoeopathy Medical College.

Academic and Infrastructural Resources

Smart class room facility has been provided to all the departments. Currently, the University library has 74,500 number of books. Apart from the printed books, the University Library also has 12700 number of e-books in total which are perpetual access in nature. 462 Ph.D. theses have been uploaded under ETD *Shodhganga* Project till the date also. The University Library has subscribed I-Thenticate (Turnitin) –Anti –plagiarism software in the year-2021 from the session 2020-21. This year, Rajiv Gandhi University, Central Library has also started the IR (Institutional Repository) which has inaugurated its portal (http://rguir.inflibnet.ac.in) on 20th May 2021. 7066 number of e-books have been already uploaded in the Institutional Repository. Besides, the library has subscribed IEEE CSDL for its users in the current academic session.

Rajiv Gandhi University has a dozen students' hostels with a capacity to accommodate nearly sixty per cent (60%) of its students as on date whereas complete (100%) accommodation for *divyangjan* has been ensured in university campus. Nearly a dozen buses of the university ply every day on fixed schedule to facilitate smooth transportation of students and staff. Currently, University has two (02) senior medical officers, two (02) nurses, one (01) pharmacist and one (01) health assistant together with three (03) MPW staff serving in its health centre which has three (03) beds for emergency service. To promote and protect the rights of women and human rights of the Minorities, University has a proactive anti-sexual harassment committee and minority cell respectively which organizes awareness programmes for different stakeholders and takes remedial measures. University has upgraded its basic infrastructure in due course of time and currently has eleven (11) bore-wells functioning with full capacity and also 250 kilowatts 3DG sets to serve the emergency electric requirements. Additionally, university has eight (08) Rooftop Solar Power Plants, supplied and installed by Arunachal Pradesh Energy Development Agency (APEDA) during 2019-20. The capacity of the plant is around 60 KW and it provides power to different hostels and academic buildings. This project saves around 476.26 KW daily during a sunny day. The APEDA will maintain these plants for five years from the date of installation.

Six (06) artificial water harvesting systems, with bricks and RCC foundation, were installed in the university campus with a capacity of 1.5 lakh litres each during 2002 (at Academic Block and Central Library each) and 2018 (at Department of CSE, Eco-Park, IDE, and Department of Geography each). Out of six (06) systems, four (04) are operational currently. The water, so stored has been used for gardening and cleaning purposes and the rest are used to recharge the ground water level. Due to availability of the water for nonconventional uses, the green vegetation in the campus is on a path of growth, and adding aesthetics to the campus life. Further, university has developed two (02) water reservoirs to recharge the ground water naturally, during the rainy season. University has hundreds of trees planted in last few years. Also, there is a complete ban on cutting of trees and bird hunting in the campus. Last year, Rajiv Gandhi University Campus has been declared as a fully plastic free zone.

The use of solar power, conservation of conventional energy, plastic free campus-*Swachhta Hi Sewa* and green audit are indicative as well as substantive sustainable practices of RGU campus. Plants provide everything for our survival. All three basic needs for survival, Oxygen, Water and Food we get from plants. University recently completed green audit of the campus to take stock of the per capita carbon footprint. The green audit, conducted during December 2019 to February 2020, has recorded the occurrence of as much as 116 species of trees in the developed area of the Rajiv Gandhi University campus on top of the Rono

Hills. This is for the first time, and it is expected to significantly serve as the base-line data, for similar future assessment. All the plants growing inside the campus with Girth at Breast Height (GBH) over 20 cm were spotted identified and measured for GBH. For this purpose, entire development part of the campus was loosely divided into 26 sectors/areas. Rajiv Gandhi University Museum of Fish (RGUMF) maintained by Department of Zoology is actively contributing in conservation and promotion of new fish species.

Achievements

RGU, the easternmost located central university of the country has kept behind many central universities in the pursuit of academic achievement and secured second place in the rankings released by the Ministry of Education, Government of India, in 2020, by registering 83% in the grading of performance. The varsity lapped up the coveted title of 'Best Central University' in 2020 at the third Himalayan Educators Summit, 2020 and ranked third to receive the '*Divya Himagiri* Himalayan State Education Excellence Award 2020'. These awards mirror RGU's hard work and the urge to excel.

Rajiv Gandhi University has earned the unique distinction of being the first university in the country to prepare First Human Development Report (HDR) of Arunachal Pradesh. The department of economics received a grant of Rs. 10 Crore as corpus fund in union budget, 2012 for research and establishment of Centre for Development Studies (CDS).

The huge (81.37%) forest cover, zoo-geographic location, altitudinal variation, various vegetation, high rainfall, different climate regimes etc., contribute in making Arunachal Pradesh an extremely rich biodiversity region. Department of Zoology & Botany of this University has been recognized as the "Centre with Potential for Excellence in Biodiversity (CPEB)" in the year, 2002, vide UGC DO Letter No. F14-2/99(IUC/UNIV. Excellence), dated 23rd May, 2002. The Centre has successfully completed two successive phases of 5 years each.

The RGU added a priceless feather to its colourful cap by establishing the "Centre of Excellence on Sports Science Education and Research" under the scheme "National Centre of Sports Science and Research" (NCSSR) of the Ministry of Youth Affairs and Sports (MYAS) to develop for the enhancement of the performance of Indian sportspersons in the international competitions. It is the first of its kind in the North-East India and only the 6th in the entire country. Under this, the University has started four (04) new departments for holistic development of youth. They are; (a) Sports Biomechanics, (b) Sports Physiology, (c) Sports Psychology, and (d) Strength Training & Conditioning. It envisions to infuse vigour and dynamism into the sporting culture of the university and the region as well.

Rajiv Gandhi University has been selected by the NITI Aayog to set up 'Atal Community Incubation Centre (ACIC)' for augmenting entrepreneurial acumen and capacity-building among the unemployed youth. As an integral part of the 'Indian Himalayan Central Universities Consortium' of NITI Aayog, New Delhi under UGC STRIDE Scheme, the RGU is contributing in collaborative research pertaining on five different themes.

The University has received financial support of Rs. 10 Crore from Department of Science and Technology, Ministry of Science and Technology, Govt. of India under PURSE 2021 Programme. The university is assigned by the Govt. of Arunachal Pradesh to document the Unsung Heroes of Arunachal Pradesh who fought against British invasion. This year the University has partnered with the State Government for celebrating the golden jubilee of the State's foundation and the its naming as 'Arunachal Pradesh'. Presently, the University is celebrating the 'Azadi ka Amrit Mahotsav' with a series of well-planned programmes and events, in a befitting manner.

RGU's Arunachal Institute of Tribal Studies (AITS) inked a memorandum of understanding (MoU) with State Research Directorate for extensive heritage documentation and to formulate a State Culture Policy (SCP) on 16th Oct., 2020, one of few such moves in the country. The Directorate of Youth Affairs, Govt. of Arunachal Pradesh has constituted a Drafting Committee for examining State Youth Policy of Arunachal Pradesh taking into account the National Education Policy, 2020 as well as latest Youth Policy of Govt. of India and other states.

The University adheres to the academic calendar, conducts the examinations, declares the results on time and organizes convocation every year on a fixed date as the part and culture of its best practices. In our pursuit to infuse and consolidate Constitutional Values and also those of Indian Freedom Struggle, during the convocation each year, university distributes Preamble of the Constitution of India and Fundamental Duties to all the passing out students along with their degree. In equity and diversity parameters, the University always has upheld a consistent and constructive role. Gender equality and promotion of indigenous students and learners with special abilities have been remaining a top priority for the university. The University is also in the process of expanding is campuses in three locations for the larger benefit of students. Rajiv Gandhi University is creditably matching the new trends in the field of higher education and has assiduously maintained its scholastic distinction to enable the aspiring students keep abreast with their fellow students across the Nation and the Globe.

Vision

Rajiv Gandhi University aspires to be India's most vibrant, energetic, responsive and acclaimed University, to be recognized for excellence in teaching, research

and providing the highest quality educational opportunities for the learners of all communities. The University aims at nurturing their talent by promoting intellectual growth to shape their personality and serve humanity as multi-skilled, socially responsible, creative, adaptable, contributing and morally sound global citizens.

Mission

Our mission is to provide opportunities and support students from diverse background and assist them to become well-informed global citizens by developing their intellectual, moral, civic and creative capacities to the fullest through multi-faceted education and sustained engagement with local, national and global communities. The University also aims to carry out academic process for achieving excellence through active and dynamic student-teacher participation and inculcate high moral, ethical and professional standards among students which will enable them to develop knowledge and skills necessary to achieve their professional goals so as to improve the performance and also provide leadership and service to the community.

2.2 Salient Initiatives Undertaken by RGU Under NEP-2020

Following are the existing best practices and innovative methods adopted by the Rajiv Gandhi University in course of implementation of the NEP-2020:

1. **Constitution of Task Force for Implementation of NEP-2020**

   In order to steer through the key provisions under NEP-2020 at multiple stakeholders and institutional partners (including affiliated colleges level), Rajiv Gandhi University has constituted a Task Force in the leadership of Director, Internal Quality Assurance Cell (IQAC) ever since NEP-2020 was brought to public domain. The task force comprising a blend of senior most as well as young and dynamic faculty members of the university has taken number of initiatives, workshops, conferences and consultative exercise with key stakeholders to ensure effective implementation of NEP 2020 at Rajiv Gandhi University.

2. **Constitution of NEP-Cell**

   With a vision to facilitate policy and executive level improvements in sync with the mandates of a flexible, learner centric and new age education of NEP-2020, an NEP-Cell has also been constituted at Rajiv Gandhi University. The Cell functions pro-actively to reach out the various departments and branches of the university in terms of updating their regulations, course-curriculum and modus operandi in line with the letter and spirit of National Education Policy-2020.

3. **Implementation of Learning Outcome Curriculum Framework (LOCF) at UG Level**

   Non-uniform course curriculum has been a persistent issue compromising the overall quality and efficacy of higher education in the country especially in the wake of new age challenges as well as evolving opportunities. In this regard, introduction of Learning Outcome Curriculum Framework (LOCF) at Under Graduate Level has been successfully completed during previous academic year itself (2021-22) by Rajiv Gandhi University across UG Courses in campus as well as all the constituent colleges.

4. **Introduction of MOOCs from SWAYAM with Credit Transfer Provisions**

   To facilitate learner centric and flexible education, Rajiv Gandhi University has implemented Massive Open Online Courses (MOOCs) from SWAYAM platform with credit transfer facility as mandatory component in different courses ever since academic session 2019-20.

5. **Inbuilt mechanism of Experiential Learning in various programmes**

   With an intent to actualise the vision of NEP-2020 regarding practice based, vocational and skill enhancing approach (including those of vocational, life and soft skills) of higher education, Rajiv Gandhi University has ensured through explicit guidelines to various boards of under graduate as well as post graduate studies to incorporate the mechanism of experiential learning in all its courses. As a result, nearly all our courses at UG, PG, Certificate, Diploma and Research level have essential component of experiential learning as on date.

6. **Skill Development Courses**

   Staying true to the vision of our Hon'ble Prime Minister and NEP-2020 in transforming education from qualification to capability, Rajiv Gandhi University has not just established a Skill Development Hub for drop out learners but has also kept in place policy as well as practice decisions of introducing skill development courses. Currently, nearly two dozen skill development courses in multiple fields from functional and communicative Hindi and English to CCTV installation etc. are being actively run across departments and centres in the university.

7. **Protection And Promotion of The Rich Heritage of Tribal Culture**

   In our pursuit to serve the cause of local communities and indigenous culture staying true to the spirit of returning back to the locale where we

are located, i.e., predominantly Tribal Social Fabric of Arunachal Pradesh which is home to twenty-six major and over hundred minor tribes, Rajiv Gandhi University has taken significant measures for the protection and promotion of the rich heritage of tribal culture. Introduction of Certificate Course in Tribal Language as well as Research Project on Oral traditions and Indigenous Knowledge System in due support and collaboration with State Government of Arunachal Pradesh has been a mark and telling record of undeterred commitment to quality education with a human face.

8. Mandatory Internship in Course Curriculum at UG and PG levels

Rajiv Gandhi University has an inbuilt mechanism of professional grooming for our learners. Courses like those of Social Work, Management, Mass Communication, Education, Computer Science and Engineering, Electronics and Communication Engineering etc. have a mandatory component of internship in their curriculum which has also been incorporated in traditional courses through a policy decision in the light of provisions laid down under NEP-2020 under multiple entry and exit system.

9. Capacity Building Initiatives for Key Stakeholders on NEP 2020

In order to spread awareness on salient provisions, the new age pathbreaking vision and learner centric approach of NEP-2020, Rajiv Gandhi University has organized over fifty programmes and capacity building workshops for key stakeholders including students, scholars, parents, teachers and non-teaching staff of the university in past two years.

10. Lateral Entry Facility in MCA programme (In the spirit of Multiple Entry and Exit System)

One of the most path-breaking features of NEP-2020 envisions for a Multiple Entry and Exit System across higher education in the country. As it includes one of our top priorities here at RGU under NEP-2020, as a mark of humble yet strong beginning we have implemented Lateral Entry Facility in MCA programme.

11. Academic Bank of Credit

After completion of Framing the modalities for the establishment of Academic Credit Bank, Rajiv Gandhi University has joined the nation in registering for Academic Bank of Credit in our pursuit to facilitate more flexible and learner centric educational edo-system as envisioned in NEP-2020.

12. Research and Development Cell

As per the mandates of UGC and NEP-2020, Rajiv Gandhi University has also constituted Research and Development Cell conceding the fact that research is the backbone of academics. It simplifies concept building and transforms new ideas into innovations in pursuance of a new era of passion for researches. Each finding gives immense pleasure and multiplies enthusiasm towards achieving target. The Research and Development Cell aims to nurture research culture in the university by promoting research in newly emerging and challenging areas of Technology, Sciences, Social Sciences, Sports, Fine Arts and Humanities. It encourages the students and faculty to undertake the research in newly emerging frontier areas of traditional as well as newly emerging multidisciplinary fields. This enhances the general research capability of budding learners by way of participating in conferences, seminars, workshops, project competition, etc. The RDC will enable attainment of targets of *Atma-Nirbhar Bharat* (Self-reliant India) and is expected to play a pivotal role in the catalyzing multidisciplinary/transdisciplinary and translational research culture mandated in NEP 2020.

13. Multi-Stakeholder Consultative Workshop

Multiple consultative workshops for awareness and consensus building with teachers, administrative staff and principals as well as academic administrators and other key functionaries of constituent colleges, departments, institutes and centres etc. has been organized from time to time by IQAC and NEP-Task Force of the university to facilitate quality education as well as speedy implementation of the provisions of NEP-2020 in not just the university but across the state.

14. **Innovation Centre**

Innovation Centre has been set up in the University with a humble motive to accelerate the overall development of university community towards transforming their lives economically, socially and physically by identifying their talents/ skills and further training them through awareness and skill development programmes. Economically viable areas such as cultivation of mushroom, vegetables, and weaving have been tried in the park.

15. Skill Hub Initiative

The 'Skill Hub Initiative' under the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) 3.0 scheme has been implemented at RGU to focus on the introduction of skill training programmes in the education ecosystems. Initiative considers the policy level synergy on integration of vocational education with general education as envisioned in the 'National Education

Policy 2020'. The effort also supplements the objectives of 'National Policy for Skill Development and Entrepreneurship, 2015'.

16. Promotion of Holistic Education

As part of holistic education learners are regularly provided with ample opportunities for their all-round development through cultural, physical, academic, co-curricular, outreach, extension, excursion tours and other capacity building activities.

17. Promotion of Sprit of Service, Constitutional and Human Values

Robust mechanism of NCC and NSS and proactive engagements in flagships schemes viz. Swachh Bharat Mission, Unnat Bharat Abhiyan, National Integration Day, Constitution Day, and International Women's Day etc. has been implemented by Rajiv Gandhi University.

18. Promotion of Languages, Arts, and Culture

Centre for Endangered Languages is actively engaged in promotion of languages, Arts, and Culture. Department of History is taking conscious efforts in promotion of indigenous knowledge system including oral traditions. Tribal Museum at AITS is our institutional mechanism to promote art and culture. With regard to promotion of Language, Arts and Culture, AITS has been actively contributing through regular workshops and institute-community interface.

19. Development, Promotion and Empowerment of Faculty

The University has inbuilt policy of promoting research, innovation and professional engagement of faculty members with monetary and moral support. Few of the mechanisms in this regard include Seed Money for newly recruited faculty members, support money for attending conferences and seminars, membership to professional bodies, monetary support for patent, research paper publication in UGC-Care, Scopus Indexed, SCI, SSCI journals.

20. Student Support System

With regard to Student Support System, there are existing provisions with regard to Scholarship, Career and Distress Counselling, Placement, Entrepreneurship, Youth Development Training and Capacity Building through dedicated Cells and Centres. Apart, robust Mentor-Mentee System being in place in every department is solely meant for student's support

21. International Collaboration for research, teaching and students exchange programmes

University has entered into Memorandum of Understanding with International Institutions for international collaborative activities. We have a dedicated International Scholars' Cell to facilitate and extend our horizons for the same.

22. Setting up Start-up incubation and other required Centres

Rajiv Gandhi University has set up Atal Community Incubation Centre (ACIC) supported by NITI Aayog for augmenting entrepreneurial acumen and capacity-building among the unemployed youth. Additionally, Rajiv Gandhi University Museum of Fish (RGUMF) maintained by Department of Zoology is actively contributing in conservation and promotion of new fish species. Centre for Entrepreneurship is also contributing to promote and support entrepreneurial activities among learners.

23. University Industry Interface

University Industry Interface has been pro-actively functional at RGU with a multi-dimensional vision to incorporate latest updates and requirements by industries and thereby update our curricula and also to include experienced professionals from their end (in line with the vision of Professor of Practice) in training and grooming as well as strengthening rapport with prospective employers for better placement and internship opportunities for our learners.

24. Four-Year Bachelor of Science Programme to be jointly offered by Departments of Physics and Chemistry

Adhering to the spirit of multi-disciplinary and flexible higher education, Departments of Physics and Chemistry at Rajiv Gandhi University have jointly evolved a four-year Bachelor of Science Programme. The programme outline and detailed structure developed after multiple consultations and brainstorming with key stakeholders including few of the architects of NEP-2020, is in final stage and all set to be implemented from upcoming academic session as a unique initiative of the institution.

25. Provision for retired faculty members towards mentoring

The University has policy provision to constructively engage retired faculty members for mentoring the students and scholars. The vision being to make best use of experience of teachers and augment the existing provisions of a robust mentor-mentee system in our institutional culture of student support and progression.

Part III:

Implementation of NEP-2020 at Rajiv Gandhi University: Eighteen Verticals of UGC

3.1 Status of Implementation: Key Initiatives by Rajiv Gandhi University

Rajiv Gandhi University, the lone central university in the state of Arunachal Pradesh has been pioneer in implementation of NEP-2020 not just in its Departments/Institutes and Courses run under its premises but also in its constituent colleges which ranges across the state and amounts to near 50 colleges across the length and breadth of Arunachal Pradesh. Some of the key highlights initiated by Rajiv Gandhi University in this regard, include the following:

1. Constitution of Task Force for Implementation of NEP-2020.
2. Consultative Meet and Brainstorming Exercises with Key Stakeholders viz. Deans, HoDs/Directors, Statutory Officers, Principals of affiliated Colleges and Students Bodies
3. Constitution of NEP-Cell.
4. Introduction of Learning Outcome Curriculum Framework (LOCF) at UG Level.
5. Introduction of SWAYAM with Credit Transfer Provisions (Viz. Economics, Chemistry, ECE, Social Work etc.).
6. Inbuilt mechanism of Experiential Learning in various UG and PG programmes.
7. Skill Development Courses.
8. Certificate Course in Tribal Language.
9. Mandatory Internship in Course Curriculum at UG and PG levels (Viz. Social Work, Management, Mass Communication, Education, Computer Science and Engineering, Electronics and Communication Engineering etc.).
10. Capacity Building Initiatives for Key Stakeholders on NEP 2020.
11. Lateral Entry Facility in MCA programme (In the spirit of Multiple Entry and Exit System).
12. Promotion of Holistic Education.
13. Promotion of Sprit of Service, Constitutional and Human Values.
14. Promotion of Languages, Arts, and Culture.
15. Development, Promotion and Empowerment of Faculty.
16. Student Support and Facilitation System.
17. International Collaboration for research, teaching and students exchange programmes.
18. Setting up Start-up incubation and other required Centres.
19. Promotion of NEP Awareness Activities at every level of functionaries and other stakeholders.

3.2 Path Breaking Initiatives by Rajiv Gandhi University

1. Multidisciplinary/Interdisciplinary

To facilitate learner centric and flexible education, Rajiv Gandhi University has implemented Massive Open Online Courses (MOOCs) from SWAYAM platform with credit transfer facility as mandatory component in different courses. Additionally, all the courses including those at UG, PG and PhD currently on offer by University have an inbuilt mechanism of Open and/or Generic Elective Courses which mandate all our learners to mandatorily choose one of the papers/ subjects being offered by their other/ cognate departments during their course work excluding their parent departments. This has inculcated a symbolic as well as substantive impact on promotion of interdisciplinary education eco-system in the university. We have number of Departments, Institutes and Centres viz. Tribal Studies, Management, Social Work, Education, Bio-Diversity etc. which not just facilitate but encourage learners from multiple subject backgrounds to opt their courses.

Adhering to the spirit of multi-disciplinary and flexible higher education, Departments of Physics and Chemistry at Rajiv Gandhi University have jointly evolved a four-year Bachelor of Science Programme. The programme outlines and detailed structure crafted in consultation with key stakeholders including few of the architects of NEP-2020, is ready to be implemented from upcoming academic session as a unique initiative of the institution.

2. Academic Bank of Credit

After completion of Framing the modalities for the establishment of Academic Credit Bank, Rajiv Gandhi University has joined the nation in registering for Academic Bank of Credit in our pursuit to facilitate more flexible and learner centric educational eco-system as envisioned in NEP-2020.

As per the mandates of UGC and NEP-2020, Rajiv Gandhi University has also constituted Research and Development Cell conceding the fact that research is the backbone of academics. It simplifies concept building and transforms new ideas into innovations in pursuance of a new era of passion for researches. The Research and Development Cell aims to nurture research culture in the university by promoting research in newly emerging and challenging areas of Technology, Sciences, Social Sciences, Sports, Fine Arts and Humanities. It encourages the students and faculty to undertake the research in newly emerging frontier areas of traditional as well as newly emerging multidisciplinary fields. This enhances the general research capability of budding learners by way of participating in conferences, seminars, workshops, project competition, etc. The RDC will enable attainment of targets of *Atma-Nirbhar* Bharat (Self-reliant India) and is expected to

play a pivotal role in the catalysing multidisciplinary/transdisciplinary and translational research culture mandated in NEP 2020.

3. Skill Development

Skill Hubs Initiatives (SHI) under Pradhan Mantri Kaushal Vikas Yojana (PMKVY) 3.0. Subsequent to that Skill Hub Centre at Rajiv Gandhi University was established vide notification No. RGU/REG-45/AC/21 dated 4th March, 2022. The Centre has offered two courses namely - **CCTV Installation Technician and Technician - Paper Bag Manufacturing**. The learners of first batch from both the courses have been successfully completed the programme.

Rajiv Gandhi University has set up Atal Community Incubation Centre (ACIC) supported by NITI Aayog for augmenting entrepreneurial acumen and capacity-building among the unemployed youth. Additionally, Rajiv Gandhi University Museum of Fish (RGUMF) maintained by Department of Zoology is actively contributing in conservation and promotion of new fish species. Centre for Entrepreneurship is also contributing to promote and support entrepreneurial activities among learners.

Additionally, a number of Skill Development Courses in the form of Certificate and Diploma Courses viz. those in Functional Hindi, Communicative English, Banking and Insurance etc. are currently on offer by across the departments. To impart professional knowledge and skills professional courses like those in Music and Fine Arts, Physical Education, Social Work, Teacher's Education, Management, Engineering-ECE & CSE etc. are part and parcel of our regular academic curricula.

4. Appropriate Integration of the Indian Knowledge system

RGU's Arunachal Institute of Tribal Studies (AITS) inked a Memorandum of Understanding (MoU) with State Research Directorate for extensive heritage documentation and to formulate a State Culture Policy (SCP), one of few such moves in the country. RGU has also been instrumental in examining State Youth Policy of Arunachal Pradesh taking into account the National Education Policy, 2020 as well as latest Youth Policy of Govt. of India and other states as entrusted by the Directorate of Youth Affairs, Govt. of Arunachal Pradesh.

In our pursuit to infuse and consolidate Constitutional Values and also those of Indian Freedom Struggle, during the convocation each year, university distributes Preamble of the Constitution of India and Fundamental Duties to all the passing out students along with their degree.

Centre for Endangered Languages is actively engaged in promotion of languages, Arts, and Culture. Tribal Museum is our institutional mechanism apart from regular workshops and community interface. The university is assigned by the Govt. of Arunachal Pradesh to document the Unsung Heroes of Arunachal

Pradesh who fought against British invasion. Inclusion of MOOCs in course curriculum across disciplines and project on documenting the legacy of 'Tribal Unsung Heroes' are significant endeavours by RGU.

5. Focus on Outcome-Based Education (OBE)

Rajiv Gandhi University has successfully implemented Logical Outcome Based Curriculum Framework (LOCF) across UG Courses in campus as well as all the constituent colleges. Additionally, Choice Based Credit System (CBCS) and Comprehensive Continuous Evaluation (CCE) have been part and parcel of all our syllabi.

The Departments regularly update their course curriculum to cater the need of different stakeholders. The curriculums are updated to fulfil the local, national, regional and global need in the relevant area of study. Each program has clearly defined program outcomes (POs) and each course has well defined course outcomes (COs). The Departments/ centres have developed formula for mapping POs with Cos.

Courses like those of Social Work, Management, Mass Communication, Education, Computer Science and Engineering, Electronics and Communication Engineering etc. have a mandatory component of internship in their curriculum which has also been incorporated in traditional courses through a policy decision in the light of provisions laid down under NEP-2020.

Robust mechanism of NCC and NSS and proactive engagements in flagships schemes have been implemented by Rajiv Gandhi University. As part of holistic education learners are regularly provided with ample opportunities for their all-round development through academic, co-curricular, and other capacity building activities.

6. Distance/Online Education

Smart class room facility has been provided to all the departments. Currently, the University library has 74,500 number of books. Apart from the printed books, the University Library also has 12700 number of e-books in total which are perpetual access in nature. Rajiv Gandhi University, Central Library has also started the IR (Institutional Repository) (http://rguir.inflibnet.ac.in).

Since, 2004 RGU is also offering graduate, post graduate and many certificate courses through its Institute of Distance Education (IDE) which include 7 - MA, 1 - UG (Pass Course), 1 - PG Diploma, & 9 - Certificate Courses. COVID-19 induced blended mode of conferences, workshops, academic and administrative meets have become new normal in RGU. The departments/ centres have introduced SWAYAM course in its syllabus as mandatory audit course from the academic year 2019-20.

Teachers adopt student centric methods in the teaching-learning which includes a blend of offline-online classes, project work/ internship, workshops, training programs etc. Each faculty member prepares the teaching plan of their subject as per the academic calendar of the University. WhatsApp group / email groups/ meeting groups etc. for each subject has been created by the concern teachers, where students and faculties discuss about the subject and share resources.

7. Capacity Building for NEP Implementation

University has conducted multiple capacity building initiatives/ webinars on NEP 2020 for awareness and enabling the key stakeholders. Few of those programmes have been listed below:

Sl. No.	Theme	Date
1.	National Education Policy (NEP) 2020: A Way Forward	20-21 August, 2020
2.	National Education Policy (NEP) Reforms in School Education	17 September, 2020
3.	Strategies and Roadmaps for a Holistic, Flexible and Inclusive Higher Education through NEP 2020	21 September, 2020
4.	NEP 2020: It's Implications for Promoting Indian Art, Culture and Heritage	27 September, 2020
5.	National Webinar on National Education Policy 2020	5 October, 2020
6.	Positive Approach Towards the National Education Policy, 2020	5 August, 2021
7.	NEP 2020 and Primacy of Elementary Education	6 August, 2021
8.	National Education Policy 2020: A Discourse with Respect to Physical Education and Sports	7 August, 2021
9.	NEP 2020: Reshaping Teacher Education	7 August, 2021
10.	National Education Policy 2020: A Pathway to Uniform and Universal Education	9 August, 2021
11.	NEP 2020: Rejuvenation of ECCE as Foundation Learning	9 August, 2021
12.	Role of Legal Education in New Education Policy	10 August, 2021
13.	Focus on Employability and Multidisciplinary Education through NEP 2020: Implications for Learners and Educators	10 August, 2021
14.	National Education Policy: One Year of Steady Reforms, a few more miles to go	10 August, 2021
15.	National Education Policy 2020: A Psychological Perspective	10 August, 2021
16.	National Education Policy 2020 in Retrospect of Food Processing and Technology: Challenges and the Way Forward	12 August, 2021

8. Enhancing Access of Higher Education

Under the framework of Digital Push for Teaching in Arunachal Pradesh, Higher Educational Institutions (HEIs) are offering Open and Distance Learning (ODL) and Online Courses as well. Institute of Distance Education (IDE), Rajiv Gandhi University, Rono Hills, Itanagar has its ODL System across the state of Arunachal Pradesh. There are sixteen (16) Centres at different regions which are working to facilitate its services to the learners. Blended mode of conferences, workshops, academic and administrative meets have become new normal in RGU. The Departments/ Centres have introduced SWAYAM course in its syllabi as mandatory credit course from the academic year 2019-20.

Since, all the Government and Private Colleges are affiliated under Rajiv Gandhi University, a Central University, so, University has repeatedly conducted multi-stakeholder consultation with principals and examination officers of all the constituent/affiliated colleges in this regard who have been oriented and guided with, to register for the same in the best interest of learners.

8. Improving Quality of Higher Education

Since, all Govt. & Pvt. Colleges are the affiliating units of RGU, Rono Hills, Itanagar University has an inbuilt recurring mechanism of rigorously and meticulously ensuring requisite infrastructure before and after offering its affiliation. Additionally, the multi-stakeholder consultations and brainstorming with principals and key decision makers of affiliated colleges on roadmap to effective and timely implementation, together with other mandates, of NEP-2020 have been organized regularly by the NEP Task Force of RGU.

RGU has guided and facilitated colleges for adopting Four Years Under Graduate Programme and have National Higher Educational Qualification Framework. Rajiv Gandhi University has successfully implemented Four Year Undergraduate Programmes (FYUP) departing from Logical Outcome Based Curriculum Framework (LOCF) across UG Courses in campus as well as all the constituent colleges. Additionally, Choice Based Credit System (CBCS) and Comprehensive Continuous Evaluation (CCE) have been part and parcel of all our syllabi. Curriculum Design is the prerogative of the University, however, in order to accommodate and assimilate the spirit of learner centric curriculum development, Colleges are submitting its suggestions to the University to be considered under the Board of Studies (BoS).

9. Future Readiness with NEP-2020

Internship - embedded degree programme have been initiated by the University under FYUP. In Rajiv Gandhi University, the Departments/Institutes/Centres regularly update their course curriculum to cater the needs of different

stakeholders. The curriculums are updated to fulfil the local, national, regional and global need in the relevant area of study. Each program has clearly defined program outcomes (POs) and each course has well defined course outcomes (COs). The Departments/ Centres have developed formula for mapping POs with Cos. Courses like those of Social Work, Management, Mass Communication, Education, Computer Science and Engineering, Electronics and Communication Engineering etc. have a mandatory component of internship in their curriculum which has also been incorporated in traditional courses through a policy decision in the light of provisions laid down under NEP-2020.

Industry - Institute lineage for apprenticeships in under pipeline. Owing to paucity of Industry in the State of Arunachal Pradesh, its progress is slow. Few Higher Educational Institutions have already started it.

RGU has Smart class room facility for all the departments. Currently, the University library has 74,500 number of books. Apart from the printed books, the University Library also has 12700 number of e-books in total which are perpetual access in nature. Rajiv Gandhi University, Central Library has also started the IR (Institutional Repository) (http://rguir.inflibnet.ac.in).

10. Skill Development of Learners under NEP-2020

Skill Hubs Initiatives (SHI) under Pradhan Mantri Kaushal Vikas Yojana (PMKVY) 3.0. Subsequent to that Skill Hub Centre at Rajiv Gandhi University was established vide notification No. RGU/REG-45/AC/21 dated 4th March, 2022. The Centre has offered two courses namely - CCTV Installation Technician and Technician - Paper Bag Manufacturing. The learners of first batch from both the courses have been successfully completed the programme.

Additionally, a number of Skill Development Courses in the form of Certificate and Diploma Courses viz. those in Functional Hindi, Communicative English, Banking and Insurance etc. are currently on offer by across the departments. To impart professional knowledge and skills professional courses like those in Music and Fine Arts, Physical Education, Social Work, Teacher's Education, Management, Engineering-ECE & CSE etc. are part and parcel of our regular academic curricula.

11. Research and Development Initiatives

Proper instructions have been issued to all HEIs to establish R&D Cells. The Department of Higher & Technical Education, Govt. of Arunachal Pradesh has also kept fund provisions for the faculty as "Research Grant" to promote the Research in the State.

As per the mandates of UGC and NEP-2020, Rajiv Gandhi University has also constituted Research and Development Cell conceding the fact that research is the backbone of academics. It simplifies concept building and transforms new ideas into innovations in pursuance of a new era of passion for researches. The Research and Development Cell aims to nurture research culture in the university

by promoting research in newly emerging and challenging areas of Technology, Sciences, Social Sciences, Sports, Fine Arts and Humanities. It encourages the students and faculty to undertake the research in newly emerging frontier areas of traditional as well as newly emerging multidisciplinary fields. This enhances the general research capability of budding learners by way of participating in conferences, seminars, workshops, project competition, etc. The RDC will enable attainment of targets of Atma-Nirbhar Bharat (Self-reliant India) and is expected to play a pivotal role in the catalysing multidisciplinary/transdisciplinary and translational research culture mandated in NEP 2020.

12.Online Courses

To facilitate learner centric and flexible education, Rajiv Gandhi University has implemented Massive Open Online Courses (MOOCs) from SWAYAM platform with credit transfer facility as mandatory component in different courses.

13.Multi-Disciplinary Education

Additionally, all the courses including those at UG, PG and PhD currently on offer by University have an inbuilt mechanism of Open and/or Generic Elective Courses which mandate all our learners to mandatorily choose one of the papers/ subjects being offered by their other/ cognate departments during their course work excluding their parent departments. This has inculcated a symbolic as well as substantive impact on promotion of interdisciplinary education eco-system in the university. We have number of Departments, Institutes and Centres viz. Tribal Studies, Management, Social Work, Education, Bio-Diversity etc. which not just facilitate but encourage learners from multiple subject backgrounds to opt their courses.

14.Learner's Flexibility with Multiple Entry and Exit

Adhering to the spirit of multi-disciplinary and flexible higher education, Eight UG programmes in Physics, Chemistry, Mathematics, Statistics, Anthropology, Psychology, Sociology, and Social Work at Rajiv Gandhi University have evolved a four-year Bachelor's Programme implemented from 2023. The programme outlines and detailed structure crafted in consultation with key stakeholders including few of the architects of NEP-2020, is ready to be implemented from upcoming academic session as a unique initiative of the institution.

15.Internationalisation of Education

For Internationalization of higher education RGU have entered into MoUs with offshore academic institutions to facilitate students and resource exchanges.

16.Social Responsibility

Community outreach programme is very much encouraging across the students through National Service Scheme (NSS). Robust mechanism of NCC and NSS and proactive engagements in flagships schemes have been implemented by Rajiv Gandhi University. As part of holistic education learners are regularly provided

with ample opportunities for their all-round development through academic, co-curricular, and other capacity building activities.

RGU's Arunachal Institute of Tribal Studies (AITS) inked a Memorandum of Understanding (MoU) with State Research Directorate for extensive heritage documentation and to formulate a State Culture Policy (SCP), one of few such moves in the country. RGU has also been instrumental in examining State Youth Policy of Arunachal Pradesh taking into account the National Education Policy, 2020 as well as latest Youth Policy of Govt. of India and other states as entrusted by the Directorate of Youth Affairs, Govt. of Arunachal Pradesh.

17.Indian Knowledge System and Value Based Education

In sync with its institutional vision and pursuit to infuse and consolidate Constitutional Values and also those of Indian Freedom Struggle, during the convocation of Rajiv Gandhi University each year, university distributes Preamble of the Constitution of India and Fundamental Duties to all the passing out students along with their degree.

Centre for Endangered Languages is actively engaged in promotion of languages, Arts, and Culture. Tribal Museum is our institutional mechanism apart from regular workshops and community interface. The university is assigned by the Govt. of Arunachal Pradesh to document the Unsung Heroes of Arunachal Pradesh who fought against British invasion. Inclusion of MOOCs in course curriculum across disciplines and project on documenting the legacy of 'Tribal Unsung Heroes' are significant endeavours by RGU.

18.Alumni Connect

All HEIs have their established Alumni Association in their respective institution. The Department of Education, GoAP has properly adhered to the guidelines which was earlier 16 points now it has 18 Points Framework, covering all the above-mentioned points. Certain steps have already been taken by the Department of Education for proper implementation of NEP - 2020 in the state.

3.3 NEP-2020 Verticals: Milestones by Rajiv Gandhi University

Sl. No.	Initiative	Update at Rajiv Gandhi University
1.	Academic Bank of Credits	▪ RGU has Introduced Academic Bank of Credits (ABC) with establishment of National Academic Depository (NAD) Cell. ▪ 2100 ABC IDs have been generated as on date (out of approximately 2700 students). ▪ RGU has dedicated Academic Bank of Credit Cell ▪ Above 95% students of RGU and 6000 students of

		affiliated colleges have registered in Academic Bank of Credit and got their ABC ID. ▪ The cell regularly organizes Special Aadhaar Camp to resolve the issues faced by students in generating their ABC IDs. ▪ The cell also organizes awareness campaign regarding ABC ID among the students.
2.	Multiple Entry and Exit in Academic Programmes	▪ Eight UG programmes in Physics, Chemistry, Mathematics, Statistics, Anthropology, Psychology, Sociology, and Social Work at Rajiv Gandhi University have evolved a four-year Bachelor's Programme implemented from 2023. ▪ MCA programme has already implemented the concept of multiple entry and multiple exit from the academic year 2020-21.
3.	Transformation of Single-Stream HEIs into Multidisciplinary Institutions	▪ RGU is a Multidisciplinary Institution and offering programmes in different streams. However, pursuits for further introduction of multidisciplinary courses are also on.
4.	Common Universities Entrance Tests (CUET)	▪ RGU is part of Common University Entrance Test (CUET) for its Bachelor Degree program.
5.	Online and ODL Education	▪ Institute of Distance Education, Rajiv Gandhi University has been offering 9 (nine) Bachelor's Degrees, 7 (seven) Master's Degrees and 7 (seven) Certificate Courses in the state via Open and Distance Learning mode through its 16 Centers across the state. ▪ Institute of Distance Education (IDE), RGU has recently started offering Certificate Course in the Japanese Language (since 2022).
6.	SWAYAM & MOOCs	▪ 20 programmes are under Credit Transfer of SWAYAM from academic year 2021-22. The number of beneficiary students in the academic year 2020-21 is 76.

7.	Internship/ Apprenticeship embedded Degree Program	▪ On an average, 20 % of the syllabi in UG and PG programmes have experiential learning components. ▪ Number of departments namely Social Work, Management, Mass Communication, Education, Computer Science and Engineering, Electronics and Communication Engineering have adopted apprenticeship/internship in the degree programmes at UG and PG levels.
8.	Academic Collaboration with foreign HEIs for Joint and Dual Degree Programmes	▪ RGU have entered into MoUs with offshore academic institutions to facilitate students and resource exchanges. ▪ Further modalities are under progress through a dedicated Cell for International Scholars.
9.	Office of International Affairs	▪ RGU has a dedicated International Cell to look after international affairs.
10.	Alumni Connect	▪ The University has a dedicated Alumni Association Affairs Cell to connect with its alumni and to facilitate and extend our horizons for the same.
11.	Global Citizenship Education in Higher Education	▪ Under Progress through NEP Sub Committee(s).
12.	Establishment of Research and Development Cells in HEIs	▪ The RGU has established Research and Development Cell for developing and strengthening the research ecosystem within the University.
13.	Pursuing two Academic Programmes simultaneously	▪ Accepted in principle, modalities under process through NEP Sub Committee(s).
14.	Professor of Practice	▪ Under Progress through NEP Sub Committee(s). ▪ RGU has a nodal officer to look after its effective implementation. ▪ University has registered on Professor of Practice

		portal.
15.	Curriculum and Credit Framework for Undergraduate Programmes	▪ RGU has implemented eight courses of undergraduate studies under four-year UG programme mandate and curriculum of NEP-2020.
16.	Minimum standards and Procedures for Award of Ph.D. Degree	▪ The RGU has adopted Minimum standards and procedures for Award of Ph.D. Degree
17.	Fostering Social Responsibility & Community Engagement in Higher Education Institutions in India 2.0	▪ The University is fostering Social Responsibility & Community Engagement through a dedicated cell.
18.	Basic facilities and amenities for a safe, secure environment for Women Cell for sensitization, policy, implementation, monitoring, and grievance redressal in HEIs	▪ RGU has Women Studies and Research Centre and Women Technology Park along with various other committees like Internal Complaints Committee and Anti-Sexual Harassment at Workplace Committee to ensure basic facilities and amenities for safe, secure environment for women as well as sensitization, policy implementation, monitoring, and grievance redressal.

3.4 The Way Forward: Future Readiness through NEP 2020 at RGU

NEP-2020 is the first education policy of the 21st century aims to transform India into a vibrant knowledge and equitable society by making education more holistic, flexible, multidisciplinary, suited to 21st century needs. It is based on the foundational pillars of Access, Equity, Quality, Affordability and Accountability. It envisions to do away with the limitations of rigid separation of disciplines, fragmented higher educational ecosystem, limited access in socio-economically disadvantaged areas, limited teacher and institutional autonomy, lesser emphasis on research, ineffective regulatory system etc.

Education is an essential and indispensable element for all-round development of the individual in particular and society in general. Elementary schools exist worldwide as the basic foundational institution in the formal educational structure. Elementary schooling, which prepares children in fundamental skills and knowledge areas, can be defined as the early stages of formal, or organized, education that are prior to secondary school. the Government of India took a giant leap forward by announcing its new education policy, the National Education Policy 2020 (NEP 2020), almost three decades after the last major revision was made to the policy in 1986. The NEP 2020 boldly envisions three important thematic developments. Firstly, it seeks to shift from content-driven curriculum that earlier inspired rote learning to applied learning. Secondly, design a 360 - degree assessment model that covers educational, physical and mental well-being of the students. And lastly, experiential learning through vocational skills, mathematical thinking and 21st-century skills like data science and coding. The larger goal is to make Indian learners truly global citizens who are future-ready.

A comprehensive policy on education fulfills this requirement of holistic development. The new National Education Policy (NEP), 2020 is a revolutionary policy. It aims at making education holistic, flexible, and multidisciplinary in the light of the needs of the 21 st century and the **Sustainable Development Goals (SDG).** With a clear focus on equity, inclusivity and digital literacy, the reforms under NEP-2020 aim to transform India into a knowledge superpower. The entire education system of this nation ranging from pre-primary education to higher education comes under the purview of this policy. However, the success of this policy lies on how it is implemented at the state level. Therefore, state government must give priority and attention for effective implementation, so that the vision, key principles and objectives of the NEP-2020 will be achieved. To conclude, Rajiv Gandhi University joins hands with the architects of National Education Policy- 2020 in realising the vision of current leadership of the nation in transforming education to a learner centric and new age society of NEW INDIA.

Part IV:

Implementation of NEP-2020 at Rajiv Gandhi University: Documents, Developments and Milestones

Model Framework for the PG Programmes (NEP-2020)

&

Guidelines for Syllabus Preparation

राजीव गांधी विश्वविद्यालय (केंद्रीय विश्वविद्यालय)

Rajiv Gandhi University (A Central University)

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Rono Hills, Doimukh, Arunachal Pradesh, India

(Established 1984)

April, 2024

NEP TASK FORCE
RAJIV GANDHI UNIVERSITY

PART I

Model Framework for PG Programmes (NEP-2020)

Model Framework for PG Programmes (NEP-2020)

Introduction

Under National Education Policy (NEP)-2020, the revamped degree programs are being encouraged at both Undergraduate (UG) and Postgraduate (PG) levels. According to the National Education Policy (NEP) of 2020, undergraduate degrees may span either 3 or 4 years, with corresponding certifications: a **UG Certificate** following 1 year of study in a specific discipline or field, including vocational and professional areas; a **UG Diploma** after 2 years; or a **Bachelor's** degree upon completion of a 3-year programme. However, the NEP emphasises a preference for 4-year multidisciplinary Bachelor's programs (**FYUP**) (structure enclosed as Annexure -1), citing their capacity to provide a comprehensive and interdisciplinary education alongside a focused study on the chosen major and minors as per student preferences.

Aligned with the aforementioned restructuring of undergraduate programs, higher education institutions (HEIs) are granted flexibility in crafting various designs for Master's programs. This flexibility allows for the possibility of a 2-year programme, with the second year primarily dedicated to research, for graduates of 3-year Bachelor's programs. Alternatively, for those completing a 4-year Bachelor's programme with Honours/Honours with Research, a 1-year Master's programme is proposed.

Table 1: Credit Requirements and Eligibility for the Master's Programme

Sl. No.	Qualifications	Level	Credits	Credit Points
1.	PG Diploma	6	40	240
2.	1-Year PG after a 4-year UG	6.5	40	260
3.	2-Year PG after a 3-year UG	6.5	40 + 40	260
4.	2-Year PG after a 4-year UG such as B.E., B. Tech. etc.	7	40 + 40	280

Table 2: Curriculum & Credit Framework for PG

Curricular Components		Two-Year PG Programme (Generic and Professional) Minimum Credits			
		Course Level	Coursework	Research Thesis/ Project/ Patent	**Total Credits**
1st Year (1st & 2nd Semester) of Two-year PG/PG Diploma (Level 6)		400	24	-	**40**
		500	16		
Students who exit at the end of 1st year shall be awarded a Postgraduate Diploma					
2nd Year (3rd & 4th Semesters) of Two-years PG and 1st and 2nd Semester of One-year PG (Level 6.5)	Research Only (Model 1)	-	-	40	**40**
	Coursework & Research (Model 2)	500	20	20	**40**
	Coursework Only (Model 3)	500	40	-	**40**

Course Level

- **400-499:** Advanced courses which would include lecture courses with practicum, seminar-based courses, term papers, research methodology, advanced laboratory experiments/software training, research projects, hands-on training, internship/apprenticeship projects at the undergraduate level or First year Postgraduate theoretical and practical courses.

- **500-599:** For students who have graduated with a 4-year bachelor's degree. It provides an opportunity for original study or investigation in the major or field of specialization, on an individual and more autonomous basis at the postgraduate level.

Framework Models for PG Programmes

Students entering 2-year PG after a 3-year UG programme can choose to do (i) only **Coursework** in the third and fourth semester or (ii) **Coursework** in the third semester and research in the fourth semester or (iii) only Research in the third and fourth semester.

Similarly, Students entering 1-year PG after a 4-year UG programme can choose to do (i) only Coursework or (ii) Research or (iii) Coursework and Research.

For the PG programme, there shall only be one exit point for those who join two-year PG programme. Students who exit at the end of 1st year shall be awarded a Postgraduate Diploma. The PG programme should include vocational courses relevant to the chosen discipline. The three models demonstrated in following sections include:

a) **Model – 1 (Two-year PG with Research without Coursework/ One -Year PG with Research)**
b) **Model – 2 (Two-year PG with Coursework & Research)**
c) **Model – 3 (Two-year PG with Coursework without Research)**

The detailed structures with regard to each of these have been provided under subsequent tables:

Table 3: Model – 1 (Two-year PG with Research without Coursework/ One -Year PG with Research)

NCrF Credit Level	Semester	Course Code	Course	Remarks	Credit	Total Credit
6.0	1st Semester of Two-year PG/PG Diploma (Level 6)	ABC-CC-5110	Course 1	Major 17 of FYUP	4	20
		ABC-CC-5120	Course 2	Major 18 of FYUP	4	
		ABC-CC-5130	Course 3	Major 19 of FYUP	4	
		ABC-CC-5140	Course 4	Major 20 of FYUP	4	
		ABC-RC-5110	Course 5	Research Methodology - I (From the concerned Dept.)	4	
	2nd Semester of Two-year PG/PG Diploma (Level 6)	ABC-CC-5210	Course 6	Departmental Elective 1	4	20
		ABC-DE-52<m><n> 0	Course 7	Departmental Elective 2	4	
		ABC-DE-52<m><n> 0	Course 8	Departmental Elective 3	4	
		ABC-DE-52<m><n> 0	Course 9	Departmental Elective 4	4	
		ABC-RC-5210	Course 10	Research and Publication Ethics (From the concerned Dept.)	4	
6.5	3rd Semester of Two-years PG and 1st Semester of One-year PG (Level 6.5)			Research Project	20	20
	4th Semester of Two-years PG and 2nd Semester of One-year PG (Level 6.5)			Research Project	20	20

Table 4: Model – 2 (Two-year PG with Coursework & Research)

NCrF Credit Level	Semester	Course Code	Course	Remarks	Credit	Total Credit
6.0	1st Semester of Two-year PG/PG Diploma (Level 6)	ABC-CC-5110	Course 1	Major 17 of FYUP	4	20
		ABC-CC-5120	Course 2	Major 18 of FYUP	4	
		ABC-CC-5130	Course 3	Major 19 of FYUP	4	
		ABC-CC-5140	Course 4	Major 20 of FYUP	4	
		ABC-RC-5110	Course 5	Research Methodology - I (from concerned Dept)	4	
	2nd Semester of Two-year PG/PG Diploma (Level 6)	ABC-CC-5210	Course 6	Major 20 of FYUP	4	20
		ABC-DE-52<m><n> 0	Course 7	Departmental Elective 1	4	
		ABC-DE-52<m><n> 0	Course 8	Departmental Elective 2	4	
		ABC-DE-52<m><n> 0	Course 9	Departmental Elective 3	4	
		ABC-RC-5210	Course 10	Research and Publication Ethics (from concerned Dept)	4	
6.5	3rd Semester of Two-years PG and 1st Semester of One-year PG (Level 6.5)	ABC-CW-6110	Course Work 1		4	20
		ABC-CW-6120	Course Work 2		4	
		ABC-CW-6130	Course Work 3		4	
		ABC-CW-6140	Course Work 4		4	
		ABC-CW-6150	Course Work 5		4	
	4th Semester of Two-years PG and 2nd Semester of One-year PG (Level 6.5)			Research Project	20	20

Table 5: Model – 3 (Two-year PG with Coursework without Research)

NCrF Credit Level	Semester	Course Code	Course	Remarks	Credit	Total Credit
6.0	1st Semester of Two-year PG/PG Diploma (Level 6)	ABC-CC-5110	Course 1	Major 17 of FYUP	4	20
		ABC-CC-5120	Course 2	Major 18 of FYUP	4	
		ABC-CC-5130	Course 3	Major 19 of FYUP	4	
		ABC-CC-5140	Course 4	Major 20 of FYUP	4	
		ABC-RC-5110	Course 5	Research Methodology - I (from concerned Dept)	4	
	2nd Semester of Two-year PG/PG Diploma (Level 6)	ABC-CC-5210	Course 6	Major 20 of FYUP	4	20
		ABC-DE-52<m><n> 0	Course 7	Departmental Elective 1	4	
		ABC-DE-52<m><n> 0	Course 8	Departmental Elective 2	4	
		ABC-DE-52<m><n> 0	Course 9	Departmental Elective 3	4	
		ABC-RC-5210	Course 10	Research and Publication Ethics (from concerned Dept)	4	
6.5	3rd Semester of Two-years PG and 1st Semester of One-year PG (Level 6.5)	ABC-CW-6110	Course Work 1		4	20
		ABC-CW-6120	Course Work 2		4	
		ABC-CW-6130	Course Work 3		4	
		ABC-CW-6140	Course Work 4		4	
		ABC-CW-6150	Course Work 5		4	
	4th Semester of Two-years PG and 2nd Semester of One-year PG (Level 6.5)	ABC-CW-6210	Course Work 6		4	20
		ABC-CW-6220	Course Work 7		4	
		ABC-CW-6330	Course Work 8		4	
		ABC-CW-6440	Course Work 9		4	
		ABC-CW-6550	Course Work 10		4	

Note:

- Departments are advised to prepare Syllabi as per all the three models.

- Departments can introduce additional Departmental Electives in the 1st and 2nd Semesters of Two-year PG instead of the core courses (Course 1, Course 2, Course 3, Course 4, and Course 6).

- ABC in the Course code represents the three-digit Departmental Code as par the "Guidelines for the Roll No. allocation for various programmes of Rajiv Gandhi University" (**Refer to Table A1 under Annexure -1)**.

- Subject Code Schema: **ABC-CT-YSPR**

ABC:	Discipline Code (viz. CSE: Computer Science and Engineering, SOW: Social Work etc.)- Refer to Table A1 under Annexure -1
CT:	Course Type (Viz. CC: Core Course, DE: Department Elective, RC: Research Course, CW: Coursework)
YSPR:	Year-Semester-Paper Serial-Sequence of *Revision* (*currently zero*)
5:	First Year of 2-Year PG
6:	Second Year of 2-Year PG or First Year of 1-Year PG

- Departmental Elective courses will have five-digit code where <m> corresponds to digits 1 to 9 and <n> corresponds to digits 0 to 9 [code can be ABC-DE- 52 11 0 to ABC-DE- 52 99 0].

- The Coursework papers offered in the second year of a two-year Master's programme and the first year of a one-year Master's programme are Department-Specific specialisation papers with substantial research components.

PART II

Guidelines for Syllabus Preparation

Guidelines for Syllabus Preparation

The Board of Studies (Bos) of every Department is advised to consult the following NEP 2020 documents of UGC and adhere with their guidelines in due spirit before finalizing their curricula:

1. Curriculum and Credit Framework for Undergraduate Programs (**Annexure -2**)
2. Draft Curriculum and Credit Framework for PG programs (**Annexure -3**)
3. Evaluation Reforms in Higher Education Institutions (**Annexure -4**)
4. National Higher Education Qualifications Framework (NHEQF) (**Annexure -5**)
5. National Credit Framework (NCrF) (**Annexure -6**)

The syllabus should contain the following:

1. Programme Educational Objective (PEO)

- PEOs are broad statements that describe the career and professional accomplishments that graduates of a programme are expected to achieve within a few years of graduation.
- They typically reflect the programme's aspirations and the needs of stakeholders, such as industry, society or academia.
- PEOs focus on the long-term success of graduates in their professional careers and may encompass aspects such as knowledge, skills, attitudes and behaviours.
- There should be tentatively 4-5 PEOs for each programme.

2. Programme Outcome (PO)

- POs are specific statements that describe what students are expected to know and be able to do by the time they complete a programme.
- They are more focused than PEOs and address the knowledge, skills and abilities students should have acquired during their study.
- POs are often aligned with accreditation requirements and standards and serve as benchmarks for assessing the effectiveness of the programme.
- The POs are generally common for a stream of studies like Arts, Science, Commerce, Engineering, etc. For example, the POs (the graduate attributes) are the same for all Master of Arts (MA) programs irrespective of their discipline (like History, Political Science, etc.).

- There should be 10-12 POs for each programme. The Syllabus committees are advised to prepare the POs based on the National Higher Education Qualifications Framework (NHEQF) Table – 3 (Graduate Attributes) **(Please refer to Learning outcomes that are specific to disciplinary/ interdisciplinary areas of learning)**.

3. Programme Specific Outcome (PSO)

- PSOs are similar to POs but are more specific to a particular specialization or focus area within a programme.
- They articulate the knowledge, skills and competencies that students specializing in a certain area should possess upon graduation.
- PSOs help ensure that students develop expertise in their chosen field of study and are prepared for specific career paths or further education.
- For example, in the MA (Economics) programme, there will be Programme Specific Outcomes (PSOs) that describe what a graduate with an MA in Economics should be able to achieve. These outcomes will differ from those in the MA (Sociology) programme because the skills learned in Economics are not the same as those in Sociology.
- There should be 2-3 PSOs for each programme. The Syllabus committees are advised to prepare the PSOs based on the National Higher Education Qualifications Framework (NHEQF) Table – 3 (Graduate Attributes) **(Please refer to Generic learning outcomes).**

4. Course Outcome (CO):

- COs are statements that describe the specific learning objectives of individual courses within a programme.
- They detail what students are expected to learn and demonstrate as a result of completing a particular course.
- COs are typically more granular than POs and PSOs, focusing on the content and learning activities of a specific course.
- COs will have to be aligned with and support the achievement of POs and PSOs by addressing the specific learning objectives of individual courses.
- During the syllabus design for a course (paper), begin by defining the COs for the course. These outcomes should reflect the knowledge, skills, and competencies that students are expected to achieve by the end of the course.

- Break down the course content into manageable units or modules. Each unit/module should focus on specific topics or themes within the broader course curriculum.
- Align each CO with the corresponding learning objectives of the units/modules where those outcomes will be addressed.
- Ensure that one or more units/modules address each CO and that all relevant aspects of the COs are covered throughout the course.
- There should be tentatively 4-5 COs for each Course.

5. Mapping of POs/PSOs with COs

- Mapping involves establishing relationships between different levels of educational outcomes to ensure alignment and coherence within a programme.
- Programme Educational Objectives (PEOs) serve as the principal goals that guide the development of POs and PSOs.
- POs are derived from PEOs and represent the desired outcomes for all students completing the programme.
- PSOs further refine the POs and are tailored to specific specializations or emphasize within the programme.
- There should be a clear alignment between Programme Outcomes (POs)/Programme Specific Outcomes (PSOs) and Course Outcomes (COs), ensuring that the attainment of COs leads students to achieve the POs and PSOs of the programme.
- The next section shows an example of PO/PSO - CO mapping.

Example: Programme Outcome (PO) and Programme Specific Outcome (PSO) mapping with Course Outcome (CO)

Let us assume that for the M.Sc. (Information Security) programme, the following are the POs, PSOs and COs:

Programme Outcomes (POs)

PO-1: Adequate knowledge of fundamentals of Information Security.

PO-2: Ability to analyze a problem critically using a scientific approach, relevant tools and techniques

PO-3: Appropriate research skills for exploring a new problem and solving it in the best possible way

PO-4: Ability to work ethically and carry out the work with social responsibility

PO-5: Ability to life-long and continuous self-learning

PO-6: Ability to carry out collaborative and multidisciplinary work in a professional environment

PO-7: Ability to identify strengths and weaknesses and continuously strive to improve oneself

Programme Specific Outcomes (PSOs)

PSO1: Students will be able to develop secure applications

PSO2: Students will be able to use tools and technologies in information security.

Course Outcomes (COs)

The table shown below gives the course outcomes of the courses "Probability and Statistics" and "Basic Cryptography" of M.Sc. (Information Security) programme.

Probability and Statistics	
CO 1	Demonstrate understanding of fundamental concepts in probability and statistics.
CO 2	Solve various problems on probability and statistics.
CO 3	Analyze the given probabilistic model of the problem.
CO 4	Use the techniques studied in probability and statistics to solve problems in domains such as Information Security, Machine Learning, Network Analysis.

Basic Cryptography	
CO 1	Demonstrate an understanding of modern concepts related to cryptography and cryptanalysis
CO 2	Analyse and use methods for cryptography and reflect on the limits and applicability of these
CO 3	Reason about the details and design philosophy of modern symmetric and public key systems
CO 4	Have a better appreciation of the uses and limitations of the various categories of cryptographic algorithms and understand that great care is needed in their selection and use.
CO 5	Reason that security is a systems problem, and that technical methods such as cryptography can only form part of the solution

COs-POs/PSOs Matrices of the Courses

The Mapping Level Contribution between COs-POs/PSOs are Categorized as follows:

Probability and Statistics									
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PSO1**	**PSO2**
CO 1	3	-	1	-	1	-	-	1	**-**
CO 2	3	2	1	-	1	-	-	1	**-**
CO 3	3	3	2	-	1	-	-	1	**-**
CO 4	3	3	3	-	1	-	-	1	**-**
Average	3	2	1.8	0	1	0	0	1	**0**
Basics of Cryptography									
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PSO1**	**PSO2**
CO 1	3	2	1	1	1	-	-	1	**-**
CO 2	1	3	3	1	1	-	-	1	**1**
CO 3	1	2	3	1	1	-	-	1	**-**
CO 4	1	3	3	1	1	-	-	1	**-**
CO 5	-	2	2	-	-	-	-	1	**-**
Average	**1.2**	**2.4**	**2.4**	**0.8**	**0.8**	**0**	**0**	**1**	**0.2**

[3: High, 2: Medium, 1: Low, - : No correlation]

- The Mapping Exercise is critical for measuring the attainment of COs, POs and PSOs, which constitute a mandatory requirement for Outcome Based Learning.

- If the course outcome directly aligns with the programme outcome, it is a Strong Mapping. In the above example, PO1 (Adequate knowledge of fundamentals of Information Security) is strongly aligned with CO1 of Probability and Statistics, which states, "Demonstrate understanding of fundamental concepts in probability and statistics." This is because the fundamental of information security is based on probability theory.

- The same Course CO1 Outcome has a weak mapping with PO3, which states, "Appropriate research skills for exploring a new problem and solving it in the best possible way", as learning the fundamentals of Probability and Statistics contributes very little towards this goal.

- **The mapping is subjective, and only the domain experts with their expertise can find the mapping factor.**

Annexure I

The Draft Course Codes & Code for Course Type & Course Structure for 4-Year UG Programmes (FYUP)

Course Coding

1. The courses offered by the department will carry a three-letter departmental code e.g., BOT for Botany, ZOO for Zoology, PHY for Physics, CHE for Chemistry, MAT for Mathematics, GEO for Geography, CSE for Computer Science and Engineering, MAS for Mass Communication etc (Table 1).

Table A1: Departmental Code

Sl. No.	Department/Institute	Three-letter Departmental Code
1.	Agricultural Sciences	**AGR**
2.	Anthropology	**ANT**
3.	AITS (Tribal Studies)	**TRS**
4.	Botany	**BOT**
5.	Chemistry	**CHE**
6.	Commerce	**COM**
7.	CSE	**CSE**
8.	Economics	**ECO**
9.	Education	**EDU**
10.	ECE	**ECE**
11.	English	**ENG**
12.	Food Technology	**FOT**
13.	Geography	**GEO**
14.	Geology	**GEL**
15.	Hindi	**HIN**
16.	History	**HIS**
17.	IDE	**IDE**
18.	Law	**LAW**
19.	Management	**MNG**
20.	Mass Communication	**MCM**
21.	Mathematics	**MAT**
22.	Fine Arts	**FAR**
23.	Music	**MUS**
24.	Fine Arts	**FNA**
25.	National Security Studies	**NSS**
26.	Physical Education	**PED**
27.	Physics	**PHY**
28.	Political Science	**POL**
29.	Psychology	**PSY**
30.	Sports Biomechanics	**SBM**
31.	Sports Physiology	**SPH**
32.	Sports Psychology	**SPS**
33.	Strength Training & Conditioning	**STC**
34.	Social work	**SOW**
35.	Sociology	**SOC**
36.	Statistics	**STA**

37.	Zoology	**ZOO**
38.	Agricultural Economics	**AEC**
39.	Agronomy	**AGN**
40.	Entomology and Agricultural Zoology	**ENT**
41.	Animal Husbandry and Dairying	**AHD**
42.	Extension Education	**EXE**
43.	Farm Engineering	**FAE**
44.	Genetics and Plant Breeding	**GPB**
45.	Horticulture	**HOR**
46.	Mycology and Plant Pathology	**MPP**
47.	Plant Physiology	**PPH**
48.	Soil Science and Agricultural Chemistry	**SSC**

2. Three-letter departmental code is followed by a code for type of course (Table 2)

Table A2: Code for Course Type

Sl. No.	**Type of Course**	**Two-letter Course Code**
1.	Major (Core) Course	**CC**
2.	Minor Course	**MC**
3.	Multidisciplinary Course	**MD**
4.	Ability Enhancement Course (English Communication, MIL)	**AE**
5.	Skill Enhancement Course	**SE**
6.	Value Added Course	**VA**
7.	Research Project	**RP**
8.	Elective course (Departmental)	**DE**

3. Internship will carry a three-letter code **INT** followed by category of internship (**CO** for *Compulsory internship* and **OP** for *Optional internship*).

4. For **Major (Core)**, **Minor**, **Multidisciplinary** and **Ability Enhancement** courses, last four-digit number refers to course code series:

   (a) **First digit** refers to year (e.g., 1 for 1st year, 2 for 2nd year, 3 for 3rd year and 4 for 4th year).
   (b) **Second digit** refers to the semester (e.g., 1 for 1st semester, 2 for 2nd semester and so on).
   (c) **Third digit refers** to the number of courses in sequence.
   (d) **Fourth digit** refers to the sequence of revision of that particular course (0 for new course, 1 for first revision, 2 for 2nd revision and so on).

5. For **Skill Enhancement** and **Value-Added** courses:
   (a) the **first three-digit** number start from 001, 002, …
   (b) **Fourth digit** refers to the sequence of revision of that particular course (0 for new course, 1 for first revision, 2 for 2nd revision and so on)

Table A3: Course Structure for Four Year Degree Programmes (Hons.)

NCrF Credit Level	Semester	Major			Minor			Multidisciplinary Course			Ability Enhancement Course			Skill Enhancement Course			Value-Added Course		Internship/ Dissertation/ Seminar			Total Credit
		Course Code	Course Type	Credit	Course Code	Course	Credit	Course Code	Course	Credit	Course Code	Course	Credit	Course	Course	Credit	Course	Credit	Course Code	Course	Credit	
4.5	1st	XYZ -CC-1110	Major 1	4	XYZ -MC-1110	Minor 1	4	XYZ-MD-1110	MDC 1	3	XYZ -AE-1110	AEC 1	4	XYZ-SE-0010	SEC 1	3	EVS-VA-1110	2				20
	2nd	XYZ-CC-1210	Major 2	4	XYZ -MC-1111	Minor 2	4	XYZ-MD-1210	MDC 2	3	XYZ -AE-1210	AEC 2	4	XYZ-SE-0020	SEC 2	3	EVS-VA-1120	2				20
5.0	3rd	XYZ-CC-2110	Major 3	4	XYZ-MC-2110	Minor 3	4	XYZ-MD-1310	MDC 3	3				XYZ-SE-0030	SEC 3	3	XYZ-VA-1130	2				20
		XYZ-CC-2120	Major 4	4																		
	4th	XYZ-CC-3210	Major 5	4	XYZ-MC-3210	Minor 4	4															20
		XYZ-CC-3220	Major 6	4																		
		XYZ-CC-3230	Major 7	4																		
		XYZ-CC-3240	Major 8	4																		
5.5	5th	XYZ-CC-4110	Major 9	4	XYZ-MC-4110	Minor 5	4												XYZ-IN-5110	Internship (Compulsory)	2	20
		XYZ-CC-4120	Major 10	4																		
		XYZ-CC-4130	Major 11	4																		
		XYZ-CC-4140	Major 16	2																		
	6th	XYZ-CC-4110	Major 13	4	XYZ-MC-4210	Minor 6	4															20
		XYZ-CC-4220	Major 14	4																		
		XYZ-CC-4230	Major 15	4																		
		XYZ-CC-4240	Major 12	4																		
6.0	7th	XYZ-CC-5110	Major 17	4	XYZ-RC-5110	Research Methodology	4															20
		XYZ-CC-5120	Major 18	4																		
		XYZ-CC-5130	Major 19	4																		
		XYZ-CC-5140	Major 20	4																		
	8th	XYZ-RC-5210	Major 21	4	XYZ-RC-5210	Research and Publication Ethics	4															20
		XYZ-DE-52<m><n> 0	Departmental Elective 1	4																		
		XYZ-DE-52<m><n> 0	Departmental Elective 2	4																		
		XYZ-DE-52<m><n> 0	Departmental Elective 3	4																		
				94			32			9			8			9		6			2	160

Notes:

(a) Department can introduce additional elective courses in the 7th and 8th semseter in (Major 17, Major18, Major 19, Major20, Major 20, Major 21)

(b) XYZ in the Couse code represnets the three digit Departmental Code as par the " Guidelines for the Roll No. allocation for various programmes of RGU"

(c) Depatmental electrive courses will have five digit code where <m> corresponds to digits 1 to 9 and <n> corresponds to digit 0 to 9 [code can be XYZ-DE- 52 11 0 to XYZ-DE- 52 99 0]

Annexure II

सत्यमेव जयते

ज्ञान-विज्ञान विमुक्तये

CURRICULUM AND CREDIT FRAMEWORK FOR UNDERGRADUATE PROGRAMMES

UNIVERSITY GRANTS COMMISSION

BAHADUR SHAH ZAFAR MARG,
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सत्यमेव जयते

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शिक्षा मंत्रालय, भारत सरकार
University Grants Commission
Ministry of Education, Govt. of India

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Foreword

National Education Policy (NEP) 2020highlights that quality higher education must aim to develop good, thoughtful, well-rounded, and creative individuals. The way to achieve suchcapabilities is only through holistic and multidisciplinary educationwith the freedom for students to shape their studies.

Keeping in view of NEP's recommendations, the UGC has revised the Choice Based Credit System and developed a new Curriculum and Credit Framework for Undergraduate Programmes. The framework reflects the NEP's recommendationssuch as restructured degree programmes, multiple entry and exit, flexible degree options with single major, double major, multi-/inter-disciplinary choices, and a curriculum built with employability skills in addition to academic subjects.

I am delighted to share the Curriculum and Credit Framework for Undergraduate Programmes for implementation in Higher Educational Institutions. I hope this framework will serve as a guiding document and help universities and colleges in undertaking the revision of the curriculum.

I take this opportunity to sincerely acknowledge the significant contribution of the expert committee under the Chairmanship of Prof. R. P. Tiwari and UGC officials in developing the Curriculum and Credit Framework for Undergraduate Programmes.

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Curriculum and Credit Framework for Undergraduate Programmes

1.0. Introduction

The National Education Policy (NEP) 2020 (hereafter referred to as NEP or Policy) 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. It notes that "given the 21st-century requirements, quality higher education must aim to develop good, thoughtful, well-rounded, and creative individuals".

The NEP 2020 states, *"Assessments of educational approaches in undergraduate education that integrate the humanities and arts with Science, Technology, Engineering and Mathematics (STEM) have consistently shown positive learning outcomes, including increased creativity and innovation, critical thinking and higher-order thinking capacities, problem-solving abilities, teamwork, communication skills, more in-depth learning and mastery of curricula across fields, increases in social and moral awareness, etc., besides general engagement and enjoyment of learning"*

Further, it also recommends that *"the undergraduate degree will be of either 3 or 4-year duration, with multiple exit options within this period, with appropriate certifications, e.g., a UG certificate after completing 1 year in a discipline or field including vocational and professional areas, or a UG diploma after 2 years of study, or a Bachelor's degree after a 3-year programme. The 4-year multidisciplinary Bachelor's programme, however, shall be the preferred option since it allows 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".*

In accordance with the NEP 2020, the UGC has formulated a new student-centric "Curriculum and Credit Framework for Undergraduate Programmes (CCFUP)" incorporating a flexible choice-based credit system, multidisciplinary approach, and multiple entry and exit options. This will facilitate students to pursue their career path by choosing the subject/field of their interest.

2.0. Anchors to the National Education Policy 2020

2.1. NEP principles that have a bearing on the curricular thrusts at different stages of higher education

The NEP highlights certain fundamental principles that would guide both the education system at large, as well as individual educational institutions. The principles that have a direct bearing on the curricula for different levels of higher education include:

i. Recognizing, identifying, and fostering the unique capabilities of each student to promote her/his holistic development;

ii. Flexibility, so that learners can select their learning trajectories and programmes, and thereby choose their own paths in life according to their talents and interests;

iii. Flexibility, so that learners can select their learning trajectories and programmes, and thereby choose their own paths in life according to their talents and interests;

iv. Multidisciplinary and holistic education across the sciences, social sciences, arts, humanities, and sports for a multidisciplinary world;

v. Emphasis on conceptual understanding rather than rote learning, critical thinking to encourage logical decision-making and innovation; ethics and human & constitutional values, and life skills such as communication, teamwork, leadership, and resilience;

vi. Extensive use of technology in teaching and learning, removing language barriers, increasing access for *Divyang* students, and educational planning and management;

vii. Respect for diversity and respect for the local context in all curricula, pedagogy, and policy;

viii. Equity and inclusion as the cornerstone of all educational decisions to ensure that all students are able to thrive in the education system and the institutional environment are responsive to differences to ensure that high-quality education is available for all.

ix. Rootedness and pride in India, and its rich, diverse, ancient, and modern culture, languages, knowledge systems, and traditions.

2.2. Transformative initiatives that have a bearing on the undergraduate education

The NEP envisages several transformative initiatives in higher education. These include:

- Introducing holistic and multidisciplinary undergraduate education that would help develop all capacities of human beings - intellectual, aesthetic, social, physical, emotional, ethical, and moral - in an integrated manner; soft skills, such as complex problem solving, critical thinking, creative thinking, communication skills; and rigorous specialization in a chosen field (s) of learning.

- Adoption of flexible curricular structures in order to enable creative combinations of disciplinary areas for study in multidisciplinary contexts that would also allow flexibility in course options that would be on offer to students, in addition to rigorous specialization in a subject or subjects.

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entry and exit points and re-entry options, with appropriate certifications such as:

- a UG certificate after completing 1 year (2 semesters) of study in the chosen fields of study,

- a UG diploma after 2 years (4 semesters) of study,

- a bachelor's degree after a 3-year (6 semesters) programme of study,

- a 4-year bachelor's degree (honours) after eight semesters programme of study. If the student completes a rigorous research project in their major area(s) of study in the 4th year of a bachelor's degree (honours with research).

- The 4-year bachelor's degree programme is considered a preferred option since it would provide 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.

- Inclusion of credit-based courses and projects in the areas of community engagement and service, environmental education, and value-based education.

- Environment education to 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 to 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 to be an integral part of holistic education.

- Global Citizenship Education and education for sustainable development to 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.

- Students to be provided with opportunities for internships with local industry, businesses, artists, crafts persons, etc., 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.

- Reorienting teaching programmes to ensure the development of capabilities across a range of disciplines including sciences, social sciences, arts, humanities, languages, as well as vocational subjects. This would involve offering programmes/courses of study relating to Languages, Literature, Music, Philosophy, Art, Dance, Theatre, Statistics, Pure and Applied Sciences, Sports, etc., and other such subjects needed for a multidisciplinary and stimulating learning environment.

Preparing professionals in cutting-edge areas that are fast gaining prominence, such as Artificial Intelligence (AI), 3-D machining, big data analysis, and machine learning, in addition to genomic studies, biotechnology, nanotechnology, neuroscience, with important applications to health, environment, and sustainable living that will be woven into undergraduate education for enhancing the employability of the youth.

3.0. Curriculum Framework

3.1. Main features of the New Curriculum Framework

The new curriculum framework will have the following features:

i. Flexibility to move from one discipline of study to another;
ii. Opportunity for learners to choose the courses of their interest in all disciplines;
iii. Facilitating multiple entry and exit options with UG certificate/ UG diploma/ or degree depending upon the number of credits secured;
iv. Flexibility for learners to move from one institution to another to enable them to have multi and/or interdisciplinary learning;
v. Flexibility to switch to alternative modes of learning (offline, ODL, and Online learning, and hybrid modes of learning).

Regulations for Academic Bank of Credit (ABC) and guidelines for Multiple Entry and Exit are already in place to facilitate the implementation of the proposed "Curriculum and Credit Framework for Undergraduate Programmes".

3.2 Definitions, Eligibility, and Duration of the Programme

3.2.1 Semester/Credits:

- A semester comprises 90 working days and an academic year is divided into two semesters.
- A summer term is for eight weeks during summer vacation. Internship/apprenticeship/work-based vocational education and training can be carried out during the summer term, especially by students who wish to exit after two semesters or four semesters of study. Regular courses may also be offered during the summer on a fast-track mode to enable students to do additional courses or complete backlogs in coursework. The HEIs can decide on the courses to be offered in the summer term depending on the availability of faculty and the number of students.

3.2.2 Major and Minor disciplines

Major discipline is the discipline or subject of main focus and the degree will be awarded in that discipline. Students should secure the prescribed number of credits (about 50% of total credits) through core courses in the major discipline.

Minor discipline helps a student to gain a broader understanding beyond the major discipline. For example, if a student pursuing an Economics major obtains a minimum of 12 credits from a bunch of courses in Statistics, then the student will be awarded B.A. degree in Economics with a Minor in Statistics.

3.2.3 Awarding UG Certificate, UG Diploma, and Degrees

UG Certificate: Students who opt to exit after completion of the first year and have secured 40 credits will be awarded a UG certificate if, in addition, they complete one vocational course of 4 credits during the summer vacation of the first year. These students are allowed to re-enter the degree programme within three years and complete the degree programme within the stipulated maximum period of seven years.

UG Diploma: Students who opt to exit after completion of the second year and have secured 80 credits will be awarded the UG diploma if, in addition, they complete one vocational course of 4 credits during the summer vacation of the second year. These

students are allowed to re-enter within a period of three years and complete the degree programme within the maximum period of seven years.

3-year UG Degree: Students who wish to undergo a 3-year UG programme will be awarded UG Degree in the Major discipline after successful completion of three years, securing 120 credits and satisfying the minimum credit requirement as given in table 2 (Section 5).

4-year UG Degree (Honours): A four-year UG Honours degree in the major discipline will be awarded to those who complete a four-year degree programme with 160 credits and have satisfied the credit requirements as given in table 2 in Section 5.

4-year UG Degree (Honours with Research): Students who secure 75% marks and above in the first six semesters and wish to undertake research at the undergraduate level can choose a research stream in the fourth year. They should do a research project or dissertation under the guidance of a faculty member of the University/College. The research project/dissertation will be in the major discipline. The students who secure 160 credits, including 12 credits from a research project/dissertation, are awarded UG Degree (Honours with Research).

Infrastructure Requirement: The Departments offering a 4-year UG Degree (Honours with Research) must have the required infrastructure such as the library, access to journals, computer lab and software, laboratory facilities to carry out experimental research work, and at least two permanent faculty members who are recognized as Ph.D. supervisors. The Departments already recognized for conducting the Ph.D. programme may conduct a 4-year UG Degree (Honours with Research) without obtaining any approval from the affiliating University.

UG Degree Programmes with Single Major: A student has to secure a minimum of 50% credits from the major discipline for the 3-year/4-year UG degree to be awarded a single major. For example, in a 3-year UG programme, if the total number of credits to be earned is 120, a student of Physics with a minimum of 60 credits will be awarded a B.Sc. in Physics with a single major. Similarly, in a 4-year UG programme, if the total number of credits to be earned is 160, a student of Physics with a minimum of 80 credits will be awarded a B.Sc. (Hons./Hon. With Research) in Physics in a 4-year UG programme with single major.

UG Degree Programmes with Double Major: A student has to secure a minimum of 40% credits from the second major discipline for the 3-year/4-year UG degree to be awarded a double major. For example, in a 3-year UG programme, if the total number of credits to be earned is 120, a student of Physics with a minimum of 48 credits will be

awarded a B.Sc. in Physics with a double major. Similarly, in a 4-year UG programme, if the total number of credits to be earned is 160, a student of Physics with a minimum of 64 credits will be awarded a B.Sc. (Hons./Hon. With Research) in Physics in a 4-year UG programme with double major.

Interdisciplinary UG Programmes: The credits for core courses shall be distributed among the constituent disciplines/subjects so as to get core competence in the interdisciplinary programme. For example, a degree in Econometrics requires courses in economics, statistics, and mathematics. The total credits to core courses shall be distributed so that the student gets full competence in Econometrics upon completion of the programme. The degree for such students will be awarded as B.Sc. in Econometrics for a 3-year UG programme or B.Sc. (Honours) / B.Sc. (Honours with Research) in Econometrics for a 4-year UG programme.

Multidisciplinary UG Programmes: In the case of students pursuing a multidisciplinary programme of study, the credits to core courses will be distributed among the broad disciplines such as Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc., For example, a student who opts for a UG program in Life sciences will have the total credits to core courses distributed across Botany, Zoology and Human biology disciplines. The degree will be awarded as B.Sc. in Life Sciences for a 3-year programme and B.Sc. (Honours) in Life Sciences or B.Sc. (Honours with Research) for a 4-year programme without or with a research component respectively.

The statutory bodies of the Universities and Colleges such as the Board of Studies and Academic Council will decide on the list of courses under major category and credit distribution for double major, interdisciplinary and multidisciplinary programmes.

3.2.4 Credit hours for different types of courses

The workload relating to a course is measured in terms of credit hours. 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 (minimum 15 weeks).

Each course may have only a lecture component or a lecture and tutorial component or a lecture and practicum component or a lecture, tutorial, and practicum component, or only practicum component. 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.

One credit for tutorial work means one hour of 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 fieldwork in a semester mean 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 engagements per week. Accordingly, in a semester of 15 weeks duration, one credit in these courses is equivalent to 30 hours of engagement.

A course can have a combination of lecture credits, tutorial credits, and practicum credits. For example, a 4–credit course with three credits assigned for lectures and one credit for practicum shall have three 1-hour lectures per week and one 2-hour duration field-based learning/project or lab work, or workshop activities per week. In a semester of 15 weeks duration, a 4-credit course is equivalent to 45 hours of lectures and 30 hours of practicum. Similarly, a 4 –credit course with 3- credits assigned for lectures and one credit for tutorial shall have three 1-hour lectures per week and one 1-hour tutorial per week. In a semester of 15 weeks duration, a four-credit course is equivalent to 45 hours of lectures and 15 hours of tutorials.

The following types of courses/activities constitute the programmes of study. Each of them will require a specific number of hours of teaching/guidance and laboratory/studio/workshop activities, field-based learning/projects, internships, and 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.

- ***Tutorial courses:*** Courses involving problem-solving and discussions relating to a field or discipline under the guidance of qualified personnel in a field of learning, work/vocation, or professional practice.

- ***Practicum or Laboratory work:*** 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.

- ***Seminar:*** A course requiring students to participate in structured discussion/conversation or debate focused on assigned tasks/readings, current or historical events, or shared experiences guided or led by an expert or qualified personnel in a field of learning, work/vocation, or professional practice.

- ***Internship:*** A course requiring students to participate in a professional activity or work experience, or cooperative education activity with an entity external to the education institution, normally under the supervision of an expert of the given external entity. A key aspect of the internship is induction into actual work situations**.** Internships involve working with local industry, government or private organizations, business organizations, artists, crafts persons, and similar entities to provide opportunities for students to actively engage in on-site experiential learning.

- ***Studio activities:*** Studio activities involve the engagement of students in creative or artistic activities. Every student is engaged in performing a creative activity to obtain a specific outcome. Studio-based activities involve visual- or aesthetic-focused experiential work.

- ***Field practice/projects*****:** Courses requiring students to participate in field-based learning/projects generally under the supervision of an expert of the given external entity.

- ***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. 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.

3.2.5 Number of Credits by Type of Course

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time). **The proposed number of credits per course and the credit distribution is suggestive and the HEIs may decide on course credits and distribution over 6/8 semesters in a manner that will facilitate the students to meet the minimum credit requirements as given in Table 2 (Section 5).**

a. Major and Minor Courses:

All discipline-specific courses (major or minor) may be 4 credits or as appropriate. An additional one to two credits may be allotted for tutorials or practicals.

b. Other Courses:

All courses under the Multi-disciplinary, Ability Enhancement (language), and Skill Enhancement categories may be of 3-credits or as appropriate;

c. Common Value-Added Courses:

Courses under Value Added, Summer Internship/ Apprenticeship/ Community outreach activities, etc., for all majors, may be of 2-credits or as appropriate;

d. Final year Research project / Dissertation etc., may be of 12 credits.

Tables 2 and 3 in the following sections provide the minimum credit requirements under each category and the distribution of course levels across 6/8 semesters.

3.3 Eligibility for the UG Programmes

Senior Secondary School Leaving Certificate or Higher Secondary (12th Grade) Certificate obtained after successful completion of Grade 12 or equivalent stage of education corresponding to Level-4.

3.4 Duration of the Programme

i. The duration of the UG programme is 4 years or 8 semesters. Students who desire to undergo a 3-year UG Programme will be allowed to exit after completion of the 3rd year. If a student wants to leave after the completion of the first or second year, the student will be given a UG Certificate or UG Diploma, respectively, provided they secure the prescribed number of credits (as given in table 3). Students who exit with a UG certificate or UG diploma are permitted to re-enter within three years and complete the degree programme.

ii. Students may be permitted to take a break from the study during the period of study but the total duration for completing the programme shall not exceed 7 years.

4.0. Outcomes-based approach to higher education

The National Higher Education Qualifications Framework (NHEQF) envisages that students must possess the quality and characteristics of the graduate of a programme of study, including learning outcomes relating to the disciplinary area(s) in 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 attributes include capabilities that help broaden 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. 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, as given in Table 1.

Table 1: 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:
	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 learned, 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.

Type of learning outcomes	The Learning outcomes descriptors
	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 communicatewith 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, and convey ideas, thoughts, and arguments using language that is respectful andsensitive 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 address opposing viewpoints.

Type of learning outcomes	The Learning outcomes descriptors
	• ***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 for 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 andwork 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 thevision, 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, thatare 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,

Type of learning outcomes	The Learning outcomes descriptors
	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, and 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 anda 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 andgoals. • gender sensitivity and adopting a gender-neutral approach, as also empathy for 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 valuesin 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 morepeaceful, 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 an objective, unbiased, and truthful actions in all aspects of work, • instill integrity and identify ethical issues related to work, and follow ethical practices.

Type of learning outcomes	The Learning outcomes descriptors
	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, andmanage a project through to completion, • exercise responsibility and demonstrate accountability in applying knowledgeand/or skills in work and/or learning contexts appropriate for the level of thequalification, 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.

5.0. Structure of the Undergraduate Programme

The UG programme will consist of the following categories of courses and the minimum credit requirements for 3-year UG and 4-year UG (Honours) or UG (Honours with Research) programmes are given below:

Table 2: Minimum Credit Requirements to Award Degree under Each Category

S. No.	Broad Category of Course	Minimum Credit Requirement	
		3-year UG	4-Year UG
1	Major (Core)	60	80
2	Minor Stream	24	32
3	Multidisciplinary	09	09

4	Ability Enhancement Courses (AEC)	08	08
5	Skill Enhancement Courses (SEC)	09	09
6	Value Added Courses common for all UG	06 - 08	06 – 08
7	Summer Internship	02 - 04	02 – 04
8	Research Project / Dissertation	-	12
	Total	120	160

Note:* Honours students not undertaking research will do 3 courses for 12 credits in lieu of a research project / Dissertation.

5.1. Curricular components of the undergraduate programme

The curriculum consists of major stream courses, minor stream courses and courses from other disciplines, language courses, skill courses, and a set of courses on Environmental education, understanding India, Digital and technological solutions, Health & Wellness, Yoga education, and sports and fitness. At the end of the second semester, students can decide either to continue with the chosen major or request a change of major. The minor stream courses include vocational courses which will help the students to equip with job-oriented skills.

5.1.1. Disciplinary/interdisciplinary major:

The major would provide the opportunity for a student to pursue in-depth study of a particular subject or discipline. Students may be allowed to change major within the broad discipline at the end of the second semester by giving her/him sufficient time to explore interdisciplinary courses during the first year. Advanced-level disciplinary/interdisciplinary courses, a course in research methodology, and a project/dissertation will be conducted in the seventh semester. The final semester will be devoted to seminar presentation, preparation, and submission of project report/dissertation. The project work/dissertation will be on a topic in the disciplinary programme of study or an interdisciplinary topic.

5.1.2 Disciplinary/interdisciplinary minors:

Students will have the option to choose courses from disciplinary/interdisciplinary minors and skill-based courses relating to a chosen vocational education programme. Students who take a sufficient number of courses in a discipline or an interdisciplinary area of study other than the chosen major will qualify for a minor in that discipline or in the chosen interdisciplinary area of study. A student may declare the choice of the minor and vocational stream at the end of the second semester, after exploring various courses.

Vocational Education and Training: Vocational Education and Training will form an integral part of the undergraduate programme to impart skills along with theory and practical. A minimum of 12 credits will be allotted to the 'Minor' stream relating to Vocational Education and Training and these can be related to the major or minor discipline or choice of the student. These courses will be useful to find a job for those students who exit before completing the programme.

5.1.3 Courses from Other Disciplines (Multidisciplinary) (9 credits):

All UG students are required to undergo 3 introductory-level courses relating to any of the broad disciplines given below. These courses are intended to broaden the intellectual experience and form part of liberal arts and science education. Students are not allowed to choose or repeat courses already undergone at the higher secondary level (12th class) in the proposed major and minor stream under this category.

i. ***Natural and Physical Sciences:*** Students can choose basic courses from disciplines such as Natural Science, for example, Biology, Botany, Zoology, Biotechnology, Biochemistry, Chemistry, Physics, Biophysics, Astronomy and Astrophysics, Earth and Environmental Sciences, etc.

ii. ***2. Mathematics, Statistics, and Computer Applications:*** Courses under this category will facilitate the students to use and apply tools and techniques in their major and minor disciplines. The course may include training in programming software like Python among others and applications software like STATA, SPSS, Tally, etc. Basic courses under this category will be helpful for science and social science in data analysis and the application of quantitative tools.

iii. **Library, Information, and Media Sciences:** Courses from this category will help the students to understand the recent developments in information and media science (journalism, mass media, and communication)

iv. ***Commerce and Management:*** Courses include business management, accountancy, finance, financial institutions, fintech, etc.,

v. ***Humanities and Social Sciences:*** The courses relating to Social Sciences, for example, Anthropology, Communication and Media, Economics, History, Linguistics, Political Science, Psychology, Social Work, Sociology, etc. will enable students to understand the individuals and their social behaviour, society, and nation. Students be introduced to survey methodology and available large-scale databases for India. The courses under humanities include, for example, Archaeology, History, Comparative Literature, Arts & Creative expressions,

Creative Writing and Literature, language(s), Philosophy, etc., and interdisciplinary courses relating to humanities. The list of Courses that can include interdisciplinary subjects such as Cognitive Science, Environmental Science, Gender Studies, Global Environment & Health, International Relations, Political Economy and Development, Sustainable Development, Women's and Gender Studies, etc. will be useful to understand society.

5.1.4 Ability Enhancement Courses (AEC) (08 credits): Modern Indian Language (MIL) & English language focused on language and communication skills.

Students are required to achieve competency in a Modern Indian Language (MIL) and in the English language with special emphasis on language and communication skills. The courses aim at enabling the students to acquire and demonstrate the core linguistic skills, including critical reading and expository and academic writing skills, that help students articulate their arguments and present their thinking clearly and coherently and recognize the importance of language as a mediator of knowledge and identity. They would also enable students to acquaint themselves with the cultural and intellectual heritage of the chosen MIL and English language, as well as to provide a reflective understanding of the structure and complexity of the language/literature related to both the MIL and English language. The courses will also emphasize the development and enhancement of skills such as communication, and the ability to participate/conduct discussion and debate.

5.1.5 Skills Enhancement Courses (SEC):

These courses are aimed at imparting practical skills, hands-on training, soft skills, etc., to enhance the employability of students. The institution may design courses as per the students' needs and available institutional resources.

5.1.6 *Value-Added Courses (VAC) Common to All UG Students (6-8 credits)*

i. ***Understanding India:*** The course aims at enabling the students to acquire and demonstrate the knowledge and understanding of contemporary India with its historical perspective, the basic framework of the goals and policies of national development, and the constitutional obligations with special emphasis on constitutional values and fundamental rights and duties. The course would also focus on developing an understanding among student-teachers of the Indian knowledge systems, the Indian education system, and the roles and obligations of teachers to the nation in general and to the school/community/society. The course will attempt to deepen knowledge about and understanding of India's freedom struggle and of the values and ideals that it represented to develop an appreciation of the contributions made by people of all sections and regions of the country, and

help learners understand and cherish the values enshrined in the Indian Constitution and to prepare them for their roles and responsibilities as effective citizens of a democratic society.

ii. ***Environmental science/education:*** The course seeks to equip students with the ability to apply the acquired 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, forest and wildlife conservation, and sustainable development and living. The course will also deepen the knowledge and understanding of India's environment in its totality, its interactive processes, and its effects on the future quality of people's lives.

iii. ***Digital and technological solutions***: Courses in cutting-edge areas that are fast gaining prominences, such as Artificial Intelligence (AI), 3-D machining, big data analysis, machine learning, drone technologies, and Deep learning with important applications to health, environment, and sustainable living that will be woven into undergraduate education for enhancing the employability of the youth.

iv. ***Health & Wellness, Yoga education, sports, and fitness:*** Course components relating to health and wellness seek to promote an optimal state of physical, emotional, intellectual, social, spiritual, and environmental well-being of a person. Sports and fitness activities will be organized outside the regular institutional working hours. Yoga education would focus on preparing the students physically and mentally for the integration of their physical, mental, and spiritual faculties, and equipping them with basic knowledge about one's personality, maintaining self-discipline and self-control, to learn to handle oneself well in all life situations. The focus of sports and fitness components of the courses will be on the improvement of physical fitness including the improvement of various components of physical and skills-related fitness like strength, speed, coordination, endurance, and flexibility; acquisition of sports skills including motor skills as well as basic movement skills relevant to a particular sport; improvement of tactical abilities; and improvement of mental abilities.

The HEIs may introduce other innovative value-added courses relevant to the discipline or common to all UG programmes.

5.1.7 Summer Internship /Apprenticeship (2 – 4 credits)

A key aspect of the new UG programme is induction into actual work situations**.** All students will also undergo internships / Apprenticeships in a firm, industry, or organization or Training in labs with faculty and researchers in their own or other

HEIs/research institutions during the summer term. Students will be provided with opportunities for internships with local industry, business organizations, health and allied areas, local governments (such as panchayats, municipalities), Parliament or elected representatives, media organizations, artists, crafts persons, and a wide variety of organizations so that students may actively engage with the practical side of their learning and, as a by-product, further improve their employability. Students who wish to exit after the first two semesters will undergo a 4-credit work-based learning/internship during the summer term in order to get a UG Certificate.

Community engagement and service: The curricular component of 'community engagement and service' seeks to 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. This can be part of summer term activity or part of a major or minor course depending upon the major discipline.

Field-based learning/minor project: The field-based learning/minor project will attempt to provide opportunities for students to understand the different socio-economic contexts. It will aim at giving students exposure to development-related issues in rural and urban settings. It will provide opportunities for students to observe situations in rural and urban contexts, and to observe and study actual field situations regarding issues related to socioeconomic development. Students will be given opportunities to gain a first-hand understanding of the policies, regulations, organizational structures, processes, and programmes that guide the development process. They would have the opportunity to gain an understanding of the complex socio-economic problems in the community, and innovative practices required to generate solutions to the identified problems. This may be a summer term project or part of a major or minor course depending on the subject of study.

5.1.8 Research Project / Dissertation

Students choosing a 4-Year Bachelor's degree (Honours with Research) are required to take up research projects under the guidance of a faculty member. The students are expected to complete the Research Project in the eighth semester. The research outcomes of their project work may be published in peer-reviewed journals or may be presented in conferences /seminars or may be patented.

5.1.9 Other Activities:

This component will include participation in activities related to National Service Scheme (NCC), National Cadet Corps (NCC), adult education/literacy initiatives, mentoring school students, and other similar activities.

5.2. Levels of Courses:

Courses shall be coded based on the learning outcomes, level of difficulty, and academic rigor. The coding structure is as follows:

i. **0-99: *Pre-requisite courses*** required to undertake an introductory course which will be a pass or fail course with no credits. It will replace the existing informal way of offering bridge courses that are conducted in some of the colleges/ universities.

ii. **100-199: *Foundation or introductory courses*** that are intended for students to gain an understanding and basic knowledge about the subjects and help decide the subject or discipline of interest. These courses may also be prerequisites for courses in the major subject. These courses generally would focus on foundational theories, concepts, perspectives, principles, methods, and procedures of critical thinking in order to provide a broad basis for taking up more advanced courses. These courses seek to equip students with the general education needed for advanced study, expose students to the breadth of different fields of study; provide a foundation for specialized higher-level coursework; acquaint students with the breadth of (inter) disciplinary fields in the arts, humanities, social sciences, and natural sciences, and to the historical and contemporary assumptions and practices of vocational or professional fields; and to lay the foundation for higher-level coursework.

iii. **200-299: *Intermediate-level courses*** including subject-specific courses intended to meet the credit requirements for minor or major areas of learning. These courses can be part of a major and can be pre-requisite courses for advanced-level major courses.

iv. **300-399: *Higher-level courses*** which are required for majoring in a disciplinary/interdisciplinary area of study for the award of a degree.

v. **400-499: *Advanced courses*** which would include lecture courses with practicum, seminar-based course, term papers, research methodology, advanced laboratory experiments/software training, research projects, hands-on-training, internship/apprenticeship projects at the undergraduate level or First year Post-graduate theoretical and practical courses.

vi. **500-599:** Courses at first-year Master's degree level for a 2-year Master's degree programme

vii. **600-699:** Courses for second-year of 2-year Master's or 1-year Master's degree programme

viii. **700 -799 & above:** Courses limited to doctoral students.

5.3. Programme/ Curricular components

The undergraduate programme seeks to equip students with the capacities in fields across arts, humanities, languages, natural sciences, and social sciences; an ethic of social engagement; soft skills such as complex problem solving, critical thinking, creative thinking, and communication skills, along with rigorous specialization in a chosen disciplinary or interdisciplinary major and minor(s).

Semesters 1 & 2: The students will undergo courses in 4 broad disciplines (major stream, minor stream, 2 broad disciplines (multidisciplinary category) to have basic knowledge not only in major areas but also in two other disciplines broadly grouped under Natural and Physical Sciences, Mathematics, Statistics and Computer Applications, Library, Information and Media Sciences, Commerce and Management, and Social Sciences. With exposure to basic courses in four disciplines, a student can decide to continue the chosen major or change the major and minor areas of interest at the end of the second semester. Additionally, these students will also take up courses of their interest from Ability Enhancement (language), Skill Enhancement, and Value-Added categories.

Change of Major: Students can opt for a change of major within the broad discipline (Natural and Physical Sciences, Mathematical, Statistics, and Computational Sciences, Library, Information and Media Sciences, Commerce and Management, and Humanities and Social Sciences) at the end of the first year.

Additional Seats: The HEIs may create 10% additional seats over and above the sanctioned strength to accommodate the request for a change of major. Any unfilled or vacant seats may be filled with those seeking a change of Major. Preference will be given to those who have got highest CGPA with no arrears in the first year.

Semesters 3 & 4: Students will choose courses of their interest in major and minor to build a career of their interest. They also pursue courses to strengthen their language skills and other skill-augmenting courses and vocational training.

Semesters 5 & 6: Students will undergo higher level courses and related courses during the 5th and 6th semesters in order to gain in-depth knowledge in the major and also in the

related disciplines through the minor stream. Students will also gain work-related skills through courses in vocational education. The programme structure will enable the students to gain sufficient knowledge and skills to meet the industry/society requirements.

Semesters 7 & 8: During the 4th and final year, students will undertake advanced level courses in both major and minor streams to get a UG Degree (Honours). Students choose a research component with courses relating to research methodology, advanced courses in theory and applied areas, and seminar presentations. Students may be permitted to carry out a research project or dissertation in another department of the same institution or another institution provided the required facilities are available.

5.4 Structure of the UG Programme

Table 3: The Semester-wise and Broad Course Category-wise Distribution of credits of the Undergraduate Programme:

Semester	Discipline Specific Courses - Core	Minor	Inter-disciplinary courses	Ability Enhancement courses (language)	Skill Enhancement courses /Internship /Dissertation	Common Value-Added Courses	Total Credits
I	(100 level)	(100 Level)	(1 course)	1 course)	(1 course)	(1 or 2 courses)	20
II	(100 level)	(100 Level)	(1 course)	(1 course)	(1 course)	(1 or 2 courses)	20
	Students exiting the programme after securing 40 credits will be awarded UG Certificate in the relevant Discipline /Subject provided they secure 4 credits in work based vocational courses offered during summer term or internship / Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.						40
III	(200 level)	(200 & above)	(1 course)	(1 course)	(1 course)	-	20
IV	(200 level)	(200 & above)	-	(1 course)	-		20
	Students exiting the programme after securing 80 credits will be awarded UG Diploma in the relevant Discipline /Subject provided they secure additional 4 credit in skill based vocational courses offered during first year or second year summer term.						80
V	(300 Level)	(200 & above)	-	-	(Internship)	-	20
VI	(300 Level)	(200 & above)	-	-	-	-	20
	Students who want to undertake 3-year UG programme will be awarded UG Degree in the relevant Discipline /Subject upon securing 120 credits						120
VII	(400 Level)	(300 & above)	-		-	-	20
VIII	(400 Level)	(300 & above)	-		(Research Project/ Dissertation)		20
	Students will be awarded UG Degree (Honours) with Research in the relevant						160

	Discipline /Subject provided they secure 160 credits	

Note:

i. Only the minimum total number of credits in each semester is indicated above. The HEIs may decide the number of credits for each course (e.g. Major, Minor, Multidisciplinary, etc.) to fulfill the minimum number of credit requirements.

ii. Students may be permitted to audit course(s) of their choice offered by the HEI provided they meet the pre-requisite for the course.

iii. Minor stream courses can be from the 3rd 300 or above level and 50% of the total credits from minors must be secured in the relevant subject/discipline and another 50% of the total credits from a minor can be earned from any discipline as per students' choice.

iv. Students are not allowed to take the same courses studied in the 12th class under the interdisciplinary category.

v. 40% of the credits in any category may be earned through online courses approved by the Department and Institution as per the existing UGC regulations.

vi. VIII-Semester core major may be seminar-based with students' presentations and discussions.

vii. Students may be encouraged to enroll in activities such as NSS / NCC.

6.0. Pedagogical approaches

The *Learning Outcomes-Based Approach* to curriculum planning and transaction requires that the pedagogical approaches are oriented towards enabling students to attain the defined learning outcomes relating to the courses within a programme. The outcome-based approach, particularly in the context of undergraduate studies, requires a significant shift from teacher-centric to learner-centric pedagogies, and from passive to active/participatory pedagogies. Every programme of study lends itself to the well-structured and sequenced acquisition of knowledge and skills. Practical skills, including an appreciation of the link between theory and practice, will constitute an important aspect of the teaching-learning process. Teaching methods, guided by such a framework, may include lectures supported by tutorial work; practicum and field-based learning; the use of prescribed textbooks and e-learning resources and other self-study materials; field-based learning/project, open-ended project work, some of which may be team-based; activities designed to promote the development of generic/transferable and subject-specific skills; and internship and visits to field sites, and industrial or other research facilities etc.

7.0. Learning assessment

A variety of assessment methods that are appropriate to a given disciplinary/subject area and a programme of study will be used to assess progress toward the course/programme learning outcomes. Priority will be accorded to formative assessment. Evaluation will be based on continuous assessment, in which sessional work and the terminal examination will contribute to the final grade. Sessional work will consist of class tests, mid-semester examination(s), homework assignments, etc., as determined by the faculty in charge of the courses of study. Progress towards achievement of learning outcomes will be assessed using the following: time-constrained examinations; closed-book and open-book tests; problem-based assignments; practical assignment laboratory reports; observation of practical skills; individual project reports (case-study reports); team project reports; oral presentations, including seminar presentation; viva voce interviews; computerized adaptive assessment, examination on demand, modular certifications, etc.

7.1. Letter Grades and Grade Points

The Semester Grade Point Average (SGPA) is computed from the grades as a measure of the student's performance in a given semester. The SGPA is based on the grades of the current term, while the Cumulative GPA (CGPA) is based on the grades in all courses taken after joining the programme of study.

The HEIs may also mention marks obtained in each course and a weighted average of marks based on marks obtained in all the semesters taken together for the benefit of students.

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

When students take audit courses, they may be given pass (P) or fail (F) grade without any credits.

7.2. Computation of SGPA and CGPA

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

i. The SGPA is the ratio of the sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e.

SGPA (Si) = ∑(Ci x Gi) / ∑Ci
Where Ci is the number of credits of the i^{th} course and Gi is the grade point scored by the student in the i^{th} course.

Example for Computation of SGPA

Semester	Course	Credit	Letter Grade	Grade point	Credit Point (Credit x Grade)
I	Course 1	3	A	8	3 X 8 = 24
I	Course 2	4	B+	7	4 X 7 = 28
I	Course 3	3	B	6	3 X 6 = 18
I	Course 4	3	O	10	3 X 10 = 30
I	Course 5	3	C	5	3 X 5 = 15
I	Course 6	4	B	6	4 X 6 = 24
		20			139
	SGPA				139/20=**6.95**

ii. The Cumulative Grade Point Average (CGPA) is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.

CGPA = ∑(Ci x Si) / ∑ Ci

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

Example for Computation of CGPA

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
Credit: 21 SGPA:6.9	Credit: 22 SGPA:7.8	Credit:25 SGPA:5.6	Credit: 26 SGPA:6.0	Credit: 26 SGPA: 6.3	Credit 25 SGPA 8.0

CGPA**= 6.73** (21 x 6.9 + 22 x 7.8 + 25 x 5.6 + 26 x 6.0 + 26 x 6.3 + 25 x 8.0)/145

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

Transcript (Format): Based on the above recommendations on Letter grades, grade points and SGPA and CCPA, the HEIs may issue the transcript for each semester and a consolidated transcript indicating the performance in all semesters.

Note : Students who have already enrolled and are pursuing UG programme as per Choice Based Credit System (CBCS) are eligible to pursue 4-year undergraduate programme and the university concerned may provide bridge courses (including online courses) to enable them for transition to CCFUGP.

ज्ञान-विज्ञान विमुक्तये

सत्यमेव जयते

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P. K. Thakur

New Delhi,
7th December, 2022

Annexure III

“DRAFT CURRICULUM AND CREDIT FRAMEWORK FOR PG PROGRAMMES”

UNIVERSITY GRANTS COMMISSION
BAHADURSHAH ZAFAR MARG
NEW DELHI-110002

Curriculum and Credit Framework for Postgraduate Programmes

1.0. Introduction

India is among the fastest-growing economies in the world. Knowledge creation and research are critical in sustaining economic growth. A robust ecosystem of research, with a vast talent pool, is perhaps more important than ever if India is to become a leading knowledge society and one of the largest economies in the world in the coming years and decades. For that to happen, the nation needs a significant expansion of its research capabilities and output across disciplines.

The higher education sector is likely to expand significantly with the possible addition of more and more young Indians into higher education as India moves towards becoming a knowledge economy and society. A major thrust, therefore, is given in NEP 2020 with initiatives such as multidisciplinary education with multiple entry and exit options, research at the undergraduate level, learning outcomes-based curriculum approach, etc.

The postgraduate programmes help students to extend their knowledge of their chosen subject and prepare them for higher research studies. The advanced knowledge and specialized skills they gain in the PG programme are crucial to sustaining the journey of a student from the acquirer of knowledge to the creator of knowledge.

The re-structured degree programmes are promoted in both undergraduate and postgraduate education. The NEP 2020 states that "the undergraduate degree will be of either 3 or 4-year duration with appropriate certifications, e.g., a UG certificate after completing 1 year in a discipline or field including vocational and professional areas, or a UG diploma after 2 years of study, or a Bachelor's degree after a 3-year programme. The 4-year multidisciplinary Bachelor's programme, however, shall be the preferred option since it allows 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".

In conformity with the restructured undergraduate programmes mentioned above, the policy says HEIs will have the flexibility to offer different designs of Master's programmes also.

2.0 Recommendations of NEP 2020 relevant to Postgraduate Education:

- There may be a 2-year programme with the second year devoted entirely to research for those who have completed the 3-year Bachelor's programme.

- For students completing a 4-year Bachelor's programme with Honours/Honours with Research, there could be a 1-year Master's programme; and

- There may be an integrated 5-year Bachelor's/Master's programme.

- Universities will aim to offer Masters programmes in core areas such as Machine Learning as well as multidisciplinary fields "AI + X" and professional areas like health care, agriculture, and law.

- There shall be a National Higher Education Qualifications Framework (NHEQF). Higher education qualifications leading to a degree/diploma/certificate shall be described by the NHEQF in terms of such learning outcomes. Accordingly, the levels prescribed for the master's programme are levels 6, 6.5, and 7.

- PG framework should be in sync with National Credit Framework (NCrF) for the creditization of all learning and assignment, accumulation, storage, transfer & redemption of credits, subject to assessment

3.0 Main features of the master's curriculum framework:

- Flexibility to move from one discipline of study to another.

- Flexibility for students who qualify UG with a double major to opt for any of the two subjects they have majored.

- Flexibility for students who qualify UG with a major and minor (s) to opt for either major or minor(s) subject in Master's programme.

- Opportunity for learners to choose the courses of their interest;

- Flexibility to switch to alternative modes of learning (offline, ODL, Online learning, and hybrid modes of learning).

- Mobility and flexibility as per the UGC (Establishment and Operation of Academic Bank of Credits in Higher Education) Regulations, 2021, and UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions. These documents are to facilitate the implementation of the proposed "Curriculum and Credit Framework for Postgraduate Programmes."

4.0 Credit requirement and Eligibility for the Master's Programme:

- A bachelor's degree with Honours/ Honours with Research with a minimum of 160 credits for a 1-year/2-semester master's programme at level 6.5 on the NHEQF.

- A 3-year/6-semester bachelor's degree with a minimum of 120 credits for a 2-year/4-semester Master's programme at level 6.5 on the NHEQF.

- A 4-year Bachelor's degree (e.g. B.E., B.Tech. etc.) with a minimum of 160 credits for a 2-year/4-semester Master's programme (e.g. M.E., M. Tech. etc.) at level 7 of NHEQF.

- A student is eligible for a master's programme in a discipline corresponding to either major or minor(s) discipline in UG programme. In this case, the University can admit the students in the Master's programme based on the student's performance in the UG programme or through an entrance examination. However, irrespective of the major or minor disciplines chosen by a student in a UG programme, a student is eligible for admission in any discipline of Master's programmes if the student qualifies the National level or University level entrance examination in the discipline of the Master's programme.

5.0 Statement of the generic outcomes of learning at a Postgraduate level

Under the National Higher Education Qualifications Framework (NHEQF), higher education qualifications are classified along a continuum of levels from level 4.5 to level 8. 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. Learning outcomes, are 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.

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. Detailed learning outcomes for the master's programme are given in the National Higher Education Qualifications Framework.

https://www.ugc.gov.in/pdfnews/2990035_Final-NHEQF.pdf

In accordance with the NHEQF, the levels for the master's programme are given in the Table.1

S.No.	Qualifications	Level	Credits	Credit Points
1	P.G. Diploma	6	40	240
2	1-Year PG after a 4-year UG	6.5	40	260
3	2-Year PG after a 3-year UG	6.5	40 + 40	260
4	2-Year PG after a 4-year UG such as B.E., B. Tech. etc.	7	40 + 40	280

6.0 Graduate Attributes of PG Programmes:

Qualifications that signify completion of the postgraduate degree 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.

Accordingly, the NHEQF outlines the statement of learning achievements at a particular level on the basis of the following elements of descriptors:

- Knowledge and understanding
- General, technical, and professional skills required to perform and accomplish tasks
- Application of knowledge and skills
- Generic learning outcomes
- Constitutional, humanistic, ethical, and moral values
- Employability and job-ready skills, and entrepreneurship skills and capabilities/qualities and mindset

7.0 Designs of Postgraduate Programme

According to the policy, HEIs will have the flexibility to have different designs of master's programme. Seemingly it appears there are three designs of PG such as 1-year master, 2-year master, and an integrated 5-year programme. However, given that in 4-year UG there are bachelor's (Hons.) and bachelor's (Hons. with Research), creditization of work experience, combinations of disciplines with emerging subjects such as AI, Machine Learning, etc. makes the number of curricular frameworks much higher. Accordingly, the higher education institutions prepare the curriculum as per the graduate attributes of the programme. A suggestive curriculum content and credit structure is attached (Table 1).

8.0 Curricular Components:

For 2-year PG: Students entering 2-year PG after a 3-year UG programme can choose to do (i) only course work in the third and fourth semester or (ii) course work in the third semester and research in the fourth semester or (iii) only research in the third and fourth semester.

1-year PG: Students entering 1-year PG after a 4-year UG programme can choose to do (i) only coursework or (ii) research or (iii) coursework and research.

5-year Integrated Programme (UG+PG): At the PG level, the curricular component of 5-year integrated programme will be similar to that of 2-year PG mentioned above.

Programmes that are intended to sharpen the students' analytical abilities to optimally solve problems, the curriculum, in general, comprises advanced skills and real-world experience and less of a research component. Such programmes should have a curriculum that is different from other programmes.

9.0 Credit Distribution

a) For 1-year PG

Curricular Components	**PG Programme (one year) for 4-yr UG (Hons./Hons. with Research) Minimum Credits**			
	Course Level	**Coursework**	**Research thesis/project/Patent**	**Total Credits**
Coursework + Research	500	20	20	40
Coursework	500	40	--	40
Research	-	-	40	

b) **For 2-year PG**

Curricular Components		**Two-Year PG Programme (Generic and Professional) Minimum Credits**			
		Course Level	**Coursework**	**Research thesis/project/Patent**	**Total Credits**
1st Year (1st & 2nd Semester)		400 500	24 16	--	40
Students who exit at the end of 1st year shall be awarded a Postgraduate Diploma					
2nd Year (3rd & 4th Semester)	Coursework & Research (or)	500	20	20	40
	Coursework (or)	500	40	--	40
	Research	--	--	40	40

Exit Point:

For the PG programme, there shall only be one exit point for those who join two year PG programme. Students who exit at the end of 1st year shall be awarded a Postgraduate Diploma.

The PG programme should include vocational courses relevant to the chosen discipline.

9.1 Course Levels :

400-499: Advanced courses which would include lecture courses with practicum, seminar-based course, term papers, research methodology, advanced laboratory experiments/software training, research projects, hands-on-training, internship/apprenticeship projects at the undergraduate level or First year Postgraduate theoretical and practical courses

500-599: For students who have graduated with a 4-year bachelor's degree. It provides an opportunity for original study or investigation in the major or field of specialization, on an individual and more autonomous basis at the postgraduate level

10.0 Flexibility:

Flexibility is the hallmark of NEP 2020. The benefit of master's degree programs is that they offer great flexibility viz. enrolling in online programmes, pursuing two postgraduate programmes simultaneously, creditizing work experience, etc.

Postgraduate programmes which are entirely online, allow students to participate in the programme along with their current responsibilities. This makes earning a postgraduate degree while continuing to work easier and more accessible to individuals.

Another opportunity for students is the facility to pursue two academic programmes simultaneously 1) in two full-time academic programmes in the physical mode provided that there is no overlap of class timings between the two programmes. 2) A student can pursue two academic programmes, one in full-time physical mode and another in Open and Distance Learning (ODL)/Online mode; or up to two ODL/Online programmes simultaneously. Degree or diploma programmes under ODL/Online mode shall be pursued with only such HEIs which are recognized by UGC/Statutory Council/Govt. of India for running such programmes.

Creditization of relevant work experience is another initiative to make education more holistic. The NCrF enables the assignment of credits for the experience attained by a person after undergoing a particular educational programme. In case a learner through employment gains experience relevant to the PG programme he/she wants to pursue, the work experience can be creditized after assessment. Accordingly, the duration can be adjusted by the HEIs. The maximum weightage provided for under this dimension is two (2) i.e. a candidate/ trained person can at best earn credits equal to the credits acquired for the base qualification/ skill, provided he has more than a certain number of years of work experience. The redemption of credits so earned, however, shall be based on the principle of assessment bands given in the NCrF. Link for NCrF is given :

(https://www.ugc.gov.in/pdfnews/9028476_Report-of-National-Credit-Framework.pdf)

The credit points may be redeemed as per Academic Bank of Credit (ABC) guidelines for entry or admission in higher education at multiple levels enabling horizontal and vertical mobility with various lateral entry options

The principle of calculating credits acquired by a candidate by virtue of relevant experiential learning including relevant experience and professional levels acquired and attaining proficiency levels (post-completion of an academic grade/ skill based program) gained by the learner/student in the industry is given in the Table below:

Credit Assignment for relevant experience / proficiency

Experience cum Proficiency Levels	Description of the relevant Experiential learning including relevant experience and professional levels acquired and attaining proficiency levels	Weightage/ multiplication Factor	No. of years of experience (Only indicative)
Trained/ Qualification attained	Someone who has completed the coursework/ education/ training and has been taught the skills and knowledge needed for a particular job or activity	1	Less than or equal to 1 year
Proficient	Proficient would mean having the level of advancement in a particular profession, skillset, or knowledge	1.33	More than 1 less than or equal to 4
Expert	Expert means having high level of knowledge and experience in a trade or profession	1.67	More than 4 less than or equal to 7
Master	Master is someone having exceptional skill or knowledge of a subject/domain	2	More than 7

11.0 Switching Subjects in Postgraduate Programme

The first degree often makes students think of a different career path that requires a change of subject. Changing direction with a postgraduate degree has its challenges, but NEP gives enough freedom to make it a possibility. The postgraduate programmes provide an opportunity for students to change the field and realize their vision, as per the pathways given below:

a) A student is eligible for admission in a master's programme either in the major or minor discipline chosen by the student in a UG programme.

b) Irrespective of the major or minor disciplines chosen by a student in a UG programme, a student is eligible for admission in any discipline of Master's programmes if the student qualifies the National level or University level entrance examination in the discipline of the Master's programme.

Candidates who have completed 4-year undergraduate programme or a 3 year UG and 2 year master's programme or 5 year integrated programme (UG + PG) in STEM subjects will be eligible for admission in M.E., M. Tech. in allied areas.

12.0 Assessment Strategy

The NEP 2020 emphasizes upon formative and continuous assessment rather than summative assessment. Therefore, the scheme of assessment should have components of these two types of assessments. Assessment have to have correlations with the learning outcomes that are to be achieved by a student after completion of the course. Therefore, the mode and system of assessments have to be guided by the learning outcomes. For more details on assessment strategy, HEIs may refer to UGC Guidelines for Innovative Pedagogical Approaches & Evaluation Reforms.

13.0 Letter Grades and Grade Points

The Semester Grade Point Average (SGPA) is computed from the grades as a measure of the student's performance in a given semester. The SGPA is based on the grades of the current term, while the Cumulative GPA (CGPA) is based on the grades in all courses taken after joining the programme of study. The HEIs may also mention marks obtained in each course and a weighted average of marks based on marks obtained in all the semesters taken together for the benefit of students.

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

Computation of SGPA and CGPA

UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

i. The SGPA is the ratio of the sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e.

SGPA (Si) = ∑(Ci x Gi) / ∑Ci

Where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the ith course.

Example for Computation of SGPA

Semester	**Course**	**Credit**	**Letter Grade**	**Grade point**	**(Credit x Grade)**
1	Course 1	3	A	8	3 x 8 = 24
1	Course 1	4	B +	7	4 x 7 = 28
1	Course 1	3	B	6	3 x 6 = 18
1	Course 1	3	O	10	3 x 10 = 30
1	Course 1	3	C	5	3 x 5 = 15
1	Course 1	4	B	6	4 x 6 = 24
		20			139
SGPA					139/20=6.95

ii. The Cumulative Grade Point Average (CGPA) is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.

CGPA = ∑(Ci x Si) / ∑ Ci

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

Example for Computation of CGPA

Semester 1	Semester 2	Semester 3	Semester 4
Credit 20 SGPA 6.9	Credit 20 SGPA 7.8	Credit 20 SGPA 5.6	Credit 20 SGPA 6.0
CGPA= (20 x 6.9 + 20 x 7.8 + 20 x 5.6 + 20 x 6.0)/80 = 6.6			

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

Transcript (Format): Based on the above recommendations on Letter grades, grade points and SGPA and CCPA, the HEIs may issue the transcript for each semester and a consolidated transcript indicating the performance in all semesters.

References:

1. The National Education Policy 2020 (https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf)
2. National Credit Framework (NCrF) (https://www.ugc.gov.in/pdfnews/9028476_Report-of-National-Credit-Framework.pdf)
3. The National Higher Education Qualifications Framework (NHEQF) (https://www.ugc.gov.in/pdfnews/2990035_Final-NHEQF.pdf)
4. Curriculum and Credit Framework for Undergraduate Programmes. (https://www.ugc.gov.in/pdfnews/2990035_Final-NHEQF.pdf)

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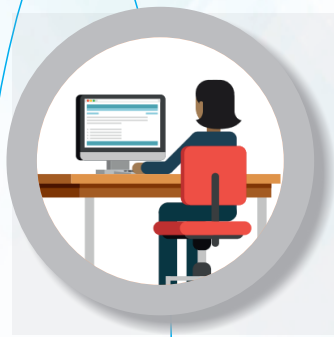
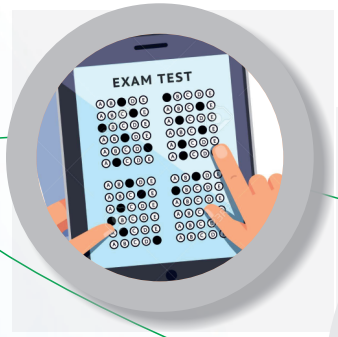
Annexure IV

EVALUATION REFORMS IN HIGHER EDUCATIONAL INSTITUTIONS





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EVALUATION REFORMS IN HIGHER EDUCATIONAL INSTITUTIONS

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Foreword

As part of ongoing Quality Mandate initiatives, UGC constituted a Committee to suggest reforms in the current evaluation system. The Committee, after due deliberations, consultations and incorporating the suggestions received from stakeholders, has come out with a report on Evaluation Reforms. It is a matter privilege to present this report "Evaluation Reforms in Higher Education Institutions" to the academic fraternity.

The report emphasizes the fact that to accomplish meaningful learning, evaluation should be linked to 'Learning Outcomes' and 'Institutional goals'. The essence of the report is that the assessment process should test the learning outcomes, knowledge gained, attitudes developed and skills mastered by a student during an academic programme.It intends to promote 'student centric learning' by reforming the existing evaluation system in the Higher Education Institutions, with 'continuous evaluation' of students' performance.

I take this opportunity to thank the Chairman and members of the Committee for their time and valuable inputs based on their expertise which has resulted in this important document.

I request Vice-Chancellors of all Universities and other academic fraternity to take necessary steps for implementation of the recommendations contained in the report on Evaluation Reforms.

(Prof. D. P. Singh)
Chairman
University Grants Commission

New Delhi
November, 2019

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Preface

The University Grants Commission (UGC) has taken various initiatives to bring in academic reforms in the Higher Education Institutions in India. Development and regular revision of curriculum based on "Learning Outcomes" is one of the quality initiatives taken up by the UGC. In continuation with this, evaluation reforms are the next major milestone to be achieved. Some limitations in the current system of testing students have made the need of reforms in evaluation system relevant. However, evaluation should be primarily linked to the teaching pedagogy and learning methods adopted and should be adaptable to situation.

This report of the committee formed by the University Grants Commission is intended to draw attention to areas, which require attention and provide ways and means to be undertaken by institutions to improve the methods of conduct of evaluation. Evaluation plays a pivotal role in the educational system. To make evaluation more meaningful, this report has considered several aspects. Foremost, it was felt necessary to link evaluation to "Learning Outcomes." This document proposes and recommends Learning Outcome-based Framework to structure and link evaluation right up to Institutional goals. It specifies required activities and work products, models of assessment and outlines the role of rubrics to increase objectivity in assessments.

Taking a more comprehensive view of evaluation, this document also covers different types of assessment by considering requisite learning attributes and has been categorized into four groups. Adequate focus is also given to need for more proportion of testing based on internal assessment modes. The document has also touched upon the grading system used and to be considered. It also focuses on the moderation process and important aspects to be considered for conduct of moderation during evaluation process.

Question banks provide an attempt to integrate both teaching and evaluation. The document stresses on the implementation of the question bank system as collaborative efforts of many experts will lead to setting of good quality question papers. Technology has provided us ways to enable lifelong learning and technology has the potential to augment traditional classroom practices and revolutionize learning and evaluation methods. Use of technology both as a learning management system and the administrative conduct of examination process has been recommended.

It is hoped that this document will serve as a useful guideline in taking an important step towards evaluation reforms.

Glossary of Terms

- **Assessment:** is the process of collecting, recording, scoring, describing and interpreting information about learning.
- **Certificate/ Diploma/ Degree:** A title/ qualification awarded after satisfactory completion of and achievement in a program.
- **Course Learning Outcomes (CLOs):** These are the outcomes/knowledge whichever student is expected to gain at the end of completion of each course (subject).
- **Credit:** Unit of measure of course work. Each course may be allotted credits in proportion to the time expected to be devoted by the student for that course.
- **Course:** A basic unit of education and/or training. A course or collection of courses forms a program of study.
- **Cumulative Grade Point Average (CGPA):** Weighted average of the grade points obtained in all courses registered by the student across semesters.
- **Difficulty Index:** (of a question) A measure of the proportion of examinees who answered the question correctly.
- **Discrimination Index:** (of a question) A measure of how well the question is able to distinguish between students who are knowledgeable and those who are not.
- **Evaluation** is the process of making judgments based on evidences andinterpretations gathered through examination and assessment and on the basis of agreed upon criteria.
- **Examination** is a quantitative measure of learners "performance and is usually held at the end of the academic session or semester.
- **Fair Assessment:** An assessment which does not give advantage or disadvantage to any student.
- **Grade Point:** Numeric weightage attached to each letter grade.
- **Grade Point Average (GPA):** A system of calculating academic achievement based on an average, calculated by multiplying the numerical grade point received in each course by the number of credits.
- **Graduate Attributes (GAs)** is a set of individually assessable outcomes that are indicative of the graduate's potential to acquire competencies in that programme.

Glossary of Terms

- **Learning Outcome Based Education (LOBE):** Adherence to student-centric learning approach to measure student's performance based on pre-determined set of outcomes.
- **Letter Grade:** Index of performance resulting from the transformation of actual marks obtained by a student in a course.
- **Outcomes:** Intended results of education in higher educational institution: What students are supposed to know and be able to do?
- **Programme:** A collection of courses in which a student enrolls and which contributes to meeting the requirements for the awarding of one or more Certificates/ Diplomas/ Degrees.
- **Programme Education Objectives (PEOs):** Broad statements that described what graduates are expected to attend within few years of graduation.
- **Programme Learning Outcomes (PLOs):** They represent the knowledge, skills and attitudes a student should at the end of the programme.
- **Question Bank:** A repository of quality questions on a subject.
- **Re-evaluation:** A recheck of an already corrected answer script.
- **Registration:** Process through which students select courses to be taken during a semester or module.
- **Result:** Outcome of an assessment/ evaluation which may be expressed in different forms such as marks, letter grade, GPA, etc.
- **Reliable Assessment:** Ensures consistency in the assessment made by the same and/or other assessors with respect to the same learning outcome for a course or a program.
- **Rubric (Assessment Rubric):** A rubric for assessment, also called a scoring guide, is a tool used to interpret and grade students' on any kind of work against criteria and standards.
- **Semester Grade Point Average (SGPA):** Performance of a student in a given semester.
- **Student:** A person admitted and registered under University regulations.
- **Syllabus:** An outline of topics covered in an academic course.
- **Transcript:** A certified copy of a student's educational record.

Introduction

Amidst rapid demands of constant change put forth by a globalised economy, the higher education sector in India is going through its transformation stage. The current pace of accelerated growth of Indian economy, significantly accompanied by surge in growth in certain sectors, primarily services, puts tremendous pressure on the need for human resources to keep up to the momentum and pace of change and growth. The challenge then to the higher education system in the country is to create a skilled resource of the young population it has, to unleash their potential to take on the baton of change and growth. In turn, the Government has a key role to play in aiding to give impetus to provide adequate and high quality education system.

With the aim of the Government to increase the Gross Enrolment Ratio to about 30% by the next decade or so, the country will need more than double the number of 700+ universities it currently has. This will not only ensure meeting expected enrolment ratio targets but will also accommodate millions of students who will seek to pursue higher education by then.

Of foremost concern is just not the quantitative growth, but to also ensure that the students are equipped with 21st century skills for the new age enterprises and to play lead roles in sophisticated ways of conduct of business. In order to achieve this, it is imperative that both the Government and the higher education sector should focus on excellence and employability. Upon these platforms, a strong system should be built-up that takes care of needs of scale and maintenance of quality. With a robust system in place, the higher education sector should focus on being more learner-centric, be oriented to conduct and gain knowledge through research, and be in pursuit of constant improvements in quality.

Innovation and technology can be drivers that can accelerate the much needed recognition of Indian higher education. Technology as an enabler is now being introduced, albeit in its nascent form, in a manner that was unthought-of, couple of years ago. Digital learning is now harnessed upon to deliver education in smaller modules. Capacity issues can be bridged by digital learning modes and online learning modes. Parameters of testing and assessment need relook and reorientation so as to create the next generation knowledge workers. A whole new format of assessment tools using digital platforms need to be utilized to build the requisite skills that is required of a growing economy. This said, in some specific way with unified efforts, will enable all students who have enrolled in higher education programmes to attain requisite skills of higher order through the intended learning outcomes.

Current Examination System

In India, the higher education has so far been largely examination oriented. The examination pattern that currently exists in University structure, test memory learning. In most cases, the examination system is affiliating in nature with external final University-conducted examination at the end of every semester or every year; this, solely serves as the purpose of assessment. This system, more often than not, insulates students from the quest of knowledge, excitement of discovery and joy of learning.

Often the annual examination alongwith marks, percentages and division leads to insensitive cramming up of superficial discreet information. Thus, with very little focus on continuous assessment during the teaching–learning process, it renders all emphasis on the final examinations orienting all teaching and teaching pedagogy towards preparing students to work towards getting better marks. In several instances, the university certified degree holders of UG, PG or Ph.D. are subjected to another written examination before they are accepted for jobs in public or private sectors. Thus, students enrolled under the higher education system are not coming out with the desired level of knowledge and expertise.

The term-end examination is usually based on the question paper which tests only memory recall as a skill. The way a question paper is set reflects on the academic quality of the institution and its members. Thus, dependence on answering the term-end examination based on a question paper puts forward flaws of the single nature of assessment (majority of marks are dependent on performance at the term-end examination). The pattern and design of the question paper is decided by the Board of Studies for each subject, and is responsible to appoint paper setters and evaluators. Requirement of question papers by the examination department of a university is a continuous process, thus there might be issues of compromise of quality of question papers set due to its constant requirement.

The machinery of conduct of end of term examination exerts tremendous pressure on affiliating universities due to large number of examinees. The question papers which are set have to be printed and sent to various examination centres, which are at a distance requiring huge logistics support so as to ensure that the examinations are conducted simultaneously. The answer scripts of the students are then transported to designated centralized assessment centres. The marks of each subject received from the designated evaluation centres have to be integrated into the mark sheet of each individual student thereby requiring accuracy and its completion in limited time to facilitate timely declaration of results.

International Scenario

In United Kingdom (UK), the Quality Assurance Review identified student assessment as a key area of concern (QAA 2014), while UNDP Regional Bureau for Arab States reports in a quality audit of 23 universities that:

…. assessment continues to be a weakness, particularly in three respects. First, too much emphasis is placed on the memory recall of descriptive knowledge. Second, not enough is done to test higher-level cognitive skills. Third, there is virtually no moderation either internal or external to ensure the fairness and transparency of marking (UNDP/RBAS 2006:5).

Marks and grades are increasingly seen by students as commodities with a purchase price and spending power; in line with the OECD's findings, university students know that an investment in fees will generate a life time return.

Across 25 OECD countries and the partner economy Israel, individuals with university degrees and advanced research education had earnings that were at least 50% higher than individuals whose highest level of educational attainment was below the upper secondary level (OECD 2007 a:6).

In western countries, most of the universities and institutions of higher education are assessing the students wholly on internal evaluation methods following the principle "those who teach should evaluate". The system followed in the western countries has been accepted by the whole world and the students coming out of those countries are valued higher than the degree holders of the Indian universities.

Rationale for Evaluation Reforms

In India, examinations play a pivotal role and are a deciding factor of career choice of students; ability to pursue the right higher qualifications and determine the degree of knowledge possessed. The global competitive forces and the wave of disruptions in industry have brought in sweeping changes both in terms of skill requirement and the decision making capabilities of human resource, thereby exerting tremendous pressure to perform in complex situations.

However, assessment of students currently existing in the university system is a matter of concern. Committees that have been setup in the past for improvement in the examination system have recommended changes in the examination system. The same pattern exists in terms of final examination as a standard or decider of fate of millions of students, thereby rendering changes suggested to have little or minimal impact. The end of term examination, in many cases, are for three hours each and which is the sole tool to decide the future career of students.

Current examination system tests memory learning skills. Demands from profession require students not just to possess information but an individual application to every situation either routine or complex. This necessitates pressure on students to perform to the best of their capabilities. Memory learning may be required but not adequate to performs in the challenging environment that currently prevails. There is a need to assess application skills or skills of higher ability like analysis, creation, evaluation etc.

Standardisation of assessment has its flaws as every student differs in terms of intellect and ability and as such one tool of measurement is akin to "*one size fits all*", which fails to identify genuine abilities and potential of students.

Examinations, in its current form are moments of stress and anxiety for students, both pre-examination as well as post examination. Coupled to this are issues of malpractices which have impact on their credibility.

Reforms thus are much needed to ensure credibility and the outcome of the assessment system. There is a need to have more horizontal assessment modes rather than one single vertical mode that decides fate of students. Reforms in examination for all forms of education i.e. formal face to face mode, Open and distance learning mode etc., should thus aim at overall development of students in terms of their critical thinking, problem solving ability, right application of knowledge, and maintain ethics.

Evaluation Reforms

1. Framework for Outcome based Education and Assessment

1.1 Higher Education – Some contributions towards policy development

To understand Higher Education Policy, the Interpretive Structural Model (ISM) of Higher Education System has been referred to. It identifies 93 elements (Figure 1 and Figure 2) that cover four sub-systems in the form of a hierarchical structure with the contextual relationship "leading to". The policy elements form a basis for the development of a framework for outcome based education and assessment.

The Mission objective is at the top of the structure (refer structure at www.dei.ac.in), which is to develop a well-rounded person and then there are four sub-systems, namely, (1) Aims and Objects, (2) Educational-Curricular Features, (3) Organizational Policy Support, and (4) Governance Policy Support.

The first one – Aims and Objects – whose elements are detailed below, is immutable. The second sub-system namely, Educational and Curricular Features, which is less subject to change, consists of sub-systems such as Intellectual Activity, Social Activity, Physical Activity and the Curriculum which is integrated, broad-based and interdisciplinary. Any student who joins the undergraduate class has to go through not only the regular curriculum but also become aware of democratic processes and the Indian Constitution through courses in Humanities; take core courses in Indian Culture, Comparative Study of Religion, General Knowledge, Scientific Methodology and Work Experience; and participate in co-curricular activities consisting of Social Services, Games and Sports, Cultural and Literary Activities. Different educational activities lead not only to the fulfillment of Academic Objectives, but also inculcate Moral and Spiritual Values and develop social sensibilities among students. High performance standards are set up for monitoring quality of the system against the aims and objects laid down by the policy and then making suitable changes based on this feedback so as to achieve the objective of evolving a well-rounded complete person. There is an emphasis on fundamental principles and there is continuous evaluation system, semester system and grading system. There is an interaction of the system with the environment, for instance, through extension projects and industry-institute interactions. Thus, learning takes place through these means. Students are encouraged to also familiarize themselves with one other modern Indian language – Telugu, Tamil, Oriya, Bengali, or even one of the foreign languages like Russian, French, German.

The third sub-system – Organizational Policy Support – may be subject to greater variation. There are policies for organizing student participation in co-curricular and extra-curricular activities and for remedial teaching. Emphasis is on learning through seminars, paper reading, group discussions etc. There is a system of formal learning or formal education by introducing major academic subjects, subjects with 50% weightage and electives. There is also provision of lateral entry of moving from one level of education to the other for better qualified students. There is also non-formal and private education. Non-formal education will improve distance education and private education will improve virtual education or cyber-education.

The fourth sub-system – Governance Policy Support – where systems and procedures are to be implemented at higher education institutions to meet the outcomes expected, effectively and efficiently.

Infrastructure for learning is provided in terms of well-equipped laboratories, science center, hobby center, teaching-aids center and modern library. Student welfare measures are provided in terms of free or affordable education and assistance. The training and motivation of staff is through in-service training programs and by providing conducive physical and psychological environment. Also, there is vocational guidance and counselling for students and training and placement cells. There is a provision of attachment of a university to below university institutions, both technical as well as general educational institutions and this provides backward linkage and helps in preparing students in these below university institutions for entering into a university as well as facilitates experimental work in these below university institutions to be undertaken by the higher level educational sub-systems. Special efforts are available for disadvantaged persons as well as weaker sections of community and for gifted students.

ISM for Higher Education Policy System

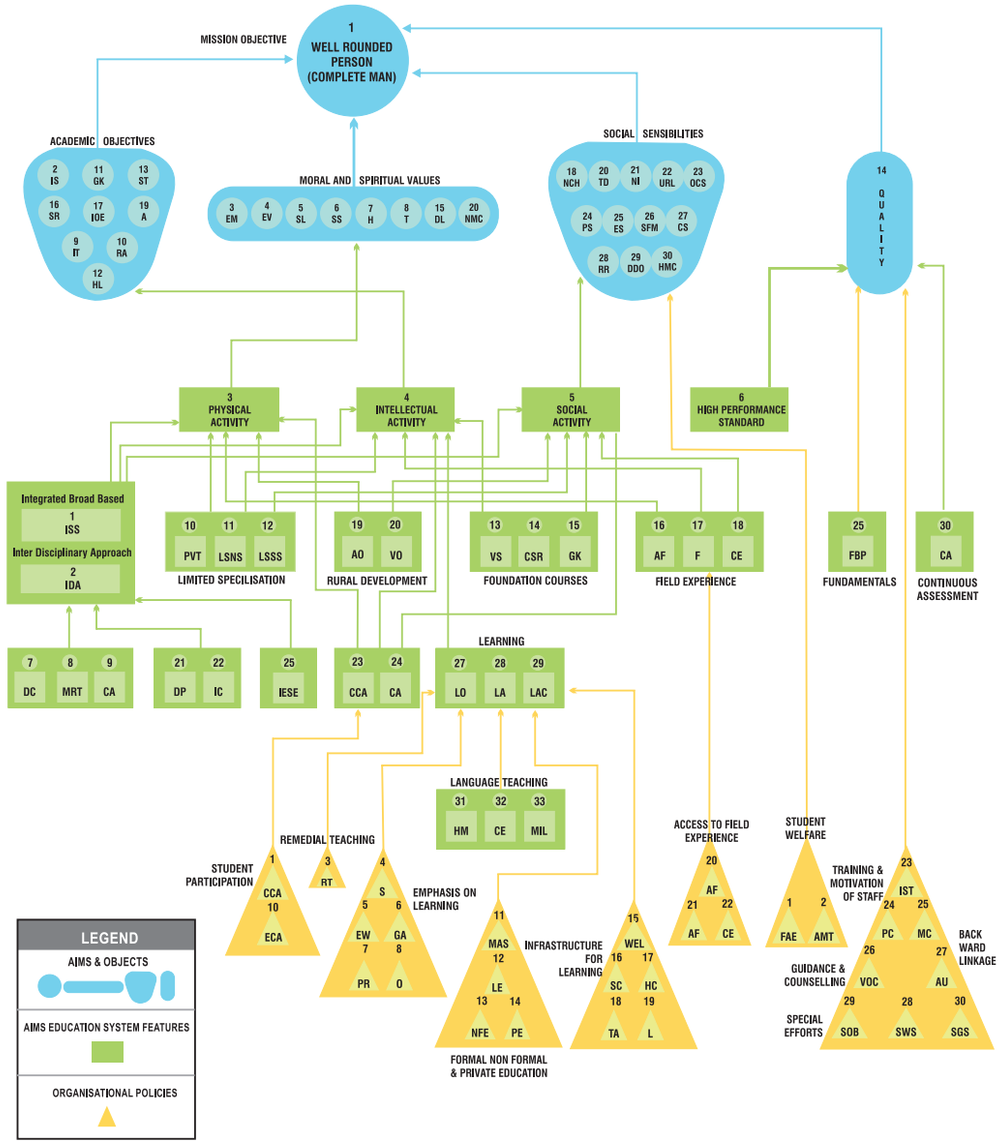

Figure-1 : ISM for Higher Education Policy System

(*Figure-1 continued to next page*)

Legend

I) AIMS AND OBJECTS

1) Well-rounded Person
2) Intellectual Strength
3) Emotional Maturity
4) Ethical Values
5) Simple Living
6) Selfless Service
7) Humility
8) Truthfulness
9) Independent Thinking
10) Reasoning Ability
11) General Knowledge
12) Habit of Learning
13) Scientific Temper
14) Quality of Education
15) Dignity of Labour
16) Self Reliance
17) Interdisciplinary Exposure
18) National Culture &Heritage
19) Aptitude
20) Tolerance for Diversity
21) National Integration
22) Understanding Rural Life
23) Class-less and Caste-less Society
24) Political System
25) Economic System
26) Social Forces &Needs
27) Civic Sense
28) A Respect for Rights
29) Duties & Discharge of Obligations
30) High Moral Character

II) EDUCATIONAL SYSTEM

1) Integrated & Broad Based
2) Interdisciplinary Approach
3) Physical Activities
4) Intellectual Activities
5) Social Activities
6) High Performance Standard
7) Breadth of Coverage
8) Most Recent Trends of Thought
9) Concentrates of Academics
10) Primarily Vocational and Technical
11) Limited Specialization in Natural Sciences
12) Limited Specialization in Social Sciences
13) Foundation Courses and Value System
14) Foundation Courses like Comparative Study of Religion
15) Foundation Courses like General Knowledge
16) Field Experience (Work Experience) in Farms
17) Field Experience (Work Experience) in Factories
18) Field Experience (Work Experience) in Commercial Establishments
19) Agricultural Operations
20) Village Development Programs
21) Democratic Processes in Student Activities
22) Indian Constitution and other Forms of Government
23) Co-curricular Activities
24) Cultural Activities
25) Fundamental and Basic Principles
26) Interlink age between the Educational System and Environment
27) Learning by Observation
28) Learning by Analysis
29) Learning by Acquisition of Knowledge
30) Continuous Assessment
31) Hindi as the Medium of Instruction
32) Competence in English
33) One other Modern Indian Language

III) ORGANISATION

1) Free /Affordable Education
2) Assistance through Means Test
3) Remedial Teaching
4) Learning through Seminars
5) Learning through Experimental Work
6) Learning through Group Activities
7) Learning through Paper Reading Sessions
8) Learning through Discussions
9) Students Participation in Management & Organization of Co-curricular Activities
10) Students Participation in management & Organization of Extra Curricular Activities
11) Major Academic Subjects
12) Lateral Entry
13) Non-formal Education
14) Private Education
15) Well Equipped Workshop/Laboratories
16) Science Centre
17) Hobby Centre
18) Teaching Aids
19) Library
20) Agricultural Farms for Field Experience
21) Small Scale Industries for Field Experience
22) Commerce and Service Establishment for Field Experience
23) In-service Training Programs and Orientation Courses
24) Adequate Physical Conditions for Motivating the Teachers
25) Adequate Mental Climate for Motivating the Teachers
26) Vocational Guidance &Counselling of the Students
27) Attachment of the School to a University level College
28) Special Efforts to Overcome Handicaps of Weaker Sections
29) Special Efforts to Overcome Handicaps of Disadvantaged Background
30) Special Care to the Gifted Students

Integration of all Aims and Objects finally leads to the objective of developing a well-rounded person. The 30 Elements of Aims and Objects can be considered under four aspects as follows:

A. Academic Objectives	B. Moral and Spiritual Values
1. *Intellectual Strength*	10. *Emotional Maturity*
2. *General Knowledge*	11. *Ethical Values*
3. *Scientific Temper*	12. *Simple Living*
4. *Self Reliance*	13. *Selfless Service*
5. *Inter Disciplinary Exposure*	14. *Humility*
6. *Aptitude*	15. *Truthfulness*
7. *Independent Thinking*	16. *Dignity of Labour*
8. *Reasoning Ability*	17. *High Moral Character*
9. *Habit of Learning*	

C. Social Sensibilities	D. Quality
18. *National Culture & Heritage*	30. *Quality of Education*
19. *Tolerance for Diversity*	
20. *National Integration*	
21. *Understanding Rural Life*	
22. *Class-less & Caste-less Society*	
23. *Political System*	
24. *Economic System*	
25. *Social Forces & Needs*	
26. *Civic Sense*	
27. *Respect for Rights*	
28. *Duties & Discharge of Obligations*	
29. *High Moral Character*	

Figure-2: Elements of Aims and Objects

1.2 Learning Outcome Based Education and Assessment

Learning Outcome Based Education (LOBE) advocates the importance of establishing a "clear picture of what is important for students to be able to do, organizing the curriculum, instruction, and assessment to make sure that learning ultimately happens." Important action points under the LOBE approach include:

- Define exit outcomes through active participation of all stakeholder groups
- Redefine performance and standards to provide regular reports on actual student learning levels in all key outcome areas
- Redesign of future-focused curriculum, with a problem and issue-based content focus and continuous development of student abilities alongwith all major competence dimensions
- Develop "high engagement/high activity" classrooms staffed by a variety of internal and external experts with continuous emphasis on multimodality active learning by individuals and learning teams.
- Encourage learning by performing in authentic and real-world settings and promote extensive use of high technology tools and applications

- Promote use of focused learning and resource centers with expanded access to facilities, materials, and learning resources.

The Learning Outcome Based Education (LOBE) model put forward by Spadys (1988) emphasizes on the importance of Program Learning Outcomes (PLOs) that serves as a critical factor to design curriculum and steer direction of all levels of outcome, i.e. course outcomes, unit outcomes, and lesson outcomes. Learning Outcome Based Education approach, helps to focus on utilization of appropriate instruction and pedagogy, helps organize teaching and learning processes around career advancement and placement of students, helps in selection and design of appropriate assessment modes and that programmes are awarded based on demonstrated achievement of outcomes. The core philosophy of Learning Outcome Based Education rests in adhering to student-centric learning approach used to measure student's performance based on pre-determined set of outcomes. Among others, of significant advantage of Learning Outcome Based Education is in bringing out reforms in curriculum framework that has to be outcome based; constant up gradation of academic resources; raising quality of research and teaching; technology integration in the teaching-learning processes; bringing out clarity among students as to what is expected from them after completion of the programme and for teachers in bringing focus on what to teach, how to teach and evaluate.

Since, Program Learning Outcomes provide direction in curriculum design, instruction/delivery and conduct of assessment, its measurement can be done through identification of related Competencies and Performance Indicators (PI). Identification of Competencies for each Program Learning Outcome is essential as it helps to understand what students should achieve. For each Competency, Performance Indicators (PI) have to be defined which are statement of expectations of students learning. It acts as tools of assessment and provides clarity of the extent of attainment of outcomes. The strategy and plan of assessment thus, need to be mapped to the Performance Indicators which are an attempt to achieve both Course Learning Outcomes and Program Learning Outcomes. However, it is imperative for institutions to set the Program Education Objectives, Program Learning Outcomes, Course Learning Outcomes, Competencies and Indicators consistent with its Vision and Mission statements. The Program Education Objectives and the Program Learning Outcomes should be driven by the mission of the institution and should provide distinctive paths to achieve the stated goals. For instance, each discipline /domain along with core and elective courses should work towards solving

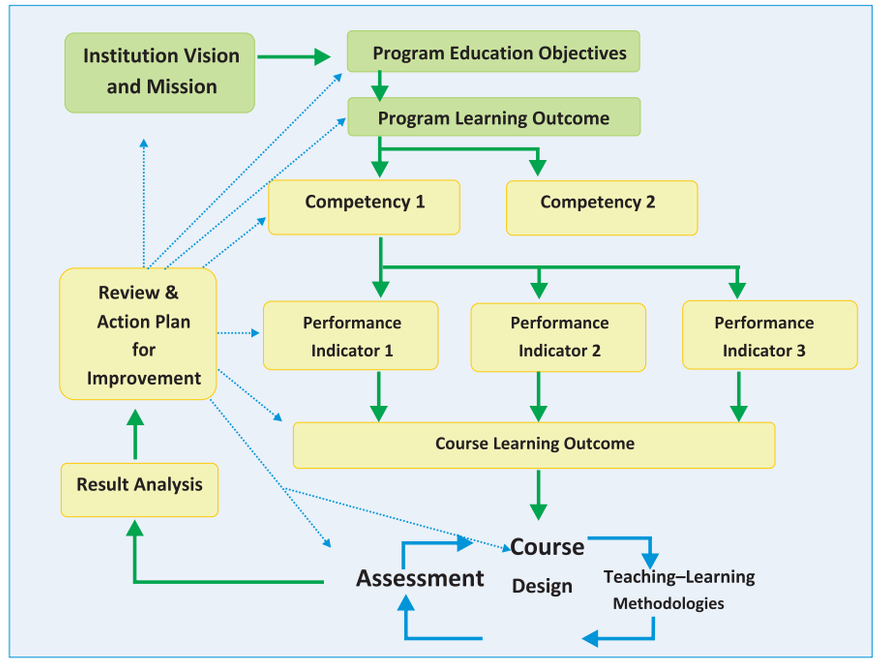

Figure-3 : Vision, Mission and Outcomes

problems and challenges faced by society at global or local levels. A review of the goals and outcomes on a regular basis forms an essential step.

The Learning Performance Pyramid describes an iterative model where the organizational characteristics (goals) drive the organizational objectives and objectives further lead to organizational outcomes.

The first step in developing the Program Education Outcomes is to develop clear Program Education Objectives (PEOs). Program Education Objectives depend upon the goals, mission and vision statements of the institution/organization along with the inputs from all its stakeholders like parents, students, society, environment, regional and national interests as illustrated in Figure-4.

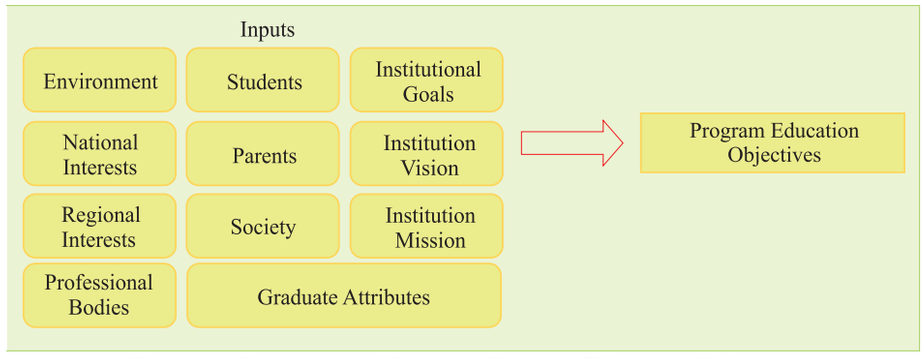

Figure-4 : Organizational Inputs to Program Education Objectives

LOBE is a dynamic and flexible framework, which allows organizations/institutions to design their institutional specific program education objectives to evolve continuously along with the evolution of social systems, ever changing national and regional interests.

Once an institution defines program education objectives, these objectives will lead to the development of Program Learning Outcomes. Program Learning Outcomes lead to the identification of competencies and from competencies one may derive multiple indicators or measurable components to assess competencies objectively.

Program Learning Outcomes also lead to design and development of a curriculum containing multiple courses with specific objectives. Course Learning Outcomes and respective course competencies and its indicators are further derived from course objectives.

A Program Learning Outcome may lead to one or many different competencies and each competency may have one or more measurable components called Indicators/ Performance Indicators. The figure below describes the linkages between Program Learning Outcomes and Competencies and its Indicators.

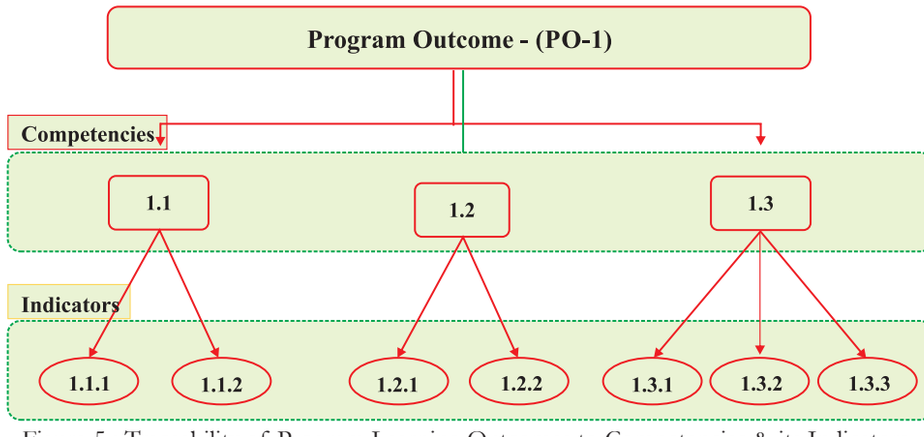

Figure-5 : Traceability of Program Learning Outcomes to Competencies & its Indicators

Competencies describe how to demonstrate the ability to perform a specific activity such as Designing, Synthesizing, Evaluating etc. However it is important to note that not all the competencies identified may be measurable. Hence, it is necessary to define the Competency, Performance Indicators that may represent a specific and measurable characteristic of a competence. An indicative illustration is provided under appendix 2 at 2.6 which mentions Program Learning Outcome, Competencies and associated Performance Indicators for B.Com. /B.A. (Economics)/B. Sc. (Chemistry) programmes.

Applying the systems approach, a Systems Engineering Process Model for L OBE may be designed which not only describes the phases and traceability elements, but also describes the importance of assessments after the course curriculum has been implemented. The process model outlined below is a V-shaped model in which the work flow is from the left, top to bottom, to the right, bottom to top.

Systems Engineering Process Model for LOBE

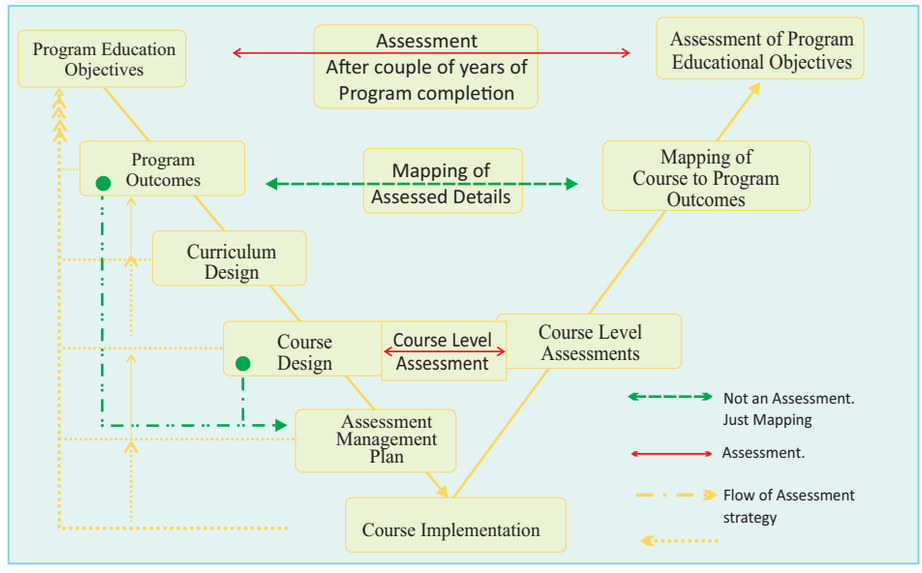

Figure-6: Systems Engineering Process Model for LOBE

In figure 6 above, the left half illustrates different phases as well as set of deliverable work products each of which is traceable to the work product generated from the previous phase; for instance, the traceability of Course Learning Outcomes to Program Learning Outcomes and Program Learning Outcomes to Program Education Objectives. Iteration between phases is necessary for refinement. All deliverables may be verified by an internal program administration committee. The right half of the Process Model details the assessment activities as per the assessment management plan. In the initial phase, assessments are performed at the course level. The assessment results are mapped to the program level and the performance is reported in an appropriate format. In the last phase, assessment is performed over few years after graduation. This assessment is performed based on feedback from students who have graduated from the university, from employers and from stakeholders dependent on the Program Learning Outcomes. The phases in the V-model are described in the following sections.

1.2.1 Program Education Objectives (PEOs)

To encourage and facilitate the adoption of the LOBE model across all disciplines, a list of Generic Program Education objectives has been identified from the higher education policy and mentioned at *Appendix-1*.

Following factors are to be considered while framing the PEOs.

- The PEOs should be consistent with the mission of the institution.
- All the stakeholders should participate in the process of framing PEOs.
- The number of PEOs should be manageable.
- It should be based on the needs of the stakeholders.
- It should be achievable by the programme.
- It should be specific to the programme and not too broad.
- It should not be too narrow and similar to the PLOs.

1.2.2 Program Learning Outcomes (PLOs)

PLOs shall be based on Graduates Attributes (GAs) of the programme. GA is a set of individually assessable outcomes that are indicative of the graduate's potential to acquire competencies in that programme. The GAs are the attributes expected of a graduate from a programme in terms of knowledge, skills, attitude and values. The graduate attributes include capabilities that help to strengthen one's abilities in terms of widening and gaining knowledge and skills, undertaking higher studies, enhancing performance in chosen field and being socially responsive.

Prepared on the basis of the Washington Accord's Program Learning Outcomes, the list mentioned in Appendix-1 is drawn from the program education objectives. A matrix has been outlined under appendix-1 linking Program Learning Outcomes to Program Education Objectives. The Competencies and their Performance Indicators of the Program Learning Outcome need to be developed after which it is important to determine assessment types. A comprehensive assessment strategy may be outlined using the revised Bloom's taxonomy levels (refer illustration at *Appendix-2, 2.1*).

1.2.3 Curriculum Design and Course Development

Next, keeping in view the Program Learning Outcomes, a curriculum must be designed and courses developed. The curriculum must be linked to the program objectives and outcomes and further the course level assessment strategies must be linked to identified program level assessment strategies. *(framework for mapping Program Learning Outcomes to Course Learning Outcomes and the course assessment strategy is provided in Appendix 2 and also under 2.3 of Appendix 2).*

1.2.4 Course Learning Outcomes (CLOs):

These are the outcomes/knowledge which every student is expected to gain at the end of completion of each course (subject). These are listed and based on them the course curriculum is finalized. Course Learning Outcomes are narrower statements that describe what students are expected to know, and be able to do at the end of each course. Course Learning Outcomes should reflect what level of knowledge students gained, skills acquired and attributes developed upon successful completion of the course; CLOs must be measurable, attainable and manageable in number. CLOs should contribute to attain PLOs in such a way that each CLO should address at least one of the PLOs and also each PLO must be reasonably addressed by adequate number of CLOs.

1.2.5 Assessment Management Plan

An assessment management plan should be prepared that details the assessment strategy both for the program and the course levels. In the assessment plan, it is important to identify type of assessment for each course and the timelines. Choosing type of assessment, needs consideration of characteristics learning attributes, its mapping to revised Bloom's taxonomy and assessment rubrics (refer 2.4 under Appendix-2), which gives a clear picture of the right assessment mix for a particular course. Any assessment should be finally implemented using an assessment rubric. The assessment rubric relates to the actual evaluation used for every course and is a tool to interpret and grade students.

1.2.6 Timelining Assessments

Assessments must be continuous to include both formative and summative components in a timely fashion for continuous feedback. An illustration is provided in the figure below:

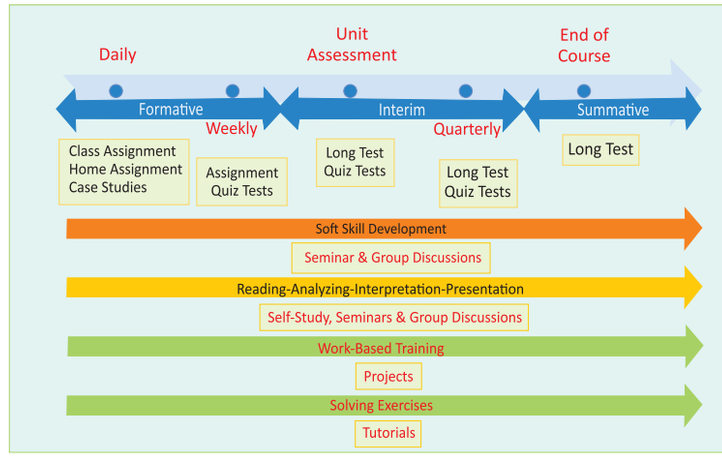

Figure-7 : Continuum of Assessments.

In essence, Programme Learning Outcomes need to be developed with a broad perspective. Achievement of learning outcomes does not solely depend upon one single type of assessment at the end of the term. It is an integration of strong learning culture, identification of competencies, appropriate teaching pedagogy, design of holistic learning experiences and choice of assessment in the form of continuous internal evaluation that is formative in nature. The system of assessment to be adopted needs to be inherently linked to programme/curriculum goals as one can objectively assess student performance by relating assessment type to Program Learning Outcomes and Program Education Objectives. Course Learning Outcomes (CLOs) should also be set for every course of the program and a process may be prepared to measure the attainment of Program Learning Outcomes (PLOs) and Program Educational Objectives (PEOs). Assessment methods and its questions must be mapped to each CLO and every CLO must be mapped to a PLO. Each question of the internal assessment modes as well as the external examination should be linked to the CLO, hence the student performance for each question must be monitored to measure the attainment of CLO.

The assessment tools (internal and external) for each course must be mapped to the revised Bloom's taxonomy action verbs (refer http://thesecondprinciple.com/teaching-essentials/beyond-bloom-cognitive-taxanomy-revised/) to help measure student performance. A detailed process of attainment of Program Education Objectives is mentioned at *appendix 2 under 2.5*.

The goal of learning is in achievement of the programme/curriculum goals and not just focusing on syllabus completion. The programme/curriculum goals, its expectations and achievement of competencies must be clearly understood and explained by teachers to the learners. Based on programme/curriculum/course goals, teachers should:

a) Design appropriate teaching pedagogy,
b) Provide learning material and resources or links to such resources, and
c) Choose right assessment type/s appropriate to each course.

If an HEI can perform a qualitative assessment using the well-defined LOBE framework discussed above, then the HEI will be able to provide a holistic assessment and healthy performance report to the students.

2. Assessment Types

Student understanding must be built on and assessed for a wide range of learning activities, which would include different approaches and are classified along several bases such as :

Based on Purpose: Assessment types include i) Summative (evaluation of students learning at end of instructional unit) and ii) Formative (informal and formal tests administered during the learning process).

Based on Nature of Data : i) Quantitative evaluation is mainly concerned with scholastic achievement in subject-based performance whereas ii) Qualitative is chiefly about evaluating the non-scholastic and probably more important, aspects of the student's personality involving social, emotional, attitudinal and moral/ethical assessment.

Based on Domain: Assessment types include i) Scholastic achievement (assessment of curriculum related classroom teaching and learning) and ii) non-scholastic achievement (assessment of students behavior, values attitude, emotional stability during co-curricular activities and other structured or unstructured situations inside or outside the classroom).

Based on Measuring Standard: i) Criterion-referenced (uses test score to generate a statement about the behaviour that can be expected of a person with that score), ii) Norm-referenced (Standardized) (whether test takers performed better or not than a hypothetical average student) and iii) Self-referenced (Ipsative) Evaluation (assessment of a person's performance is compared with their own earlier performance to identify improvements, if any).

A further classification is based on *direct* and *indirect* measurement of learning. A direct method which is based on a sample of actual student work, including reports, exams, demonstrations, performances, and completed works, requires students to produce work so that teacher can assess how well students meet expectations. An indirect method is based upon a report of perceived student learning. These include surveys, exit interviews, and focus groups.

The assessment must be designed with learner attributes in mind. These attributes, which have clear linkages to Program Education Objectives and Outcomes, stem from the taxonomy. A critical overview of Assessment Types along with learner attributes is given in *Appendix-3*.

A wide range of assessment types for evaluating students is available for the teachers/ institutions to use. Each assessment type has its distinct utility, advantages and limitations. A suitable compendium of such types needs to be carefully chosen for a particular program depending on its nature, objectives and available resources. An overview of some of the significant tools alongwith their advantages and limitations is presented below :

	Written Mode		**Oral Mode**		**Practical Mode**	**Integrated Mode**	
1.	Exams	1.	Viva/ Oral exam	1.	Lab work	1.	Paper
2.	Class Tests	2.	Group discussion /	2.	Computer		Presentations /
3.	Open Book Exams /		Fishbowl technique		simulations /		Seminars
	Tests	3.	Role play		Virtual Labs	2.	SWOC Analysis
4.	Open Notes Exams /	4.	Authentic Problem	3.	Craft work	3.	Authentic
	Tests /CA		Solving	4.	Co-Curriculars		Problem
5.	Self-Test/Online Test	5.	WSQ (Watch	5.	Work Experience		solving

	Written Mode		Oral Mode		Practical Mode	Integrated Mode	
6.	Essay/Article Writing		Summarise question)			4.	Field
7.	Quizzes/ Objective	6.	One Question Quiz				Assignments
	Tests	7.	End of the class quiz			5.	Poster
8.	Class Assignment	8.	Think-Pair-Share				Presentations
9.	Home Assignment	9.	Socratic Seminar			6.	Portfolios
10.	Annotated	10.	Rapid Fire Questions				
	Bibliographies	11.	KWL (Know – Want				
11.	Reports		To Know – Learned)				
12.	Portfolios						
13.	Dissertations						
14.	Book Review						
15.	Article Review						
16.	Journal Writing						
17.	Case Studies						

Written Mode

Assessment Type	Examinations
Nature	Traditionally essay type, time- constrained, external exams
Advantage	Relatively economical; No chance of plagiarism; Familiarity to students and staff; Fixed date forces students to learn; Chance for in depth & planned preparation; Provides overview of attainment in the entire course.
Limitations	Tests memory most of the times more than higher level thinking; No feedback to students as the course is over by exam time; Can encourage surface learning; Sampling of content not comprehensive; Element of chance; 'Halo effect': the level of the long answer just marked can change expectations of the next answer; External examiners may not do their job sincerely as there is no accountability to students.
Suggested Frequency	Term-end, (preferably semester- end not annual)
Suggested Usage	Include all types of questions-essay, short answer, objective; Design to test all levels of cognitive domain; Exam Blue Print be prepared to ensure inclusion of all types & levels of questions and proper sampling of content; Rubrics (with detailed indicators of level-wise performance) & Model Answers for marking essay type ques. for minimizing subjectivity; Marking Criteria made known to students; Answer copies should be code numbered; Examiners with good track record from well-rated universities be selected; Provision for improvement of scores & make up in cases of established emergency.

Assessment Type	Class Tests
Nature	Traditionally essay type, time- constrained, internal exams
Advantage	Relatively economical; Less chance of plagiarism; Familiarity to students and staff; Fixed date forces students to learn; Chance for in depth & planned preparation
Limitations	Tests memory more than higher level thinking; Delayed feedback to students as correction needs time; Can encourage surface learning; Sampling of content not comprehensive; Element of chance; 'Halo effect'
Suggested Frequency	2-3 times in a semester including make-up test

Assessment Type	Class Tests
Suggested Usage	Include all types of questions-essay, short answer, objective; Design to test all levels of cognitive domain; Exam Blue Print be prepared to ensure inclusion of all types & levels of questions and proper sampling of content; Rubrics (with detailed indicators of level-wise performance) & Model Answers for marking essay type ques. for minimizing subjectivity; Marking Criteria made known to students; Teacher should provide written feedback selectively and discuss answers in the class; Only Role/Code numbers , not names be written to avoid bias in marking; Display of model answer copies.

Assessment Type	Open Book Exams / Tests
Nature	Students allowed to get books of their choice for reference
Advantage	Less stress on memory; Slower writers not penalized; Measures what students can do with resources not just what they can remember
Limitations	Not everyone might have access to same quality book(s); Difficult to run in teaching rooms as more desk space is required
Suggested Frequency	One of the class tests or some class assignments (say 30%) could be of this type
Suggested	Questions be based not simply on retrieval of information but creative
Usage	synthesizing, critically assessing and organizing it too; Students be trained in reference reading; Consultation of several text books be encouraged during teaching; Library should have good stock of books; Book Banks can be maintained.

Assessment Type	Open Notes Exams /Tests /CA
Advantage	Helps encourage good note taking;
Limitations	Students need to get used to the system; Bad note taking penalized; Can discourage use of memory; Needs larger desk space
Suggested Frequency	One of the class tests or some class assignments could be of this type & even combined with Open Book Test
Suggested Usage	Note making techniques be taught to students; Not just direct questions from notes, but application analysis and synthesis of that knowledge.

Assessment Type	Self-Test (Online or Conventional)
Nature	For all types of subjective & objective items
Advantage	Flexible timing (according to need & readiness of learner); Self/Automated checking; No bias or subjectivity; No fear of ridicule; Mastery learning occurs if proper feedback and follow up is embedded
Limitations	Less motivated students may not opt for it unless mandatory
Suggested Frequency	Available at all times for self- improvement
Suggested Usage	Available for a specified duration (if course requirement) or at all times (if for self-improvement); Topic-wise questions could be uploaded on MOOCs/LMS. Test could be auto generated according to need; Could be compulsory or optional.

Assessment Type	Article/ Essay Writing
Nature	Individual long, written assignment
Advantage	Scope for individual expression & creativity; Can show depth of learning; omprehensive test of written communication; Examine students' ability to form coherent arguments; Can show breadth of student knowledge and understanding; Plagiarism can be difficult to detect; Useful later for students' research activities and develop critical skills for students to a wide range of material.
Limitations	Some students may not be able to show their abilities in the essay format due to not having been well trained in essay writing; Very time consuming
	to mark objectively; 'Halo effect': the level of the essay just marked can change expectations of the essay about to be marked; Essays are time consuming to write and so cannot test all of the syllabus; Students can be rewarded for simply regurgitating 'all they know' on a topic; grading can vary from marker to marker so grades can be subjective
Suggested Frequency	One per course per semester
Suggested Usage	Topics be well selected to test critical, reflective thinking, and extended reading; Rubrics for marking be developed & shared with students; Variety of topics for same and different learner levels be prepared; Students must be first oriented to essay writing skills according to UG/PG level.

Assessment Type	Quizzes/ Objective Tests / Recognition Type (such as MCQs; True or False; Matching; Classifying) /Recall Type -Filling Blanks; One word / Phrase Answers
Nature	Structured Tests; short duration
Advantage	Can be very reliable; Excellent validity as greater syllabus coverage; Can show how fast students think; Can be carried out quickly; Requires less effort in correction; Can be used to test interpretation and decision skills
Limitations	Students may be guessing; Takes skill to design good questions - especially questions to test high level learning outcomes; Needs careful planning to ensure the answer choices are clear; Risk of hacking; Risk of impersonators; Not always available to students with certain disabilities
Suggested Frequency	4 per semester including 1 Makeup & 1 Surprise Quiz; Also valuable as "End of the class quiz"
Suggested Usage	Teachers be trained in construction, advantages, disadvantages and precautions while preparing different types of objective items; Balance between recognition and recall types; Go beyond factual information to HOT Skills.

Assessment Type	Annotated Bibliographies
Nature	Individual or group assignment
Advantage	Good test of students' abilities to scan and evaluate literature; Can stimulate higher order thinking skills as students review; stimulates group work and discussion; Good preparatory skill for research
Limitations	The material for review may not be available to the student; The range of material may vary in relevance and degree of difficulty
Suggested Frequency	Once in a semester in 1- 2 courses
Suggested Usage	Topics should be based on students' interests and course requirements; Referencing skills be first taught to students.

Assessment Type	Reports
Nature	Of activity performed or event observed
Advantage	Develop a key transferable skill; Reports can involve a wide range of skills that are otherwise hard to directly assess
Limitations	Can be very time consuming for students; Using the same format and structure for a range of reports may decrease their effectiveness
Suggested Frequency	1 per Semester(mostly in practical courses)
Suggested Usage	Important to first teach report writing requirements and process.

Assessment Type	Portfolios
Nature	Usually in practical courses to display an overview of the sessional work or some creative endeavour
Advantage	Can contain evidence of a wide range of skills and attributes; Can be very effective in combination with a quick viva exam; portfolios can demonstrate progress in learning; Portfolios can reflect students' attitudes and individual strengths
Limitations	Looking through portfolios can be time consuming; Hard to mark objectively; Authenticity of evidence can sometimes be questioned
Suggested Frequency	1 per Semester
Suggested Usage	Can be of various formats; Course instructor should specify some basic requirements for objectivity in assessment.

Assessment Type	Dissertations
Nature	Detailed research based report
Advantage	Individual work, allowing a student to demonstrate their understanding, creativity and research skills
Limitations	Assessment takes a long time; Subjectivity may creep in; Issues of structure and style may overshadow assessment of the work
Suggested Frequency	1 per semester or year depending on the program level & credits (UG/PG)
Suggested Usage	Should be assessed periodically as the work progresses; Assessment should include presentation followed by discussion & constructive suggestions before a panel and others interested; External exam may be in the form of a viva or presentation.

Assessment Type	a) Book Review b)Article Review, portal reviews etc
Nature	a) PG level b) UG / PG levels
Advantage	Requires interpretation and evaluation; Opportunity to understand how experts proceed; individual work allowing a student to demonstrate their understanding
Limitations	Students need to be taught how to review; Difficult to find appropriate articles Once in a semester in 1-2 courses
Suggested Frequency	Topics should be based on students' interests and usefulness; Students
Suggested Usage	should be first exposed to good reviews and the basic requirements.

Assessment Type	Self –Status Assessment Tools KWL (Know – Want to Know – Learned); Reflective Journals
Nature	KWL are simple formats to be filled up by students before the lesson (KW) and after it (L); Reflective journals are maintained as dairies to fill up Ones experience after each class or lesson
Advantage	Help the learner and teacher assess the learning resulting from every lesson; Help develop Meta- cognitive and HOT skills among students; Help the teacher to discover the hidden and individualized aspects of the lessons
Limitations	Time consuming and difficult to collect and collate the students writings in every class
Suggested Frequency	Every Day/ Every lesson/ every week
Suggested Usage	KWL could be carried out as team work to reduce compilation; Journal writings could be utilized for keeping cumulative records of students and "ipsative" assessment.

Assessment Type	Case Studies
Nature	Students analyse a given case (real or fictional) and come to solutions regarding some given issues or questions
Advantage	Valuable technique for assessing Higher order thinking , Values & Attitudes; Promoting creative and innovative solutions; Can develop team values if attempted in a group
Limitations	Difficult to frame or find case studies for assessing the whole range of cognitive, affective and social skills
Suggested Frequency	As part of Regular tests/exams or Assignments
Suggested Usage	Sometimes Students may be asked to get cases for relevant skills on which they may be assessed as well.

Oral Mode

Assessment Type	Viva/ Oral exam
Nature	Conducted individually or in small group; usually accompanying practical test
Advantage	High degree of authenticity; Good for isolating areas or skills; Good practical experience towards later interview situations
Limitations	Not all candidates perform well in viva; The use of the same questions may lead to later candidates being prepared for the questions; Questions can get tougher as the day goes; Can only deal with a narrow range of skills; Exams are not anonymous
Suggested Frequency	2-3 times / semester with 1 make-up & 1 term end in certain Courses
Suggested Usage	For PG level can be conducted by a panel of experts; Marking criteria should be known to evaluators and students.

Assessment Type	Group Tasks Group Discussion/ Fishbowl Technique / Role Play / Authentic Problem Solving
Nature	Small groups of 2-5; Members work on a joint task
Advantage	Communication of ideas; Encourages team work (collaboration and co- operation); Opportunity for authentic skill development; Opportunity to develop & assess multiple personality domains- cognitive, affective (values, attitudes, etc.) Social, psychomotor ; Assess higher order thinking skill

Assessment Type	Group Tasks Group Discussion/ Fishbowl Technique / Role Play / Authentic Problem Solving
Limitations	Difficult to assess individual input; Time consuming for students to organize; Some students might overshadow others; others might be a pull- back
Suggested Frequency	Once every semester with one make up and one term-end in certain courses
Suggested Usage	Groups formed must be roughly equivalent; Problems assigned should be equivalent; Each team member must have a specific role; Rubrics for marking must be mutually decided including all domains of education

Assessment Type	Rapid Fire Questions
Nature	Questions on a topic asked very quickly and also answered very fast
Advantage	Good practice and evaluation of students' level of understanding; Raises the level of cognitive challenge
Limitations	Shy students may not freely participate; May be difficult to assess on the spot
Suggested Frequency	May be embedded in classroom teaching as required
Suggested Usage	Students should be told the criteria of a good question; May be assessed by two evaluators for greater objectivity; May be recorded for closer assessment.

Assessment Type	Other Lesson- embedded Techniques WSQ (Watch- Summarise- question)/ One Question Quiz / Think-Pair- Share/ Socratic
Nature	These are interspersed within a regular lesson to provide formative feedback
Advantage	Excellent for formative assessment; Cumulative output can be used for grading purposes as well; Make students alert and active in the class
Limitations	Require additional class time
Suggested Frequency	Every lesson as per need

Integrated Mode

Assessment Type	Field Assignments
Nature	Field visit with report
Advantage	Authentic form of assessment; Develops observation and recording skills; Requires organisation skill
Limitations	Costly to supervise; Difficult to timetable; Need to consider ethical and safety issues
Suggested Frequency	Once in a Semester
Suggested Usage	Students must be exposed to note taking and report writing skills; If visiting different sites reports may be presented in class for sharing of experiences & learning

Assessment Type	Seminar/Paper Presentations
Nature	Group or individual work depending on class strength
Advantage	No doubt regarding authenticity of presenter; Students take presentations seriously; Can be used for individual or group work; Questions and answer sessions as follow ups can help develop important skills; Students learn from their own and everyone else's presentations; Opportunities of peer feedback

Assessment Type	Seminar/Paper Presentations
Limitations	Can be time consuming (especially in a large group); Unfamiliarity of our students with giving presentations; Appeals regarding grading of presentations can be hard to deal with; Presentations cannot be anonymous; Students with some disabilities may find presentations difficult
Suggested Frequency	1 per semester in all major courses
Suggested Usage	Students must be oriented in seminar writing, presentation & questioning skills; It must be mandatory for all students to participate in questioning and discussion; Marking criteria should be specified for all components, e.g. presentation, discussion, questioning, written paper, etc.

Assessment Type	Poster Presentations
Advantage	Add visual dimension to assessment tools; Peer to peer/teacher interaction; Students can learn from each other's posters; Develop research, creativity and discussion skills
Limitations	There could be possibility of subjectivity in grading
Suggested Frequency	Once in a Semester
Suggested Usage	Students should be exposed to various formats of posters; Display should be accompanied by discussion; Grading criteria must be known to students and teachers

Practical Mode

Assessment Type	Lab work, Computer simulations/Virtual Labs, Craft work, Work Experience
Nature	All the tasks involve a major component of working with one's hands. Used as a complement to theory
Advantage	Keeps students 'on the task'; Formative in nature as there are opportunities for students and teachers for on the spot feedback; Provide opportunities for "Process Assessment"; Encourage application, translation and interpretation of concepts learnt
Limitations	Require careful planning and supervision
Suggested Frequency	Formatively in the class itself; Along with regular tests and exams (monthly, end-semester)
Suggested Usage	Must be preceded by adequate demos and practice; Grading criteria must be known to students and teachers.

3. Assessment Rubrics

3.1 Introduction

A rubric for assessment, also called a scoring guide, is a tool used to interpret and grade students' on any kind of work against criteria and standards.

An assessment rubric provides the means to increase objectivity in assessment and reduce subjectivity; presents a clear expectation on the assessments, and relates it to learning outcomes; ensures consistency, transparency and fairness in the marking process across course instructors for the same assessment type; efficiently grades or marks many assessments for a large group of students; defines clear guidelines for moderation; and provides more objective data for analytics.

3.2 Structure of a Rubric

Usually in the form of a grid, a grading/ marking/ scoring rubric combines the elements of performance, criteria and descriptors to create an assessment tool for the course instructor

Rubric title			
Criteria	***Level of Performance***		
	Scrore 1	Score 2	Score 3
Criterion 1			
Criterion 2		***Descriptiors***	
Criterion 3			

The assessment criteria define the characteristics or traits to be judged which should be derived from the course learning outcomes and indicate what is expected to be demonstrated.

Level of performance is the rating or measure on the degree of achievement on a particular criterion as specified by the rubric, i.e. excellent/good/satisfactory/poor etc.

Descriptors identify the qualities required to demonstrate achievement of each level of performance for each criterion. Listed in the form of short explanations, they provide guidance on the actual judgement on the assessment to match students' performance.

An illustration below provides a few criteria, levels of performance and descriptors

Criteria	**Performance (Marks)**		
	5	**3**	**1**
Content	The material presented was complete , precise and well supported by facts and figures	The material presented was partially complete and was off-topic at some places	The material presented was incomplete and largely off-topic
Knowledge & Understanding	Seminar demonstrated thorough knowledge and applicability of facts, terms and concepts	Seminar demonstrated moderate knowledge and applicability of facts, terms and concepts	Seminar demonstrated limited knowledge and applicability of facts, terms and concepts
Discussion	The student actively participated in the discussion and was able to give a convincing reply to questions	The student had a moderate participation in the discussion and was able to give a convincing reply to some questions	The student did not participate in the discussion and was not able to give a convincing reply to most questions

Figure-8 : Seminar Presentation Rubric

3.3 Types of Assessment Rubrics

Holistic Rubric : assumes that the work must be evaluated as a whole rather being treated as a sum total of different criteria. The focus is on overall assessment of a specific content or skills. Only one score is given for the entire work/task. It is generally useful for simple tasks. For instance, a short essay may be graded by considering all the criteria together.

Analytic Rubric : features a grid of criteria and levels of achievement. They provide specific feedback along several criteria. It is suited for tasks that must be assessed against several criteria.

3.4 Developing a Rubric

The steps to be followed are:

- Identify learning outcomes for the assessment
- Decide on criteria based on learning outcomes, i.e., the characteristics on which to judge student's performance.
- Select levels of performance i.e. an appropriate scoring method must be chosen depending on the nature of the assessment and chosen scale.
- Write descriptors, i.e., describe the expected achievement on each characteristic for each level of performance. The descriptions should be specific, clear and consistent.
- The rubric should be tested on a sample of student's assessments before implementation.

4. External and Continuous Internal Assessment Modes

4.1 Current Examination System

Current examination systems traditionally rely on external University examinations which have remained unchanged for several decades now. The ability of a student is decided by the end of the term (semester/annual) examination; hence scoring more marks in this final examination is the only aim of the student. The existing system does exert undue stress on the students as they have to score higher to pursue a job or higher education career. However, we are witnessing the fact that some higher educational institutions conduct their own tests to choose students thus showing little faith on the marks obtained from such final examinations. This situation also questions the reliability of the so called final examinations. In addition, society in India has their expectations from students who appear for final examinations of current coveted degrees. If a student scores high marks, they are adored, on the other hand if a student fails to score high marks, they are labeled as low performers or are looked down upon. Truth is that students who are able to secure a job have to perform well by and improvising their job/practical/application skills and acumen. Focus on mere academic scores will definitely not improvise such practical skills.

Designing assessment systems solely based on recall of information will not help in the current scenario; rather focus needs to be on active participation of learners. It is important to emphasize that memorization should be discouraged. Improvement in a system is possible only when the right blend of internal and external evaluation is done. Though harder to evaluate, assessment modes should bring out abilities of students in terms of being creative, original and add new knowledge and as such, modes of assessment have to be more self-regulatory.

Teaching pedagogy that embodies and emphasizes on internal assessment modes can empower both teachers and students to perform to full potential and ability. Apart from other skills, focus on building critical thinking, problem solving approach and project based learning is of immense importance. These will assist in transformation of the teaching learning process.

4.2 Models of Assessment

Based on the types of assessment and triangulation of assessments, various models of implementation are suggested for both theory as well as practical courses. All the models focus on continuous assessments, mixing types, so that an ongoing feedback is obtained for both the teacher and the student. It is possible to administer many of one type of assessment at regular intervals or choose the best out of the many. This will encourage a student to improve on skills and performance.

Model 1 (for Theory Course)			**Model 2 (for Theory Course)**	
Internal- 70% (140 marks), External- 30%(60 marks)			Internal- 70% (140 marks), External- 30%(60 marks)	
Internal Assessment Modes			Internal Assessment Modes	
Class test (best 2 out of 3)	2 x 35marks		Class test + Daily Home Assignment 1 (best 2 out of the 3)	2 x 35marks
Quiz (best 3 out of 4)	3 x 10 marks		Daily Home (compulsory) Assignment 2	40 marks
S & GD Learning / Active	10 marks		S & GD / Tutorial/Active Learning/Additional Assignment	20 marks
Home Assignment	10 marks		Attendance	10 marks
Class Assignment	10 marks		External (End of semester)	60 marks
Attendance	10 marks			
External (End of semester)	60 marks			

Model 3 (for Theory Course)	
Internal- 70% (140 marks), External- 30%(60 marks)	
Internal Assessment Modes	
Weekly Home Assignments	40 marks
Class tests	2 x 35marks
Quiz/S & GD / Tutorial/Active Learning/Additional Assignment	20 marks
Attendance	10 marks
External (End of semester)	60 marks

Model 4 (for Theory Course)	
Internal- 70% (140 marks), External- 30%(60 marks)	
Internal Assessment Modes	
Weekly Home Assignments	30 marks
Review of Bibliography/ essay/Poster presentation	2 x 10marks
Class test	2 x 30 marks
Quiz/S & GD / Tutorial/Active Learning/Additional Assignment	20 marks
Attendance	10 marks
External (End of semester)	60 marks

Model for Practical Course	
Internal- 70% (140 marks), External- 30%(60 marks)	
Internal Assessment Modes	
Lab work assessment (best 2 out of 3)	2 x 25 marks
Viva Voce / Lab Quiz (best 2 out of 3)	2 x 40 marks
Attendance	10 marks
End of course Long practical test and viva	60 marks

Model for Project / Self Study Assessment	
Internal- 70% (140 marks), External- 30%(60 marks)	
Internal Assessment Modes	
Project Assessment (best 3 out of 4)	3 x 40 marks
Participation in discussion	10 marks
Attendance	10 marks
External (End of semester)	60 marks

Model for Work Experience Course Assessment	
Internal- 100% (200 marks)	
Objective test (best 2 out of 3)	2 x 25 marks
Practical cum Viva Voce (best 2 out of 3)	2 x 40 marks
Comprehensive (open assessment multiple types)	50 marks
Attendance	20 marks

4.3 Some Guidelines for Internal Assessment

In order to assess the skills, values and knowledge gained by the student, the concerned faculty member has to conduct internal assessment. The internal assessment may comprise of the following :

i. All the undergraduate, postgraduate, M.Phil. and Ph.D. programmes offered by the University are to have specified components for internal evaluation. For example, Essays, Tutorials, Home Assignments, Seminars, Presentations, Laboratory Work, Unit Tests, Workshop, Project based learning, peer reviews, quizzes, other elements of participatory learning may be used.

ii. The schedule and pattern of continuous assessment/evaluation should be decided by the concerned institution in advance and publicized to all students and faculty through the institutional regulations and the student's information brochure. The components of internal assessment/evaluation are to have a time frame for completion by students with concurrent and continuous evaluation of faculty members. Following the principle of "those who teach should evaluate", the continuous internal assessment/evaluation have to be conducted by the teacher and the evaluation outcome should be expressed by pre-determined marks or by grades. Tests that are prepared by teachers and conducted during academic teaching are considered of high value as opposed to the end of term tests that are more threatening in nature. However, teachers have to include elements of self-assessment or peer-assessment during construction of such tests.

iii. In order to ensure transparency, fair-play and accountability, the evaluation report submitted by al the faculty members are to be reviewed from time to time by a committee of the institution constituted by the appropriate authority.

iv. The outcome of the internal evaluation reviewed by the committee is to be announced and displayed on the notice board as per the time frame of the academic calendar.

v. The proportion of Internal evaluation (IE) to External Evaluation (EE) should be specified for UG (30:70) and for PG (40:60). The proportion of IE can be low to start with . It can be raised progressively in a phased manner to 50% depending on the outcome of the experience. Though this may be accepted in principle, putting it into practice needs issues to be addressed and weeded out.

However, care has to be taken that schemes of internal assessment should not adhere to a standard system or mode or type. Relevant types of internal assessment have to be developed suiting the needs and requirement of each specific subject. There is no one size that fits all. Teachers need continued support and training through workshops to successfully implement such internal assessment schemes otherwise an improper handling will lead to perception by students doubting its integrity and impartiality.

5. Credit System and Grading

5.1 Introduction

The UGC had issued guidelines to all Universities in 2015 for implementation of the choice based credit system with a view to offer students choice of courses within a programme with a flexibility to complete the programme by earning credits at a pace decided by the students themselves. The system allowed students to choose inter-disciplinary, intra-disciplinary courses according to their learning needs, interest and aptitude. It was considered as a cafeteria approach and was expected to provide mobility to students.

Current credit system practiced in institutions needs comprehensive reforms as they offer very little flexibility, choice and are less learner-centric. Degrees offered today are more self-contained focusing on a specialization area and depend a lot on knowledge available with the faculty from the department only. Though the most requisite credit system does exist, wherein students are given a wide choice and flexibility, these exist as small islands in the vast ocean of thousands of educational institutes in India. In such institutions, the curriculum is frequently designed which is learner centric and offering a wide specialization area for students to pick and choose courses from.

The institutions shall make attempts wherein the design of the credit system and the teaching and evaluation modes shall be the responsibility of individual course teachers. The students should have the freedom to opt for courses from other specializations and not just from their core specialization. For this there has to be stronger collaborations between departments of the University and outside.

5.2 Grading system

Most institutions follow the absolute grading system which is a simple procedure wherein the marks obtained by students correspond to a specific grade and grade point. It reflects the individual performance in a particular subject without any reference to the group/class. The absolute grading system has limitations and may be susceptible to some inconsistencies.

The relative grading system on the other hand provides relative performance of a student to a group/class wherein the student is ranked in a group/class on basis of relative level of achievement. In this system decisions are made in advance by the faculty members as to what proportion of students would be awarded a particular grade on the basis of their relative performance and which is done by assigning grades on basis of a normal curve. This facilitates comparative performance and eliminates negative effect of pass or fail.

Relative grading system may be used if the number of students registered for the course is at least 30. For a class of smaller size, an absolute grading scheme may be used. The statistical method may be used with adjustments to calculate the mean (M), median (Md) and standard deviation (SD) of the total marks (TM) obtained by the students registered for the course. If the mean and median coincide, the mean may be used for further computations, otherwise the median may be used. If suppose the mean is used, then the letter grades may be awarded based on the ranges specified in table below:

Ranges for Relative Grading

Letter Grade	Range
A	TM ≥ M+1.75 SD
A-	M+1.25 SD ≤ TM < M+1.75 SD
B	M+0.75 SD ≤ TM < M+1.25 SD

Letter Grade	Range
B-	M+0.25 SD ≤ TM < M+0.75 SD
C	M-0.25 SD ≤ TM < M-0.25 SD
C-	M-0.75 SD ≤ TM < M-0.25 SD
D	M-1.25 SD ≤ TM < M-0.75 SD
D-	M-1.75 SD ≤ TM < M-1.25 SD
E	M-2.0 SD ≤ TM < M-1.75 SD
E-	M-2.25 SD ≤ TM < M-2.0 SD
F	M-2.25 SD > TM

Letter grades may be improved based on the following scheme: Use the table above to determine grade boundaries. Look for natural gaps in the neighborhood of grade boundaries. Choose the largest gap in the neighborhood and make this as the grade boundary.

An 'E', 'E-' and 'F' grade may not be a purely relative grade. These may be assigned on the following basis:

- A minimum, say 30/100, may be set as pass marks for the course. A fail grade may then be awarded only if the Total Marks for the course are less than 30. Otherwise the students may be awarded the Just Pass Grade D-.
- A fail grade may be awarded to students whose marks are below the prescribed minimum even if the table above leads to a pass grade.

Similarly, a lower limit may be set for the A grade also, for instance greater than or equal to 86. Students not achieving the prescribed minimum may be awarded a lower letter grade even if the table above indicates otherwise. A pass grade may be made mandatory for both internal as well as external examinations In the case of a separate internal and external assessment,

a. Internal and External marks may be summed up with appropriate weightages to compute a total out of 100 marks. The letter grade may be assigned on this computed total.

b. Internal and external marks may be graded separately and then the assigned grade points may be used, with appropriate weightages, to compute a final grade point and letter grade.

Grading in the case of Re-evaluations, Retests and Remedial Examinations may be based on the following guidelines:

a. The ranges of marks once computed for awarding letter grades the first time, called the First Distribution (FD), will not be modified.

b. If a re-evaluation leads to a change in marks, then FD will be used to award an appropriate letter grade.

c. A retest may be permitted if

   i. A student gets a letter grade of E or E-. In this case, irrespective of the marks obtained, at most D grade may be awarded.

   ii. A student is unable to complete course requirements because of certified illness or tragedy. In this case FD will be used to award an appropriate letter grade.

The use of relative grading system may be recommended in autonomous institutions, institutes of national importance and institutions with high ranking. The results of the relative grading system may be shared by such institutions later with other interested institutions to implement the same.

5.3 Credit Transfer Policy

Facilitation of credit transfers is a must to support the continuation of learning and should enable the students to gain the qualification in minimal time provided they meet all minimum standards and requirements. Credit transfers should also facilitate mobility of students among institutions.

Students who have completed course-work, at least first year, at some university other than the university to which transfer is sought (may request for transfer of admission to this university. A student may be granted admission only through an admission process that will follow the same policy as for fresh admissions. However, a uniform credit system must be followed by all universities to effect transfer of credits.

Credit Transfer request can be submitted only after the student has been admitted in the concerned program and the following conditions are met:

i. The course work has been completed at a UGC approved and accredited University through fulltime formal learning mode.
ii. The university accreditation grade/ ranking is not lower than that of the university to which the transfer is sought.
iii. The courses prescribe to the common minimum syllabus under UGC CBCS system.
iv. The letter grade obtained in the courses is "B" or better.
v. The number of credits to be transferred does not exceed the prescribed limit.
vi. The program in question must have a similar credit system, in particular, modular or semester and the same numeric and letter grading system along with common meaning of the term "credit" in numerical terms.

The aspect of shelf life of courses needs to be taken into account while accepting credits as obsolescence of knowledge of certain field in terms of its current relevance needs to be looked into. The time lapsed between successful completion of certain courses of the program and the admission to which program transfer is sought needs to be considered. The maximum number of credit points that may be considered under a credit transfer needs to be specified. Contextual variables such as teaching-learning approach adopted, learning facilities offered, use of evaluation modes may also be considered while preparing the credit transfer policy.

A comprehensive policy on credit transfers will have to be framed by each university.

6. Question Bank

6.1 Need of Question Bank

Teaching and evaluation complement each other, hence changes are not only required of the evaluation aspect, rather changes need to be effected both in teaching and evaluation. Question banks, thus is an attempt to integrate both teaching and evaluation. Preparation of question bank makes use of accumulated experience of teachers which renders effective examining of students.

The need for setting of question paper through the question bank system is felt due to an increasing number of students enrolling for higher education programmes thus increasing the load which the existing pattern of examining must bear; curriculum revisions; inter-disciplinary nature of subjects due to integration of course contents from diverse courses; and need for increasing involvement of teachers in the evaluation process. Consequently, there is a constant need for development of standards and quality of examination along with demand for fair and just evaluation process.

The question papers that are set using the traditional paper setting procedure by calling experts may lead to repetition of questions and that they just test information recall, whereas, there is a need to test analytical skills of students. Question banks lead to setting of better quality questions that are valid and appropriate to test the abilities desired of students.

Setting of Question Papers through the Question Bank System is a much needed reform in the examination system. It reduces administrative mechanisms for conduct of paper setting process. A pool of experts of the concerned subject shall be contributors to an exhaustive question bank. The question bank system provides a platform for a wider participation of academicians with active collaboration in setting questions based on revised Blooms taxonomy. The involvement of many experts from different institutions will lead to setting of paper of good quality as teachers with known expertise on a particular unit/module can set questions only on the said topic/module. Well-developed question banks, as a matter of fact lead to and influence curriculum development.

To be effective, it is necessary that the question bank must have a large number of questions of a particular course. With the use of ICT based system the question paper sets can be drawn within minutes. However the system requires an approved standard format/pattern of the question paper.

6.2 Important Considerations

The question bank system should also take into consideration the following:

a) That questions are drawn from each unit of the syllabus

b) That the questions drawn meet the Programme Objectives and Outcomes of the course

c) Questions should span all difficulty levels and each question be marked with its difficulty level

d) Should include questions of every type as per Section such as Long Answer, Short Answer and Very Short Answer Questions must specify the expected length and suggested time for completion. Objective items must include Recognition Type and Supply Type of items. The probability of making blind guesses should be reduced.

e) Answer key should be provided

f) Each question may be appended with suitable codes to indicate the learning outcome mapped to, the topic in the syllabus that it examines, the difficulty level and the discrimination ability.

Institutions are advised to conduct workshops to be attended by subject matter experts who shall pool their expertise to generate questions. Question banks that are prepared should be subject to proof reading of text by forming an appropriate committee. Procedure for regular (yearly) revision of the question bank must be undertaken to increase its validity. About 20 % of the questions must be changed every year either to keep pace with changes in domain areas or due to syllabus revisions. Faculty members have to be trained in preparation of question banks.

6.3 Procedure

The following procedure may be adopted to develop a question bank:

- Specifying Objectives/ Learning Outcomes to be tested. It should cover the entire hierarchy of learning objectives as specified by Bloom and Anderson.
- Deciding the question format
- Writing or pooling of questions by panel of experts
- Review of questions
- Sample group testing/ pilot test
- Assessment of difficulty and discrimination ability of the questions
- Final Selection of questions for the question Bank

7. Moderation

Moderation of assessment is an organized procedure which ensures use of valid assessment material and consistent application of criteria, to provide fair academic judgment and reliable outcome in the form of marks or grades. It assures appropriate designing and implementation of assessment activities along with generation of valid and reliable results.

Integration of moderation process with assessment system is imperative for the development of academic quality in higher educational institutions as :

- It addresses any difference in individual judgments of different evaluators.
- It ensures that all achievements in the form of marks and grades across courses reflect achievement of same level of standard.
- It is also carried out to develop a common understanding of the standards and criteria and to recognize performance which demonstrates that standard or fulfils that criteria.

Moderation may be conducted in case there are large number of fail grades or high grades, or when large numbers of students who have received the same grade or clustering of students on letter grades, or when there are discrepancies between grades allocated to individual students in different courses, or to find out the difficulty level of the question paper or whether the assessments modes used cover the entire syllabus or not.

Applicability - Moderation should be made applicable to both external and internal modes of assessment. All programs and courses should indicate, as part of their statements on assessment, arrangements for the moderation of assessed work. This can be done through formulation of a moderation policy and implemented across all programs and courses of instruction and delivery, i.e. even those programs delivered *via* distance or online mode. The time frame for the moderation should be linked withthe time frame for assessment.

In the event a moderation is triggered, an evaluation should begin with a discussion on the following (though not exhaustive) lines:

a. What are the rubrics used for each of the different types of assessment in the course? Is a standardized/ prescribed rubric used or has the instructor developed his/ her own rubric. If the instructor is using a personally framed rubric, or if there is no identified rubric, then how does the assessment map to learning outcomes?

b. The difficulty level of the questions included in the assessments, i.e., is the difficulty level on the extremes, very easy or very hard.

c. The manner of awarding marks, i.e., has the correction been at the extremes, liberal or tough.

Each department should establish a committee and designate roles and responsibilities at different levels for smooth working of the moderation process. In order to maintain neutrality, it should be ensured that moderator should not be the assessor. Staff members should be trained professionally in assessment techniques and moderation procedures. All assessment material produced by learner including examination sheets, assignments, project reports, research reports etc. should be examined.

Higher educational institutions should be encouraged to make the moderation process online. In this system, assessment plans, moderation plans, assessment tools, samples of which may be submitted online. Moderation reports should be generated online so that progress can be tracked.

The moderation should not be restricted to just assessment but also include moderation of content and assessment design.

8. Use of Technological Interventions

With the proliferation of different types of access devices, especially mobile access devices, technology has the potential to augment traditional classroom practices and revolutionize learning and evaluation methods. Technology, in fact can be an important driver to enable lifelong learning. Learning and engagement of students is facilitated by use of technology through several modes such as synchronous learning, semi-synchronous learning, blended learning, collaborative learning, flipped classroom etc. MOOC's, especially provided through SWAYAM, are a window of opportunity for lifelong learning and are offered through technology based platforms. Learning management systems (LMS) are used by institutions to integrate the entire teaching, learning and evaluation process. The Learning Management System may be used by higher educational institutions to deliver academic content in blended form and to assess learning through thesis, assignments etc. Open source learning management systems such as Moodle, Edmodo may be used for posting content in the form of videos, audios, e-learning modules, live class sessions etc. Use of plagiarism detection software is highly recommended in order to check originality of content.

In the conduct of examinations, universities face tremendous challenges such as need for trained manpower, distribution of question paper without delays and errors, delays in evaluation of answer scripts, lack of infrastructure to conduct examinations at a large scale, non-availability of faculty members for assessment, security issues faced during paper setting and paper distribution, tampering of certificates and answer scripts etc.

For a typical examination department of an institution, automation is required right from registration of student to convocation through an integrated system. In fact, steps must be taken to implement a complete examination management system that considers the complete life cycle of examination process. The use of technology will reduce dependency on human intervention and be error free. The following functions have to be automated:

i. registration of students and generating unique PRN,
ii. filling up of examination form,
iii. generation of seat numbers and admit cards/hall tickets,
iv. preparation of list of paper setter,
v. use of question bank system to draw question sets, question paper generation,
vi. online distribution of question papers on the day of examination with system of encryption,
vii. barcode system for answer books (this will eliminate issues related to errors, avoid malpractices etc.),
viii. digitization of answer scripts and onscreen evaluation of answer sheets,
ix. tracking of students performance,
x. Marks submission through online software,
xi. viewing of result through online system,
xii. online verification and revaluation system,

xiii. digitization of certificates and marksheets (to avoid tampering and easy retrieval),

xiv. certificate authentication system,

xv. Submission of various other applications through online system.

The above will lead to conduct of functions of the examination system in an efficient and transparent manner and timely availability of information to students.

On-Demand Examination:

On-Demand Examination may provide flexibility to the students, especially those enrolled under open and distance education mode. This system works on the principle of flexibility where assessment can take place when the learner consider themselves ready to appear. Thus readiness depends on learner and not on the institutions. An advantage of this system may result in reduced number of failures in examination, reduced, mal-practices in examination etc.

To facilitate the system of on-demand examination, a large question bank needs to be developed to generate different sets of question papers with the same level of difficulty. The question bank may contain various types of questions such as multiple choice questions, short questions, long questions so as to test skill knowledge and application.

9. Result Declaration

Declaration of results is a crucial element of the educational system of a higher educational institute on which rests its credibility and reputation. In order to strengthen the process of result declaration it is important to incorporate the following features:

1) Timeliness of declaration of result

2) Clarity of interpretation of the Result Card

3) Comprehensive Format

4) Accessibility

5) Verifiability

9.1 Timeliness of the Result Declaration

Timeliness is essential in case of both internal and external components of evaluation. The following table shows a suggested timeline for formative, internal, assessments and summative assessments.

Formative Assessment (Internal)	
Daily Tasks	Before the next task
Weekly Tasks	Before the next task
Unit End Tests	One week
Summative Assessment (External/ Internal)	
External Components	20-30 days
Internal Components	7-10 days

9.2 Clarity of Interpretation

In the final result, having both internal and external components, it is desirable that both should be mentioned separately, followed by the overall grade. The result should be easy to comprehend. This becomes more important if educational institutes have varying grading and credit system. It is thus essential to include at the back of the result, information about the grading and credit system, interpretation of grades, and conversion of grades to percentage.

9.3 Comprehensive Format of the Report

Results reflect the achievement and competency of learners across all dimensions. A single grade, percentage or score cannot depict the entire range of achievements of a learner. The result should be comprehensive and include all aspects of learning outcomes, i.e. Academic, Social, Moral and Spiritual. HEIs should evolve a format and granularity to suit their assessment profiles and display achievement of learners in respective areas.

9.4 Accessibility

Semester end results should be declared online for both internal as well as external components. This could be in the form of awarded letter grades only. A provision should be made in the website through an automated system whereby students can view their mark sheet through individual logins. To make the system secure, the details such as PRN, seat number should

be necessary fields to view results. This will enhance the accessibility and transparency of the evaluation process and will also give the flexibility to present details of evaluation on different learning outcomes. There should be a provision to access results of preceding semesters also. The results on completion of the program should be accessible to external agencies, e.g., potential employers, other higher educational institutions, for verification of student credentials. Transcripts should be made available as and when requested.

9.5 Verifiability

Results and Academic Awards should be valid, comprehensive and verifiable by external agencies as they have significant link with the entire career path of the students. The verifiability of results by prospective employers, HEIs and other agencies should be managed through the National Academic Depository (NAD) (http://nad.gov.in/).

As per the NAD Website, NAD is a 24X7 online store house of all academic awards i.e., certificates, diplomas, degrees, marksheets etc. duly digitized and lodged by academic institutions / boards / eligibility assessment bodies. NAD not only ensures easy access to and retrieval of an academic award but also validates and guarantees its authenticity and safe storage. This will enable educational institutions, students and employers online access/retrieval/verification of digitized academic awards and shall eliminate fraudulent practices such as forging of certificates and mark-sheets.

Recommendations

UGC has taken various initiatives to bring in Academic Reforms in Higher Education Institutions (HEI's). Evaluation Reforms is one of the major task initiated in this direction. The UGC had placed a Public Notice on UGC website inviting suggestions from teachers, students, controller of examinations and experts from the field. Many people have responded to the Public Notice dated 7th June, 2018 and submitted various suggestions.

The UGC has also constituted a committee to make recommendations. Based on the suggestions received, a discussion paper was prepared and a consultative meeting on Examination Reforms was held on 6th September, 2018.

In nutshell, all the observations, suggestions and discussions during the Consultative Meeting are summarized as follows:

a) The students passing out from UG/PG courses are unemployable.

b) In order to prepare employable students, learning outcome based curriculum should be prepared.

c) The examination and evaluation should test the learning outcome, knowledge gained, attitude developed and skills matered through it.

d) At present students learn only to achieve marks in the examination which should be changed and the learning should be to enrich the knowledge, attitude and skill.

e) Evaluation process needs to be made more flexible and the quality of evaluation should be brought out.

f) The available 13 lakh teachers should be involved to create data base of questions.

g) At least 40% evaluation should be through internal and continuous assessment and the remaining 60% should be through the terminal examination.

The committee considered all the above points while making the recommendations.

- India being a vast country, having different types of Universities - Central Universities, State Universities, Deemed Universities, Private Universities, Open Universities, and Standalone Institutions - a rigid system of examination cannot be followed. However, the aims and objectives of conducting the examination must be to assess the outcome of the level of learning of the student; it is necessary that a framework has to be decided with some flexibility. This will bring uniformity in the examination system and the relative merit of the candidates based on their learning outcome can be seen.
- The Committee has also considered the various initiatives taken by the Hon'ble Prime Minister of India, Hon'ble Minister of Human Resource Development, Government of India and University Grants Commission in the Education domain such as extending the reach of higher education, technological innovation to measure wider range of skills and knowledge, digitalization of programmes, transfer of knowledge to enrich rural India and ICT learning.

Keeping the above in view the Committee makes the following recommendations:

1. Objectives of Examination System, Models of Examination System which can be followed in India and Structural and Procedural Changes needed in the examination system:

1.1 Learning Outcome Based Education Framework needs to be implemented at HEIs to structure and link evaluation right up to Institutional goals. The attainment of

Program Education Objectives, Programme Learning Outcomes and Course Learning Outcomes may be worked out at the university / institute level for each programme as mentioned under 2.5 at *Annexure-2*.

1.2 Separate suitable models for UG, PG, M.Phil./Ph.D. may be developed by the HEIs in the light of this Report. While need for more emphasis on Internal and Continuous Evaluation is emphasized, taking into consideration the ground realities, the HEIs can begin with the proportion of I.E. to E.E. 30:70 and reach 50:50 in a time bound manner, without compromising the quality and standard. In exceptionally high ranking HEIs, the ratio can be 60:40. Some flexibility may be considered, especially as the ground realities are much different at the University level and at affiliated colleges in urban areas, semi-urban and rural areas. The situation can be monitored and reviewed periodically for better implementation.

1.3 To achieve the evaluation objectives, the HEIs must make use of available technology and automation in various pre-, on- and post-examination stages. Technical support for the same by the UGC / university may be required.

1.4 Proper question paper setting as well as Learning Outcome Based Education are the most important part of the Examination System and is key to quality of evaluation. Guidelines, necessary for the proper paper setting as well as Learning Outcome Based Education may be discussed in Orientation and Refresher Courses for the teachers.

2. Question Paper Setting:

2.1 Question paper setting needs drastic reforms. While setting the QP, questions from the QB, and independently by the paper setter(s), in the pre-decided proportion (say 70:30), can be drawn with due consideration to the category of questions.

2.2 The composition of a QP should be such that an average student should not find it hard to get passing grade while it should post real challenge to a good students with high scoring becoming increasingly difficult.

2.3 Properly and correctly worded, balanced, well-set question paper with unambiguous questions, is the key to quality and is the most important part of the examination system. Necessary guidelines to the paper setters should be provided. Workshops to sensitize the teachers and create awareness may be arranged.

2.4 Periodic academic audit of the QPs (as also of assessed answer books) should be conducted with an objective of quality monitoring by the respective State Council of Higher Education of concerned State.

3. Grading and Credit Transfer

3.1 Ensure a minimum program-wise uniformity in all HEIs w.r.t. number of Course Credits (for Core, Elective etc. courses) and Total Credits at UG & PG levels to facilitate smooth credits transfers (Refer to latest UGC guidelines for UG:

http://www.ugc.ac.in/pdfnews/8023719 Guidelines-for-CBCS.pdf). For computation of Grade, Grade Points, SGPA, CGPA etc, the same guidelines to be followed.

3.2 Some uniformity in the broad topics in courses at first, second and third year in each major degree programs in all HEIs (with some flexibility, say 20-30%, to HEIs) can ensure smooth credit transfers, and hence horizontal mobility, for the students between HEIs. The optional subjects which normally have nominal credits may be considered for transfer of credit, through those optional subjects are not offered by the receiving university.

3.3 Similar guidelines by UGC for PG required.

3.4 While Absolute Grading is followed in most of the HEIs in which grading is used, Relative Grading system will be fairer to the students and may be followed in unitary

universities and institutions of national importance to start with, which may be percolated to all other HEIs in a phased manner.

3.5 Each HEI can have a Committee to determine the equivalence of the credits in cases of transfers/horizontal mobility.

3.6 Guidelines for such "Equivalence Committees" can be provided.

4. Moderation

4.1 Moderation at every stage is essential to evolve fair, trust-worthy, dependable and transparent Evaluation system.

4.2 Moderation at different stages like paper setting, assessment, re-assessment, post-evaluation should be mandatory.

4.3 Assessment of the over-all procedures adopted, quality and standard of the paper-setting, assessment and evaluation system as a whole should be undertaken every 2-3 years.

4.4 A Examination Reforms Cell at HEI level and a Examination Reforms Committee (appropriate nomenclature can be used) at the state level can be set up for the purpose.

5. On-Demand Examination

5.1 It is time, steps are initiated in the direction of providing On-Demand Examination facility to the students.

5.2 A National Board may be established to conduct Examinations On-Demand.

5.3 To start with, it can conduct exams for popular degree programs. Initially, on-demand examinations can be introduced for distance programs for which it is best suited.

5.4 Related syllabus, study material and QBs can be made available to the candidates.

5.5 Should be open to all; no age limit, minimum requirements of eligibility etc,

5.6 Extensive use of technology/automation.

5.7 System should ensure highest dependability, openness, reliability, transparency and recognition.

6. Internal Examination and External Examination

6.1 Most suitable combination of IE and EE for comprehensive and continuous evaluation and assessment of the students can be evolved by the HEIs in the light of the discussion in this Report.

6.2 Internal Evaluation: should be such that it will not cause undue stress and pressure on students.

6.3 Proportion of IE and EE should be specified for UG as well as PG levels: should be flexible to some extent for programs of different nature.

6.4 System of IE should be objective, student friendly, transparent and free from personal bias or influence.

6.5 The results of IE should be made known to the students soon after the IE.

6.6 Proportion of IE and EE should be specified for UG (e.g. 30:70) as well as PG levels (e.g. 40:60)

6.7 Proportion of IE can be low to start with. It can be raised progressively in a phased manner to 50% depending on the outcome of experience. For high ranking HEIs, it can be higher (say 50:50 or 60:40).

6.8 Internal assessment must be graded on a relative, not an absolute, scale and must be moderated and scaled against the marks obtained in the external exam.

7. Malpractices

To ensure credibility of the examination system, it is essential to check the malpractices.

7.1 By protecting the identity of candidates and examiners from each other a lot of post-exam malpractice can be checked. A fool-proof system e.g. use of encrypted barcodes, which hides the identity of the student (and the centre) from not only the examiner but also exam dept. employees, may be used. This can be used in conjunction with other methods, e.g. randomizing of exam scripts given to any particular examiner.

7.2 A major source of cheating remains help from outside the exam hall, sometimes even through ingenious means. If candidates are not permitted to leave the exam-center in the first ninety minutes, and even thereafter not permitted to carry the question papers out with them, most of this can be nipped in the bud.

7.3 Transmission of QPs directly to the centres through internet just before the commencement of examination in a safe manner should be introduced.

8. Technological Interventions/Technology based Automation

8.1 Areas of technological interventions and automation should be specified and must be followed by the HEIs.

8.2 UGC can take initiative in preparation of required software for use by HEIs (especially in the areas of registration, seating arrangement, issue of personalized hall tickets, integration of results of internal and external assessment, preparation of final results, calculation of grades etc.). These can be made available to the HEIs to expedite proper implementation of the reforms.

9. Question Bank

9.1 Should be given top priority.

9.2 QB should be prepared Course wise (Core, Elective, Ability/Skill etc.).

9.3 UGC can take initiative for preparation of basic QBs in major courses/subjects. These can then be adapted by the HEIs. This will ensure some minimum uniformity, quality and standard.

9.4 The QBs should be sufficiently large and should contain questions under various categories based on learning-outcomes.

9.5 Moderated QBs should be made available to the teachers and students.

10. Need for Minimum Standardized Infrastructure

10.1 Minimum infrastructure requirements should be prescribed. The HEIs with less than minimum required infrastructure should work towards achieving this in a time bound manner.

10.2 The improvement at the HEI level can be monitored by the state level Examination Reforms Committee.

11. Ability Test

11.1 Can be developed to assess and indicate the abilities of the students.

11.2 Different levels of practicals and on the spot problem solving exercise may be carried out to assess the skill of the students.

12. Result Declaration

12.1 Declaration of results is a crucial element of the educational system of a HEI on which rests its credibility and reputation. In order to strengthen the process of result declaration it is important to incorporate the features like timeliness of declaration of result, clarity of interpretation of the Result Card, its comprehensive format, accessibility and verifiability etc.

12.2 The accessibility and verifiability to be ensured through NAD.

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Appendix 1

Generic Higher Education Program Education Objectives (some examples):

1) Academic Objectives

Intellectual Strength
General Knowledge
Scientific Temper
Self Reliance
Inter-disciplinary Exposure
Aptitude
Independent Thinking
Reasoning Ability
Habit of Learning

2) Moral and Spiritual Values

Emotional Maturity
Ethical Values
Simple Living
Selfless Service
Humility
Truthfulness
Dignity of Labour
High Moral Character
Physical and Mental Wellness

3) Social Sensibilities

Awareness about National Culture and Heritage
Tolerance for Diversity
National Integration
Understanding Rural Life Civic Sense
Respect for Rights
Awareness about Duties

Generic Graduate Program Learning Outcomes (some examples):

1) Academic

Professional Knowledge
Problem Analysis
Design and Development of Solutions
Conduct Investigation of Complex Problems
Innovation and Entrepreneurship
Individual and Team Work Communication
Vocational and Industry Exposure
Life-long Learning

2) Moral and Spiritual Values

Professional Ethics
Integrated Value System
Physical and Mental Wellness

3) Social Sensibilities

Education and Society Environment and Sustainability
National Constitution, Culture and Heritage
Social Sensibilities and Rural Development

Traceability Matrix of Generic Program Learning Outcomes with Generic Program Education Objectives

Generic Program Learning Outcomes	Generic Program Education Objectives				
PLO-1: Disciplinary/ Professional Knowledge	Intellectual Strength	Inter Disciplinary exposure			
PLO-2: Problem Analysis	Intellectual Strength	Reasoning Ability	Aptitude		
PLO-3: Design and Development of Solutions/ Policies	Intellectual Strength	Scientific Temper	Self Reliance		
PLO-4: Conduct Investigations of Complex problems	Scientific Temper	Independent thinking	Self Reliance		
PLO-5: Modern Usage tools	Intellectual Strength	Aptitude			
PLO-6: Inter and Trans disciplinary Development	Independe nt thinking	Inter Disciplinary exposure	Self Reliance		
PLO-7: Jugaad Innovation and Entrepreneurship	Intellectual Strength	Independen t thinking	Inter-Disciplinary exposure		
PLO-8: Ethics	Tolerance for Diversity	Ethical Values	Truthfulness		
PLO-9: Individual and Team Work	Tolerance for Diversity	Ethical Values	Truthfulness		
PLO-10: Communication	Intellectual Strength	Reasoning Ability	Self Reliance		
PLO-11: Project Management and Finance	Intellectual Strength	Reasoning Ability			
PLO 12: Vocational and Industry Exposure	Intellectual Strength	Independent thinking	Scientific Temper		
PLO-13: Life-long learning	Habit of learning				
PLO-14: The Education and Society	Selfless Service National	Independent thinking	Inter Disciplinary exposure	General knowledge	

Generic Program Learning Outcomes	**Generic Program Education Objectives**				
PLO-15: Environment and sustainability	Culture and Heritage	Independent thinking	Inter Disciplinary exposure	General knowledge	
PLO-16: Social Sensitivities and Rural Development	Dignity of Labor	Understanding Rural Life	Selfless Service	High Moral Character	Inter Disciplinary exposure
PLO-19: National Constitution, Culture and Heritage	National Heritage	National Integration	Selfless Service	A respect for rights	General knowledge
PLO-18: Physical and Psychological Fitness	Physical and Mental Wellness				
PLO-17: Integrated Value System	Tolerance for Diversity	Emotional Maturity	Truthfulness	High Moral Character	

Appendix 2

2.1: Assessment strategy of each Program Indicator based on Revised Bloom's taxonomy

PLO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.				Assessment Based on revised Blooms Taxonomy					
C.S. No	**Competency**	**I.S. No**	**Indicators**	**Remembering**	**Understanding**	**Applying**	**Analyzing**	**Evaluating**	**Creating**
1.1	Demonstrate competencein mathematical modeling	1.1.1	Apply mathematical techniques such as calculus, linear algebra, and statistics to solve problems						
		1.1.2	Apply advanced mathematical techniques to model and solve mechanical engineering problems						

2.2 : Mapping of Program Learning Outcomes to Course Learning Outcomes along with assessment strategy

PLO-1: Recognize the importance of mathematical modeling simulation and computing, and the role of approximation and mathematical approaches for describing the physical world.				Assessment Based on Blooms Taxonomy						CLO-1: Calculus and Matrices				Assessment Based on Blooms Taxonomy					
C.S. No	**Competency**	**I.S.No**	**Indicators**	**Remembering**	**Understanding**	**Applying**	**Analyzing**	**Evaluating**	**Creating**	C.S.No	**Course Competency**	**I.S.No**	**Course Performance Indicators**	**Remembering**	**Understanding**	**Applying**	**Analyzing**	**Evaluating**	**Creating**
1.1	Demonstrate competence in mathematical modeling	1.1.1	Apply mathematical techniques such as calculus, linear algebra, and statistics to solve problem							1.1	Demonstrate the ability to solve real world problems using Calculus	1.1.1	Perform operation with various form of complex number to solve equations.						
												1.1.2	Ability to use optimization techniques to solve real world problems.						
										1.2	Demonstrat etheability to solve real world problems using Differential Equations		Apply Laplace transformation to solve initial value						
		1.1.2	Apply advanced mathematical techniques to model and solve problem of physical world																

2.3: A Framework for linking Program Learning Outcomes and Course Learning Outcomes using Bloom's taxonomy

Program Learning Outcomes	Program Competency	Program Indicator	Assessment based on revised Blooms Taxonomy	Course -1		
				Course Competency		
				1.1		1.2
				Indicator		
PO 1	1.1	1.1.1	Remembering		X	
			Understanding	X	X	X
			Applying	X	X	X
			Analysis		X	
			Evaluation			
			Create			

2.4: Mapping Assessment Types to Revised Bloom's Taxonomy Levels for Courses related to the Academic Discipline

Assessment Type for Academic Activities	Remem-bering	Under-stand	Applying	Analyzing	Evaluating	Creating
Daily Home Assignment - Objective						
Daily Home Assignment - Subjective						
Class Assignment						
Seminar and GD						
LAB Quiz						
Project						
Term Exam						

2.5: Attainment of Program Education Objectives (PEOs):

Since these are the accomplishments of a graduant , they are assessed after 3-4 years of graduation. The attainment is decided based on the feedback from stakeholders.

Stakeholders are

1. Alumni
2. Parent
3. Employer
4. Industries
5. Peers

A questionnaire is prepared based on the PEOs and percentage of satisfactory feedback is decided. If the defined expected level is achieved, PEO is said to be attained.

Following procedure is adopted for attainment of PLOs.

- List the courses contributing to each PLO.
- Map the CLOs of each course with PLOs.
- Find the weightage of each course in attainment of PLO.
- Using Direct and Indirect methods of assessment, compute attainment of CLOs.

- Direct Method of Assessment is based on performance of student in University examination, internal assessment, assignments, term work and oral/practical examinations.
- Indirect Method of Assessment is based on periodical feedback from stake holders at the end of each course.
- Weightage of direct and indirect assessment in computation of attainment of each course outcome may vary from programme to programme. Generally, it is recommended as 70% for direct assessment and 30% for indirect assessment. (Attainment= 0.7 D+ 0.3 I).
- Find attainment of all courses contributing to the respective PLOs.
- Based on weightage of each course, attainment using direct assessment of that PLO is computed.
- Attainment of PLO using indirect assessment is computed based on Exit feedback.
- Apportioning appropriate weightage (0.7 D+ 0.3 I) final attainment of PLO is computed.

Suggested PEOs, Graduate Attributes, PLOs for Under Graduate Programme - Bachelor of Science (B.Sc.)

A) PEOs

- **PEO1:** To prepare students for career in basic science and its applications in professional career**.**
- **PEO 2:** To develop the student to cope up with the advancements in respective science field.

B) The Graduate Attributes

a. **Knowledge of science:** Apply the knowledge of mathematics, science and fundamentals to the solution of problems with different applications.

b. **Problem analysis**: Identify, formulate, research literature, and analyse various research and application problems reaching substantiated conclusions using first principles of mathematics, natural sciences.

c. **Design and development of solutions for complex problems**: Design system reactions or processes that meet the specified needs with appropriate consideration for the public health and safety, and the societal, and environmental considerations.

d. **Conduct investigations of complex problems**: The problems that cannot be solved by straightforward application of knowledge, theories and techniques; that may not have a unique solution, which need to be defined (modeled) within appropriate mathematical framework or scientific derivation.

e. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern tools including prediction and formulation of various reactions with an understanding of the limitations.

f. **Environment and sustainability**: Understand the impact of the scientific applications and solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

g. **Ethics**: Apply ethical principles and commit to professional ethics, responsibilities and norms of the scientific and sustainable development.

h. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

i. **Communication**: Communicate effectively on complex activities with the community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

j. **Project management and finance**: Demonstrate knowledge and understanding of the management principles and apply these to one's own work, as a member and leader in a team, to manage research and application projects and in multidisciplinary environments.

k. **Life-long learning**: Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of scientific change.

Programme Learning Outcomes (PLOs)

The Graduates will be able to

1. Apply possessed knowledge of fundamental subjects to solve different problems.
2. Analyse various research and scientific problems.
3. Design system reactions with appropriate consideration to safety, economy, health and environmental considerations.
4. Solve complex scientific problems by conducting scientific derivations or mathematical simulations.
5. Use modern tools, resources and software.
6. Apply their responsibilities in societal and environmental contexts.
7. Exhibit professional ethics and norms of scientific development
8. Function individually and in teamwork.
9. Communicate effectively in both verbal and written forms.
10. Manage the work and finance of a research, application projects.
11. Practice the use of lifelong learning.

Following Table shows how the PLOs are aligned with the Graduate Attributes (GAs)

PLOs	**Graduate Attributes**										
	a	**b**	**c**	**d**	**E**	**f**	**g**	**h**	**i**	**j**	**K**
1	**X**										
2		**X**									
3			**X**								
4				**X**							
5					**X**						
6						**X**					
7							**X**				
8								**X**			
9									**X**		
10										**X**	
11											**X**

Mapping of PLOs with GAs

Note: The PEOs, PLOs and Graduate Attributes defined above are examples/samples for an under graduate programme in Science education. On the basis of experience, study, requirements and feedback from various stake holders, Institutions/ departments can define /rewrite PEOs/ PLO/CLOs/GAs. Further, on similar grounds institutions/departments can write PEOs/ PLO/CLOs/GAs for other programmes, such as Arts/Commerce etc.

Sample computation of Attainment of PLOs for Under Graduate Programme-Bachelor of Science. (B.Sc.)

Name of the Programme: **B.Sc. (Chemistry)**

1. List the courses of the programme (Sem I to VI) contributing to each PLO
2. Write CLOs of each course and map with PLOs.

Here the example of course Physical Chemistry is taken

CLOs of the said course are mapped with PLO1 of the programme. Following is the Sample Mapping of Course outcomes of the said course with PLO1 of the programme.

Course Code -

Course Title: **Physical Chemistry (Sem III)**

CLOs	PLOs											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	H	-	-	-	H	-	-	-	H	-	-	M
2	H	-	-	-	H	-	-	-	-	-	-	M
3	H	-	-	-	H	-	-	-	-	-	-	H
4	H	H	-	-	H	-	-	-	-	-	-	H
5	H	H	-	-	H	-	-	-	-	-	-	H
6	H	-	-	-	H	-	-	-	M	-	-	H

The co-relation between Course Learning Outcomes with the Program Learning Outcomes can be defined by three levels using letter grade such as H, M, L. Meaning of it is as

L (Low)	:	indicates range of contribution of CLO with respective PLO is between 1 to 30%.
M (Medium)	:	indicates range of contribution of CLO with respective PLO is between 31-70%
H (High)	:	indicates range of contribution of CLO with respective PLO is between 71-100%.

On the similar basis, mapping of courses of all years/semesters is done with PLOs and correlation is defined in terms of letter grades.

3. Computation of relative weightage and percentage of contribution of each course in attainment of respective PLOs.

The concept of Six –Sigma is used for calculating weighted percentage of contribution of each course in attainment of respective PLOs. The tool used for the same is called as Six Sigma Tool – Cause and Effect Matrix. As per Six- Sigma Concept, the weightage of H, M and L is 9, 3 and 1 respectively. Sample Calculations shown below:

Weightage of course Physical Chemistry in attainment of PLO1with reference to correlation between course outcomes of the course "physical Chemistry" (number of H, M and L and its

weightages as per six sigma tool) = 6H= 6x9=54 Weighted Percentage of the course "Physical Chemistry" in attainment of PLO1

Weightage of the course/ total weightage of all courses =54/1548 = 3.48%. Here 1548 is total of weightage of all courses contributing PLO1 computed based on correlation between Course Learning Outcomes with the Program Learning Outcomes and Six Sigma tool.

Title of the Course	L	M	H	Weightage	Weighted percentage of contribution of the course in attainment of PLO1
Physical Chemistry	0	0	6	54	3.48

Similarly compute weighted percentage of contribution of each course in attainment of PLO1.

Attainment of CLOs

Attainment of CLOs is computed using Direct and Indirect Assessment methods. Direct Method of assessment is based on performance of student in university examination, internal assessment, assignments, term work and oral/practical examinations and Indirect Method of assessment is based on periodical feedback from stake holders at the end of each course.

A) CLO attainment by Direct Assessment tools:

1) **Assessment of CLOs from End Semester Exam :** Based on the result of End Semester Exam, the number of students scoring more than 60% in every subject are found out. (Percentage of marks can be changed).
2) **Assessment of CLOs from Term-work & Oral / Practical Exam :** Based on the result of Term-work & Oral /Practical Exam, the number of students scoring more than 60% in every subject is found out. This also includes the marks of the Term-work which are based on Continuous assessment of the student for the entire semester. This covers his performance in punctuality (timely submission), presentation and understanding in every lab work /assignments/drawing sheets.
3) **Assessment of CLOs from Unit Test Exam :** While framing the syllabus, care is taken to frame the unit in such a manner that each CLO is covered in teaching when a particular unit is covered in the teaching process. Three Unit Tests are conducted; the syllabus of each unit test is well defined stating the Unit numbers that will be assessed in that unit test. Care is taken to set the questions on specific units while setting the paper of each unit test. By knowing the results of three-unit tests, marks obtained by the student in each unit of the syllabus is known.

If a student scores 60% marks in a question, it is considered that he has understood that unit to the required extent and corresponding CLO is attained. Average of all CLO attainments of a student considering all the three unit tests, represents the performance of the student in Unit Tests.

Following table shows the sample attainment of calculation of attainment of CLO s based on the performance in Unit Tests.

Attainment of CLOs based on performance in Unit Tests

Sr. No.	Course	Percentage Attainment in Unit Test						
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	Avg.
1	Physical Chemistry	88.88	94.11	88.57	46.66	19.60	74.28	68.68

Combining the assessment by all performance indicators:

The assessment by combining all the performance indicators is done by giving due weightage to the scheme of assessment.

To find out this combining assessment following equations are used

1) For first year courses (having only Term work), direct assessment is calculated as below

$$\frac{80}{125} + \frac{20}{125} + \frac{25}{125}$$

Where,

x = percentage assessment of theory end semester examination

where x is calculated as the percentage of students who scored more than 60% in the end semester examination

y = percentage assessment of Unit Test Examination

where y is calculated based on the performance of students in each Unit test, percentage of students scored more than 60% in the Unit Test z = percentage assessment of Termwork

where z is calculated based on the performance of students in Termwork, it is the percentage of students scored more than 60% in Termwork + oral or Termwork + practical examination

2) For course having only Theory Examination, Direct assessment is calculated as below

$$\frac{80}{100} + \frac{20}{100}$$

Where,

x = percentage assessment of theory end semester examination

where x is calculated as the percentage of students who scored more than 60% in the end semester examination

y = percentage assessment of Unit Test Examination

where y is calculated based on the performance of students in each Unit test, percentage of students scored more than 60% in the Unit Test

3) For course having Theory and Termwork + oral or Termwork + Practical Examination, Direct assessment is calculated as below

$$\frac{80}{150} + \frac{20}{150} + \frac{50}{150}$$

Where,

x = percentage assessment of theory end semester examination

where x is calculated as the percentage of students who scored more than 60% in the end semester examination

y = percentage assessment of Unit Test Examination

where y is calculated based on the performance of students in each Unit test, percentage of students scored more than 60% in the Unit Test

z = percentage assessment of Termwork + oral or Termwork + practical examination

where z is calculated based on the performance of students in Termwork + oral or Termwork + practical examination, it is the percentage of students scored more than 60% in Termwork + oral or Termwork + practical examination

Based on the above formulas, total direct attainment is calculated for CLO. The following table shows the sample calculations for the same

CLO Attainment
Academic Year 2014-15

Sr. No.	Course	Heads of Passing (Percentage Attainment)							
		Theory			TW + Oral Or TW+ Practical			Unit Test	Average % Attainment
		(1)	(2)	(3)	(4)	(5)	(6)		
1	Physical Chemistry	55	36	65.45	55	45	81.82	68.68	71.34

Column no (1), (4) ----- No. of Students Appeared
Column no (2), (5) – ---No. of students scored more than 60%
Column no (3), (6) --- - Percentage attainment

Sample Calculations:

Course Name: Physical Chemistry

Following formula is used to compute attainment of CLO

$$\frac{80}{150} + \frac{20}{150} + \frac{50}{150}$$

According to above table, $x = 65.45$, $y = 68.68$, $z = 81.82$

Using the formula

$$\frac{80}{150} \times 65.45 + \frac{20}{150} \times 68.68 + \frac{50}{150 \times 81.82}$$
$$= 71.34$$

The CLO attainment of Course Physical Chemistry is 71.34

CLO Attainment by Indirect Assessment tools:

The course outcome feedback is conducted at the end of every term of Academic Year by distributing structured feedback questionnaire to the students. The analysis of this feedback questionnaire is done on the following scale. The feedback forms were sorted with various scales and feedbacks having scale more than 5.5 are considered as satisfactory level for calculations for indirect attainment. Following table shows the sample indirect assessment showing average assessment of every course.

A- 10-8.5 B- 8.4-7.0 C- 6.9-5.5 D- 5.4- 4.0 E- 3.9-0

Table 1: Indirect Attainment of CLOs

Academic Year 2014-15
No. of Students given feedback 50
Name of course: - Advanced surveying

Sr. No	Course Learning Outcome	A	B	C	D	E	Avg(A+B+C)	Percentage	Average
1	CLO1	28	20	2	0	0	50	100.00	98.66
2	CLO2	16	28	6	0	0	50	100.00	
3	CLO3	22	16	12	0	0	25	100.00	
4	CLO4	24	18	6	2	0	50	96.00	
5	CLO5	20	22	8	0	0	50	100.00	
6	CLO6	30	12	6	0	2	48	96.00	

Attainment of each course = 0.7 D+ 0.3 I

Final Assessment of CLO Attainment

Academic Year 2014-15

Sr. No.	Course	% Attainment		Average Course
		Direct (D)	Indirect (I)	Attainment 0.7D+0.3 I
	Physical Chemistry	71.34	98.66	79.54

Assessment of PLO attainment by Direct Assessment tools:

The percentage shown in front of each subject represents the percentage contribution of that subject in attainment of PLO1.

Sample Calculations shown below

Weighted Contribution of the course in attainment of PLO1

	L	M	H	Weightage	Weighted percentage of contribution of the course in attainment of PLO1 (a)	Average Course Attainment (b)	Weighted Contribution of the course in attainment of PLO1 (axb)/100
AS	0	0	6	54	3.48	79.54	2.77*

* 2.77 is Weighted Contribution of the course Physical Chemistry in attainment PLO1 Assessment of PLO attainment by Indirect assessment tools:

Indirect Attainment of PLO1: Graduate Exit Survey was carried out.

Indirect Attainment of PLO1

PLO 1:

Question asked	*Response Received	Satisfaction Number	% attainment
How well can you apply the knowledge of Physical Chemistry for professional carrier development?*	52	50	96.15

* Question can be modified. *Number of Students giving feedback

Satisfaction Number: Number of students given feedback which is more than 5.5 on a scale of 10

A- 10-8.5 B- 8.4-7.0 C- 6.9-5.5 D- 5.4- 4.0 E- 3.9-0

Based on the direct and indirect method of assessment of PLO 1, final attainment of each PLO 1 is decided.

Following table shows the final attainment of PLO1.

Final Attainment (%) = 70 % Direct attainment + 30% indirect attainment

Final PLO1 attainment

PLO	Direct Attainment (D)	Indirect Attainment (I)	Final Attainment (0.7D+0.3I)
1	70.81	96.15	78.41

On the similar basis, the assessment of all PLOs attainment is carried out.

Notes:

1) All PEOs/PLO/CLO/GA mentioned here are for Under graduate programme in Science faculty. Similarly, one can write PEOs/PLO/CLO/GA for other programmes such as Arts, Commerce and PG Programmes.

2) Direct assessment shown in sample calculations is based on total marks obtained in the said course in university examinations and internal assessment. Further refinement is possible in direct assessment by using question wise marks in university marks and mapping of questions with CLOs.

2.6 Suggested Program Learning Outcomes, Competencies and associated Performance Indicators for either B.Com/B.A (Economics)/B.Sc (Chemistry) (table below is indicative)

Program Learning Outcomes (PLOs) 1: Knowledge of Commerce : Possess and applyknowledge of Accounting, Finance, Taxation and Business principles and concepts to complex business situation and problems

	Competency		Indicators
1.1	B.Com - Demonstrate competence in Accounting system	1.1.1	Understand and apply accounting concepts in preparation of journal, ledger, balance sheet, cash book etc
		1.1.2	Apply knowledge to prepare final accounts of firms Apply various methods of depreciation for
		1.1.3	accounting purpose Apply computational techniques to solve quantitative financial accounting problems
1.1	B.A.(Economics) - Demonstrate competence in Micro Economics and its system	1.1.1	Understand and apply concepts supply and demand; and working of the market structure.
		1.1.2	Apply knowledge of inputs of firms, pricing etc for profit maximization of firms.
1.1	B.Sc (Chemistry)- Demonstrate competence in basic concepts of Chemistry	1.1.1	Applyknowledgeofchemicalbonding, thermodynamics and atomic structure in the field of chemistry
		1.1.2	Practically demonstrate and conduct experiments regarding reactions and identify inferring radicals
1.2	B.Com - Demonstrate competence in Financial Management concepts	1.2.1	Apply knowledge of financial accounting standards in business
		1.2.2	Apply knowledge of capital budgeting, cost of capital, cash flow etc in business firms
1.2	B.A. (Economics)- Have sound knowledge of macro-economic concepts	1.2.1	Apply knowledge of GDP, Income, Expenditure etc to national income accounting.
		1.2.2	Apply knowledge of money supply and inflation to analyse and understand impact of monetary policy
1.2	B.Sc (Chemistry)- Have knowledge of allied disciplines related to Chemistry	1.2.1	Apply numerical techniques, equations, calculus and trigonometry in the discipline
		1.2.2	Understand and demonstrate knowledge of concepts of matter, electricity and magnetism to chemistry
1.3	B.Com - Demonstrate competence in policies and system	1.3.1	Apply knowledge of taxation system for purpose of corporate taxation and individual tax

	Competency		Indicators
1.3	B.A.(Economics)- emonstrate competence in application of mathematical and statistical models for economics	1.3.1	Understand and apply concepts differential equation, geometry and linear algebra in the field of economics
		1.3.2	Apply various concepts of probability, variables, sampling and statistical tools to the field of economics.
1.3	B.Sc (Chemistry)- Demonstrate competence in Analytical and organic chemistry		Employ spectroscopic techniques for structural identity of organic molecules and apply spectrophotometric techniques for chemical analysis Apply and conduct experiments with knowledge of purification and separation techniques
1.4	B.Com - Demonstrate competence in business management concepts	1.4.1	Apply concepts of planning, organizing and coordinating and decision making to solve business problems
		1.4.2	Apply principles of scientific management to conduct of business operations in firms

Program Learning Outcomes (PLOs) 2: Analytical Skills: Recognize, analyze and reach toconclusions of problems using the principles of accounting and finance

	Competency		Indicators
2.1	Demonstrate an ability to identify problems in Accounting and finance for firms	2.1.1	Articulate problem statements and identifyobjectives
		2.1.2	Identify appropriate concepts and systems in anattempt to solve problems.
2.2	Demonstrate an ability to formulate, analyse and interpret systems and concepts	2.2.1	Combine principles and applicable concepts to formulate a process suitable to existing requirement / problem
		2.2.2	Identify changes in practice/system and processes in an attempt to provide alternatives to existing processes and systems
2.3	Demonstrate an ability to analyse results, defend position and arrive at conclusions.	2.3.1	Produce and validate results by applying existing suitable principles
		2.3.2	Identify sources of error in the process
		2.3.3	Prepare conclusions that are consistent to analysis conducted with deep understanding so as to defend the conclusions arrived at.

Program Learning Outcomes (PLOs) 3: Critical Thinking Skills: Critically assess; generatecreativity and apply knowledge gained to solve complex problems

	Competency		Indicators
3.1	Demonstrate an ability to discover and process information in the field.	3.1.1	Construct concepts as an ordered system of relationships
		3.1.2	Seek clear understanding of concepts and ideas that shape reasoning.
3.2	Demonstrate an ability to consider a wide variety of viewpoints, clarify and solve problems	3.2.1	Has developed a multi-dimensional thought process to consider multiple relevant viewpoints.
		3.2.2	Formulate purpose and goals that are clear, realistic and reasonable
		3.2.3	Seek clear understanding of the question/situation under consideration to be solved.
		3.2.4	Has built a broad perspective in understanding issues and facts.
3.3	Demonstrate an ability to transfer ideas to new context, examine assumptions, assess facts, and explore implications and consequences.	3.3.1	Make inferences, discern, evaluate situations within context.
		3.3.2	Question facts with clear understanding through
		3.3.3	exploration and consideration of its complexities.
		3.3.4	Distinguish between assumptions that are justifiable with those that are not.
		3.3.5	Arrive at results logically, with sound assessment and within constraints.
		3.3.6	Seek clear understanding of implications of their thoughts or ideas and the consequences thereof

Program Learning Outcomes (PLOs) 4: Employability Skills: possess knowledge, skill andabilities so as to realize potential for employment or meet requirements of industry.

	Competency		**Indicators**
4.1	Have good communication and demonstrates team working skills	4.1.1	Demonstrates effective communication skills.
		4.1.2	Has interpersonal skills and works effectively in teams/groups.
		4.1.3	Appreciates the value of diversity in teams
		4.1.4	Demonstrates ability towards conflict resolution
4.2	Demonstrate and ability to be adaptable and have a positive attitude	4.2.1	Application of positive attitude to situations and complexities
		4.2.2	Understands and takes directions and maintains composure in difficulties
		4.2.3	Accepts responsibility for consequence of actions
4.3	Demonstrate an ability to execute solutions to industry requirements	4.3.1	Presents information and concepts with deep understanding and insights.
		4.3.2	Possesses knowledge in the field of study
		4.3.3	Has updated knowledge of job related requirements
		4.3.4	Has understanding of business environment and systems
		4.3.5	Synthesizes industry requirements and provides
		4.3.6	solutions by identifying suitable criteria of evaluation
		4.3.7	Equips with entrepreneurial and consultancy skills

Program Learning Outcomes (PLOs) 5: Ethics: apply ethical principles and commits toprofessional ethics and norms of the practice.

	Competency		**Indicators**
5.1	Demonstrate an ability to understand ethical codes and practices	5.1.1	Identify ethical code of conduct of the practice and requirements.
5.2	Demonstrate and ability to apply ethical principles	5.2.1	Examines ethical principles and applies in conduct of tasks
		5.2.2	Identifies unethical professional conduct and suggests alternatives

Program Learning Outcomes (PLOs) 6: Lifelong Learning : recognizes the need for andshall engage in lifelong learning in a changing environment. .

	Competency		**Indicators**
6.1	Demonstrate an ability to find out sources of new information and its access	6.1.1	Source new information on a regular basis.
		6.1.2	Analyses sourced information from a feasibility approach.
6.2	Demonstrate and ability to keep abreast of latest developments in the field	6.2.1	Recognizes the need and importance of impact of new developments on current practices
		6.2.2	Use of latest developments in project work and assignments
6.3	Demonstrate and ability to find gaps in knowledge and seek to address the gaps	6.3.1	Identify gaps and finds relevant information to address the gaps
		6.3.2	Analyses and synthesizes the information that may likely address gaps

Course Learning Outcomes

An indication of course learning outcomes relating to courses of B.Sc (Chemistry) programme is provided below:

Physical Chemistry and Inorganic Chemistry – I

- Explain the concept of chemical kinetics and its scope
- Develop skills in procedures and instrumental methods applied in analytical and practical tasks of physical chemistry
- Explain how reaction rates are measured
- Apply rules of logarithms in solving numerical problems in the field of chemistry
- Understand the application of distribution laws in metallurgical operations
- Know and recall the fundamental principles of organic chemistry that include mole concept and stoichiometry
- Acquire deep understanding of methods of expressing concentratios, strength, normality etc
- Prepare standard solutions of acids and bases and predict reaction between acids and bases
- Explain in detail the concept of oxidation and reduction chemical reaction and its changes in oxidation number of molecules, atoms and ions

Organic Chemistry

- To know and understand the structure, nomenclature and application of organic compounds
- Identify weak and strong acids and bases through inductive, resonance, hyper conjugative and steric effects
- Recognize the different types of reactants i.e. electrophile, nucleophile etc
- State and describe chemistry related to alkanes, alkenes, alkylhalides etc and their derivatives, apply them in analysis and synthesis and understand reaction mechanisms.
- Predict the outcome and mechanism of some simple organic reactions using basic understanding of reactivity

Appendix 3

Direct Assessment Types and their Mapping to Characteristic Attributes

Type of Assessment	Category	Nature of Questions	Evaluated Attributes																
			Disciplinary	Critical Thinking	Problem Solving	Analytical Reasoning	Scientific Reasoning	Reflective Thinking	Research Related Skills	Self-Directed Learning	Digital Literacy	Communication Skills	Cooperative/ Team Work	Leadership Qualities	Moral and Ethical Values	Lifelong Learning	Multicultural Competence	Fostering Innovation
Daily Home Assignment	Formative	MCQ/Fill in the Blanks/ Short Answer	✓		✓			✓		✓								
Weekly Home Assignment	Formative	Project Based	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						✓
End of Lecture Class Assignment	Summative	MCQ, short answer	✓		✓	✓	✓											
Spontaneous Challenge Inquiry	Formative	Fill in the blanks, True-False, MCQ, matching		✓	✓	✓						✓						
Surprise Quiz	Formative	Fill in the blanks, True-False, MCQ, matching	✓															
Rapid Fire Quiz	Formative	Oral questions in quick succession	✓	✓		✓		✓										

Type of Assessment	Category	Nature of Questions	Evaluated Attributes															
			Disciplinary	Critical Thinking	Problem Solving	Analytical Reasoning	Scientific Reasoning	Reflective Thinking	Research Related Skills	Self-Directed Learning	Digital Literacy	Communication Skills	Cooperative/ Team Work	Leadership Qualities	Moral and Ethical Values	Lifelong Learning	Multicultural Competence	Fostering Innovation
Quarter Term Quiz	Formative	Fill in the blanks, True-False, MCQ, matching	✓		✓													
Problem/Case based Scenarios	Formative/ Summative	Application of concept (s)	✓	✓	✓	✓	✓	✓	✓	✓		✓						✓
One Minute Paper (class summary)	Formative	On short paragraph on concepts learned during the class	✓	✓		✓		✓	✓			✓				✓		
Application Article	Formative	A note on the application of concept learnt to a real-world problem	✓	✓		✓		✓	✓		✓	✓				✓		
Mid Term Written Test	Formative	Mixed Short and Long Answers	✓	✓	✓	✓	✓	✓				✓						
End of Term Written Test	Summative	Mixed Short and Long Answers	✓	✓	✓	✓	✓	✓				✓						
Full Term Project	Summative	Real World, Local Problem	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓
Seminar & Group Discussion	Summative	Research oriented Study					✓	✓	✓	✓	✓	✓						

Type of Assessment	Category	Nature of Questions	Evaluated Attributes																
			Disciplinary	Critical Thinking	Problem Solving	Analytical Reasoning	Scientific Reasoning	Reflective Thinking	Research Related Skills	Self-Directed Learning	Digital Literacy	Communication Skills	Cooperative/ Team Work	Leadership Qualities	Moral and Ethical Values	Lifelong Learning	Multicultural Competence	Fostering Innovation
Self-Study	Summative	Research-oriented																
Viva Voce/Oral Examination	Formative/ Summative	Oral Quiz	✓			✓												
Essays	Summative	Descriptive	✓	✓				✓	✓	✓	✓	✓						
Poster	Summative	Research presentation	✓	✓		✓	✓		✓	✓		✓						✓
Pro/Con Grid	Formative	Pros and Cons development	✓	✓		✓		✓				✓						
Concept Maps	Formative	Concept identification	✓	✓		✓	✓	✓	✓	✓		✓						
Reviews and Annotated	Summative	Research oriented presentation	✓	✓					✓	✓	✓	✓						
Peer Assessment	Formative/ Summative		✓	✓		✓	✓	✓		✓		✓			✓		✓	
Short Term Industry	Summative	Industry Related Problem			✓				✓			✓	✓	✓		✓	✓	✓
Full-Term Industry	Summative	Industry Related Problem			✓				✓			✓	✓	✓		✓	✓	✓
Laboratory Assignment	Formative	Subject matter related	✓		✓		✓		✓		✓		✓		✓			
Undergraduate research	Formative	Yearlong research	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓

Acknowledgement

Evaluation Reforms in Higher Education Institutions has been prepared with the help of an Expert Committee under the chairpersonship of Prof. M. M. Salunkhe, Vice Chancellor, BharatiVidyapeeth (Deemed to be University), Pune; along with -Prof. V. K. Jain, Vice Chancellor, Tezpur University, Tezpur;Prof. FurqanQamar, Secretary General, Association ofIndian Universities, New Delhi;Prof. Jaspal Singh Sandhu,Vice Chancellor, Guru Nanak Dev University, Amritsar;Prof.TankeshwarKumar,ViceChancellor,GuruJambeshwarUniversityofScience&Technology,Hisar; Dr. PremKumar Kalra, Director, Dayalbagh Educational Institute, Agra;Prof. K. Biswal, Dept. ofEducational Management Information System, NIEPA, New Delhi; Dr. K. P. Upadhyay, Ex-Controller ofExamination, Banaras Hindu University, Varanasi; Dr. Shashi Nijhawan, Principal, Shivaji College, New Delhi; and Dr. RenuBatra, Additional Secretary, University Grants Commission (Co-ordinator); Ms. Megha Kaushik, Educational Officer, UGC, assisted the committee.

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Notes

सत्यमेव जयते

UNIVERSITY GRANTS COMMISSION

QUALITY MANDATE

ज्ञान-विज्ञान विमुक्तये

Objectives

- Improve the graduate outcomes
- Promote student linkages with society and industry
- Train students in professional & soft skills
- Teacher Vacancy not to exceed 10 % of sanctioned strength
- All HEIs to obtain minimum NAAC score of 2.5 by 2022

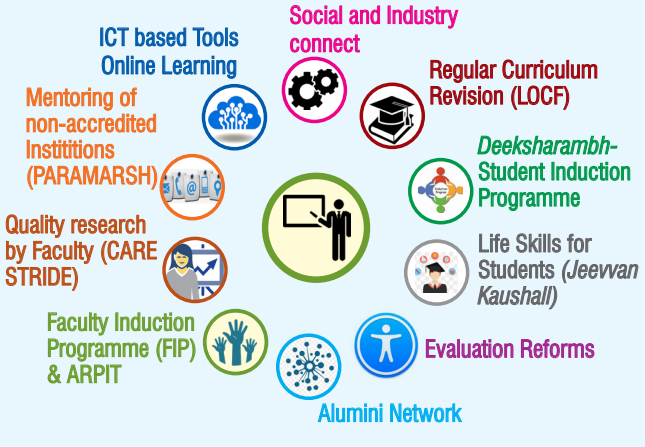
Initiatives to be undertaken by HEIs

1. Student Centric Initiations including Induction Programme for students - *Deeksharambh*.
2. Learning Outcome based Curriculum Framework (LOCF)- revision of curriculum at regular intervals.
3. Use of ICT based learning tools for effective teaching-learning process including MOOCs and online degrees.
4. Imparting Life Skills *(Jeevan Kaushal)* to students.
5. Social and Industry connect for every institution: Every institution shall adopt at least 5 villages for exchange of knowledge and for the overall social/ economic betterment of the village communities. University-Industry linkages to be promoted to improve employability.
6. Evaluation Reforms-test the concept, and application
7. Student Career Progression and Alumni Network.
8. Faculty Induction Programme (FIP), Annual Refresher Programme in Teaching (ARPIT) and Leadership Training for Educational Administrators (LEAP).
9. Scheme for Trans-disciplinary Research for India's Developing Economy (STRIDE) and Consortium for Academic & Research Ethics (CARE).
10. Mentoring of non-accredited institutions (PARAMARSH).

All Higher Education Institutions shall strive by 2022 to:

- improve the graduate outcomes for the students to ensure that they get access to employment/self-employment or engage themselves in pursuit of higher education.
- promote linkage of students with the society and industry to ensure that at least 2/3rd of the students engage in socially productive activities and get industry exposure during their period of study in the institutions.
- train the students in essential professional and life skills such as team work, communication skills, leadership skills, time management skills etc; inculcate human value sand professional ethics, and the spirit of innovation/ entrepreneurship and critical thinking among the students and promote avenues for display of these talents.
- ensure that vacancies of teaching posts at any point of time do not exceed 10% of the sanctioned strength; and 100% of the teachers are oriented about the latest and emerging trends including ICT in their respective domains of knowledge, and the pedagogies that disseminate their knowledge to the students.
- every institution shall get NAAC accreditation with a minimum score of 2.5 by 2022.

Initiatives to be taken by HEIs



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Annexure V

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National Higher Education Qualifications Framework (NHEQF)

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National Higher Education Qualifications Framework (NHEQF)

University Grants Commission
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ज्ञान-विज्ञान विमुक्तये
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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)

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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, andtwenty-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 curricularstructures

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. Amongthe 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 RegionalQualifications 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 consideredand 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 aredefined 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 readilybetween 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 thesize 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 ofBusiness 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 tothe 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 oflearning 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.

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 pursuehigher 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.

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 totake 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 oftechnological 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 higherlevel of education and research. • problematize, synthesize, and articulate issues and design research proposals, • define problems, formulate appropriate and relevant researchquestions, 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 thefield/ 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 tothe 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 ofthe 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 applicationsof the findings of recent research and evaluation studies in the contextof 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 andtechniques 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 tothe 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 involvingthe creation of new forms of work and rapidly changing work andproduction 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. Theworkload 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 Graderepresents 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 relatedto 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 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.

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 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 tasksassociated with the chosen fields of learning.	• comprehensive, factual, theoretical, and specialized knowledge in broad multidisciplinary contexts with depth in the underlying principlesand theories relating to one or more fields of learning. • knowledge of the currentand 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 oflearning. • 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 solutionsto 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 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, • 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.

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.

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 moralvalues	• 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 relatingthe 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 takesome 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 asa 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 propertyrights, • 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.

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 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:*** ***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 argumentsto 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)

New Delhi.
20th April, 2023 / चैत्र 30, 1945

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Annexure VI

NATIONAL CREDIT FRAMEWORK

(NCrF)

The Report of the High-Level Committee
Comprising Members
from
UGC, AICTE, NCVET, DoSEL & DoHE, MoE,
MSDE, CBSE, NCERT, NIOS and DGT

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The Report on **National Credit Framework (NCrF)** jointly developed by the High-Level Committee comprising of members from University Grant Commission (UGC), All India Council for Technical Education (AICTE), National Council for Vocational Education and Training (NCVET), National Council for National Council for Educational Research and Training (NCERT), Department of School Education and Literacy (DoSEL) & Department of Higher Education (DoHE), Ministry of Education (MoE), Ministry of Skill Development and Entrepreneurship (MSDE), Central Board of Secondary Education (CBSE), National Institute of Open Schooling (NIOS) and Directorate General of Training (DGT)

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FOREWORD

Educational opportunities and effective skilling are the driving force of economic growth and social development for any country. India is the world's youngest nation in terms of youth population with a burgeoning economy. The benefits of these strengths can be evenly spread across the country only when the youth is well educated and appropriately skilled. Quality education that meets the need of the industry and enhances employment, therefore, is a pressing need. Emphasizing that there should be no hard separation among curricular and extracurricular or co-curricular or between vocational or academic streams, the National Education Policy (NEP) 2020 stressed upon the need for vocational education through integration and mainstreaming of vocational education with general education. This calls for re-engineering of education system.

The High-Level Committee constituted by the Government to formulate a unified credit accumulation & transfer framework for both vocational and general education, from school education to higher education, has developed "National Credit Framework" encompassing three main components such as credits earned from academic grade, skill programme and relevant experience. This framework will enable establishing equivalence and mobility between general education and vocational education so that lifelong learning, recognition of prior learning, multiple entry and exit, and continuous professional development are encouraged in the system.

I congratulate the High-Level Committee under the chairmanship of Dr N. S. Kalsi, Chairman, NCVET for taking on this challenging task of drafting the "National Credit Framework". I am sure this framework will make studies and courses more transparent, flexible and provide skilled manpower for India's economy to achieve inclusive and equitable growth.

Prof. M. Jagadesh Kumar
Chairman
University Grants Commission

PREFACE

National Education Policy (NEP), 2020, envisioned under the dynamic leadership of **our Hon'ble Prime Minister, Shri Narendra Modi,** reflects **the aspiration** of the **students, teachers and citizens** of the country. The NEP is rooted in ***Bhartiya*** and is in sync with the culture and heritage of our nation while assimilating global knowledge and perspective.

The National Education Policy 2020, **lays emphasis on of making the education more holistic and effective by integration of general (academic) and vocational education** while ensuring the **vertical and horizontal mobility of students and learners** between academic and vocational streams. Built on the **foundational pillars of access, equity, quality, affordability and accountability**, NEP strives to **transform India into a vibrant knowledge society** to become a global knowledge superpower ***(Vishwaguru)***.

To realise the intent and objectives of National Education Policy 2020, the **National Credit Framework (NCrF),** has been developed **under the guidance of Shri Dharmendra Pradhan, Hon'ble Minister of Education and Minister of Skill Development & Entrepreneurship** jointly by a **High Level Committee** constituted by the Government with members from UGC, AICTE, NCVET, NIOS, CBSE, NCERT, Department of School Education and Learning & Department of Higher Education, Ministry of Education, DGT, and Ministry of Skill Development. NCrF is a **comprehensive credit framework** encompassing elementary, school, higher, and vocational education & training, **integrating creditization of learning** on in various dimensions i.e. **academics, vocational skills and Experiential learning including relevant experience and proficiency/ professional levels acquired**.

The NCrF provides for **creditization of all learning and assignment, accumulation, storage, transfer & redemption of credits, subject to assessment; removes distinction and establishes** academic **equivalence** between vocational & general education while enabling **mobility** within & between them, and its operationalization through the Academic Bank of Credits (ABC).

The **NCrF relies on an integrating approach** across the **education and skilling frameworks enabling** the education and skilling ecosystem **in implementing** one single credit-based framework in line with the vision of National Education Policy 2020.While catering to **multi-disciplinarity and holistic education** across sciences, social sciences, arts, humanities and sports, NCrF **enables multiple entry - multiple exit** (ME-ME) **pathways** in general & vocational education; **ensures flexibility for students** to choose their **learning trajectories and career choices,** including option for **mid-way course correction or modification**, as per their talents and interests.

NCrF also recognizes blended and online learning, promoting extensive use of technology in teaching and learning, especially in vocational education, training and skilling. Use of technology in turn helps in removing barriers while improving **access and opportunities for Divyangs**.

Implementation of NCrF will promote Internationalization of education by enabling equivalence of courses and qualifications, provisions of credit transfer**,** and encourage international exchange of students and faculty with foreign universities.

NCrF has enabled special provisions for educational acceleration for gifted students with special learning abilities as also for Recognition of Prior Learning for workforce those have acquired the knowledge and skills informally, through family inheritance, work experience, traditional or other methods, **thereby allowing them progression and mobility into the formal education and learning ecosystem.**

The NCrF will enable transformation of India **by providing high quality education opportunities integrated with effective skills** to reap the demographic dividend making education and skilling truly **aspirational for our youth**.

The NCrF is an enabling framework and may not be construed as a regulation. It empowers, facilitates and allows the stakeholders while giving them the required flexibility for catering to their specific academic and skilling needs. National Credit Framework (NCrF) shall act as one single **broad enabling frameworks** for all regulatory organizations, and autonomous institutions who may, wherever required, **notify their detailed implementation guidelines** within this Framework. I am confident that NCrF will become a game changer by mainstreaming the skill education and experiential learning including relevant experience & proficiency/professional levels acquired, making this integral part of the education system thereby ensuring that the youth is provided with educational opportunities with quality skills for better employability.

As a part of this framework formulation and finalisation process extensive consultations have been carried out with various stakeholders including the presentations & discussions on the contours of National Credit Framework with IITs, IIMs, IIITs, NITs, IISERs, INIs, Universities, including skills universities and technical universities, HEIs, Engineering Colleges, School Boards, Technical Education Boards, state departments of education, higher education, technical education and skill education among many others. The draft national credit framework was given wide publicity and also put up for public consultation for more than 40 days and all comments and suggestions received have been duly analysed and, wherever necessary, have been incorporated in the document.

I am thankful to all the esteemed members of the High-Level Committee namely Shri Atul Kumar Tiwari, now Secretary, Ministry of Skill Development & Entrepreneurship, Shri Manoj Ahuja, the then

Chairperson CBSE, Shri Vineet Joshi, Additional Secretary, DoHE & Director General NTA, Shri. Maneesh Garg, Joint Secretary, DoSEL, MoE, Ms. Nidhi Chhibber, Chairperson CBSE, Prof. M.P Poonia, Vice- Chairman, AICTE, Prof. Rajnish Jain, Secretary, UGC, Prof. (Dr.) Saroj Sharma, Chairperson, NIOS, Dr. Dinesh Prasad Saklani, Director, NCERT, Dr Sridhar Srivastava, officiating Director, NCERT and Dr. Biswajit Saha, Director (Training & Skill Education), CBSE, Member-Secretary of the committee for working relentlessly on this framework, providing their valuable inputs, insights and support in bringing out this report. I acknowledge their invaluable contribution in formulation of this framework in such a short timeframe.

This document would have not been possible without the valuable guidance and unstinted support of Prof. Jagadesh Kumar, Chairman, UGC and Prof. Anil Sahasrabudhe, the then Chairman, AICTE. I whole heartedly thank them. I am also thankful for the valuable support of Sh. Rajesh Aggarwal, the then Secretary, Ministry of Skill Development and Entrepreneurship, Sh. Sanjay Murthy, Secretary Department of Higher Education, Smt. Anita Karwal, Secretary Department of School Education and Learning, Ministry of Education in bringing out this policy. I would also like to thank Dr. Vinita Aggarwal, Dr. Neena Pahuja the Executive Members, Lt Col Gunjan Chowdhary, Director, Ms. Sarika Dixit and Mr. Shourya Sangam, consultants at NCVET for their persistent help and assistance in preparing this document.

My best wishes to all the stakeholders for effective & efficient implementation of this much awaited framework which will be a game changer for the education and skilling landscape of the country for not only country's growth but also making education and skilling aspirational for our youth and making India the **skill capital of the world** by our global recognition in the education and skilling domain.

Dr. Nirmaljeet Singh Kalsi, IAS (Retd.)
Chairperson of NCVET &
High-Level Committee

ABBREVIATIONS

AICTE	-	All India Institute of Technical Education
CBCS	-	Choice Based Credit System
CBSE	-	Central Board of Secondary Education
CITS	-	Craftsman Instructor Training Scheme
CTS	-	Craftsman Training Scheme
DGT	-	Directorate General of Training
HEIs	-	Higher Education Institutes
MSDE	-	Ministry of Skill Development and Entrepreneurship
NAC	-	National Apprenticeship Certificate
NCERT	-	National Council for Educational Research and Training
NCrF	-	National Credit Framework
NCVET	-	National Council forVocational Education and Training
NEP	-	National Education Policy
NSEQF	-	National School Education Qualification Framework
NHEQF	-	National Higher Education Qualification Framework
NIOS	-	National Institute of Open Schooling
NSQF	-	National Skill Qualifications Framework
NTA	-	National Testing Agency
NTC	-	National Trade Certificate
SAMVAY	-	Skill Assessment Matrix for Vocational Advancement of Youth
SDG	-	Sustainable Development Goals
UGC	-	University Grants Commission
VET	-	Vocational Education and Training

CONSTITUTION OF COMMITTEE ON CREDIT FRAMEWORK

The Government of India Constituted a High-Level Committee, vide order dated 18th November 2021, to develop a National Credit Accumulation & Transfer Framework for both Vocational and General Education. The Credit Framework would enable the integration of academic and vocational domains/components of learning and ensure flexibility and mobility between the two. The composition of the Committee is as follows:

1.	**Dr. Nirmaljeet Singh Kalsi, Chairperson, NCVET**	**Chairman**
2.	Shri Manoj Ahuja, Chairman, CBSE	Member
3.	Shri Atul Kumar Tiwari, Addl Secretary, MSDE	Member
4.	Shri Vineet Joshi Addl Secretary DoHE & Director General NTA, Chairman, CBSE	Member
5.	Smt. Neelam Shammi Rao, Addl Secretary & DG, DGT, MSDE	Member
6.	Shri. Maneesh Garg, Joint Secretary, DoSEL, MoE	Member
7.	Prof. Rajnish Jain, Secretary, UGC	Member
8.	Prof. (Dr.) Saroj Sharma, Chairperson, NIOS	Member
9.	Prof. M.P Poonia, Vice- Chairman, AICTE	Member
10.	Dr Sridhar Srivastava, Director, NCERT	Member
11.	Dr. Biswajit Saha, Director (Training & Skill Education), CBSE	Member-Secretary

TERMS OF REFERENCE OF THE HIGH LEVEL COMMITTEE

i. Assign credit value to academic and skill courses taught at various levels

   a. School education,

   b. Higher Education,

   c. Skilling Ecosystem, Vocational Training and Education

   d. Distance/ Blended Learning, etc.

ii. Identify ways of Credit Accumulation for:

   a. School Education

   b. Higher Education.

   c. Vocational education and Training

iii. Propose Credit Transfer Model for:

   a. Vocational and School Education and vice-versa

   b. Vocational and Higher Education and vice-versa

iv. Establish academic equivalence between Vocational and General Education at all levels.

v. Develop the unified credit framework for integration of vocational education and training/ skilling into school and higher education in line with the National Education Policy 2020 to enable vertical and horizontal mobility between education and skilling

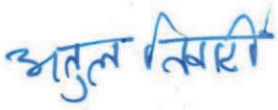
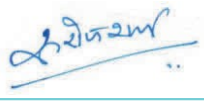
vi. Identify the mechanism for accumulation and storage of credits through a Credit Bank

vii. Any other matter relating to the development and functioning of the unified credit framework

The Final Report has agreement and signature of all the esteemed members of the High level Committee.

NATIONAL CREDIT FRAMEWORK

We, the undersigned members of the High Level Committee constituted by Ministry of Skill Development and Entrepreneurship (MSDE) vide order no Coord-11/01/2021-P&C dated 18th November 2021 on the National Credit Accumulation and Transfer Framework for both Vocational and General Education, hereby submit the final Report of National Credit Framework (NCrF):

S.No.	Name and Designation		Signature with Date
i.	Dr. Nirmaljeet Singh Kalsi, Chairperson, National Council of Vocational Education and Training (NCVET)	Chairman	
ii.	Shri Atul Kumar Tiwari, Secretary, Ministry of Skill Development and Entrepreneurship (MSDE) (Then Addl Secy MSDE)	Member	
iii.	Shri Vineet Joshi, AS, DoHE, MoE & Director General NTA	Member	
iv.	Ms. Nidhi Chibber, Chairperson, CBSE	Member	
v.	Shri. Maneesh Garg, Joint Secretary, DoSEL, MoE	Member	Transferred out
vi.	Smt. Trishaljit Sethi, Director General, DGT, MSDE	Member	
vii.	Prof. M.P Paonia, Vice-Chairman, AICTE	Member	
viii.	Prof. RajnishJain, Secretary, UGC	Member	
ix.	Dr. Dinesh Prasad Saklani, Director, NCERT	Member	
x.	Prof. (Dr.) Saroj Sharma, Chairperson, NIOS	Member	
xi.	Dr. Biswajit Saha, Director (Training & Skill Education), CBSE	Member - Secretary	

THE NATIONAL CREDIT FRAMEWORK: EXECUTIVE SUMMARY

Manifesting the National Education Policy 2020

The National Education Policy 2020 envisions making education more holistic and effective and to lay emphasis on the integration of general (academic) education, vocational education and experiential learning including relevant experience and proficiency/ professional levels acquired. To fulfil this vision, it is imperative to establish and formalize a national credit accumulation and transfer system which will **integrate both general & vocational education** while ensuring mobility of students/ learners within and between the two systems.

The **National Credit Framework (NCrF)** has been jointly developed by UGC, AICTE, NCVET, NIOS, CBSE, NCERT, DGT, Ministry of Education, and Ministry of Skill Development to achieve the vision and intent of NEP. NCrF is a comprehensive framework encompassing elementary, school, higher, and vocational education & training, integrating **learning on all dimensions i.e. academics, vocational skills and experiential learning including relevant experience and proficiency/ professional levels acquired**.

The **National Credit Framework (NCrF) is an inclusive one single meta framework** to seamlessly integrate the credits earned through school education, higher education and vocational & skill education. For creditization and integration of all learning, the National Credit Framework (NCrF) shall encompass the qualification frameworks for higher education, vocational & skill education and school education, namely National Higher Education Qualification Framework (NHEQF), National Skills Qualification Framework (NSQF) and **National Curriculum Framework (NCF)/** National School Education Qualification Framework (NSEQF) respectively.

The implementation of **NCrF would be a game changer** in realising the vision and intent of NEP by ensuring **flexibility & mobility** and **establishing academic equivalence** between general and vocational education **while removing distinction between them.** Such integration shall open numerous options for further progression of students and inter-mingling of school & higher education with vocational education &experiential learning including relevant experience and proficiency/ professional levels acquired, to further enable entry and re-entry from vocational stream to general education and vice-versa, thus mainstreaming the vocational education and skilling.

The National Credit Framework (NCrF) enables for broad based, **multi-disciplinary, holistic education**, allowing **imaginative and need based curricular structures** and encourages **creative combinations of subjects and disciplines.** The Framework has been built on the strength of existing regulations, guidelines and qualification frameworks of UGC, AICTE, NCVET, NCERT, CBSE & NIOS as

also the credit system being followed by IITs, IIMs, NITs and other INIs so that the options for Multiple Entry-Multiple Exit (ME-ME) are available, accessible and applicable across the higher education, school education and vocational education.

The National Credit Framework (NCrF) provides **for Assignment, Accumulation, Storage, Transfer & Redemption of Credits**. It paves way for **multi-disciplinary education** and **empowers students** through **flexibility in choice of cou**rses for choosing their **own learning trajectories and programmes**, and thereby choose their paths in life with **appropriate career choices**, including **option for mid-way course correction**s, according to their talents and interests.

The NCrF fully enables the students with opportunities to catch up and re-enter education ecosystem in case they have fallen behind or dropped out at any stage. NCrF also fully supports **educational acceleration for students with gifted learning abilities and Recognition of Prior Learning for workforce that has** acquired knowledge and skills informally through the traditional family inheritance, work experience or other non-formal or informal methods, **thereby allowing them integration, progression and mobility into formal education ecosystem.**

The total **Notional Learning Hours** for one year of education/ learning across school education, higher education and vocational education, training and skilling have been agreed to be **1200 Hrs per year** for the purpose of assignment of credits for which the students/ learners shall be **awarded 40 Credits** subject to assessment**.**

Thus for the purpose of credit calculations under National Credit Framework (NCrF), overall, one Credit is equivalent to 30 notional learning hours while the regulators or autonomous institutions may provide for different number of hours per credit for theory practical and experiential learning. The assignment of credits is independent of the education streams, subjects or type of learning. The students/ learners may take additional courses, programs, subjects or projects beyond 40 credits to get additional credits for the same.

The NCrF recognises **no hard separation between different areas of learning**, i.e. arts and sciences, vocational and academic streams, curricular and extra-curricular for the purpose of assignment of credits and credit levels. In the true spirit of National Education Policy 2020, **the total learning hours of students / learners can be creditized, subject** to assessment.

The **learning hours may include** class room learning, teaching, practical and laboratory work, innovation labs, class projects, assignments, tutorials; sports and games, yoga, physical activities, performing arts, music, handicraft work, social work, NCC, bag less days; examinations, class tests, quizzes, assessments; vocational education, training and skilling, minor or major project work, field visits in skill education as well as internship, apprenticeship, on the job training (OJT), and experiential learning including relevant proficiency and professional levels acquired etc.

Such an approach would also close the gap in achievement of learning outcomes by shifting focus from the classroom education to competency and learning outcome-based learning.

Under the National Credit Framework (NCrF) **every learning hour can be creditized subject to its assessment.** The **Credit levels** to be assigned across school/ higher/ vocational education/ skilling**,** (independent of the streams, subjects etc.) are based on the **cumulative numbers of years of learning with assessment.** For earning credits, the course/ qualification should be aligned to the qualification framework concerned, be assigned a defined NCrF level while clearly describing the desired competency and learning outcome expected. Also, the learning outcome shall be assessed after completing the course/ qualification for assignment of credits.

The **assessment is thus mandatory for earning credits** for all types of learning. **The Assessment** are the stages at which the student/ learner needs to be formally assessed for progression in academic/ vocational/ skilling streams. (e.g. 10th/ 12th board exams, DGT's assessment and exams for CTS, UG/ PG exams in higher education). The NCrF Credits for the two courses/ qualifications/ programs may be added to each other and accumulated in ABC if these are earned in the same assessment band subject to the guidelines of the respective regulators.

The NCrF credit levels to be assigned for school education are up to level 4, while for higher education the NCrF levels will be assigned from Level 4.5. to level 8 [Undergraduate Levels: 4.5, 5.0, 5.5 & 6.0; Post Graduate Levels: 6.0, 6.5 & 7.0; and PhD Level 8] and for vocational education & training from level 1 to level 8.

The total Credit Points earned by the student in a particular year could be obtained by multiplying the credits earned with the NCrF Level at which the credits have been earned. The credit points may be redeemed as per the guidelines issued in this regard for entry or admission in school, higher, technical or vocational education programs/ courses at multiple levels enabling horizontal and vertical mobility with various lateral entry and exit options.

In addition to the credits for higher education, the **Academic Bank of Credit (ABC)** shall also be expanded to include **credits earned through school education, vocational education, training and skilling, including apprenticeships, internships, project work etc.** ABC could digitally store the academic and other credits earned from recognized institutions / bodies so that credits could be redeemed, and the relevant award of certificate, diploma or degree granted taking into account the credits / credit points earned at various NCrF levels. The credits may also be linked to Digi locker for easy verification and portability.

The National Credit Framework (NCrF) also **enables creditization of experiential learning including relevant experience and proficiency/professional levels acquired**, based on the weightage for the purpose, subject to assessment.

Assignment of Credits has also been enabled for online, digital and blended learning, especially in vocational education and skilling to expand the open and distance learning options and to promote extensive use of technology in education, learning & skilling. This would help in overcoming the constraints of physical infrastructure & scalability while enhancing access, equity, and affordability and ensuring quality and accountability. The blended learning option shall also **enhance accessibility of learning in Indian language for 90% non-English medium students as well as for Divyangs.**

National Credit Framework (NCrF) will encourage **internationalization of education through credit transfer provisions,** thus enabling **wider recognition and acceptance of Indian education and skilling** by other countries through **international equivalence,** promoting exchange with foreign universities and institutions.

Thus, there would be only **one National Credit Framework** for higher education, school education, vocational education, training and skill education, namely the **National Credit Framework (NCrF)** which would be the **single meta framework document notified for creditization and integrating learning in various dimensions** of academics, skilling and experiential learning including relevant experience and proficiency/ professional levels acquired, The NCrF would be operationalised through the Academic Bank of Credits (ABC). The **qualification frameworks for school, higher education and skills would be aligned with NCrF.** The **basic principles and provisions of National Credit Framework (NCrF)** would be **applicable to all the qualification frameworks**.

National Credit Framework (NCrF) shall act as a **broad enabling framework** for all regulatory organizations (UGC, AICTE, NCVET, NCERT etc.), and autonomous institutions, including Universities, INIs, CBSE, NIOS, State School Boards, State Technical Education Boards, etc. who may, wherever required, **notify their detailed implementation guidelines. However, all such guidelines shall confirm to the provisions of the national credit framework.** The **NCrF** empowers institutions and enables them with the required flexibility for catering to their specific academic requirements and other special needs**.**

The National Credit Framework (NCrF) shall not only enable effective implementation of the vision of National Education Policy 2020 through integration of various policy endeavors under general education and vocational education but will also be a game changer to establish a benchmark for holistic education and learning integrated with skills, by removal of barriers, infusion of flexibility and creation of lifelong learning opportunities. NCrF will enable transformation of India by providing high quality education opportunities integrated with effective skills to reap the demographic dividend making education and skilling truly aspirational.

NATIONAL CREDIT FRAMEWORK

1. SECTION 1: OVERVIEW

1.1. INTRODUCTION

Education is fundamental for achieving full human potential, developing an equitable society and promoting national development. Providing universal access to quality education is the key to India's continued ascent and leadership on the global stage in terms of economic growth, social justice & equality, scientific advancement, national integration, and cultural preservation. Universal high-quality education opportunities integrated with effective skills is the best way forward for developing and maximizing our country's rich talents and resources for the good of the individual, the society, the country, and the world.

Today, India is one of the youngest nations in the world with more than 62% of its population in the working-age group (15-59 years), and over 54% of its total population below 25 years of age. Its population pyramid is expected to bulge across the 15-59 age groups over the next decade. This is a huge opportunity and at the same time poses a formidable challenge. To reap this demographic dividend India needs to equip its workforce with knowledge and employable skills so that they can contribute substantively to the economic growth and development of the country. Our ability to provide high-quality educational opportunities to the youth will determine the future of our country.

Not only the educational opportunities but effective skilling is also the driving force of economic growth and social development for any country. Countries with higher levels and standards of skills adjust more effectively to the challenges and opportunities in domestic and international job markets. The United Nations in the epic summit of 2015 on 'Transforming our World: the 2030 Agenda for Sustainable Development' defined 17 Sustainable Development Goals (SDGs) which places emphasis on 'skill' apart from the 'basic necessities' for people across the world.

The SDGs have defined skill development requirement as - 'to promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all'. The SDGs report 2018 by the United Nations shows that 42% of the world population is young with a global youth unemployment rate of 13%, which can be brought down drastically by skilling the youth.

The global education development agenda reflected in the Goal 4 (SDG4) of the 2030 Agenda for Sustainable Development, adopted by India in 2015 seeks to 'ensure inclusive and equitable quality education and promote lifelong learning opportunities for all' by 2030. Such a lofty goal will require the entire education system to be reconfigured to support and foster learning, so that all of the critical targets and goals (SDGs) of the 2030 Agenda for Sustainable Development can be achieved. Efforts

made in this direction should meet the needs of all sectors of economy including primary, industry and the service sectors. Such efforts should also be learner centric to make the entire skilling movement aspirational. Skill training needs to be considered as a complementary and essential part of mainstream education, rather than being regarded as a secondary alternative, as also envisaged under the National Education Policy (NEP), 2020.

This National Education Policy, 2020 envisions an education system rooted in Indian ethos that contributes directly to transforming India, into an equitable and vibrant knowledge society, by providing high-quality education to all and thereby making India a global knowledge superpower. The Policy envisages that the curriculum and pedagogy of our institutions must develop among the students a deep sense of respect towards the Fundamental Duties and Constitutional values, bonding with one's country and a conscious awareness of one's roles and responsibilities in a changing world.

The vision of this policy is to instill among the learners a deep-rooted pride in being Indian, not only in thought, but also in spirit, intellect, and deeds, as well as to develop knowledge, skills, values, and dispositions that support responsible commitment to human rights, sustainable development & living, and global well-being, thereby reflecting a truly global citizen. Education with effective skilling is a great leveller and is the best tool for achieving economic and social mobility, inclusion, and equality. These elements must be incorporated considering the local and global needs of the country, and with a respect for and deference to its rich diversity and culture.

The National Education Policy seeks to provide to all students, irrespective of their place of residence, a quality education system, with particular focus on historically marginalized, disadvantaged, and under-represented groups. Instilling knowledge of India and its varied social, cultural, and technological needs, its inimitable artistic, language, and knowledge traditions, and its strong ethics in India's young people is considered critical for purposes of national pride, self-confidence, self-knowledge, cooperation, and integration. This may be achieved by a number of factors and an important one amongst these being establishing equivalence and mobility between general education and vocational education and training/ skilling so that lifelong learning, recognition of prior learning, multiple entry and exit, and continuous professional development is encouraged in the system.

1.2. CREDITS IN INDIAN CONTEXT

1.2.1. School Education

At present, there is no established credit mechanism for regular school education. However, under the open schooling system, the National Institute of Open Schooling (NIOS) follows the following credit system:

i. Each subject is assigned 240 hours for self-study. Total 5 subjects are required at the

Secondary and Senior Secondary level which makes it of 1200 hours and 40 credits in one year

ii. 1 credit is equivalent to 30 hours of total study i.e. each subject is of 8 credits.

There is no distinction for allocation of credits based on type of learning like theory, practical or experiential learning etc.

1.2.2. Higher Education

I. CHOICE BASED CREDIT SYSTEM (CBCS) BY UGC

Under the CBCS system, the requirement for awarding a degree or diploma or certificate is prescribed in terms of number of credits to be earned by the students. This framework is being implemented in several universities across States in India. The main highlights of CBCS are as below:

- The CBCS provides flexibility in designing curriculum and assigning credits based on the course content and learning hours.
- The CBCS provides for a system wherein students can take courses of their choice, learn at their own pace, undergo additional courses and acquire more than the required credits, and adopt an interdisciplinary approach to learning.
- CBCS also provides opportunity for vertical mobility to students from a bachelor's degree programme to masters and research degree programmes.

The detailed Guidelines for Choice Based Credit System is available at https://ugc.ac.in/pdfnews/8023719_Guidelines-for-CBCS.pdf

II. SKILL ASSESSMENT MATRIX FOR VOCATIONAL ADVANCEMENT OF YOUTH (SAMVAY) BY AICTE

The scheme on Skill Assessment Matrix for Vocational Advancement of Youth (SAMVAY) is a credit framework for skill-based vocational courses which was launched by MHRD on 11th November 2014. The SAMVAY defines the rules for credit allotment and follows the NSQF regulatory framework while stating the credit assessment requirements for skills. The skill-based courses, under SAMVAY, generally, have both the skills and general education components.

The following formula may be used for the credit calculation in general education component of the courses:

i. General Education credit refers to a unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching [lecture or tutorial] or two hours of practical work/field work per week. Accordingly, one Credit would mean equivalent of 14-15 hrs of theory or 28 - 30 hrs of workshop/ lab work.

ii. One Credit is equivalent to 14-15 periods of 60 minutes each, for theory, or 28-30 periods of 60 minutes for workshop/labs and tutorials.

iii. For internship/field work, the credit weightage for equivalent hours is 50% of that for lectures/tutorials.

iv. For self-learning, based on e-content or otherwise, the credit weightage for equivalent hours of study is 50% or less of that for lectures/tutorials.

For the ease of calculation, the break -up of credit with respect to general education component is as in the table below:

Table1: Break-Up of Credits

Theory 1 Credit = 15 hours	Practical 1 Credit = 30 hours	Experiential learning including relevant experience and proficiency/ professional levels acquired 1 Credit = 40-45 hours
• In each theory class, a new concept is taught, and the student is learning something new throughout the class. • It also involves self-learning.	• The practical is dependent on theory and experiments performed are based on concepts learned in theory class. • Repetition of an already learned concept. Observations are taken again and again	Experiential learning including relevant experience and professional levels acquired activities like field visits, industrial visits, etc carry lesser weightage because it is just an observation and/or application of concepts learned

As per SAMVAY, the credits regarding skill component may be awarded in terms of NSQF level certification which will have more than 50% weightage of total credits of the course based on the assessment in a manner prescribed by the concerned regulatory body.

The latest SAMVAY guidelines are available at: SAMVAY_1_.pdf (aicte-india.org)

III. UGC GUIDELINES FOR PROVIDING SKILL-BASED EDUCATION UNDER NATIONAL SKILL QUALIFICATION FRAMEWORK

Under these guidelines, the skill-based programmes shall have a mix of general and skill components in which 30-40% of the total content shall be of general nature including language courses while the remaining 60% (extendable upto 70%)of the content shall be on skill development. In such programs the following formula is used for conversion of time into credit hours.:

a. Skill Component: The skill component should have a minimum of 60% (extendable upto a maximum of 70%) of the total credits. The skill component will include practical classes in laboratories / workshops, internships, apprenticeships and any other forms of hands on training.

b. General Education Component: The balance credits of the program i.e. 30-40% are of general component. This will include curricula which are supportive to the core trade in addition to communication skills, soft skills, digital skills, critical thinking, problem solving skills, environmental studies and value education.

The Credit assigned for the general education components are in line with SAMVAY. The detailed guidelines can be accessed at 6556003_Guidelines-for-providing-Skill-Based-Education-under-NSQF.pdf (ugc.ac.in) and summary document at NSQF New Guidelines.pdf (ugc.ac.in)

IV. CREDITS STRUCTURE FOR AUTONOMOUS INSTITUTIONS LIKE IIT/IIMs

The institutions like IIT/IIMs in India are autonomous and each institution implements its own credit system which broadly follow the similar system. Education and learning at such institute/s are generally organized around the semester-based credit system of study. There is a process of continuous evaluation of a student's performance/progress and flexibility is allowed to students to progress at an optimum pace suited to their ability or convenience, subject to fulfilling minimum requirements for continuation and within the maximum allowable period for completion of a degree/ program of study.

The IITs in general follow a concept of L-T-P Structure which means Lectures, tutorials and practical hours respectively. The curricular design of programs being offered and the assignment of credits for lectures, tutorials and practical varies from IIT to IIT. A use case indicating comparison of the credit system for 4 IITs namely- IIT Delhi, IIT Madras, IIT Bombay and IIT Guwahati is placed at Annexure I.

1.2.3. Vocational education and Training/ Skilling

I. NATIONAL SKILLS QUALIFICATION FRAMEWORK (NSQF)

The National Skills Qualification Framework (NSQF) was notified on 27th December 2013, by the Ministry of Finance, pursuant to the decision of the Cabinet Committee on Skill Development held on 19th December 2013.

NSQF is a national competency-based skill framework that provides for multiple pathways, horizontal as well as vertical to facilitate mobility both within vocational education and training/ skilling and between vocational education and training/ skilling and general education thus linking one level of learning to another higher level. The NSQF is also a quality assurance framework as it organizes qualifications in a series of 10 levels (now revised to 8 levels) based on Professional Theoretical Knowledge, Professional and Technical Skills/ Expertise, Employment Readiness & Entrepreneurship Skills & Mind-set, Broad Learning Outcomes and Responsibility. These levels are defined in terms of learning outcomes which are an explicit description of what a learner should know, understand and be able to do as a result of learning, regardless of whether these competencies were acquired through formal, experiential, non-formal or informal learning. This enables learners to acquire the desired competency levels, transit to the job market, and at an opportune time, return for acquiring additional/ advanced skills as required to further upgrade their competencies.

The NSQF is based on an outcome based approach wherein each level is defined and described in terms of competency levels that are to be achieved, thereby enabling clear provisions for mobility (both vertical & horizontal) and making progression pathways transparent for students, institutions and employers. The NSQF has resulted in development of quality qualifications applicable both in school education and higher education and has also helped in alignment of Indian qualifications to international qualifications through existing qualification frameworks of other countries. The NSQF facilitates the awarding of credit and supports credit transfer and progression routes within the Indian Education and Training system.

NSQF is anchored in National Council for Vocational Education and Training (NCVET) and is implemented through National Skills Qualification Committee (NSQC) for which a permanent secretariat is set up in NCVET. The NSQC has representation from Central Ministries, NITI Aayog, all regulators including UGC, AICTE, and CBSE, Awarding Bodies like the Directorate General of Training (DGT), Sector Skill Councils (SSCs) and the State Skill Development Missions, and select industry bodies by rotation.

Thus NSQC represents the stakeholders from higher education, technical education, school education, open schooling, informal education and skill ecosystem including the representatives from various ministries connected with education & skilling. NSQC also has stakeholders from the sector skill councils which are in turn representing industries, recognized industry associations by rotation, state governments by rotation and concerned awarding bodies

The detailed NSQF notification can be accessed at https://www.ncvet.gov.in/nsqf-notification.

2. SECTION 2: GENESIS OF THE NATIONAL CREDIT FRAMEWORK

2.1. NEED FOR THE NATIONAL CREDIT FRAMEWORK

The National Education Policy 2020, lays emphasis on the integration of the general (academic) education and vocational education & training/skilling with provision for seamless horizontal and vertical mobility between the two for lifelong learning. Such integration shall enable desired reforms in the education and skilling systems. In addition, this integration of vocational education and training/ skilling programmes into mainstream education at all levels, as is highlighted in NEP 2020, will lead to removal of distinction between general and vocational education and training/ skilling while at the same time enable establishing academic equivalence between the two which is the most important way of making the vocational education and training/ skilling aspirational' for the youth. The integration would also lead to emphasizing the dignity of labour and importance of various vocations.

To fulfil the vision of National Education Policy 2020, make education more holistic and effective and to lay emphasis on the integration of general (academic) education, vocational education and experiential learning including the relevant experience and proficiency/professional levels acquired it becomes imperative to establish and formalize a national credit accumulation and transfer system which will enable such integrations while ensuring equivalence and mobility of students and learners within and between the General and vocational education systems.

The detailed National Education Policy 2020 is available at

https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf

2.2. NATIONAL CREDIT FRAMEWORK- ENABLING EFFECTIVE TRANSFORMATION IN EDUCATION & SKILL ECOSYSTEM THROUGH IMPLEMENTATION OF NEP 2020

The National Education Policy (NEP) 2020, is the first education policy of the 21st century and aims to address the many growing developmental imperatives of our country. The NEP proposes the revision and revamping of all aspects of the education structure, including its regulation and governance, to create a new system that is aligned with the aspirational goals of 21st century education, including Sustainable Development Goal (SDG), while building upon India's heritage, traditions and value systems. The National Education Policy lays particular emphasis on the development of the creative potential of each individual. It is based on the principle that education must develop not only cognitive capacities - the 'foundational capacities' of literacy & numeracy and 'higher-order' cognitive capacities, such as critical thinking and problem solving but also social, ethical, and emotional capacities and dispositions. Built on the foundational pillars of Access, Equity, Quality, Affordability and Accountability, the policy aims to transform India into a vibrant knowledge society and global knowledge superpower by making both school and college education more holistic, flexible and multidisciplinary.

The NEP 2020 proposes reduction in curriculum/content in all subjects to its core essentials, to make space for critical thinking and more holistic, inquiry-based, discovery-based, discussion-based, and analysis based learning. The mandated content will focus on key concepts, ideas, applications, and problem solving. Teaching and learning will be conducted in a more interactive manner; questions will be encouraged, and classroom sessions will regularly contain more fun, creative, collaborative, and exploratory activities for students for deeper and more Experiential learning including relevant experience and proficiency/ professional levels acquired after the individual takes up self/job employment on completion of his or her education/skill training. In all stages of education, Experiential learning including relevant experience and proficiency/ professional levels acquired will be adopted, including hands-on learning, arts-integrated and sports-integrated education, story- telling-based pedagogy, among others, as standard pedagogy within each subject, and with explorations of relations among different subjects. To close the gap in achievement of learning outcomes, classroom transactions will shift, towards competency-based learning and education.

The NEP 2020 while highlighting the importance of flexible learning emphasizes on imaginative and flexible curricular structures which will enable creative combinations of disciplines for study and offer multiple entry and multiple exit (ME-ME) points and thus, enables removing of the current system of rigid boundaries. These would create new possibilities for students to choose and learn the subject(s) of their choice, while changing the educational institute as per their preference, convenience, or necessity'. NEP shall also help to achieve universal participation in educational institutes by carefully tracking students, as well as their learning levels, in order to ensure that they (a) are enrolled in and attending educational institutes, and (b) have suitable opportunities to catch up and re-enter educational institutes in case they have fallen behind or dropped out.

NEP 2020 highlights the need for multidisciplinary study from the secondary education stage. It lays particular emphasis on empowering students through flexibility in course choices so that the learners could choose their learning trajectories and programmes, and thereby choose their paths in life according to their talents and interests. The NEP 2020 also proposes to establish an 'Academic Bank of Credit' (ABC) which could digitally store the academic credits earned from recognized institutions so that the degrees can be awarded considering credits earned.

Given the premise, a well-defined and robust credit framework will enable seamless integration and coordination across institutions and all stages of education and skilling. Such a framework will enable broad based, multi-disciplinary/ inter-disciplinary, holistic education with flexible curricula, creative combinations of subjects, providing for multiple entry and exit points with appropriate certification and thereby will enable achieving the objectives as are envisioned in NEP.

2.3. ADVANTAGES OF NATIONAL CREDIT FRAMEWORK

2.3.1. Removal of Hard Separations between Educational Streams, General and Vocational education, Curricular & other activities

NEP 2020 highlights that, holistic development and a wide choice of subjects and courses should be the new distinguishing feature of secondary school education and there should be no hard separation among 'curricular', 'extracurricular', or 'co-curricular' among 'arts', 'humanities', commerce and 'sciences' etc, or between 'vocational' or 'academic' streams.

Learning is a multi-dimensional process that takes into account cognitive, emotional, social and physical learning as well. To ensure holistic learning of students, it is desirable that they are allowed to choose subjects according to their interests irrespective of the nature of course (academic or vocational). The educational institutes are meant to prepare students for handling life challenges and upheavals, and it is only through this flexibility of choice with a range of elective subjects available that will help learner/students make more informed career choices. The proposed credit system will take into account the learning hours put in by a learner irrespective of the stream of education (general and vocational).

2.3.1. Establishing Equivalence Between General and Vocational education & training/ skilling

Equivalency, in general, determines the level of education and number of years of study completed along with the upward progression in accordance with candidate's field of study. By equivalence, it is understood that the evaluation of a curriculum followed by the holder of the educational award (certificate/ diploma etc.) and its compatibility with the national education system in terms of the learning outcomes and the gained competencies are aligned to other curriculums and therefore considered at parity.

In order to establish such equivalence, it is important that each program within general education and vocational education and training/ skilling has a measurable criterion including the outcomes and competencies backed by proper assessment which is possible only through a robust credit framework. Such framework should enable assignment of a measurable criteria for both general education and vocational education and training/ skilling with due emphasis on the content of the study, duration and achievement of requisite competencies. The credit framework shall also allow for identifying measurable outcomes through a well-defined assessment process in order to bring equivalence of a vocational education and skilling program with general education programs with or without any additional academic learning. It will facilitate interoperability, mobility, and transfer of students between schools, boards, colleges and universities, empowering greater choice and means for students to pursue knowledge and skills of their interests, aptitude and circumstances.

2.3.2. Mobility Between and Within General and Vocational Education & Training/ Skilling

One of the major advantages of the National Credit Framework will be to enable establishment of eligibility criteria for various qualifications being implemented both in general education and

vocational education and training/ skilling in terms of accumulated credit points at certain credit levels. These credit points can be used to determine the eligibility for taking admission in various programs at multiple levels, subject to fulfilment of the broad principles laid down under National Credit Framework (NCrF)and the acceptance of the credit points by the concerned agencies. This mobility will be an outcome of the equivalence that is established between general and vocational education and training/ skilling based on the criterion laid by NCrF without the need for further certification of equivalence of academic qualifications of students.

2.3.3. Enabling Provisions for Lifelong Learning Through Multiple Entry and Multiple Exit (ME-ME) Options

Flexible learning is important to choose one's learning pathway leading to the award of certificate, diploma, and degree. There are occasions when learners pursue alternative schooling, home-schooling, online schooling or have to give up their education mid-way for various reasons. The national credit framework will act as an enabler in this regard and regulators shall be required to define the entry and exit criteria of the programs being offered by them. This would also help in fragmenting an entire program into smaller units with due acknowledgement being given to each unit of learning.

The credit transfer mechanism will also enable a student to enter, exit and re-enter the educational ecosystem both general and vocational at any point of time. In such cases due weightage is proposed to be given to work experience gained or any other training undertaken by the learner, in offline or online mode, subject to assessment. The proposed equivalence by virtue of this national credit framework enables a learner (whether from a general education background or from a vocational education and training/ skilling background) to accumulate necessary credits that will allow him/her to re-enter the mainstream education. The ME-ME is possible when the entire education ecosystem especially in case of higher education is divided into yearly independent modules.

The multiple entry and exit option or the lifelong learning will serve the following objectives:

i. Remove rigid boundaries and facilitate new possibilities for learners.

ii. Recognises no hard separation between different areas of learning, i.e. arts, commerce, humanities and sciences, vocational and academic streams, curricular and extra-curricular for the purpose of assignment of credits and credit levels.

iii. Offer creative combinations of disciplines of study that would enable multiple entry and exit points.

iv. Offer flexibility in curriculum and novel course options to students in addition to discipline specific specializations.

v. Offers flexibility in choice of courses to the students for choosing their own learning trajectories and programmes, and thereby choose their paths in life with appropriate career choice, including option for mid-way course corrections, according to their talents and interests.

vi. Creditization of all types of learning subject to assessment. Also enables creditization of experiential learning including relevant experience and proficiency/ professional levels acquired, based on the weightage for relevant experience and proficiency/ professional levels achieved, subject to assessment.

vii. Enable credit accumulation, storage transfer and redemption along with provision of assessment/ evaluation.

viii. Validation of non-formal and informal learning (like alternative/home/open/ online/distance learning) for the award of a certificates, diploma, degree and encourage lifelong learning; and

ix. Facilitate redemption /encashing credits earned against a certificate diploma or degree when the learner resumes his/her programmes of study.

2.3.4. Integration and Intermingling of Education, Skilling and Work Experience

The proposed credit framework provides for a comprehensive and practical approach to include all dimensions learning i.e. academic education, skilling and experiential learning including relevant experience and professional levels acquired. Such seamless mixing of Education, Skilling and Work Experience would enable a student/learner to take full benefit of the option of Multiple Entry-Multiple Exit wherein, the student exits an academic program, undertakes a skill based training followed by a relevant work experience, acquires corresponding credits and then returns back for further education/ higher education.

This also enables a student/learner to get benefits of all kinds of learning whether acquired from academic education, vocational education & training/skilling or through Experiential learning including relevant experience and proficiency/ professional levels acquired by engaging in a workplace.

2.3.5. Enabling creditization of learning for students with varying learning capacities

This framework will enable creditization of learners with varying learning abilities including the educational acceleration of gifted students which is when students move through traditional curriculum at rates faster than normal pace and includes grade/class skipping, early entrance to school

or college and/ or subject based acceleration and also students with learning disabilities subject to achieving the desired learning outcomes prescribed at a particular level determined by successful assessments.

Such an approach may also be extended, and special provisions must be enabled for Hackathons, Olympiads and students showing exemplary performance in Sports, Fine Arts and other similar activities. Within the broad principles of NCrF, the regulator may define the specific modalities for catering to such students, subject to defining special assessment criteria.

The NCrF, therefore, also envisions to be a competency framework which shall, in addition to the established processes of formal education and certification, shall also enable the gifted learners with exceptional learning abilities/ capabilities/ competencies to move up the education and skilling ladder without going through the prescribed established formal education / learning hours by assessing the **learning outcomes for assignment of credits and the credit levels**. However, such **specialized assessment methods have to be very strict, objective, above board and adhere to high standard** so as to keep the credibility of the NCrF intact.

2.3.6. Enables provisions for Recognition of Prior Learning (RPL)

The NCrF has enabled provision for **Recognition of Prior Learning thereby creditizing the existing** knowledge and skills **o**f the workforce acquired through various **formal, non-formal or traditional of any other methods. This would also take into account the learning acquired** through family inheritance, work experience, cluster-based learning and creditizing the same, **thereby allowing them progression and mobility into mainstream education.**

3. SECTION 3: DEVELOPING THE NATIONAL CREDIT FRAMEWORK

3.1. FORMULATION OF THE HIGHLEVEL COMMITTEE (HLC)

In order to fulfil the vision of NEP, 2020 and to facilitate its effective implementation, it was felt that it is important to formulate a comprehensive framework which caters to both General Education and Vocational Education and Training/ Skilling and also seamlessly aligns and integrates them. This was further emphasized upon by the Hon'ble Minister MSDE and MoE who suggested that the credit frameworks made in silos will not be conducive to address the challenges existing in the entire educational and skilling ecosystem and hence it is imperative that a national credit framework be developed across academics (school education, higher education) and vocational education & skilling.

Accordingly, a High-Level Committee, with well-defined ToRs was constituted by MSDE vide Order dated 18th November 2021, to develop a National Credit Accumulation and Transfer Framework for both General and Vocational Education and Training/ skilling. This framework should enable integration of academic and vocational domains of learning and ensure flexibility and mobility between the two. The Committee had representation from heads/ senior officials of Ministry of Education (including school and higher education), UGC, AICTE, NCERT, NIOS, CBSE, Ministry of Skill Development and Entrepreneurship (MSDE), NCVET and DGT. The committee was to be Chaired by Dr. Nirmaljeet Singh Kalsi, IAS Retd., Chairperson, National Council of Vocational Education and Training (NCVET).

The ToRs of the Committee and scope is also detailed below:

To formulate a framework for allocation of credits to every component of learning i.e. theory, practical, extracurricular, and experiential for general as well as vocational education and training/ skilling, to facilitate mobility within VET and from VET to general education. This framework is envisaged to cater to the following specific objectives:

i. To define credit, components of credit and corresponding credit value

ii. To devise a formula for calculating the credit/s for School Education, Higher Education, and VET.

iii. To formulate a framework for credit accumulation for School Education, Higher Education, and VET.

iv. To formulate a framework for credit transfer for VET & School Education, and vice-versa; and VET & Higher Education, and vice-versa.

v. Establish Academic Equivalence:

a. Between General Education and Vocational (both for School and Higher Education)

b. Within Vocational education and training/ skilling

vi. Identify the mechanism for accumulation, storage, and redemption of credit through Credit Bank

The HLC submitted its final Report on draft framework to Hon'ble Minister, Education and SDE and the same was launched by the Hon'ble Minister for public consultation from 19th October to 30th November 2022. Based on the observation/feedback/comments received the suitable modifications have been carried out for finalizing the framework.

3.2. THE NATIONAL CREDIT FRAMEWORK, ONE SINGLE META FRAMEWORK; THE BASIC PRINCIPLES

The National Credit Framework (NCrF) is a comprehensive framework encompassing elementary, school, higher, and vocational education & training, integrating the learning on the multiple axis i.e. academics, vocational skills and Experiential learning including relevant experience and proficiency/ professional levels acquired which has been jointly developed by UGC, AICTE, NCVET, NIOS, CBSE, NCERT, Ministry of Education, DGT, and Ministry of Skill Development.

The NCrF has been formulated on the existing regulations /guidelines of UGC, AICTE, NCVET, NCERT & NIOS and existing qualification frameworks for higher education, vocational education and school education so that the options for Multiple Entry-Multiple Exit (ME-ME) are accessible and applicable across the higher education, school education and vocational education.

The National Higher Education Qualifications Framework (NHEQF) has been formulated by UGC to achieve the objectives of NEP with detailed level descriptors and learning outcomes. The NHEQF and National Skills Qualifications Framework (NSQF) are in sync with each other to ease the integration of vocational education into higher education. The National Credit Framework (NCrF) seamlessly integrates higher education and vocational education and is totally aligned with the NHEQF and NSQF while also integrating school education [National Curriculum Framework (NCF)/ National School Education Qualifications Framework (NSEQF)] in continuum. Till now there was no credit framework in place for school education.

The National Credit Framework (NCrF) is one single meta framework which enables seamless integration and coordination across regulators and institutions to enable broad based, multi-

disciplinary, holistic education across sciences, social sciences, arts, humanities and sports, allows imaginative and flexible curricular structures, enables creative combinations of disciplines and integration of vocational education & skilling into academics with multiple entry and exit options.

3.2.1. National Credit Framework (NCrF) to be One Single Meta Framework

National Credit Framework (NCrF) is envisaged as one single credit framework encompassing school education, higher education, vocational education & training/ skilling and experiential learning based on proficiency/professional levels achieved. **The National Credit Framework (NCrF)** is the **Meta Framework for creditization of all types of learning and** integrating credits earned from academics, vocational education & training/ skilling and experiential learning including work experience and proficiency/professional levels achieved. **This** is the **enabling Framework,** laying down and defining the basic principles for operationalisation of credit system and **achieving the objectives of NEP 2020.**

It shall also cater to the needs of all HEIs/ institutions including the autonomous institutions and institutes of National Importance including IITs, IIMs, IIITs, IISERs, and NITs as these institutions may also take the advantage of NCrF. Moreover, for creditization and integration of all learning, the National Credit Framework (NCrF) shall encompass the qualification frameworks for higher education, vocational & skill education and school education, namely National Higher Education Qualification Framework (NHEQF), National Skills Qualification Framework (NSQF) and National Curriculum Framework (NCF)/ National School Education Qualification Framework (NSEQF) respectively. A qualifications framework is a formalized structure in which learning level descriptors and qualifications are used to define and understand learning outcomes.

Thus, there would be only one credit framework for higher education, school education and skill education, namely the National Credit Framework (NCrF) which would be one single meta framework. It integrates and provides for creditization of learning in dimensions of academics, skilling and Experiential learning including relevant experience & proficiency/ professional levels acquired. NCrF would be operationalised through Academic Bank of Credits (ABC). The qualification frameworks for school, higher education and skills would be embedded and aligned with NCrF.

3.2.2. National Credit Framework- The Basic Principles

The basic principles and provisions of National Credit Framework (NCrF) would apply to all the qualification frameworks (NHEQF and NSQF are already aligned with NCrF), particularly with respect to the following aspects:

i. **Creditization of all types of learnings**; Assignments of Credit levels for all learnings for seamless integration,

ii. **Integration of learning in all dimensions of academics and skilling along with experiential learning including relevant experience and proficiency/ professional levels acquired**.

iii. **Assignment of one single Credit level** i.e. NCrF Credits Levels applicable **across** all qualification frameworks; no other separate Credit levels to be assigned by any stakeholders.

iv. **Assignment, Accumulation, Storage, Transfer & Redemption of Credit**s- Assignment of credits to be independent of the streams, subjects or any learning, of course subject to assessment.

v. **Assignment of Credits for online, digital and blended learning.**

vi. Operationalisation of NCrF through **Academic Bank of Credits (ABC)** encompassing school education higher education and vocational / skill education.

vii. The total **Notional Learning Hours** for assignment of credits to be uniform across school education, higher education and vocational education & training/skilling.

viii. The **assessment is mandatory for earning credits.**

ix. **Equivalence of academic and vocational education & skilling programmes.**

x. Multiple entry and multiple exit (ME-ME) options; ensuring **horizontal and vertical mobility.**

xi. Provision of **multi-disciplinary and holistic education** across sciences, social sciences, arts, humanities and sports.

xii. **No hard separation between different areas of learning**, i.e. arts, commerce, humanities and sciences etc., vocational and academic streams, curricular and extra-curricular for the purpose of assignment of credits and credit levels.

xiii. Allow **imaginative and flexible curricular structures**, enables **creative combinations of disciplines.**

xiv. Provision for **integration of vocational education & skilling into academic education** at all levels.

xv. **Empowerment of students** for **flexibility** in choice of courses/choosing their **own learning trajectories** and programme. Option for **mid-way course correction**s.

xvi. **Provision for Recognition of Prior Learning, and NCrF credit levels and credit assignment for the same for main streaming the learners who are out of formal education and skilling ecosystem. Provision for RPL with or without upskilling**

xvii. Caters to **creditization, subject to assessments,** for creating opportunities, progression pathways for **other learnings not creditized earlier** for award of a certificate, diploma, degree and **encourage lifelong learning:**

a. **Informal learning** (takes place outside schools/ colleges and arises from learner's involvement in activities that are not undertaken with a learning purpose in mind.)

b. **Non-formal learning** (takes place outside formal learning environments but within organizational framework. A conscious decision & intentional effort by learner to master a particular activity, skill or area of knowledge.).

c. **Learning through any means including non-government organizations (NGOs)** (like informal slum schools, alternative/ home/ open/ online/ distance learning and in some cases self-study/self-learning through open schooling. This could be formal, informal or non-formal.

xviii. Supports **educational acceleration for students with gifted learning abilities; also supports the same level and number of credits for Divyangs, even though it may require higher learning hours for achieving the same outcome levels for Divyangs.**

xix. Supports provision for **hackathons, and subject Olympiads** etc. for exceptional children/ students/ learners/individuals through learning outcome based special assessments.

xx. Provides scope for creditizing **national/ international achievers** in any fields including but not limited to **Sports, Indian Knowledge System, Music, Heritage and Traditional Skills, Performing & Fine Arts, Master Craftsmen,** etc

The NCrF therefore would integrate the credits earned through learning from the different qualification frameworks i.e. higher education including technical education (NHEQF), vocational

education, training & skilling (NSQF) and for school education NCF/ NSEQF. Therefore, these Qualification Frameworks would be necessary to be maintained, inter-alia, for the **following purposes** for implementation of the intent of National Education Policy (NEP) 2020 as also for the operationalisation of the National Credit Framework (NCrF) by the school education, higher education and vocational education & skilling:

a. The curricular structure for accreditation/ approval of qualifications.

b. Planning and delivery of education/ skilling programmes.

c. Developing, designing of curriculum, courses, qualifications.

d. Developing syllabus, content, pedagogy, teaching and learning resources.

e. Information about the broad equivalence of qualifications.

f. Defining Learning outcomes, which the learner must possess, (regardless of whether they were acquired through formal, non-formal or informal learning).

g. The level descriptors for school education, higher education and vocational education & skilling. These levels are defined in terms of learning outcomes.

h. Defining entry criteria and academic equivalence.

i. Nomenclature and award of certificates, diplomas and degrees.

The National Credit Framework (NCrF) shall act as a **broad enabling framework** for all regulatory organizations (UGC, AICTE, NCVET, NCERT etc.), CBSE, NIOS, State Open Schooling, State School Boards, State Technical Education Boards, etc and autonomous institutions, including Universities, Institutes of National Importance (INIs), who may, wherever required **and as applicable. Notify their detailed implementation guidelines** with respect to following major provisions within the contours of this Framework. Thus, the National Credit Framework (NCrF) empowers institutions and enables them with the required flexibility for catering to their specific academic requirements for creating imaginative and **flexible curricular structures, creative combinations of disciplines** and other special needs**.**

3.2.3. Credit and Credit Points

'Credit' is recognition that a learner has completed a prior course of learning, corresponding to a qualification at a given level. For each such prior qualification, the student would have put in a certain

volume of institutional or workplace learning, and the more complex a qualification, the greater the volume of learning that would have gone into it. Credits quantify learning outcomes that are subject achieving the prescribed learning outcomes to valid, reliable methods of assessment.

The **credit points** will give the learners, employers, and institutions a mechanism for describing and comparing the learning outcomes achieved. The credit points can be calculated as credits attained multiplied with the credit level.

3.2.4. Total Notional Learning Hours in a Year for Assignment of Credits

In line with the philosophy of NEP 2020, which emphasizes on considering any kind of learning as part of the overall learning and doing away with the distinction between curricular, co-curricular, and extra-curricular, it was felt that the overall notional learning hours across the academic classes including pre-school, school and higher education should be aligned. This would lead to consistency and standardization in the entire education and vocational ecosystem, mainstreaming both formal and informal education system and also smoothen the process of implementation of the proposed credit framework.

Accordingly, under the National Credit Framework (NCrF), the total Notional Learning Hours for assignment of credits across school education, higher education and vocational education & training/skilling have been agreed to be 1200 hrs per year (except for pre-school up to grade 5th wherein the learning hours range from 800 to 1000 hours) for which the students shall be awarded 40 Credits.

Thus, 20 Credits shall be awarded for a six-months semester with 600 Notional Learning Hours. Assignment of credits is independent of the streams, subjects or any learning and is subject to achieving the prescribed learning outcomes at a particular NCrF credit level posts successful assessment. Students also have the flexibility to take 1 courses/ programs/subjects/projects beyond 40 credits (within the curricular design) to get additional credits. For the purpose of calculations under the National Credit Framework (NCrF), in general, **30 notional learning hours will be counted as one Credit.**

3.2.5. What Constitutes Learning Hours - Components of Learning

NCrF recognises no hard separation between different areas/streams of learning, i.e., arts, commerce and sciences, vocational and academic streams, or type of learning i.e. curricular and extra-curricular for the purpose of assignment of credits and credit levels. Accordingly, the learning shall not be limited to only the instructional hours but also encompass all the other activities in the educational institutions, earlier categorised as curricular, co-curricular, and extra-curricular. In the true spirit of National Education Policy 2020, the total outcome based learning hours for credits shall, subject to assessment, include:

i. Classroom teaching/ learning hours/ tutorials

ii. Lab work/ practical/ innovation labs/ projects/ incubation labs

iii. Yearly and half-yearly examinations/ class tests/ quiz/ other assessments including formative assessments

a. Activities as part of the curricular structure leading to experiential learning like relevant experience and proficiency/ professional levels, Performing arts/ fine arts, music, handicraft, traditional, heritage work,

b. Debate and Discussion/ Essay Writing / Recitation/Story Writing etc.

c. Celebration of festivals in institutes, music performance, Drama etc.

d. Self-defence classes, value education classes, Career Counselling sessions etc. Other Contests/ Events/ Competitions like Hackathons & Olympiads etc.

iv. Sports/ games / physical activity / yoga

v. Life skills based education like employment skills, basic operational skills like learning to fix a bulb, basic carpentry, classes on morals/etiquettes, constitutional values, environmental sensitivity etc.

vi. Social/ community work (like adult education, teaching in NGOs or Out of school students, environment related, gender sensitization), NCC/ shramdan (School cleaning, building, decoration)

vii. Bag less days, field visits organised by the institution

viii. vocational education/ training, skilling, minor/ major project work, assignments

ix. Field visits/ Projects/ Industry attachment by institutions

x. Internship and apprenticeship hours, on the job training (OJT), and experiential learning including relevant experience and proficiency/ professional levels acquired

xi. Programs offered through blended/ online/ digital learning

xii. Self-study/ Home assignments (only for open schooling, out of school students)

xiii. Any other type of learning as may be notified by the regulators concerned

The consideration and formulation of bouquet of programs/ subjects and activities will be done by the concerned regulator/ autonomous institution / board. They may also prescribe the learning outcomes for every NCrF level/ program which are aligned with the overall national credit framework to enable effective operationalization of the credit framework. Such an approach would also close the gap in achievement of learning outcomes, shifting the classroom education towards competency and learning outcome-based learning and education.

Thus, under the National Credit Framework (NCrF) every learning can be creditized subject to achieving the prescribed learning outcomes is determined by successful assessment. For earning credits, the following shall be applicable:

i. The course/ qualification should be NSQF/ NHEQF aligned and approved with a defined NCrF level, clearly indicating the desired outcomes expected.

ii. Also, the learning outcome shall be assessed after completing the course/ qualification for assignment of credits.

iii. The basis of assessing credits related to sports, fine arts etc. shall be defined and determined by the concerned regulator/ school board.

iv. It will be under the purview of respective regulator/ institution to determine/ prescribe the content/ curriculum of a program The curriculum must align with principles as defined in NEP including life skills such as communication, cooperation, teamwork, etc.

A snapshot of learning hours across grades (from pre-school to Ph.D.) is given in table below.

Table 2: Learning hours across academic classes

S.No.	Stakeholders of Education, Higher Education, Technical Education, and Vocational education and training/ skilling System	Total Notional Learning Hours in/ by the Institution per year*	Remarks
1	School Education: Foundational stage (5 Years) (3 years of Anganwadi/ pre-school/ Balvatika) (Ages 3-6) + 2 Years (Class 1 & 2) (Ages 6-8)	800	
2	School Education: Preparatory Stage: 3 Years, (Class 3 to 5) (Age 8-11)	1000	

S.No.	Stakeholders of Education, Higher Education, Technical Education, and Vocational education and training/ skilling System	Total Notional Learning Hours in/ by the Institution per year*	Remarks
3	School Education: Middle Stage: 3 Years, (Class 6 to 8)(Age 11-14)	1200	1000 Hours of Educational Learning + 200 Hours of learning through other activities
4	School Education: Secondary Stage: 4 Years, (Class 9 to 12), (Age 14-18)	1200	1080 Hours of Educational Learning + 120 Hours of learning through other activities
5	NIOS: 8th Grade/ 10th Grade/ 12th Grade (with a gap of 2 years between each)	1200	8th/ 10th or 12th certificate from NIOS/ School Board
6	DGT: 1-Year ITI after 8th Plus NIOS	1200+ 240 hrs (NIOS**/ STT***) +150 hr of project	NTC + 9th Class certificate from NIOS/ School Board
7	DGT: 2-Years ITI After 8th grade plus NIOS or 1-Year ITI plus 1-Year NAC after 8th plus NIOS	1200+ 240 hrs (NIOS/ STT) +150 hr of project	NTC + 10th Class certificate from NIOS/ School Board
8	DGT: 1-Year ITI after 10th Plus NIOS	1200+ 240 hrs (NIOS/ STT) +150 hr of project	NTC + 11th Class certificate from NIOS/ School Board
9	DGT: 2-Years ITI After 10th plus NIOS or 1-Year ITI plus 1-Year NAC After 10th plus NIOS	1200+ 240 hrs (NIOS/ STT) +150 hr of project	NTC + 12th Class certificate from NIOS/ School Board
10	AICTE: 3 Years Diploma after 10th	1200	This does not include self-study hours but includes industry attachments/ internships
11	DGT: 1-Year to 2-Year ITI after 12th	1200	This does not include self-study hours but includes industry attachments/ internships

S.No.	Stakeholders of Education, Higher Education, Technical Education, and Vocational education and training/ skilling System	Total Notional Learning Hours in/ by the Institution per year*	Remarks
12	AICTE: 2-Years Diploma after 12th	1200	This does not include self-study hours but includes industry attachments/ internships
13	AICTE: 3-Years Bachelor's Degree in Vocation (B.Voc) after 12th	1200	This does not include self-study hours but includes industry attachments/ internships
14	AICTE: 4-Years Bachelor's degree in Engineering/ Technology after 12th	1200	This does not include self-study hours but includes industry attachments/ internships
15	AICTE: - Year Post Graduation Diploma after Bachelor's degree	1200	This does not include self-study hours but includes industry attachments/ internships
16	AICTE: 2-Years Master's Degree after Bachelor's degree	1200	This does not include self-study hours but includes industry attachments/ internships
17	UGC: 1-Year Undergraduate Certificate after 12th	1200	This does not include self-study hours but includes industry attachments/ internships
18	UGC: 2-Years Undergraduate Diploma after 12th	1200	This does not include self-study hours but includes industry attachments/ internships
19	UGC: 3-Yyears Bachelor's degree after 12th	1200	This does not include self-study hours but includes industry attachments/ internships
20	UGC: 4-year UG with Honours / Honours with Research, after 12th	1200	This does not include self-study hours but includes industry attachments/ internships
21	UGC: 1-Year Post-Graduate Diploma after 3-years Bachelor's degree	1200	This does not include self-study hours but includes industry attachments/ internships

S.No.	Stakeholders of Education, Higher Education, Technical Education, and Vocational education and training/ skilling System	Total Notional Learning Hours in/ by the Institution per year*	Remarks
22	UGC: 2-Years Master's Degree after 3-years Bachelor's degree OR 1-Years Master's Degree 4-year UG with Honours / Honours with Research	1200	This does not include self-study hours but includes industry attachments/ internships
23	UGC: Doctoral program - Ph.D. (3 to 5 Years) after Master's degree	1200	-

** These Hours will not include the self-study Hours except in case of except in the case of distance education, Rome-schooling, alternative schooling, online education and National/State open schooling/where it is part of the overall learning Hour*

*** NIOS is National Institute of Open Schooling. In NIOS, self-study forms a major component for a learner as the study material in ODL system specifically of NIOS is called Self Learning Material (SLM) which are quite exhaustive in content and not Textbook. The face to face classroom teaching is limited to Personal Contact Programme (PCPs) which are conducted during weekends or on Holidays in order to facilitate learners from various heterogeneous group having understanding issues/doubts during their self-learning/study. In case of NIOS, the 1200 Hours per year is assigned for self-study +PCP +Assignments +Internal +Theory +Practical +Portfolio +projects +Internship.*

**** STT is Short Term Vocational education and training/ skilling*

3.2.6. NCrF Credit Levels

In order to align with the international best practices being followed with respect to assigning credit levels, the NCrF has proposed that the maximum levels within this framework shall uniformly be up to level 8. The assignment of Credit levels under NCrF will be based on the cumulative numbers of years of learning with assessment and is explained below:

i. The credit level that can be attained after completion of school education i.e. grade 5th will be level 1, grade 8th will be level 2, grade 10th will be level 3 and grade 12th will be level 4.

ii. The higher education shall be from credit levels of 4.5 and to level 8.

iii. For the Vocational Education, Training and Skilling, the NCrF credit levels are from level 1 to 8 wherein the level 1 is of lowest level of competence and complexity while level 8 indicates highest level of competence and complexity.

The level descriptors prescribed for a NCrF credit levels will be defined for every qualification framework i.e. National Higher Education Qualification Framework (NHEQF), National Skills Qualification Framework (NSQF) and National Curricular Framework (NCF).

These descriptors may describe the knowledge, skills and outcome based learning expected to be attained by a student/learner at various levels in the qualification framework. The learning outcomes could also be specific to disciplinary areas as Generic learning outcomes.
Example:

i. In case of National Higher Education Qualification Framework (NHEQF), the Descriptor includes element of -

   a. Knowledge and understanding, skills required to perform and accomplish tasks,
   b. Application of knowledge and skills,
   c. Generic learning outcomes,
   d. Constitutional, humanistic, ethical, and moral values; employment- ready skills and entrepreneurship skills and mindset,
   e. Credit requirements, and
   f. Entry requirements for deciding the NCrF level to be assigned.

ii. In case of National Skills Qualification Framework (NSQF), there are 5 level descriptors (revised) namely-

   a. Professional Theoretical Knowledge,
   b. Professional and Technical Skills/ Expertise,
   c. Employment Readiness & Entrepreneurship Skills & Mind-set,
   d. Broad Learning Outcomes, and
   e. Responsibility for deciding the NCrF level to be assigned.
   f. NSQF also prescribes the Entry requirements for NCrF level to be assigned and
   g. Credit earned for each short term / long term skilling.

3.2.7. Notional Hours and Credit Assignment

In accordance with the international best practice and the current recommendations of NHEQF, the framework proposes that the number of credits per year for 1200 learning hours will be 40. Accordingly, every semester will comprise of 20 credits for 600 hours of notional learning hours. Any additional program/ course undertaken by the student/ learner beyond the 1200 learning hours or

beyond the purview of the course syllabus, shall be considered for additional credits that can be earned by the student/ learner. Therefore, the minimum credits that a student/learner can earn in a year shall be 40. However, in case of multiple exit options, the student may require undertaking additional exit module over and above the 40 credits of learning undertaken, as will be prescribed by the concerned regulator.

E.g. A student clearing the assessment of 1st year UG programs and pursuing regular education, moves to 2nd year UG will be awarded 40 credits for 1st year of UG education.

E.g. A student desirous of exiting after 1st year of Graduation (UG program) will require to undertake an exit module of 4 credits subject to achieving the prescribed learning outcomes determined by successful assessment before being awarded UG Certificate. The total credits earned by this student/learner in this case will 44.

The NCrF provides for basic guidelines on total learning hours in a year or part thereof and credits to be allocated based on those learning hours. The assignment of credits for learning hours for theory, practical and experiential learning including relevant experience and proficiency/ professional levels acquired for calculation of one credit, shall be prescribed by the concerned regulator.

Wherever necessary and if the curriculum so demands, the concerned regulator/ autonomous institution may consider having more than 40 credits for a particular program. However, the minimum credits for any program against 1200 hours of learning in a year will be 40.

3.2.8. Credits Assignment for Additional Learning Hours

Any additional program/ course undertaken by the student/ learner beyond the prescribed 1200 learning hours or beyond the purview of the course syllabus, shall be considered for assignment of additional credits that can be earned by the student/ learner. Such programs could include academic subjects, vocational courses, industry based trainings etc. run either directly by the institution, through the industry/ organization or any other. Hence depending on the interest, talent and capability, a student may earn credits beyond the ceiling of 40 subject to achieving prescribed learning outcomes determined by successful assessment. This provision will enable the student to undertake the dual degree/ dual Qualification programs as notified by UGC/ permitted by NCVET and allow students to take additional subjects in case of school education. This shall also encourage and provide for other School Boards / Regulatory Bodies to offer students further flexibility, mobility and opportunities including ME-ME and establishing eligibility for further progression for various educational programs.

3.2.9. Assessment Bands

The credit framework is based on the basic principle that **credits are a function of achieving the desired learning outcome/s for a program/ course/training determined by the successful assessment**. No credit can be earned by the student unless the student is assessed for the achievement of the desired competencies and outcome of a program.

In case of academic education for both school and higher education, progression to the next grade is dependent on the assessment of the stage student is in which are the major assessment stages which are mandatory before the student goes to the next step. For e.g., unless a student clears 8th grade, the student cannot appear for 10th grade and unless the student clears 10th, the student cannot appear for 12th exam. Similarly, in case of higher education, for enrolling in a Higher Education Institute (HEI) "Certificate obtained after successful completion of Grade 12 or equivalent state of education" is a must.

The **assessment is thus mandatory for earning credits** for all types of learning and progression. The assessments may include routine/ regular assessment after completion a program/course; assessment for recognition of prior learning; and on demand assessment for special provisions like accelerated and slow learning etc.

A use case of various types of assessments is attached as Annexure II. In addition, assessment is a compulsory after each academic year/ semester/session and also after a skilling course to enable implementation of multiple entry-multiple exit (ME-ME) options, which would normally be available at the end of each academic year or end of a short term or long term skilling course.

This means that the student will be earning credits after every semester/ year/completion of an academic/vocational program which they go through and hence the framework needs to cater to this requirement.

Accordingly, NCrF proposes that the NCrF levels be equated with the assessment/ major assessment stage which will be a mandatory stage for a student/learner to clear. Between two mandatory stages there may be 2-5 levels depending on whether it falls in purview of school or higher education. The clubbing of these levels has been referred to as Assessment bands. The Credits earned for the two courses/ qualifications/ programs or through experiential learning may be accumulated and added if earned in the same assessment band, subject to the guidelines of respective regulators. The regulator may also consider setting up of broad learning outcomes for each level and bands so defined.

Accordingly, the assessment bands so formulated are as indicated in the Table 3.

Table 3: NCrF levels for different academic grades/ Vocational Education & Training/ Skilling* and Assessment Bands

Academic Band/ Hours of Learning per year	Academic Grade/ Levels- School Education & Higher Education	Vocational Education Long Term Training/ Short Term Training (LTT/STT)	National Credit Framework (NCrF) Credit levels	Credits Earned/ year	Credit Points Earned	Assessment Stage and equivalence
Doctoral Degree	Ph.D.	NSQF Level 8 STT	8.0	40	320	
PG degree (1/2 years)/ ME/ M Tech (1200 Hrs./yr)	PG- 2nd (Engg)	NSQF Level 7 STT	7.0	40	280	MTech. 2nd Yr/ Engg PG Degree
	PG – 2nd yr/ PG 1st yr (Engg)	NSQF Level 6.5 STT	6.5	40	260	PG Degree/ M. Voc / M.Sc. (Engg)
4-year UG with honors/ Honors with Research / B.E./ B.Tech. OR 3 year UG (1200 Hrs/yr)	**4-year UG with honors/ Honors with Research /** PG – 1st yr	NSQF Level 6 STT	6.0	40	240	UG- Degree (Hons)/ PG – Diploma/B.Tech/B.E
	UG- 3rd Year	10th+5-Yr NTC/NAC/CITS, 12th+3-Yr NTC/NAC/CITS, NSQF Level 5.5 STT	5.5	40	220	UG- Degree/ B. Voc/ B.Sc. Eng
	UG- 2nd Year	10th+4-Yr NTC/NAC/CITS, 12th+2-Yr NTC/NAC/CITS, NSQF Level 5 STT	5.0	40	200	UG- Diploma
	UG- 1st Year/equivalent	10th+3-Yr NTC/NAC/CITS, 12th+1-Yr NTC/NAC/CITS, NSQF Level 4.5 STT	4.5	40	180	UG- Certificate
2 year- Senior Secondary (1200 Hrs/yr)	Class XII	10th+2-Yr NTC/NAC/CITS, NSQF Level 4 STT	4.0	40	160	Class XII (Thru CBSE/ School Boards/ NIOS) Diploma Vocation
	Class XI	10th+1-Yr NTC/NAC/CITS, NSQF Level 3.5 STT	3.5	40	140	Class XI (Thru CBSE/ School Boards/ NIOS) Certificate of Vocation
2 Year- Secondary (1200 Hrs/yr)	Class X	8th+2-Yr NTC/NAC, NSQF Level 3 STT	3.0	40	120	Class X (Thru CBSE/School Boards/ NIOS)
	Class IX	8th+1-Yr NTC/NAC, NSQF Level 2.5 STT	2.5	40	100	Class IX (Thru CBSE/ School Boards/ NIOS)
3 year- Middle (1200 Hrs/yr)	Class VIII	NSQF Level 2 STT	2.0	40	80	Class VIII (thru School Boards/ NIOS)
	Class VII		1.67	40	67	
	Class VI		1.33	40	53	
3 year- Preparatory (1000 Hrs/yr)	Class V	NSQF Level 1 STT	1.0	33	33	Class V (thru School Boards/ NIOS)
	Class IV		0.8	33	26.4	
	Class III		0.6	33	19.8	
5 year Foundational (800 Hrs / yr)	Class II		0.4	27	10.8	
	Class I		0.2	27	5.4	
	Pre-School (3 years)		0.1x3	27x3=81	8.1	

3.2.10. Major Dimensions of National Credit Framework

The National Credit Framework encompasses the following main components/ dimensions of learning:

i. Credits earned by virtue of completed academic education
ii. Credits earned by virtue of undergoing vocational education, training/ skill program
iii. Credit points earned by virtue of relevant Experiential learning including relevant experience and proficiency/ professional levels acquired

i. Academic Education - School Education, Higher Education, Professional Education

At present, the school education system follows a system of progression of academic classes that is dependent on a student successfully clearing the requirements of a particular class/ grade to proceed to next. To formulate a comprehensive and holistic credit framework, that also considers the learning acquired during schooling and through informal modes either by home schooling, special schools (Divyangs & others), open schooling or online schooling, it is necessary that a credit system at the school level is also developed.

For higher and professional education, frameworks namely CBCS and SAMVAY (for skill based programs) exist and the education ecosystem has been aligned with these frameworks. These frameworks, however, were not able to fully address the requirements of assigning credits to vocational education and training/ skilling or school education and other forms of learning. The National Credit Framework therefore seeks to cater to all kinds/ types/ forms/ levels of academic education, be it school, higher/ professional or/ and vocational.

ii. Vocational Education and Training/ Skilling

With the emphasis on mainstreaming vocational education and training/ skilling under the National Education Policy 2020, it is important that the skill/vocational programs undertaken by students/learners are also assigned credits. One of the aims of the national credit framework is to creditise vocational education and training/ skilling, thereby, enabling seamless integration of vocational education and training/ skilling with the general education through credit accumulation & transfer mechanism. This will specifically enable students who have to discontinue general education and undertake short-term skilling program(s) for early employment and to enable them to gain credits for vertical and horizontal mobility and further progression.

iii. Relevant Experiential Learning and Proficiency/Professional levels Achieved

One of the most unique, practical & beneficial features of the National Credit Framework is assignment of credits/credit points/ weightage to the experiential learning including relevant

experience and professional levels acquired/ proficiency/ professional levels of a learner/student. Experiential learning is of two types:

a. ***Experiential learning as part of the curricular structure of academic or vocational program. e.g., projects/OJT/internship/industrial attachments etc.***

This could be either within the Program- internship/ summer project undertaken relevant to the program being studied or as a part time employment (not relevant to the program being studied- up to certain NSQF level only). In case where experiential learning is a part of the curricular structure the credits would be calculated and assigned as per basic principles of NCrF i.e., 40 credits for 1200 hours of notional learning.

b. ***Experiential learning as active employment (both wage and self) post completion of an academic or vocational program.***

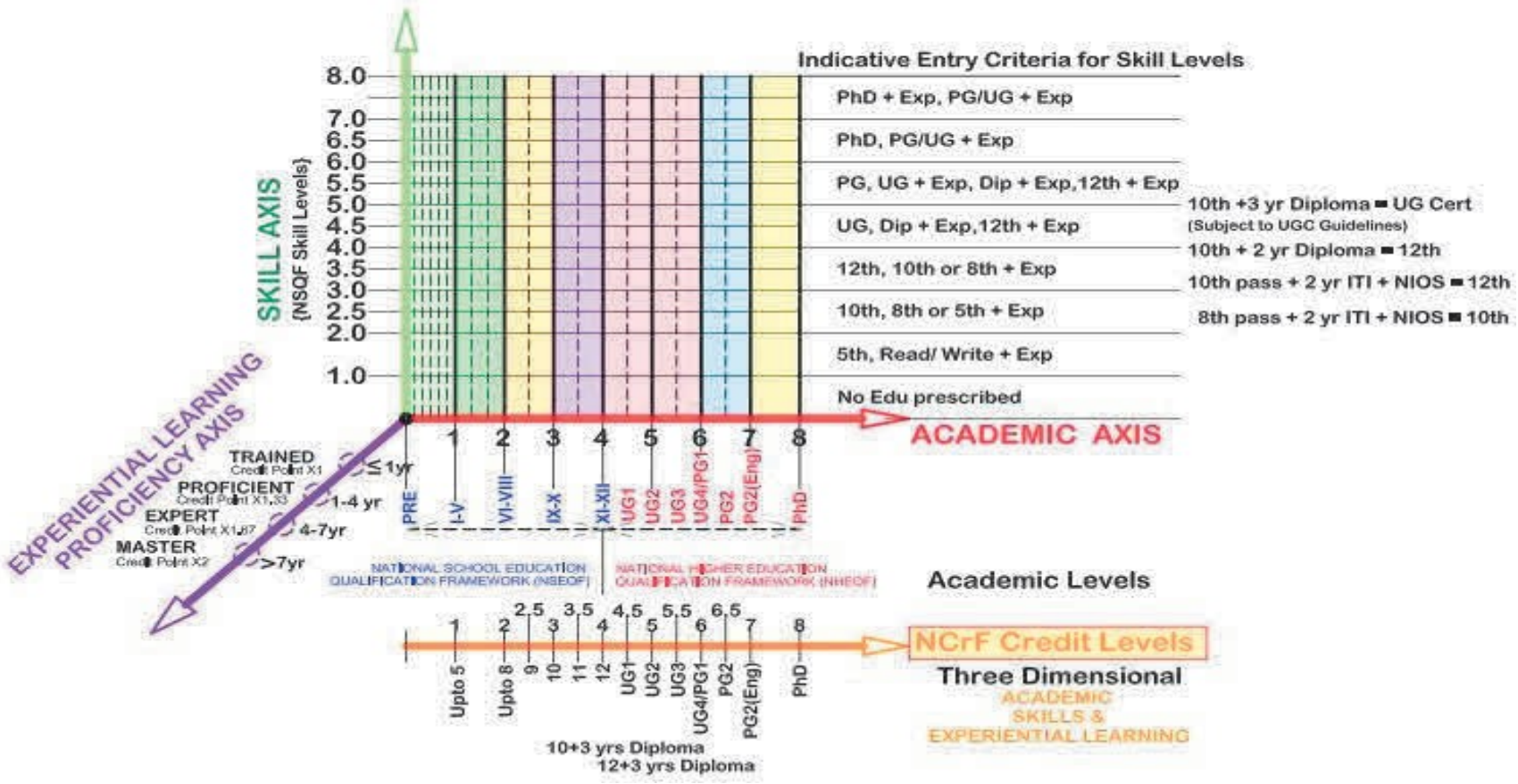
This means that the experience attained by a person after undergoing a particular educational program shall be considered for assignment of credits. This could be either Full or Part time employment after undertaking an academic/ Vocation program

In case where experiential learning is as a part of employment the learner would earn credits as weightage. The maximum credit points earned in this case shall be double of the credit points earned with respect to the qualification/ course completed. The credit earned and assigned by virtue of relevant experience would enable learners to progress in their career through the work hours put in during a job/employment.

Thus, the National Credit Framework (NCrF) provides for Assignment, Accumulation, Storage, Transfer & Redemption of Credits in alignment with the National Higher Education Qualification Framework (NHEQF), National Curriculum Framework (NCF) National School Education Qualifications Framework (NSEQF) and National Skill Qualification Framework (NSQF) which are the comprehensive credit-based Academic & Skill Qualification frameworks.

A diagrammatic view of the dimensions of the credit assignment is in figure I below:

National Credit Framework (NCrF) -The Dimensions of Learning



3.3. ASSIGNMENT OF CREDITS IN NATIONAL CREDIT FRAMEWORK

3.3.1. Mechanism for Assignment of Credits and Calculation of Credit Points

As explained in the previous sections, for every 1200 hours of learning, the students/learners can earn 40 credits and for the purpose of calculation under NCrF, one (1) credit would correspond to thirty (30) notional learning hours.

This assignment of credits shall also factor in the NCrF level at which these credits are earned which are unique and are also considered as weightage factor. This results in the student/learner earning **credit points** which are further accumulated and stored in the ABC for redemption and credit transfer. **These credit points are calculated as Credits earned multiplied by the NCrF level (weightage factor)**. Accordingly, for every year of study or learning undertaken for various NCrF levels, the learner acquires different credit points enabling further accumulation and credit transfer as per the norms prescribed by the concerned regulators/autonomous institutions.

Some examples of how credits points are calculated are given in the example/use case below:

E.G. A 12th pass student earning 40 credits at NCrF level 4 will earn a total of 160 credit points **(40 credits X NCrF level (4) = 160)**

Similarly, a student completing a NSQF level 4 qualification of 450 hours earns 15 credits. The credit points earned by the student after completion and assessment of this qualification would earn a total of 60 credit points.
(15 credits X NCrF level (4) = 60)

3.3.2. Credits Assigned by Virtue of Academic Education

I. School Education

Based on the principles defined in the sections above, the total credits attained by a student who has completed one year of education are 40. These 40 credits are earned on a yearly basis subject to successful completion of the assessment at that level/ class/grade. Currently, National Skills Qualification Framework is totally in sync with the qualification framework being followed at school level and the same may be implemented till such time the National School Education Qualification Framework (proposed for School education) is formulated and notified. School Students engaged in active community service like teaching young's/adults may also be given credits for their work.

The assignment of credits at school level is given in the Table below:

Table4: NCrF levels and credit assignment for school education

S. No	Academic Education Band	School Edu Grade/ Level	Number of Hours of study	Credits for hours / year	Credit Levels as per NCrF	Credit Points Earned *
C-1	C-2	C-3	C-4	C-5	C-7	C-8 (C6 X C7)
	Pre-Primary School		800X3	27x3	**0.1**	8
1	**Primary School(I-V)**	**Class I**	800	27	**0.2**	5
2	Primary School(I-V)	**Class II**	800	27	**0.4**	11
3	Primary School(I-V)	**Class III**	1000	33	**0.6**	20
4	Primary School(I-V)	**Class IV**	1000	33	**0.8**	26
5	Primary School(I-V)	**Class V**	1000	33	**1.0**	33
6	**Middle School(VI-VIII)**	**Class VI**	1200	40	**1.33**	53
7	Middle School(VI-VIII)	**Class VII**	1200	40	**1.67**	67
8	Middle School(VI-VIII)	**Class VIII**	1200	40	**2.0**	80
9	**High School (IX-X)**	**class IX**	1200	40	**2.5**	100
10	High School (IX-X)	**Class X**	1200	40	**3.0**	120
11	**Sr. Sec. School (XI-XII)**	**Class XI**	1200	40	**3.5**	140
12	Sr. Sec. School (XI-XII)	**Class XII**	1200	40	**4.0**	160

*Rounded off to the nearest decimal

II. Higher Education including Technical Education

In case of higher education, all one year programs offered will have notional learning hours of1200 hours with 40 credits. The concerned regulator (UGC and AICTE) may add more programs in the one-year program thereby leading to increased learning hours beyond 1200 notional hours of learning and higher overall credits while ensuring that the broad contours of the National Credit Framework are adhered to.

Additional activities like community-based activities, career counselling, tutorials etc may also be creditized. The regulators/ autonomous institution may consider having baskets of courses/ activities to offer the students along with the flagship programs/ defined curricular programs keeping in view the industry and user organizations.

Accordingly, the assignment of credits with respect to Higher education as prescribed under NHEQF, for all streams including science/ commerce/ arts and Engineering (technical) is as given below:

Table 5: NCrF levels and Credit Assignment in Higher Education

Sr. No	EXAMPLES OF HIGHER EDUCATION QUALIFICATIONS LOCATED WITHIN EACH LEVEL (Including Science/ Arts/ Commerce and Vocational)	TOTAL LEANING HOURS PER YEAR	TOTAL CREDITS PER YEAR	NATIONAL CREDIT FRAMEWORK (NCRF) CREDIT LEVELS	CREDITS POINTS
C-1	C-2	C-3	C-4	C-5	C-6 (C-4 X C-5)
1	**Undergraduate Certificate** Programme duration: first year (first two semesters) of any undergraduate programme	1200	40	4.5	180
2	**Undergraduate Diploma** Programme duration: first two years (first four semesters) of any undergraduate programme.	1200	40	5	200
3	**Bachelor's Degree** Programme duration: three years (Six semesters) of any undergraduate programme.	1200	40	5.5	220
4	**Bachelor's Degree (Honours/ research/ Engineering).** Programme duration: four years (eight semesters) of any undergraduate programme.	1200	40	6	240
5	**Post-Graduate Diploma.** Programme duration: One year (2 semesters) after any bachelor's degree i. PGD after 3-year Bachelor degree/ 2 semesters of the 2-year master's degree programme. ii. PGD after 4-year bachelor degree	1200	40	i. 6 ii. 6.5	i. 240 ii. 260
6	**Master's Degree.** Programme duration: One year (two semesters) after obtaining a Bachelor's degree (Honours/Research).	1200	40	6.5	260
7	**Master's Degree.** Programme duration: two years (four semesters) after obtaining a 3 yr Bachelor's degree;	1200	40	6.5	260
8	**Master's degree;** Programme duration: two years (four semesters) after obtaining a Bachelor's Engineering degree.	1200	40	7.0	280
9	Doctoral degree	1200	40	8.0	320

III. Other Learning Like Online/ Blended/ Open & Distance Learning

The Credit assignment is a function of total hours of learning put in by a student in a year versus total credits available in a year. The learning hours irrespective of the mode of learning (offline, online or blended) shall continue to follow the broad principles specified in previous sections which also form the core of the NCrF. The only exception being the hours may include the self-study hours, as applicable in the case of distance education, home-schooling, special schooling, alternative schooling, and open education.

In case of online programs such as those being offered through MOOC (Massive Open Online Courses), NPTL or Swayam Platform, it is important that these online courses be defined in terms of learning outcomes against an appropriate NCrF level along with indicative mapping with the other academic/ regular programs. Such mapping would be prescribed by the concerned regulator. Creditization of these courses and redemption of such credits against a degree/diploma/certificate will further be defined by universities/autonomous institutions/regulators.

Assignment of Credits for programs being implanted in online or blended mode in academic /vocational education and skilling will enhance the scope of expand the open /distance learning and will promote extensive use of technology in learning & skilling. This would help in overcoming the constraints of physical infrastructure & scalability while enhancing access, equity, and affordability and ensuring quality and accountability. The blended learning option shall also enhance accessibility of learning for out of school students as well as for Divyangs.

3.3.3. Credits Assignment for Vocational Education and Training & Skilling

For the vocational education and training/ skilling ecosystem, with respect to credit assignment, the following shall be applicable:

- Total notional learning hours in a year (for purpose of calculating credits): 1200
- Credits to be allocated in a year with 1200 notional learning hours: 40 (however for each year of learning the number of hours may go up and correspondingly the number of credits will also go up to say 44 or 48)
- Therefore, for the purpose of overall credit calculations number of notional hours leading to one credit unit= 1200/ 40 = 30

The credit assignment for vocational/ skill education as per NSQF levels & credit assignment at different levels is reflected in the Table No. 6.

Table 6: NCrF Levels and Credit Assignment in Vocational Education and Training/ Skilling

NSQF/ NCrF level at Entry	NSQF/ National Credit Framework (NCrF) level attained after VET/ Skill Training (STT/ LTT)	Minimum entry criteria for undergoing Short Term Training (STT) at the given level		Minimum Range of Notional hours of Short-Term Training/ STT (Theory + Practical + OJT) (Notional Hours in Multiple of 30/ 15) subject to assessment	Long Term Training LTT Course viz. Craftsmen Training Scheme (CTS) in Industrial Training Institutes (ITIs), Crafts Instructor Training Scheme (CITS) & National Apprenticeship Certificate (NAC)	Optional Additional requirements for below given Academic Equivalence of the LTT or STT VET & Skilling Qualifications, Courses, or Programs
		Min Education/ Skill Qualifications required	**Minimum Relevant Experience Required ***			
Fresher at Level 0	**Level 1**	◣No formal education prescribed	No Experience required	**150-210 Hours OR** 600 hours of Apprenticeship	No LTT course	**For Grade 3 or Grade 5 certificate** In addition to STT, Foundational literacy and numeracy at NSQF level 1 for Grade 3 and 2 for Grade 5 certificate respectively by Competent Authority**
Fresher or Level 1	**Level 2**	◣No formal education prescribed ◣May require ability to read and write for some qualifications	No Experience required. However, 1 year relevant experience may be desirable for some qualifications	**210-270 Hours OR** 750 hours of apprenticeship	No LTT courses	**For Grade 5 or Grade 8 certificate** In addition to STT Advance Literacy & Numeracy Skills at NSQF level 2 for Grade 5 and 3 for grade 8 certificate by Competent Authority**
		◣Previous relevant Qualification of NSQF Level 1	No Experience required			
Level 2	**Level 2.5**	◣9th Grade pass ◣8th Grade pass and pursuing continuous schooling	No Experience required	**240-300 Hours**	**1-year** Vocational education & Training/ Skilling (NTC/ NAC) after Grade 8 AND (For NTC only) 150 hours of project work	**For Grade 8 or Grade 9 Certificate** In addition to LTTs/STTs & Grade 7 or Grade 8 certificate, the candidate must have accumulated 40 credits*** at level 2.5 and completed a language course of level
		◣5th Grade pass	4 year relevant experience			
		◣Ability to read and write	4 year relevant experience			
		◣Previous relevant Qualification of NSQF Level 2	6 months relevant experience			

		◣Previous relevant Qualification of NSQF Level 1	1.5 year relevant experience		**AND** (For NTC/NAC only) 240 hours of Language course	2/3 for Grade 8/9 by a Competent Authority**. **For NTC/NAC:** In addition to NTC/NAC, successful assessment of language course through NIOS/ DGT/ Competent Authority** for Grade 9 Certificate
Level 2.5	**Level 3**	◣ Grade 10	No Experience required	**270-390 Hours**	**2** years of Vocational education & Training/ Skilling (NTC/ NAC) after Grade 8 **AND** (For NTC only) 150 hours of project work **AND** (For NTC/NAC only) 240 hours of Language course	**For Grade 9 or 10 Certificate** In addition to LTTs/STTs & Grade 8 or Grade 9 certificate, the candidate must have accumulated 40 credits*** at level 3 and completed a language course of level 3 for Grade 9/10 by a Competent Authority**. **For NTC/NAC:** In addition to NTC/NAC, successful assessment of language course through NIOS/ DGT/ Competent Authority** for Grade 10 Certificate
		◣Grade 8 with two years of (NTC/ NAC) after 8th ◣Grade 8 pass and pursuing continuous schooling in regular school with vocational subject	No Experience required			
		◣8th grade pass	2year relevant experience			
		◣5th grade pass	5 year relevant experience			
		◣Previous relevant Qualification of NSQF Level 2	1 year relevant experience			
		◣Previous relevant qualification of NSQF Level 2.5	6 months relevant experience			
Level 3	**Level 3.5**	◣11th Grade pass ◣Completed 1st year of 3-year diploma after 10th ◣10th grade pass and pursuing continuous schooling ◣8th grade pass with two years of NTC	No Experience required	**360-420 Hours**	1 to 2 years of Vocational education & Training/ Skilling (NTC/ NAC) After Grade 10 **AND** (For NTC only) 150 hours of project work	**For Grade 11th Certificate** In addition to LTTs/STTs & Grade 10 certificate, the candidate must have accumulated 40 credits*** at level 3.5 and completed a language course of level 3.5/4 for Grade 11 by a Competent
		plus 1 year NAC/CITS ◣8th grade pass with two years of NTC ◣8th Grade pass with 1 year NTC plus 1 year NAC	One Experience required			

		◣8th Grade pass with 1 year NTC plus 1 year CITS			**AND** (For NTC/NAC only) 240 hours of Language course	Authority**. **For NTC/NAC:** In addition to NTC/NAC, successful assessment of language course through NIOS/ DGT/ Competent Authority** for Grade 11 Certificate
		◣8th Grade pass	3 year relevant experience			
		◣Previous relevant Qualification of NSQF Level 2.5	3 year relevant experience			
		◣Previous relevant Qualification of NSQF Level 3	1.5 year relevant experience			
Level 3.5	**Level 4**	◣12th grade pass	No Experience required	**390-480 Notional Hours of Training**	**2 to 3 years** of Vocational education & Training/ Skilling (NTC/ NAC) (After 10th) **AND** (For NTC only) 150 hours of project work AND (For NTC/NAC only) 240 hours of Language course	**For Grade 12th Certificate** In addition to LTTs/STTs & Grade 11 certificate, the candidate must have accumulated 40 credits*** at level 4 and completed a language course of level 2/3 for Grade 12 by a Competent Authority**. For NTC/NAC: In addition to NTC/NAC, successful assessment of language course through NIOS/ DGT/ Competent Authority** for Grade 12 Certificate
		◣Completed 2nd year of 3-year diploma (after 10th) and pursuing regular diploma	No Experience required			
		◣10th grade pass plus 2-year NTC ◣10th grade pass plus 1-year NTC plus 1 year NAC	No Experience required			
		◣8th pass plus 2-year NTC plus 1-Year NAC plus CITS	No Experience required			
		◣10th grade pass and pursuing continuous schooling	No Experience required			
		◣10th Grade Pass	2 year relevant experience			
		◣8th Grade pass	4 year relevant experience			
		◣Previous relevant Qualification of NSQF Level 3.0 with minimum education as 8th Grade pass****	3 year relevant experience			
		◣Previous relevant Qualification of NSQF Level 3.5	1.5 year relevant experience			
Level 4	**Level 4.5**	◣Completed 1st year of UG ◣Pursuing 1st year of UG and continuous education ◣Pursuing 3rd year of 3-year diploma after 10th and continuous education ◣Completed 3-year diploma after 10	No Experience required	**450-510 Notional Hours of Training** OR For UG Students - 450 Hours of Internship + project work with Assessment	**1 to 2 years** of Vocational education & Training/ Skilling after 12th (NTC/ NAC/ CITS) **OR** **3 to 4** years of Vocational education	**For LTT and STT Courses with UG Certificate** In addition to 20 credits# from NCrF Level 4.5 or above STT/ LTT courses **and,**
		◣Completed 2nd year of 2-year diploma after 12th ◣Pursuing 2nd year of 2- year diploma after 12 and continuous education	No Experience required			

		10th Grade pass plus 3 years of vocational education & Training e.g. ◣10th grade pass with 2 year NTC plus 1 year NAC/CITS ◣10th Grade pass with 1 year NTC plus 1 year NAC plus 1 year CITS	No Experience required		after 10th (NTC/ NAC/ CITS) **AND** (For NTC only) 150 hours of project work **AND** (For NTC/NAC only) 240 hours of Language course	20 credits# from UGC/ AICTE approved NHEQF courses at NCrF level 4.5 or above
		◣10th grade pass with 1 year NTC plus CITS	1 year Experience required			
		◣8th Grade pass with 2 year NTC plus 1 year NAC plus 1 year CITS	1 year Experience required			
		◣Previous relevant Qualification of NSQF Level 3.5 and with minimum education as 8th Grade pass	3 year relevant experience			
		◣Previous relevant Qualification of NSQF Level 4 and with minimum education as 8th Grade pass	1.5 year relevant experience			
Level 4.5	**Level 5**	◣Completed 2nd year of UG ◣Pursuing 2nd year of UG and continuous education ◣Completed 2nd year of diploma (after 12th) ◣Pursuing 2nd year of 2-year diploma after 12th	No Experience required	**480 to 570** Notional Hours of Training **OR** For UG Students - 510 Hours of Internship + project work with Assessment	**2 to 3 years** of Vocational education & Training/ Skilling after 12th (NTC +NAC/ CITS) **OR** **4 to 5 years** of Vocational education & Training/ Skilling after 10th (NTC/ NAC / CITS)	**For LTT and STT Courses with UG Diploma** In addition to 20 credits from NCrF Level 5.0 or above STT/ LTT courses **And** another 20 credits from UGC/ AICTE approved NHEQF courses at NCrF level 5.0 or above
		◣12th pass with 1 year Vocational Education & training (NTC or NAC or CITS)	No Experience required			
		◣Completed 3 year diploma after 10th	1 year relevant experience			
		◣12th Grade pass	2 year relevant experience			
		◣ 10th Grade pass	4 year relevant experience			
		◣Previous relevant Qualification of NSQF Level 4 and with minimum education as 8th Grade pass	3 year relevant experience			
		◣Previous relevant Qualification of NSQF Level 4.5	1.5 year relevant experience			
Level 5	**Level 5.5**	◣Completed 3rd year of UG ◣Pursuing 3rd year of UG and continuous education ◣Completed 2nd year diploma after 12th	No Experience required	**540 to 600** Notional Hours of Training **OR**	**3 to 4 years** of Vocational education & Training/ Skilling/ experiential learning	**For LTT and STT Courses with UG Degree**

		12th Grade Pass plus 2 years of vocational Education and Training. E.g. ◣12th grade pass with 1 year NAC plus 1 year CITS ◣12th grade pass with 1 year NTC plus 1year NAC/CITS	1 year relevant experience	For UG Students - 550 Hours of Internship + project work with Assessment	after 12th (NTC/ NAC/ CITS) **OR** **5 to 6 years** of Vocational education & Training/ Skilling/ experiential learning after10th (NTC/ NAC/ CITS)	In addition to 20 credits from NCrF Level 5.5 or above STT/ LTT courses **And** another 20 credits from UGC/ AICTE approved NHEQF/ courses at NCrF level 5.5 or above
		◣12th Grade pass with 1 year NTC/ NAC ◣Completed 3-year diploma (after 10th)	2 year relevant experience			
		◣12th Grade pass	3 year relevant experience			
		◣Previous relevant Qualification of NSQF Level 5	1.5 year relevant experience			
		◣Previous relevant Qualification of NSQF Level 4.5	3 years relevant experience			
Level 5.5	**Level 6**	◣Pursuing first year of 2-year PG program after completing 3 year UG degree ◣Pursuing PG diploma after 3 year UG degree ◣Completed 4 year UG (in case of 4-year UG with honours/ honours with research) ◣Pursuing Completed 4 year UG (in case of 4-year UG with honours/ honours with research)	No Experience Required	**570 to 660 Notional Hours of Training** **OR** For UG/ PG Diploma Students - 600 Hours of Internship + project work with Assessment		**For STT Courses with PG Diploma** In addition to 20 credits from NCrF Level 6.0 or above STT courses **And** another 20 credits from UGC/ AICTE approved NHEQF courses at NCrF level 6 or above
		12th Grade Pass with 2 years of Vocational Education & Training. E.g. ◣12th Grade with 1 year NTC plus 1 year NAC/CITS ◣12th grade with 1 year NAC plus CITS	2 year relevant experience			
		◣12th grade pass	4 years relevant experience			
		◣Previous relevant Qualification of NSQF Level 5.5	1.5 years relevant experience			
		◣Previous relevant Qualification of NSQF Level 5	3 years relevant experience			
Level 6	**Level 6.5**	◣Pursuing PhD (after 4 year UG honours with research) ◣Pursuing 2nd year of PG (after 3 year UG Degree)	No Experience Required	**630 to 690 Notional Hours of Training** OR		**For STT Courses with PG Degree**

		◣Pursuing 1st year of PG (after 4-year UG Degree with Honours/ honours with Research) ◣Pursuing 1st year of PG- Eng		For PG Students - 660 Hours of Internship + project work with Assessment		In addition to 20 credits from NCrF Level 6.5 or above STT Courses **And** Another 20 credits from UGC/ AICTE approved NHEQF courses at NCrF level 6.5 or above
		◣2-year Diploma after 12th Grade (in any field)	3 years of relevant experience			
		12 Grade Pass with 2 years of Vocational education and Training thereafter. E.g. ◣12th Grade with 1 year NTC plus 1 year NAC/ CITS ◣12th grade with 1 year NAC plus 1 year CITS	3 years relevant experience			
		◣Previous relevant Qualification of NSQF Level 6	1.5 years relevant experience			
		◣Previous relevant Qualification of NSQF Level 5.5	3 years relevant experience			
Level 6.5	**Level 7**	◣Pursuing PhD	No Experience Required	**660 to 750** Notional Hours of Training **OR** For PG Students - 720 Hours of Internship + project work with Assessment		**For STT Courses with PG Engg** In addition to 20 credits from NCrF Level 7.0 or above STT courses **And** 20 credits from AICTE approved NHEQF courses at NCrF level 7 or above
		◣Pursuing 2nd year of 2 year PG- Eng	No Experience Required			
		◣Completed 3 year UG degree	3 years of relevant experience			
		◣Completed 4 year UG degree with Honours/ Honours with research	2 years of relevant experience			
		◣Previous relevant Qualification of NSQF Level 6.5	1.5 years of relevant experience			
		◣Previous relevant Qualification of NSQF Level 6	3 years of relevant experience			
Level 7	**Level 8**	◣PhD in the relevant field	No Experience Required	**750 onwards** Notional Hours of Training **OR** 810 Hours of Internship & project		
		◣PhD in any field	1 year of relevant experience			
		◣PG in any field	4 years of relevant experience			
		◣UG in relevant field	5 years of relevant experience			
		◣UG in any field	6 years of relevant experience			
		◣Previous relevant Qualification of NSQF Level 6.5	4 years of relevant experience			
		◣Previous relevant Qualification of NSQF Level 7	2 years of relevant experience			

Note: This table is subject to change as per the requirements of the vocational education and skilling ecosystem. However, any changes made shall be in line with the overall spirit and provisions of national credit framework. NCVET will issue detailed guidelines on various aspects of NSQF from time to time.

NOTES: # May be read as upto 20 Credits from NCrF/NSQF and remaining credits from NHEQF

*	• Relevant Experience may include On the Job training (OJT), Internship and Apprenticeship training. • OJT undertaken as part of qualification and redeemed into credits shall not be considered again as part of relevant work experience. • For establishment of Relevant Experience & OJT till NCrF/ NSQF level 2.5 the concerned AB/ Regulatory Body may, in the absence of a formal experience certificate, prescribe process (like preadmission test etc.) to assess the relevant experience based on the learning outcomes. In such cases, formal experience & OJT certificate may not be insisted upon. • However, for all NCrF/NSQF levels beyond 2.5 proper certificates establishing relevant experience & OJT shall be required. • The additional hours of learning through project work and NIOS lead to additional credit. • Credits in case of STT programs shall be dependent on number of hours calculated on the principal of 40 credits against 1200 learning hours. • Provision of Recognition of Prior learning with or without up-skilling and subject to outcome based assessment and certification shall also be used for assignment of credit levels to the trained workforce with Experiential learning including relevant experience and professional levels acquired
**	• Competent Authority shall be the body as approved & notified by the Department of School Education and Learning, Ministry of Education (MoE) for assessment & issuance of certificates of academic/ levels equivalence as mentioned
***	• Credits required for academic equivalence may be accumulated through skill training or relevant work experience or language courses subject to successful completion of the same. • It may be ensured that one should not use Monkey stairs using entry Qs + Exp to gets higher and higher levels of certificates without commensurate outcome based skills, which are properly assessed. ABs concerned should clearly put some practical checks and balances/ riders /Limits. For RPL no formal entry qualifications would be insisted upon subject to the condition that the RPL assessment shall be conducted as per the detailed guidelines of NCVET
****	• Not applicable for learners who are purely into skill ecosystem & do not want any academic equivalence or mobility onto the academic axis, may progress vertically on the skilling axis based on the number of years spent in the previous NSQF level and/or RPL subject to assessment without any restrictions on academic entry qualification. This would further be detailed out in RPL Guidelines which provide that in very special cases (say Padma Award winners, Olympic Medalist) the level descriptors may not apply.

3.3.4. Credits Assignment for Relevant Experience and Professional/Proficiency Levels Acquired

One of the dimensions of assigning credit within the NCrF is through relevant experience/ proficiency. As explained previously in the section 3.2.10 (iii), there are two types of experiential learning i.e. experiential learning as part of the curricular design of an academic/ vocational program and experiential learning as part of employment undertaken after completion of an academic/vocational program.

In case where experiential learning is a part of the curricular structure the credits would be calculated and assigned as per basic principles of NCrF i.e., 40 credits for 1200 hours of notional learning. In case where experiential learning is part of employment (related field both wage and self) the learner would earn credits as weightage. The maximum credit points earned in this case shall be double of the credit points earned with respect to the qualification/ course completed. The credit earned and assigned by virtue of relevant experience would enable learners to progress in their career through the work hours put in during a job/employment.

Individual regulators/autonomous institutions may prescribe the weightages for the experiential learning based on the relevant work experience and proficiency/ professional levels achieved. However, the range of these weightages must lie between 1 and 2 wherein 1 in the minimum and 2 is the maximum weightage. An indicative mechanism for assignment of weightages based on the experiential learning (relevant work experience and proficiency level achieved) for calculation of overall credit points is as below:

Table 7: Credit acquired by virtue of relevant experience / proficiency

Experience cum Proficiency/ professional levels	Description of the relevant Experiential learning including relevant experience and professional levels acquired and attaining proficiency/ professional levels	Weightage/ multiplication Factor	Defining criteria by Respective Regulatory/ Trade Bodies (Indicative)
Trained/ Qualified	Completed the coursework/ education/ training and has been taught the skills and knowledge needed for a particular job or activity and assessed	1	◣ E.g. No of years of experience, ◣ Level of knowledge and proficiency or professional levels attained ◣ Any other parameters as maybe defined by the Respective Regulatory/ Trade Bodies
Proficient	Proficient implies a thorough competence derived from training and practice	1.33	
Expert	Expert is defined as performing a job to high standards with good level of education, skill, or training and experience	1.67	
Master	Master means having great/ highest level of knowledge and experience in a trade or profession	2	

Example- a learner who has undertaken training of 1200 hours (40 credits) of level 3 program attains 120 credit points (40*3). Presuming that this candidate works in a related field for 3 years, then the overall credit points earned shall be- 120 X 1.33=159.6 or rounded of to 160 credit points.

Similarly, in case of student/ learner with more than 7 years' experience, the maximum credit points earned will be 120 X 2= 240

3.4. CREDIT ACCUMULATION AND TRANSFER (OPERATIONALIZATION OF CREDIT FRAMEWORK)

a. Credits Accumulation

The credits will be earned by each student and learner after going through the course qualification or program subject to assessment. The credits would be given for every kind of learning which are for each subject or qualifications. These credits can be accumulated Indian Academic Bank of Credits.

Generally, under each of the programs and qualifications design under National Higher Education Qualification Framework (NHEQF) or National Skill Qualification Framework (NSQF) the requirement of credits to be hard for each year or qualification are prescribed by the concerned regulators. Presently there is no credit system in place at school level and therefore there is no practice of prescribing the credits to be earned for clearing each grade in the school. However, once the national credit framework is in place, the concerned regulator may prescribe the credits to be earned for each grade.

There is also a concept of credit points which could be subsequently used for various purposes. The total credit points earned by a student/learner is a multiplication of total credits earned at a level of study/ skilling and NCrF level assigned to that level of skilling/ academic class. The Framework also envisions to consider the cases wherein the student opts out of the education ecosystem and gains employment.

Such a student, if desirous of returning to mainstream education shall benefit as the experience gained by the student during his active employment shall also be assigned credits which can be redeemed to establish eligibility for further mobility in accordance with the assessment band. The weightage assigned to relevant experience shall be multiplied with the credit points to calculate the final credits available to a student.

Accordingly, at any point of time, the overall credit points accumulated by a student shall be calculated as 'total credit points earned' multiplied by the 'weightage assigned to the relevant experience acquired by the student'.

E.g. A learner completing grade 11 and grade 12 from regular schooling earns 40 **credits** for each grade.
The **credit points** accumulated by the learners would be 3.5 X 40= 140 and 4X40= 160 for each grade.
Therefore, the **accumulated credit points for the assessment band** (NCrF level 3.5 and 4) equals 300.

b. Credits Storage

Credits accumulated by an individual shall be stored through Academic Bank of Credits (ABC) as envisaged under by NEP. ABC shall enable an individual to digitally keep record of all the learning acquired and accumulated throughout life in a common account. ABC shall provide for storage of credits irrespective of type of learning i.e. academic, vocational or experiential and thus shall enable

lifelong learning. Information regarding ABC have been further detailed down in Section 3.5 of this document.

c. Credits Transfer

The transfer of credits may be defined as the process of mutual acceptance of credits between two entities. This would mean that the competencies acquired by a learner/ student after completion of qualification/s are acknowledged in numerical values. The transfer of credits is possible only when credits are recognized by concerned awarding bodies and there is a mutual agreement on credits between the body allocating credits and the body accepting those credits. To enable such transfer, it is imperative that learning outcomes for every NCrF level and every program/course be defined by the concerned regulators/board to facilitate effective operationalization. While having the requisite number of credits shall make a learner fulfil the eligibility criteria for entry to a program, the accepting institution will have flexibility to prescribe the modalities and process for admission which may include merit based listing, an entrance test/ examination or simply first come-first serve basis.

In addition, it would be the responsibility of the regulator/ Autonomous institutions to define the need of abridge module while defining the admission criterion.

The transfer of credits shall fulfil the following objectives:

i. Establish equivalence between General education and Vocational Education and Training/ Skilling, without further certification of equivalence

ii. Define Entry criteria for various qualifications

iii. Define and establish Multiple entry and exit possibilities

iv. Enhance International Mobility

v. Other benefits like establishing minimum requirements for a job/ employment or projects, if applicable

3.4.1. Establishing Academic Equivalence Within and Between General Education and Vocational Education and Training/ Skilling

One of the objectives of the National Credit Framework is to establish equivalence between various streams of education by ensuring equivalence between different types of existing programs/ qualifications and this equivalence sets the base for establishing eligibility of students and/ or establishing multiple entry and exit pathways. The following are the basic principles to be followed while establishing equivalence:

i. The learner must have accumulated credit required for a particular level either through regular informal and formal education, vocational education and training/ skilling or through relevant work experience or a combination of all.

ii. Equivalence is possible only within the same assessment band.

iii. The learner would need to clear/pass the previous assessment band in order to move to the next assessment band

iv. The accumulated credits are with respect to each assessment band.

v. For establishing equivalence (including academic) for a level, the requirement of any additional learning will be defined by the concerned regulator.

Such an equivalence shall be applicable to all kinds of program including those being implemented within school education, Higher education (both general and technical) and vocational education (ITI-DGT based programs). This would mean that even an ITI pass out will be able to get academic equivalence to 9th, 10th, 11th and 12th grades, subject to additionally fulfilling the requirements for such equivalence/ equivalence criteria. The equivalence table (below) in addition to the existing equivalence post completion of 2 year ITI after 8th and 2 year ITI after 10thwith 10th and 12th grade respectively also establishes requirements/ process for academic equivalence for ITI pass student for grade 9 and grade 11.

E.g. 1st year UG and 1st year BE/ B.Tech to be treated equivalent for seeking admission in the second year of any UG program.(with/ without any bridge courses)

E.g. An ITI pass out (2 years after 10th) along with an additional language course from NIOS attains equivalence of Class 12th certificate along with ITI-NTC

The matrix of equivalence between school education & vocational education and training/ skilling and higher education and vocational education and training/ skilling is detailed in the **Table No. 8**

Table 8: The National Credit Framework Levels (NCrF), Academic Levels (National School Education, Higher Education Qualifications Framework), and Vocational Education and Skills Levels (National Skill Qualifications Framework) and conditions for academic equivalence

No of Years of Edu	Stages/ Band/ Education Program	School Education grade Passed / Credits Earned per year/ NCrF Credits Levels	Higher Education Programs (General Edu) / Credits Earned	Higher Education Programs (Tech Edu/ AICTE) / Credits Earned	Vocational education and training/ skilling Programs (Long Term) with Entry criteria	Vocational education and training/ skilling Programs (Short Term) with Entry criteria / Credits Earned	Additional requirement for Academic Equivalence of the VET & Skilling qualifications completed	Common National Credit Framework Levels	Credit Points earned
Col-1	Col-2	Col-3	Col-4	Col-5	Col-6	Col-7	Col-8	Col-9	Col-10
	School Education								
	3 years of **Pre-Primary 800 Hrs/Year**	Balvatika/ **81/ 0.1 x 3**	NA	NA	NA	NA		0.1	8
1	**Primary School** Grade I & II **800 Hrs/ Year** and Grade III, IV & V **1000 Hrs/ Year**	Grade I/ **27/ 0.2**	NA	NA	NA	◣No formal education and ◣150-210 hrs of Vocational education and Training/ Skilling **OR** ◣600 hours of apprenticeship	**In addition to (Col-7)** Foundational literacy and numeracy at NSQF level 1/ 2 for grade 3 or Grade 5 certificate by competent authority	0.2	5
2		Grade II/ **27/ 0.4**	NA	NA	NA			0.4	11
3		Grade III/ **33/ 0.6**	NA	NA	NA			0.6	20
4		Grade IV/ **33/ 0.8**	NA	NA	NA			0.8	26
5		Grade V/ **33/ 1.0**	NA	NA	NA			1.0	33
6	**Middle School 1200 Hrs/ Year**	Grade VI/ **40/ 1.33**	NA	NA	NA	◣No formal education **OR** ◣Ability to read and write with one-year experience wherever job requires **AND** ◣210-270 hrs. of Vocational education & Training/ Skilling	**In addition to (Col-7)** Advance Literacy & Numeracy Skills at NSQF level 2 or 3 through competent authority for grade 5th or grade 8th certificate	1.33	53
7		Grade VII/ **40/ 1.67**	NA	NA	NA			1.67	67
8		Grade VIII/	NA	NA	NA			2.0	80

		40/ 2.0				**OR** ◣**NSQF Level 1 with 1-year Experience** and 210-270 hrs. of Vocational education and Training/ Skilling **OR** ◣750 hours of apprenticeship			
9	High School 1200 Hrs/Yr	Grade IX	NA	Completed **1 year of ITI after 8th class**	8th Grade pass + 1 year of Vocational education & Training/ Skilling (NTC/ NAC) **AND (for NTC only)** 150 hours of project work	◣Total 8-9 years of learning including academic education, vocational education, training and skilling and/or Experiential learning including relevant experience and professional levels acquired, subject to assessment **OR** ◣1-year relevant experience at NSQF Level 2 or 6 months' relevant experience at Level 1 **AND** ◣240-300 hrs. of Vocational education & Training/ Skilling	**In addition to (Col-6)** Language skill at level 3 through competent authority for 9th Certificate **In addition to (Col-7)** Grade 8th certificate + Accumulated 40 credits at level 2/3 **plus** Language Skills at level 3 by competent authority for Grade 9th Certificate	2.5	100
10	High School 1200 Hrs/Yr	Grade X	NA	Completed **2 Years of ITI after 8th Class**	8th Grade pass + 2 years of Vocational education & Training/ Skilling (NTC/ NAC) **AND (for NTC only)** + 150 hours of project work	◣Total 9-10 years of learning including academic education, vocational education, training and skilling and/or Experiential learning including relevant experience and professional levels acquired, subject to assessment **OR** ◣1-year relevant experience at NSQF Level 2 or 6 months' relevant experience at Level 2.5 **AND** ◣270-390 hrs. of Vocational education & Training/ Skilling	**In addition to (Col-6)** Language skill of level 3 through competent authority for 10th Certificate **In addition to (Col-7)** Grade 8th and/or Grade 9th certificate + Accumulated 40 credits at level 3 **plus** Language Skill at level 3 through competent authority for Grade 10th Certificate	3.0	120
11	Sr. Sec. School 1200 Hrs/Yr	Grade XI	NA	Completed	10th Grade pass + 1 year of Vocational	◣Total 10-11 years of learning including academic education,	**In addition to (Col 6)**	3.5	140

				1st Yr of Diploma after 10th (Certificate of Voc. (Eng))	education & Training/ Skilling (NTC/ NAC) (After 10th) **AND (for NTC only)** + 150 hours of project work	vocational education, training and skilling and/or Experiential learning including relevant experience and proficiency/ professional levels acquired, subject to assessment **OR** ◣1-year relevant experience at NSQF Level 3 or 2-year relevant experience at level 2.5 **AND** ◣360 to 420 hrs. of Vocational education & Training/ Skilling **OR** ◣10th Grade pass and pursuing continuous schooling in regular school with one vocational subject	Language skill of level 3.5/4 through competent authority for grade 11th Certificate **In addition to (Col 7)** Grade 10th certificate + Accumulated 40 credits at level 3.5 **plus** Language Skill of level 3.0/3.5 through competent authority for Grade 11th Certificate		
12	Sr. Sec. School 1200 Hrs/Yr	Grade XII	NA	Completed 2nd Yr of Diploma after 10th (Industrial Training Certificate (Eng.)) **Diploma of Vocation**	10th Grade pass + 1 to 2 years of Vocational education & Training/ Skilling (NTC/ NAC) (After 10th) **AND (for NTC only)** + 150 hours of project work	◣Total 11-12 years of learning including academic education, vocational education, training and skilling and/or Experiential learning including relevant experience and proficiency/ professional levels acquired, subject to assessment **OR** ◣2-year relevant experience at NSQF Level 3 or 1 Year experience at NSQF level 3.5 **AND** ◣390 to 480 hrs. of Vocational education & Training/ Skilling	**In addition to (Col 6)** Language skill at level 3.5/4 competent authority for 12th Certificate **In addition to (Col 7)** Grade 11th certificate + Accumulated 40 credits at level 4 **plus** Language Skill at level 3.5/4 through competent authority for Grade 12th Certificate	4.0	160
	Higher Education								
13	3-Year Undergraduate Program 1200 Hrs/Yr	NA	Completed 1st Year of 3-year UG / **(UG Certificate)** 40 credits	Completed 1 Year of technical education after 12th plus internship as per AICTE Policy 40 credits	Total 1 year of Vocational education & Training/ Skilling after 12th (NTC/ NAC/ CITS) **OR**	◣Total 12 to 13 years of learning including academic education, Vocational education, Training and Skilling and/ or Experiential learning including relevant experience and proficiency/ professional levels acquired, subject to assessment	**For Armed Forces** 20 Credits from NHEQF courses at level 4.5 and Above **&** 20 credits from NSQF aligned & approved skill courses at level 4.5 or above	4.5	180

				OR Completed 3-year diploma after 10th 40 credits **Diploma Engineering**	Total 2 to 3 years of Vocational education after 10th (NTC/ NAC/ CITS) **AND (for NTC only)** +150 hours of project work	**OR** ◣2 years of relevant experience at NSQF Level 3.5 or 1year relevant experience at NSQF Level 4 **AND** ◣450-510 hrs. of Vocational education & Training/ Skilling	**For LTT & STT with UG certificate** 20 credit from NCrF level 4.5 or above STT/LTT courses **&** 20 credits from UGC/ AICTE approved NHEQF courses at level 4.5 and above		
14	3-Year Undergraduate Program 1200 Hrs/Yr	NA	Completed 2 years of UG education **(UG Diploma)** 40 credits **OR**	Completed 2 Year of technical education after 12th plus internship as per AICTE Policy 40 credits UG Diploma	Total 1 to 2 years of Vocational education & Training/ Skilling after 12th (NTC +NAC/ CITS) **OR** Total 3 to 4 years of Vocational education & Training/ Skilling after 10th (NTC/ NAC / CITS)	◣Total 13 to 14 years of learning including academic education, vocational education, training and skilling and/or Experiential learning including relevant experience and proficiency/ professional levels acquired, subject to assessment **OR** ◣3-year experience at NSQF Level 4 (min 8th class pass) or 1.5 years of experience at NSQF level 4.5 **AND** ◣480-570 hrs of Vocational education & Training/ Skilling	**For Armed Forces** 16 Credits from NHEQF courses at level 5.0 and Above and 24 credits from NSQF aligned & approved skill courses at level 5.0 or above **For LTT/ STT Courses with UG Diploma** In addition to 20 credit# from NCrF level 4.5 or above STT/LTT courses **and** 20 credits # from UGC/ AICTE approved NHEQF courses at level 5.0 and above	5.0	200
15	3-Year Undergraduate Program 1200 Hrs/Yr	NA	Completed UG 3rd Year **(UG Degree)** 40 credits **OR**	Completed 3 Years of technical education after 12th plus internship as per AICTE Policy 40 credits **(B. Voc/ B.Sc. Eng)**	Total 2 to 3 years of Vocational education & Training/ Skilling/ Experiential learning including relevant experience and proficiency/ professional levels acquired after 12th (NTC/ NAC/ CITS) **OR**	◣UG Diploma **OR** ◣Total 15-16 years of learning including academic education, vocational education, training and skilling and/or Experiential learning including relevant experience and proficiency/ professional levels acquired, subject to assessment **OR** ◣3 years of experience at NSQF Level 4.5 or 1.5 years of experience at level 5 **AND**	**For Armed Forces** 24 Credits from NHEQF courses at level 4.5 and Above **&** 16 credits from NSQF aligned & approved skill courses at level 5.5 or above **For LTT/ STT Courses with UG Degree** In addition to 20 credit from NCrF level 5.5 or above STT/LTT courses	5.5	220

					Total 4 to 5 years of Vocational education & Training/ Skilling/ Experiential learning including relevant experience and professional levels acquired after10th (NTC/ NAC/ CITS)	◣540-600 hrs of Vocational education & Training/ Skilling	**&** 20 credits from UGC/ AICTE approved NHEQF courses at level 5.5 and above		
16	4-Year Undergraduate Program (With Honors) 1200 Hrs/ Yr	NA	Completed 4-year UG with Honors / Honors with Research 40 credits **OR** Completed 1st year of 2-year PG after 3-year UG 40 credits **OR** Completed 1-year PG **(PG-Diploma)** after 3-year UG/ 40 credits	Completed 4 Year of technical education after 12th plus internship as per AICTE Policy 40 credits **B. Tech /B. E**	NA	◣Total 16-17 years of learning including academic education, vocational education, training and skilling and/ or Experiential learning including relevant experience and professional levels acquired, subject to assessment **OR** ◣3 years relevant experience at NSQF Level 5 or 1.5 years of relevant experience at level 5.5 **AND** ◣570-660 hrs. of Vocational education & Training/ Skilling	**For STT Courses with UG Degree- Honors/ research or PG Diploma** In addition to 20 credit from NCrF level 6 or above STT/LTT courses & 20 credits from UGC/ AICTE approved NHEQF courses at level 6 and above	6.0	240
17	Masters/ Postgraduate 1200 Hrs/Yr	NA	Completed 2nd year of 2-year PG after 3-year UG/ 40 credits M.Sc. (Engg.) PG Degree **OR** Completed 1-year PG after 4-year	Completed 1st year of 2-years ME/ M. Tech Prog plus internship as per AICTE Policy 40 Credits **OR** Completed 2nd year of M. Voc after 3-year B. Voc	NA	◣Total 17-18 years of learning including academic education, vocational education, training and skilling and/or Experiential learning including relevant experience and proficiency/ professional levels acquired, subject to assessment **OR** ◣3 years relevant experience at NSQF Level 5.5 or 1.5 year of relevant experience at level 6 **AND**	**For STT Courses with PG Degree** In addition to 20 credit from NCrF level 6.5 or above **&** 20 credits from UGC/ AICTE approved NHEQF courses at level 6.5 and above	6.5	260

			UG with Honors / Honors with Research 40 credits	plus internship as per AICTE Policy 40 credits PG Diploma		630- 690 hrs. of Vocational education and training/ skilling & Training/ Skilling **OR** ◣ Pursuing 2nd year PG (after 3 years of UG Degree) **OR** ◣ Ph.D. after Degree (honors) **AND** 570-660 hrs. of Vocational education & Training/ Skilling			
18	Masters/ Postgraduate 1200 hours/ Year	NA	NA	Completed 2nd year of 2-years M. E/ M. Tech Prog plus internship as per AICTE Policy 40 Credits **(Masters- Eng)**	NA	◣Total 18-19 years of learning including academic education, vocational education, training and skilling and/or Experiential learning including relevant experience and professional levels acquired, subject to assessment **OR** ◣3 years of relevant experience at NSQF Level 6 or 1.5 years of relevant experience at level 6.5 **AND** ◣660-750 hrs. of Vocational education & Training/Skilling	**For STT Courses with PG engineering** In addition to 20 credit from NCrF level 7 or above **&** 20 credits from UGC/ AICTE approved NHEQF courses at level 7 and above	7.0	280
19 years +	PhD after PG, 2 to 4 yrs.	NA	NA	1st Yr of Ph.D. and onwards	NA	◣More than 19 years of learning including academic education, vocational education, training and Skilling and/or Experiential learning including relevant experience and professional levels acquired, subject to assessment **OR** ◣4 years of relevant experience at level 6.5 or 2 years of relevant experience at NSQF Level 7 **AND** ◣750 (or more) hrs. of Vocational education & Training/ Skilling		8.0	320

Notes:

1. *The National Credit Framework (NCrF) shall function as **one single and broad enabling framework** for all regulatory organizations, and autonomous institutions who may, wherever required, notifying their detailed implementation guidelines within this Framework. **However, all implementation guidelines and standing operating procedures (SOPs) shall be in- line with and conform to the national credit framework**.*

2. *The NCrF is **the enabling framework** to empower and enables institutions with the required flexibility for catering to their specific academic requirements for creating imaginative and flexible curricular structures, creative combinations of disciplines and other special needs.*

3. ***STT is Short Term Training, LTT is Long Term Training. In case of Long Term Training (LTT) i.e., column 6:***

   i. *The NTC stands for National Trade Certificate and is a one or two- year duration certificate program. This certificate program is offered by Directorate General of Training (DGT) and is offered after Grade 8th, Grade 10th and after Grade 12th. NTC is offered to students who pass the All India Trade Test (AITT) for Craftsman Training Scheme (CTS)*

   ii. *The NAC is National Apprenticeship Certificate, and the period of training varies from one year & two months to 2 years. The minimum age for undertaking NAC program is 14 years and the qualifications vary from Grade VIII pass to XII Grade pass (10+2) system. NAC is offered to students who pass the All India Trade Test (AITT).*

   iii. *The craftsman Instructor Training Scheme (CITS) is a program offered by DGT for the instructor trainees. The DGT mandates that all trainers in the it is must be CITS certified. The duration of CITS program is 1 year and the eligibility for CITS is Raring NTC/ NAC/Diploma/Degree qualifications.*

4. ***Open schooling and NIOS:***

   i. *Open schooling is an alternative and complementary to formal education offering an opportunity for complete range of schooling. The term open schooling describes that the learning is open in terms of timing, location, teaching roles, instructional methods and modes of access. Open schooling aims at removing obstacles exist in formal learning viz., age, geographic, financial, infrastructure or time related and so on. In this process, the student takes the responsibility for what they study, how they learn, the pace at which they learn, using the learning support they have and when the examinations they take etc. Thus, the learner has flexibility to learn and progress.*

   ii. *In India, the National Institute of Open Schooling (NIOS) is the largest Open Schooling system in the world providing alternative schooling. It offers open basic education courses, vocational, life enrichment courses etc. It offers a range of courses equivalent to Grades III to the pre-degree level. The target group includes neo-literates, dropouts and general public. The NIOS curriculum is largely placed in the categories of equivalency or alternative schooling, life skills education & training, as well as training in income generation courses.*

   iii. *NIOS is also offering various courses in collaboration with various institutions like ITDC, IMA, NHM, Moot, MoHFW, Sector Skill Council (SSCs). NIOS is also implementing various Govt projects for literacy (NLMA), digital literacy (PMGDISHA), ASHA assessment and Certification, Training Assessment & Certification in Community Health for untrained Health workers in collaboration with State Govt.*

   iv. *NIOS offers elementary level courses under its Open Basic Education (OBE) programme for Level-A, Level-B and Level-C equivalent to Grade 3, 5 and 8 of the formal system, Secondary (Grade10) and Senior Secondary (Grade12).*

   v. *So far, NIOS does not conduct 9th Grade examination. For admission to Grade X in NIOS, the entry requirement is Certificate of Grade VIII pass or self-certificate. The Self Certificate states that the learner has studied at Rome and find herself/himself eligible for study in Secondary (Grade 10tR).*

   vi. *Similarly, there is no Grade XI examination in NIOS. For entry to Grade XII, the eligibility criteria are certificate of the Secondary examination from a recognized board. However, a gap of two years for certification at Senior Secondary level is required after passing of the secondary level.*

   vii. *However, the National Credit Framework (NCrF) enables NIOS to conduct special assessments for Grade IX and XI or conduct an on demand examination as and when demanded by the students/ learners.*

   viii. *# May be read as upto 20 credits from NCrF/NSQF program and balance credits from NHEQF based programs.*

3.4.2. Credit Framework Enabling Entry Eligibility for Academic & Vocational Progression

i. The credit points earned and accumulated can be used to determine the eligibility for taking admission in various programs at multiple levels, subject to fulfilment of the following broad principles laid down under NCrF and the acceptance of these credit points by the concerned agencies. While the detailed transfer mechanism indicating entry eligibility at various levels for various streams shall be defined by individual regulators, following conditions are required to be fulfilled:

a. It must be ensured that the student has acquired and accumulated the credit points needed for moving to a particular level after undergoing either skill based training or academic classes or through relevant experience. These credit points must have been accumulated from the adjacent (lower) assessment band. For e.g. A 10th pass student (who had cleared assessment band B') is eligible for appearing for 12th class examination (assessment band 'C') provided the student has accumulated requisite credit points, either through an additional academic program or through vocational education & training/ skilling or through relevant experience as defined in the equivalence table or specified by the regulator/ autonomous institutions.

b. The student has undertaken and cleared the examination resulting in passing of the adjacent lower assessment band. E.g. For taking admission in a UG equivalent program (assessment band 'D'), the students must have accumulated enough credits in the previous assessment band 'C' (11th and 12th) and cleared the requisite exam leading to 12th class certification.

c. The educational institute providing the credits and the institute accepting the credits are in mutual agreement while transferring the credits, without the need for further equivalence certificate for each student. Since a similar program being offered by two different institutions may have variation, it is expected that the institutions permitting transfer of credits will have mutual understanding. The accepting institutes, if they so desire, may also supplement their program with a bridge course.

d. Once the eligibility criteria for various programs is established, the accepting institution may devise appropriate policy changes.

e. The NCrF enables and empowers establishing academic equivalence and defining the entry criteria for various academic and vocational programs. However, the process of admission into the admitting institution including conducting a merit based selections through entrance test/ examination or screening etc for an institute is subject to the guidelines specified by regulator or if the institution is autonomous, the internal

mechanisms established by the institution, subject also to availability of seats etc.

f. As regards the assessment of the students with exceptional achievements/ performance in games and sports, performing/ fine arts, Social Work, NCC, or other similar subjects/ category is concerned, the same can be defined/ prescribed based on their level of competition (State level/ National level, International level/ Commonwealth/ Olympics/ World Championships etc), the level of representation (District/ State/ National/ International), medal/ distinction achieved in team/ individual events, and such exceptional performance can be treated equivalent to an assessment. The modalities, however, may be defined/ prescribed by the concerned regulator.

3.4.3. Establishing Multiple Entry and Multiple Exit (ME-ME) Pathways

The credit transfer mechanism will also enable a student/ learner to enter and exit the educational ecosystem, both general and vocational, at any point of time. In such cases due weightage is given to work experience gained or any other training undertaken by the learner. The proposed equivalence by virtue of this National Credit Framework highlights how a student can accumulate necessary credits that will allow a student to re-enter the mainstream education.

While NCrF is an enabling framework, the detailed guidelines of ME-ME shall be as defined/ prescribed by the concerned regulator. The standardization of content/ curriculum although seems to be an ideal approach, however, given the diversity of the country, the same may not be feasible. The regulators or the autonomous body concerned may however prescribe the criteria for ME-ME which may include an entry or exit module as per the NCrF level of the program.

E.g. A 5th grade student with total accumulated credit points of 200 over the years and undertaking certain bridge course is eligible to appear for 8th class examination. Once the student clears it, he will be grade 8th pass and can continue with 9th grade onwards through mainstream education.

E.g. i. In case of the **undergraduate degree of either three- or four-year duration**, the possible multiple entry and exit options are below:

a. Certificate after completing one year in a discipline or field including vocational and professional areas.
b. Diploma after two years of study; or
c. Bachelor's degree after a three-year programme
d. Bachelor's degree with research/ honours/ Engineering in case of a 4-year bachelor program

E.g. **For the Master's programmes:**

a. A two-year programme with the second year devoted entirely to research for those who have completed the three-year Bachelor's programme.

b. A one-year Master's programme for students who are completing a four-year Bachelor's programme with honours or Honours with Research; and

c. An integrated five-year Bachelor's/Master's programme with an option to exit at the end of the third year with a Bachelor's degree, with entry to a 2-year Master's programme in another HEI.

E.g. Learner after completing first year of M. Tech program, shall be eligible for an M. Voc degree, upon exit. Having M. Voc degree, however, is not mandatory for entry into an M. Tech program.

The responsibility of detailing out the multiple entry- multiple exit options for the general education and the vocational education and training/ skilling shall be the responsibility of concerned regulators. The regulator/ autonomous institutions like IITs and IIMs may also take a view on the level of standardization of subjects and content being implemented in various institutions (both school and higher) for the enablement of seamless student mobility, however, the NCrF does not prescribe any such condition for mobility of students.

The ME-ME options separately for higher education (both by UGC and AICTE) is at **Annexure III.**

3.4.4. International Mobility

The International equivalence and transfer of credits shall be enabled through various multilateral/ bilateral agreements between respective regulators of the countries concerned.

A uniform and standardised national framework for credit accumulation and transfer would lend credibility and authenticity to the credits being assigned and earned under various programs in India thereby making these credits more acceptable and therefore transferable internationally.

The demand for transparent sets of professional competencies, skills, and knowledge propelled by the globalization of economies enhanced the international mobility of students and professionals. Acceptance of equivalence of various qualifications between the countries, therefore, becomes vital to enable the international equivalence and mobility of students and professionals. In higher education, there could be variations in terms of course contents, levels of the courses, the assessments and grading systems, and titles of qualifications, which always remained a challenge to establish any equivalence of certificates, diplomas and degrees or allow transfer of credits between two institutions in different countries. This necessitates the requirement of a measurable method for establishing equivalence between qualifications to enable the identification of skills, comparisons, and mobility of learners and workers between countries.

The Qualification Frameworks, which provide for a way of structuring qualifications defined by not only the course curriculum, but the learning outcomes becomes the incredible method to measure the outcome of learning and thus for comparing qualifications to establish equivalence. Thus, the thrust towards developing National Qualifications Framework (NQF) focusing on learning outcomes/graduate attributes gained importance. Many countries developed National Qualification Framework (NQF) with learning outcomes as the focal point. Simultaneously, the pace to develop the Regional Qualifications Framework (RQF) also picked up due to the initiatives by the Organisation like Economic Co-operation and Development (OECD), World Bank, and International Labour Organization (ILO). International agreements that followed enabled the comparison of qualifications between the signatory countries encouraging the mobility of learners and professionals.

- **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 its 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 it 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 Bologna** Process launched in 1998-1999, established goals for reform in the participating countries, such as the three-cycle degree structure (bachelor, master's, doctorate), and adopted shared instruments, such as the European Credits Transfer and Accumulation System (ECTS). The Bologna Process is aimed to improve the effectiveness and efficiency of higher education in Europe in the context of a common European Higher Education Area. Learning outcomes form the premise for the Bologna education reform. Mobility of students by recognition of qualifications contributes to the mobility of students at an international level thereby the credit transfer from one institution to another is simplified.

- Based on the Bologna Process, a series of descriptors, as given below, for the three Bologna Process cycles were drafted which came to be known as Dublin Descriptors, as below:
  - Knowledge and understanding.
  - Applying knowledge and understanding.
  - Making judgments.
  - Communications skills and Learning skills.

i. **Global Convention on the Recognition of Qualifications:** It concerns Higher Education and was unanimously adopted by the UNESCO General Conference at its 40th session on 25 November 2019. The Global Convention is designed to facilitate international academic mobility and promote inclusive access to higher education, by ensuring the right of individuals to have their higher education qualifications evaluated through fair, transparent, and non-discriminatory mechanisms. It also aims to strengthen international cooperation in higher education and contribute to raising the quality of higher education worldwide.

ii. **Sydney Accord:** The Sydney Accord was signed in June 2001 for development and recognition of good practice in engineering education. The Sydney Accord is specifically focused on academic programmes dealing with engineering technology. The Accord acknowledges that accreditation of these academic programmes is a key foundation for the practice of engineering technology in each of the 11 countries/territories covered by the Accord.

iii. **The Dublin Accord:** Originally signed in May 2002 for mutual recognition of the academic program/qualifications which underpin the educational base granting Engineering Technician titles. The Accord acknowledges that the educational base is a key foundation for practice as an engineering technician, in each of the 9 countries or territories covered by the Accord. The Dublin Accord is fostering the concept that for academic recognition, an accreditation system which remains independent of the institutions being accredited is essential. Critical issues-professional competency, accountability, benchmarked standards, quality assurance, and risk management-must be addressed

To enable, enhance and encourage such mobility, it is important that a nationally accepted and internationally comparable and acceptable framework be developed to facilitate transparency and comparability of higher education qualifications at all levels internationally.

The development of the National Credit Framework (NCrF) and the National Higher Education Qualifications Framework (NHEQF) will greatly facilitate our attempts in this direction.

The concerned regulator/autonomous institutions shall prescribe the relevant mechanism/guidelines for establishing such comparability and mutual agreement with counter parts in the other countries.

A committee to review the Sydney and Dublin accord in light of NEP, 2020 and integration of skill sets with knowledge based present education system and desirability to enter into these accords for recognition of Indian Engineering and vocational qualifications among member states for exploiting employment opportunities formulated at AICTE. In the meeting it was discussed that India could be signatory to Dublin Accord established for mutual recognition of engineering technician qualifications i.e. 3- Years Engineering Diploma and later explore the possibility of including B.Voc under this accord.

3.4.5. Enabling Requirements for a Job/ Employment

A well-structured and evolved Credit Accumulation & Transfer mechanism shall also enable prospective employers to not only verify the competencies achieved by a candidate in terms of credits but also map the job requirements with competencies required in terms of credits in a particular sector/subsector/occupation. This may convert credits into a ready currency in the job market enabling an individual to use them for recruitment and recruiters to notify jobs in terms of credits.

3.5. CREDIT STORAGE AND REDEMPTION THROUGH ACADEMIC BANK OF CREDITS

3.5.1. Mechanism for Credit Storage

The framework envisages a well-developed Academic Bank of Credits (ABC), encompassing the requirements of academic, vocational and Experiential learning including relevant experience and proficiency/ professional levels acquired. As per NEP 2020, Academic Bank of Credits (ABC), which shall be a national-level facility, will promote the flexibility of the curriculum framework and interdisciplinary/multidisciplinary academic mobility of students across the HEIs in the country with appropriate 'credit transfer' mechanism.

ABC shall enable the integration of multiple disciplines of school education and higher education leading to the desired learning outcomes including increased creativity, innovation, higher order thinking skills and critical analysis. ABC shall provide significant autonomy to the students by providing an extensive choice of courses for a programme of study, flexibility in curriculum, novel and engaging course options across a number of higher education disciplines/ institutions.

'Academic Bank of Credits' (ABC) system intends to enable students across the nation in “fulfilling their thirst for knowledge by providing academic flexibility to pick and modify their educational paths, link diverse disciplines; and assist them in acquiring the proper foundations and building blocks for their ambitions”. The 'Academic Bank of Credits' (ABC) shall be an educational digital platform created to facilitate student's seamless mobility between or within degree-granting Higher Education Institutions (HEIs) and vocational education and training/ skilling through a formal system of credit recognition, credit accumulation, credit transfer, and credit redemption to promote distributed and flexible teaching and learning. The ABC guidelines have been notified by UGC and will be extended to cover the provisions related to school education as well.

3.5.2. Accumulation and Storage of Credits

The Academic Bank of Credits shall be a repository of all credits earned by a student. These credits shall be accumulated and redeemable provided the credits accumulated are within the same assessment band. The credits accumulated shall have a validity/ expiry which will be defined with respect to each program.

This will be the responsibility of independent regulators based on the type, relevance and future utility of a program amongst others. The validity of the credits should be in-sync with all the other regulatory policy and initiatives of the Government. Once redeemed the student shall not be able to use the same credits again for similar purpose.

3.5.3. Verification of Credits Earned

The verification of credits accumulated and stored in ABC will be done by respective regulators.

3.5.4. Redemption of Accumulated Credits

The ABC will promote equity, quality, flexibility, mobility, collaboration, transparency, and integration to improve the competitiveness and efficiency of India's education system. ABC shall provide services, including credit accumulation, credit transfer, credit redemption through the opening, closure and validation of accounts and shall enable multiple entry-multiple exit (ME-ME) options in a programme. Students who pursue education as freelancers or through open / home / online schooling can also accumulate credits. These credits can be deposited to student's ABC account. After the accumulation of credits, a student can redeem these in order to get any academic degree based on the norms set by the regulatory body/ institution. It works on the principle of ME-ME as well as "anytime learning, anywhere learning, and any level learning' as is emphasized in NEP 2020. It can facilitate the integration of campuses by creating student mobility within the university system. ABC can also help integrate skills into a credit-based system by providing a credit recognition mechanism. However, the Certificates/ Diploma/ degrees will have to be given by university, regulator or respective Awarding Body (AB) and not by the credit bank.

The ABC will act as a Bridge for Employability meaning that ABC will also enable the employers to access the credit accumulated and stored in order to establish the eligibility of a candidate for a particular job. For credit redemption, the process to be followed will be as per the Academic Bank Guidelines notified by UGC.

3.5.5. Credits Expiry and Renewal

'Credits earned by students shall be deposited in the respective Bank Account with ABC and shall be valid for a period as defined by the respective regulator or till it is redeemed. The redemption of credits shall be as per the provisions of ABC Guidelines or as stipulated by the regulator concerned/ autonomous institution.

3.6. Implementation of Operationalization Guidelines and SOPs

3.6.1. SOPs and Guidelines

While the NCrF lays down broad framework, enabling provisions and basic guidelines for achieving the intent of NEP has been included in this document along with the responsibility of implementing the provisions defined in the NCrF through detailed operational guidelines. NCrF provides enough scope to the Regulators and Autonomous Institutions to have Implementation SOPs, Guidelines on various aspects viz. Multiple Entry, Multiple Exit, entry and exit modules for implementing ME-ME, within the overall national credit framework the regulators and the autonomous institutions may have guidelines and SOP on the following:

i. Developing flexible curricular structures, multi-disciplinary credits vs. academic/other credits to be earned under a program, assessment strategy and methods, establishing admission/ entry criteria for various programs etc.

ii. Prescribing learning outcomes for various academic/vocational program corresponding to comparable NCrF credit Level.

iii. Detailing the multiple entry-multiple exit options including the requirement of any additional entry or exit modules.

iv. The detailed guidelines on establishing equivalence within and between general and vocational education and training/ skilling for a level, including the requirement of additional learning.

v. The assignment of credits for individual programs in terms of learning hours for theory, practical and Experiential learning including relevant experience and proficiency/ professional levels acquired for calculation of credits for the program.

vi. Defining the components for learning hours, over and above mentioned in NCrF.

vii. SOPs for credit assignment, credit transfer and redemption, credit validation and expiry, creditization of digital/ online learning.

viii. Determine the curriculum, syllabus, content, teaching and learning material for a program and its standardization across educational institutions, if the regulator or the autonomous body so decides.

ix. SOP for accumulation of credits for courses/ qualifications/ programs earned in the

same assessment band, and also setting up of broad learning outcomes for each level and assessment bands defined under NCrF.

x. Detailed transfer mechanism indicating entry eligibility at various levels for various streams shall be defined by individual regulators, subject to fulfilment of defined conditions.

xi. Define the specific modalities for catering to students with varying pace of learning and defining special assessment criteria.

xii. The basis of assigning and assessing credits for students with exceptional achievements/ performance in games and sports, performing/ fine arts, Social Work, NCC, or another similar subjects/ category.

xiii. Detailed guidelines for Recognition of Prior Learning (RPL).

xiv. SOPs for considering relevant experiential learning and attaining higher proficiency/ professional levels for assignment of additional credit points subject to assessments.

xv. SOPs for verification and redemption of credits accumulated and stored in ABC.

xvi. Detailed guidelines on Operationalisation of ABC for school education, higher education, technical education and vocational education and skills

3.6.2. Operationalization of NCrF by the concerned Regulators and Autonomous Institutions

During the course of public consultations, it has been emphasised by most of the stakeholders that for proper implementation of NCrF there is a need for detailed instructions for operationalization including micro detailing of certain aspects as prescribed in the NCrF. As already stated, the National Credit Framework is only an enabling framework and provides enough flexibility to the individual regulators and autonomous institutions to come up with detailed standard operating procedures and guidelines on the above-mentioned aspects of operationalization. For this purpose, the regulators and autonomous institutions may have to constitute various committees with representation of all stakeholders, including the members from all regulators, for avoiding any conflict in the SOPs, guidelines and instructions being issued by individual regulator and autonomous bodies and to ensure that all such guidelines and instructions are aligned to provisions laid down in the NCrF. Such an inclusive and holistic approach will also ensure that a continuous cross consultation and referencing so that there are no provisions in the operationalization guidelines by any regulator which are conflicting with or contradictory to philosophy and basic principles of NCrF.

3.6.3. Mechanism for Removal of Difficulties During Implementation

Though the high-level committee has tried it's best to envision and include all types of use cases still it is felt that at the time of implementation a number of new aspects related to framework or use cases may come up requiring an appropriate resolution at inter-ministerial level.

Therefore, for issuing clarifications, taking care of the unforeseen use cases which concern all regulators and autonomous bodies, resolving any initial hiccups and ensuring smooth implementation of the National Credit Framework, the government may continue the functioning of High-Level Committee with its current composition or by altering its members for next one year, for ironing out and resolving the initial implementation issues while also taking steps for capacity building of the stakeholders.

The HLC having members from all concerned ministries, regulators & institutions shall ensure removal of any difficulty and bridging of any policy/ framework gaps during the implementation process. This committee shall also enable inter regulator/inter institutional discussions & deliberations to remove any doubts, issue any clarifications and resolve any conflicts.

It is recommended that after one year a Standing Committee on national credit framework maybe constituted by the government drawing members from all regulators and ministries concerned for overseeing the smooth implementation of NCrF at all levels.

3.7. Indicative Roles and Responsibilities of the Stakeholders

The Stakeholders namely Administrative Ministries and Departments, concerned Regulators for Higher Education, School Education and Vocational Education, various School Boards at central and state level, Institutes of National Importance (INIs), Universities, Colleges, Training centres and faculty/ teachers/ trainers will require to play their part in implementation of NCrF.

Table 9: The indicative roles and responsibilities are as mentioned below:

STAKEHOLDER INVOLVED	RESPONSIBILITIES
Administrative Central Ministry/ Department MSDE and DoSEL, DoHE MoE	i. Get the final report on National Credit Framework submitted by the high-level committee approved by the competent authority and notify the same. ii. Constitute the inter-ministerial committees to formulate the communication strategy, including communication with the state governments, for creating public awareness for implementation of NCrF. iii. Create awareness through conduct of conferences, workshops and other means on the provisions of NCrF and how it is to be implemented by various stakeholders. iv. Ensure effective implementation of the provisions laid down in NCrF by respective bodies under the central as well as the state government and the respective regulators. v. Effective monitoring of implementation of NCrF
Regulators (UGC/AICTE/NCVET) School Boards (CBSE/NIOS/State)	i. The regulators/ INIs/ Autonomous institutes to prescribe and notify various operationalization guidelines SOPs, and other provisions related to implementation of various provisions of NCrF ii. Designing courses, qualifications and programs with clear learning outcomes for various academic/vocational programs as provided under national education policy and NCrF with appropriate Credit Levels. iii. Expand the scope of operation of academic bank of credits to include school education and vocational education, training& skilling by setting up a committee of regulatory bodies concerned who will participate in the academic bank of credits. iv. Operationalization of ABC and mandating ABC to all the bodies v. Enabling/ Developing flexible curricular structures for multi-disciplinary holistic learning and effective integration and embedding of vocational education, training and skilling with general education. vi. Frame and issue detailed SOPs for credit assignment including creditization of digital/ online/ blended learning. vii. Prescribe SOPs/Guidelines for • Entry criteria for various programs • Establishing equivalence between programs • ME-ME options applicable along with entry/exit module • Creditization of Additional programs viii. Design and develop outcome based assessment methodologies and SOPs as per the provisions of NCrF.

STAKEHOLDER INVOLVED	RESPONSIBILITIES
	ix. SOPs for considering relevant experiential learning and attaining higher proficiency/ professional levels for assignment of additional credit points x. Assignment and storage of credits for school education, skill education and experiential learning as per the expanded scope of Academic Bank of Credit and for proper operationalization of ABC. xi. Lay down/ prescribe admission guidelines with ME-ME options for various programs/courses in line with the provisions of the NCrF. xii. Develop guidelines for credit accumulation, storage and transfer for various purposes for different programs/courses. xiii. SOP for verification and redemption of credits accumulated and stored in ABC xiv. Assessment guidelines for assessment of students with accelerated or slow pace of learning, exceptional achievements/ performance in games and sports, performing/ fine arts, social work, NCC, or another similar subjects/ category and assignment of credits to such learners
HEI- Autonomous Institutes/ Universities **VE- Awarding Bodies**	i. Design of programs and courses prescribing credits for theory, practical and experiential learning including the learning outcomes. ii. Assignment and accumulation of credits subject to successful assessment for achieving the prescribed learning outcomes. iii. Creating awareness about National Credit Framework and various provisions for the stakeholders including students, institutes and industry iv. Design and implement flexible and multi-disciplinary curricular structures and detail programs to be offered which are outcome based with embedded vocational education and skill components at various NCrF credit levels. v. Design and develop assessment methodologies, guidelines and SOPs for outcome-based learning including assessment types and methodologies as per the provisions of NCrF. vi. Guidelines for establishing entry criteria for various course/programs. vii. Provide for ME-ME options with additional requirement of entry/exit modules if any. viii. Detailed guidelines for establishing equivalence between two programs/courses/ Qualifications/ National Occupational Standard (NOS) from various Universities/Institutions/ Awarding Bodies etc.

STAKEHOLDER INVOLVED	RESPONSIBILITIES
	ix. Implementation and monitoring of guidelines, standard operating procedures and mechanisms designed for implementation of provisions of NCrF. x. Creation of adequate digital infrastructure and ICT guidelines for effective implementation of National Credit Framework (NCrF) including ABC. xi. Take all other steps for the Operationalization of national credit framework guidelines and all its provisions in totality.
Affiliated Institutions/ Schools/ Training centre	i. Create awareness about provisions of NCrF for the faculty, students, parents, resource person and others. ii. Implement SOPs/ Guidelines as prescribed by concerned regulator/Boards/Universities. iii. Operationalise ABC including any ICT infrastructure required for the same. iv. Capacity building of Faculty/ Teachers/Trainers/ students.

4. SECTION 4: SPECIAL PROVISIONS IN NATIONAL CREDIT FRAMEWORK

4.1. Provisions for Creditization of Special Cases of learning: Educational Acceleration

The framework would be considered as successful only if it is responsive to the special needs of various groups off students and learners. The respective regulators would make provision for such exceptional cases. Some of the use cases to be covered are given below:

I. Provision for educational acceleration and its creditization

a. Education acceleration is one of the established mechanisms for gifted children. The practice of educational acceleration has been used to match high level student's general abilities and specific talents with optimal learning opportunities

b. Acceleration occurs when students move through traditional curriculum that rates faster than the normal pace. Among the many forms of acceleration are grade skipping or class skipping, early entrance to school or college and subject based acceleration, for example when a 5th standard student takes an 8th standard mathematics or social science or a language course

c. For educational acceleration the following activities have been undertaken/ planned under the national education policy:

i. NCERT & SCERTs when framing the national or state curricular and pedagogical framework for early childhood care and education will factor the aspects of educational acceleration.

ii. PARAKH as well as CBSE, NIOS and other School Boards of assessment in the country **will design/ create/ prescribe special assessment methods to facilitate** the assessment of **such fast track learning trajectories** for gifted children.

iii. UGC, AICTE and NCVET may also develop their own mechanisms, including special assessment methods, for enabling assessments of such fast track learning trajectories for such gifted students, independent of the learning hours spent by them.

iv. In such cases **instead of the learning hours** it is the **pre-defined learning outcome subject to very strict, high-standard assessment** that would establish that the intended learning outcomes have been fully achieved which would decide the assignment of credit levels and the credits.

II. Provision for Creditizing National/ International Achievers in Various Fields

a. Creditization for achievers at the national and international levels in various fields is one of the objectives of National Education Policy 2020. The practice of creditizing national/ international achievers in various fields, including but not limited to sports & games, science, technology, social work, performing arts, fine arts, tradition & heritage, literature, Indian knowledge system etc. is it required to promote excellence in various fields of national and international importance which in-turn will encourage promotion of high level general abilities and specific talents in such fields.

b. The special achievements could be way of winning medals/ positions in national or international events, Padma or other awards conferred by the central or state governments or other recognised bodies, high impact high priority social work which could be duly assessed through independent assessment methods.

c. The indicative list of various fields for such special achievers could be:

i. **Games and Sports**, for example National/ Federation Games, National Championships, Commonwealth/Asian Championships, Asian Games, World Championship, World Cup, Olympic Games, etc

ii. **Performing Arts**, viz dance drama, music, including Indian classical music,

iii. Master Craftsmen of **Heritage and Traditional Skills**,

iv. **Social work with high impact or in priority areas**, for example education, environment, healthcare, anti-drug, etc

v. **Special achievements in the Innovation and start-up ecosystem** with high impact or in priority areas for example innovation development of indigenous technologies in agriculture and rural development

vi. Special expertise in **Indian Knowledge System**: The tradition mentions 18 major vidyas, or theoretical disciplines; and 64 kalas, applied sciences or vocational disciplines, crafts. The 18 vidyas are: the four Vedas, the four subsidiary Vedas (Ayurveda - medicine, Dhanurveda - weaponry, Gandharvaveda - music and Silpa - architecture), Purana, Nyaya, Mimamsa, Dharmasastra and Vedanga, the six auxiliary sciences, phonetics, grammar, metre, astronomy, ritual, and philology — these formed the basis of the 18 sciences in ancient India.

d. The learning outcomes will have to be pre-defined in each case at appropriate national credit framework levels along with the criteria for special achievements, and method of assessments to measure/ establish the achievement of the desired outcomes.

E.g. If a person has won a gold medal in the Olympic Games, his preparation and practice for this outcome and achievement could be equated with the skilling credits requirements (say 70% credits) for a B. Voc. degree in physical education. Just by accumulating 30 percent remaining academics credits (say in Hindi), the person could get vocational degree in physical education.

4.2. Provision for Recognition for Prior Learning (RPL)

There exists a large section of students/ learners/ persons/ workers who have acquired knowledge, skills, and work competencies through either informal or mix of formal and informal experiential learning including relevant experience and proficiency levels acquired or other learning through family/ traditional inheritance etc.

However, they have no formal certifications for the same. As a result, they are unable to be integrated with the formal education and skill ecosystem for further progression in the academic stream or through up-skilling or re-skilling. Moreover, they do not get appropriately paid and get limited opportunities for revenue generation for their knowledge and skills in the absence of any formal recognition of their skills and skill certifications.

E.g. Another example in the social work could be that a student, who has successfully planted 10 trees in his/her village and has successfully looked after these trees for a certain period, say one or 2 years, and the plants have survived well, he or she could be given certain credits for this work subject to the assessment with credible visual evidence by the village panchayat or the local forest Ranger or is the school principal that the trees planted have actually survived.

To enable such students/ learners/ persons/ workers, NCrF provides for 'Recognition of Prior Learning' (RPL) which refers to the process for recognising learning that have been developed from experiential learning including relevant experience and proficiency/ professional levels acquired and/or previous formal, non-formal and informal learning contexts subject to assessment of their existing knowledge, skills, competencies, learning outcomes. The Learning outcomes are appropriately assessed leading to the certification of the same through a pre-prescribed, well-defined, credible, objective and established process/ mechanism. RPL, therefore will enable such students/learners/persons/workers to formalise their previous formal, non-formal and informal learning and provide them the opportunities for personal and career development through career progression and skill upgradation by their integration into formal education and skilling ecosystem.

As envisaged under NEP 2020, the NCrF provides for earning and accumulation of credits through education, skill development and experiential learning including relevant experience and proficiency/ professional levels acquired on outcome-based assessment approach (rather than criteria based on

learning hours alone). However, for earning and accumulation of credits, assessment of students/ learners/ persons/ workers, corresponding to a particular NCrF level assessment is a mandatory requirement. The level descriptors clearly define the levels of knowledge, skills, competencies and learning outcomes for each Credit level under NCrF. Moreover, the National Higher Education Qualification Framework (NHEQF) and National Skill Qualification Framework (NSQF) level descriptors are also in place.

Thus, NCrF shall provide a gateway to the students/ learners/ persons/ workers to creditise their informal or mix of formal and informal experiential learning, including relevant experience and proficiency/ professional levels acquired or learning through other methods, into credits at pre-designated NCrF levels through a pre-defined, well-established outcome-based assessment process called Recognition of Prior Learning (RPL). This provision shall also enable the goal of lifelong learning, open further progression pathways to higher education for such persons and enhance the employability and/or entrepreneurial opportunities as envisaged under NEP 2020.

Under the framework of NCrF, the school education, higher education and vocational education shall establish their own mechanisms through a well-defined, credible, objective and established process/ for RPL evolving out of NEP principles of outcome-based learning and assessment.

The similar concept of RPL may also be extended to the general education, including school education and higher education domain, to create options for students/ learners/ persons/ workers to get assessed for a subject/ qualification at a NCrF level, subject to meeting the competency and outcome levels in-line with the level descriptors and regulatory compliances prescribed by the regulator concerned. Such a provision shall effectively provide them with opportunities and options of examination/ Assessment-On-Demand. NIOS is an example which offers option of Exam-On-Demand to the learners who have completed certain numbers of years of self-study or learning for assessment for a particular educational grade. Similar models shall be developed and adopted by CBSE and other state school boards etc. to provide RPL/examination/ Assessment-On-Demand options in school education as well.

The students should also have option to get themselves assessed for learning /subject/ skills acquired outside the formal education system. This shall, in the true sense, promote multidisciplinary learning and innovation while opening pathways from vocational education training & skills to general education, and vice versa to achieve the objective of holistic approach in education. The concept of On-Demand-Assessment (RPL on-demand) along with the general RPL would form the basic pillars of creditization of learning through informal/ non-formal/ other methods.

The NEP discusses the rich traditions &heritage of ancient Indian eternal knowledge and promotes the nurturing of traditional and heritage skills. It furthermore emphasizes on researching, enhancing and putting new uses through our education system. Recognition of Prior Learning (RPL) for various

traditional (indigenous) skills and occupations is an integral approach to acknowledge and recognise the potential of scholars of the Indian knowledge system, traditional and heritage skill masters, craftsmen and artists, exponents of classical music and performing and fine art forms, as also paving the way for the local artisans and craft persons for upskilling and mainstreaming them in formal education and skill sectors. NCrF shall empower them to improve and upgrade their skills and competencies.

However, the Recognition of Prior Learning (RPL) would require trained master assessors and assessors along with a well-defined, credible, objective, reliable, rational and established assessment processes. Such assessment shall also have to be carried out through credible assessment agencies and must be evidence based. In a few traditional and heritage skill areas, such assessments may be carried out using very unconventional methods like relying on the Guru-Shishya Parampara.

Globally recognised reputed industry bodies and OEMs, who are themselves the big consumers of the output of the skilling ecosystem, may also play a vital role as designated assessment agencies/ centres for some of the RPL. However, for enabling these suitable guidelines will be developed and notified by the respective regulators.

Thus, RPL is based on the Learning Outcome (LO) based assessment approach recognizing learning through informal methods, providing access and opportunity for further education and skilling.

In conclusion, credibility of RPL is based on the high quality assessment consisting of a well-defined, credible, objective, reliable and rational and established assessment processes. Assessment against pre-defined learning outcomes at pre-defined NCrF levels, as per Level Descriptors of respective regulator. Such RPL can be assessed through the dedicated assessment centres of with state of art infrastructure & robust assessment mechanism with proper evidence. RPL allows transition from training centres to higher education institutions in both directions and increase educational choices and career opportunities specially for the deprived section of the society.

The detailed guidelines for implementation of RPL will be developed and notified by the concerned regulators/ autonomous bodies for further enablement of abovementioned provisions as per requirements.

Name: A, **Job role:** Helper/ Assistant Automobile repairing Mechanic (level 2, 2.5, 3), **Age:** 22 , **Education:** Ability to read and write, **Experience:** 4 years

'A' gets enrolled in the RPL program and goes through the RPL assessment process. He was declared successful in the assessment and awarded with the RPL certificate of NSQF level 2.5 along with credits.

Name: B, **Job role:** Automobile repairing Mechanic (level 4.5) , **Age:** 25,
Education: 5th Grade pass, **Experience:** 6 years

'B' got to know that RPL can provide a certificate for his skills gained from work experience of 6 years in automobile repairing domain and got enrolled in the RPL program.After enrolment, a master assessor was assigned to him, and he goes through the RPL assessment process. Post clearing the assessment 'B' is awarded with the RPL certificate of NSQF level 4 along with credits.

4.3. Provisions for Creditization of Special Cases of learning: Divyangs/ Persons with Disability

The National Credit Framework supports the same level and number of credits for Divyangs (Loco, Visual, Mental etc.), even though it may require higher learning notional hours (Theory and/or Practical as the need be) with special assistance (like Audio Visual contents) for achieving the same outcome levels for these individuals.

These learners' basis the skilling level and certification attained post successful completion of assessments shall be competent to carry out various job roles like those by the general candidates.

4.4. Provision for special events like Hackathon, Olympiads

National Credit Framework (NCrF) also enables hackathons, and subject Olympiads. The provision and detailed guidelines would also be developed for handling hackathons, and subject Olympiads etc. for exceptional children/ students/ learners.

a. **Hackathons, and subject Olympiads**, both would need special assessment methods and credit assignments on the basis of achievement of outcome based learning outcomes subject to such special assessment.

b. For such special events, **instead of the learning hours,** it is the **learning outcome which would decide the assignment of credits and the credit levels**. However, the **assessment has to be very objective, credible, strict, above board and adhere to high standard** so as to keep the integrity of the NCrF, and the credits earned through **Hackathons, and subject Olympiads** intact.

c. Assignment of credits as per the defined NSQF levels of the learning outcomes or the qualification, the commensurate NCrF level may be calculated on the basis the academic qualifications which are relevant for the respective skill learning outcome.

d. In this type of RPL the organization will register for Hackathon based RPL (to be

conducted either internally or externally by the bodies recognized for such assessments. There will be submission of a Problem statement that may have cross sectoral and/or multi sectoral academic, NOSs/Skills involved. The Hackathon shall be aligned with standards created by respective regulators, institutes or Awarding Bodies. Awarding Body will validate the alignment of problem statement with Qualifications that are NSQF aligned. The assessments shall be carefully calibrated to measure the exact learning outcomes and commensurate credits add credit levels emerging out of the learning outcomes from the event.

5. OUTCOMES OF THE PROPOSED NATIONAL CREDIT FRAMEWORK: REALISING THE VISION OF NATIONAL EDUCATION POLICY 2020

The implementation of the National Credit Framework (NCrF) will have the following benefits/ expected outcomes:

i. NCrF will enables fulfilling the objective of NEP to ensure that there is no rigid separation between academic streams, extracurricular, and vocational streams in schools.

ii. NCrF will also give due weightage to Experiential learning including relevant experience and proficiency/ professional levels acquired which is now included as a part of the overall learning hours.

iii. NCrF enables embedding and integration of vocational and skilling at all levels of Education. In the form of exposure at early stages and in the middle school and quality vocational education, training and skilling at the secondary and senior secondary school, smoothly integrating into higher education. It will ensure that every student learns at least one vocation/ skill, earns credits for it and is exposed to several more vocation and skills.

iv. NCrF will enable the required flexibility, so that learners have the freedom to choose their own learning trajectories and programmes, thereby defining their own career path according to their talents and interests.

v. NCrF will ensure the unity and integrity of all knowledge by enabling multidisciplinary and holistic education across the sciences, social sciences, arts, humanities, and sports for a multidisciplinary world.

vi. The framework enables a mix of arts, science, humanities, life skills including employability skills etc. Thus NCrF will encourage entire education system to be creative, innovative because of the multi-disciplinary approach to learning.

vii. NCrF will also enable inter-transfer of students / learners between different streams/ subject/ curriculums/institutions/universities/boards/and education systems within India and also with overseas/ international educational institutions.

viii. NCrF will bring connectivity and synergy in learning across all levels of education from school education to higher education.

ix. NCrF would enable availability of higher level vocational courses and qualification to students and learners enrolled in all higher education programmes, including the 3 or 4-year multidisciplinary Bachelor's programmes. The vocational education and skilling programs would also be available to students and learners and enrolled with NIOS, State Open Schools, adult literacy and life-enrichment programmes including availability of soft-skills and life-skills such as communication, cooperation, teamwork, and resilience.

x. NCrF would enable different models of vocational education, training and skilling, internships and apprenticeships, by school education institutions as well as higher education institutions.

xi. This Framework will provide the basis for Recognition of Prior Learning. Through NCrF, dropouts from the formal education system will be reintegrated into the mainstream by aligning their practical experience with the relevant level of the Framework and will also facilitate mobility across 'general' and 'vocational' education.

xii. NCrF considers the multiple reasons leading to School/ Higher Education dropouts and enables suitable entry and reintegration paths for them, both in general education and vocational education, training and skilling. NCrF, therefore, promotes universalization of education from pre-school to secondary level and ultimately to higher education by ensuring more students returning and joining mainstream.

xiii. NCrF is one single meta framework which is already aligned with all existing qualification frameworks including National Higher Education Qualification Framework (NHEQF) (by UGC/AICTE) and existing National Skills Qualification Framework (NSQF) (by NCVET).

xiv. NCrF will help in filling the gaps between current state of learning outcomes and what is desirable to enhance the employability of a student, while also ensuring that the time invested by a student in learning either via education or through experiential learning or work experience does not go unaccounted.

xv. NCrF will further strengthens and ensure implementation of the principles laid out in NEP. NCrF will enable improvement in the GER as has been envisaged by the Government.

xvi. The NCrF will enable multiple entry-multiple exit options across the education ecosystem. NCrF will promote lifelong learning by enabling students and learners to

earn and store credits in a 'Academic Bank of Credits' as well as redeem the accumulated credits certificate, diploma or degree.

xvii. NCrF will also help in addressing the long-standing issues associated with vocational education, training and skilling of not being aspirational. The NCrF permits mainstreaming of vocational programs with equal weightage and credits being given to vocational subject as to any other academic subject across school and higher education.

xviii. NCrF focuses on establishing equivalence between general education courses and vocational education programs thereby leading to seamless integration between general and vocational education and training/ skilling.

xix. NCrF is also easily adaptable by different streams like law, medical etc as required.

xx. NCrF addresses the difficulties students are facing in respect of equivalence of certificates issues by various School Education Boards in India and abroad for the purpose of admissions in higher education institutions and employment in Central/State Government/ in other countries.

xxi. NCrF will promote international equivalence of qualifications and courses as well as the mobility of students across international boundaries.

Table 10: Expected Outcomes of the National Credit Framework implementation

S No	NCrF BENEFICIARIES			
	STUDENTS	**INSTITUTIONS**	**GOVERNMENT**	**INDUSTRY**
1.	Creditization of all learning hours, including academic, vocational and Experiential learning including relevant experience and professional levels acquired,	Promotes unification of HEIs to promote multidisciplinary education	Increased enrolment of students (GER)	Short term future skills can be obtained as up-skilling
2.	Multidisciplinary and holistic education with flexible curricula	More diversified and rich student's knowledge base	Helps in fulfilling the national vision of complementing the demographic dividend	Re-Skilling and up-skilling of existing employees/ engineers
3.	Flexibility in duration of study/ courses through provisions of Multiple entry and exit / work option	Promotes stronger collaboration between institutions	To achieve Hon PM's Vision of making India the Skill capital of the World.	Allows students to attain NSQF approved foundational skills developed by industry & be more employable
4.	Provision for lifelong learning - any time anywhere learning	Simpler and uniform credit mechanism	Making vocational education and training/ skilling aspirational	Provision of Micro-credentials allows integration of quick educational upgradation/ up-skilling
5.	Removal of hard distinction between education stream thereby making study choices respectful and allowing for more than one award in same period.	Increased focus on research and innovation	Highly educated and trained workforce for Aatmanirbhar Bharat.	Helps cater to the future demand of skills and bridging skill gap
6.	Removes distinction between arts, science, social sciences, and commerce etc Students get credits for every academic/ skill/ experience	Promotes digital learning, blended learning and open distance learning	Could be extended to all kind of streams including agriculture, medical and law	Makes students more employable by more holistic design of study by including vocational education and training/ skilling
7.	Enhances the scope of core learning to include foundational and cognitive both.	Leveraging of institutional infrastructure		Have skill enhanced, multi/ cross-sectoral skilled pool of employable youth

Annexure I: Comparative Analysis of Credit Mechanism of IITs

	IIT Delhi	IIT Bombay	IIT Guwahati	IIT Madras
Credit Scheme	L-T-P (Lecture-Tutorial-Practical)	L-T-P (Lecture-Tutorial-Practical)	L-T-P (Lecture-Tutorial-Practical)	L-T-T-P (Lecture-Tutorial-Extended Tutorial-Practical)
Credit Weightage	Credits assigned to a course of format 3-1-2: L+T+P/2 = 3+1+2/2 = 5 credits I.e., 1 L = 1 credit 1 T = 1 credit 1P = 0.5 credit	1 L = 2 credit 1 T = 2 credit 1P = 1 credit	Credits assigned to a course of format 3-1-2: L+T+P/2 = 3+1+2/2 = 5 credits I.e., 1 L = 1 credit 1 T = 1 credit 1P = 0.5 credit	1 L = 1 hr = 1 credit 1 T 1 T 1P = 2.5 hr = 3 credits
Example: Engineering	1 Sem = 19 - 20 credits Total 148 -158 credits	1 Sem = 35 - 40 credits Total 280 -320 credits	1 Sem = 30 - 48 credits Total 240 -384 credits (5-6 courses/ semester)	NA

Annexure II: Types of Assessments
(Blended Learning Guidelines of NCVET)

1. **Assessment broadly can be classified into the following types:**

a. **Diagnostic assessments:** Diagnostic assessments are intended to help teachers identify what students know and can do in different domains to support their students' learning. These help teachers determine strengths of students in various areas to better address their specific needs.

b. **Formative assessments:** Formative assessment refers to a wide variety of methods that teachers use to conduct in-process evaluations of student comprehension, learning needs, and academic progress during a lesson, unit, or a course. Formative assessments help teachers identify concepts that students are struggling to understand, skills they are having difficulty acquiring, or learning standards they have not yet achieved so that adjustments can be made to lessons, instructional techniques, and academic support.

c. **Summative assessments:** Summative assessment is an assessment administered at the end of an instructional unit in a course. These assessments are intended to evaluate student learning by comparing performance to a standard or benchmark.

d. **Ipsative assessments:** Ipsative assessment involves comparisons between past and current work to identify a learner's growth over time, rather than progress toward an external set of criteria. Therefore, Ipsative assessment is an internal or self-referenced assessment.

e. **Norm-referenced assessments:** Norm-referenced tests report whether test takers performed better or worse than a hypothetical average student, which is determined by comparing scores against the performance results of a statistically selected group of test takers, typically of the same age or grade level, who have already taken the exam.

f. **Criterion-referenced assessments: Criterion-Reference tests measure** the performance of test takers against the criteria covered in the curriculum.

g. **Peer-to-Peer randomised Assessments:** Peers will be able to provide assessment in this case

h. **Industry Validation of Effectiveness**: In the Vocation Education, Industry validation of effectiveness of training is particularly important.

i. **Self-assessments:** To evaluate how much the learner has grasped by self-learning.

2. **Other Assessment Methods:** Conducting an assessment takes time, thought, attention, planning, and often collaboration. Each assessment tool, whether a short survey or detailed rubric, will be useful only insofar as it both addresses the outcomes well and is feasible to use.

a. **Rubrics: F**or assessing qualitative student work such as essays, projects, reports, or presentations. Rubrics serve well to clearly denote the specific expectations for an assignment, for collecting data for assessment of student learning outcomes. and for student performance. Rubrics can be used for grading, for providing feedback to students, and for informing and encouraging students to think about their own learning.

b. **Portfolios and E-Portfolio:** Portfolios can provide a window into the process of student learning across a semester-long project that can be assessed (usually by using a rubric).

c. **Curriculum Mapping:** A good curriculum map can serve to focus assessment, and the improvements that follow, where it will be most useful, informative, or effective.

d. **Structured Interviews:** While time-consuming, structured interviews are useful when specific questions need to be asked. It also leaves room for unplanned topics or ideas to emerge.

e. **Student Experience Surveys:** Student experience in research universities (SERU), including administration of on-line census SERU Undergraduate and Graduate Surveys, can yield important information about student perceptions and experiences.

Annexure III: Multiple Entry Multiple Exit options by UGC & AICTE

I. Multiple Entry Multiple Exit (ME-ME) - UGC

ACADEMIC LEVEL	ENTRY QUALIFICATION *	EXIT QUALIFICATION AND CREDITS required for the level	NATIONAL CREDIT LEVEL (NCrF)
	Higher Education		
UNDER-GRADUATE 1st year (B. General/ B. Voc)	12th pass certificate or equivalent state of education	Under-Graduate Certificate will be awarded and Minimum 40 credit-hours followed by an exit 4-credit skills-enhancement course	4.5
UNDER-GRADUATE 2nd year (B. General/ B. Voc)	Under-Graduate Certificate	Under-Graduate Diploma will be awarded and Minimum of 80 credit-hours followed by an exit 4-credit skills-enhancement course	5
UNDER-GRADUATE 3rd year (B. General/ B.Voc	Under-Graduate Diploma	Bachelor Degree will be awarded and Minimum of 120 credit-hours	5.5
UNDER-GRADUATE 4th year (B. General/ B.Voc)	Bachelor's Degree (3 year)	Bachelor's degree (Honors/ Honors with Research); and Minimum of 160 credits, with minimum of 40 credits each at level 4.5, 5, 5.5 and 6 of the NHEQF	6
POST GRADUATE DIPLOMA Or 1st year of 2- year PG program	Bachelor's degree (3 years)	Post Graduate Diploma after completion of 1st year of 2-year PG program; and Minimum of 40 credits for individuals who have completed a bachelor's programme	6.0
MASTERS (M. General / M. Voc) 2 year of master program	Bachelor degree (after 3 years of UG)	Master's degree; and Minimum of 80 credits from the first and second years of the program, with minimum of 40 credits in the first year and minimum of 40 credits in the second year of the program at level 6.5 on the NHEQF	6.5
MASTER'S (General/ M. Voc) One year program after 4 year UG	Bachelor's degree (honors/ honors with research) or Post Graduate Diploma	Master's degree; and Minimum of 40 credits for individuals who have completed a bachelor's degree (Honors/ Honors with Research)	6.5
Master's programme (Eng M.E., M. Tech	Bachelor's degree (honors/ honors with research)	Master's degree; and 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	7
Ph.D.	PG Diploma OR Master's Degree OR a Bachelor's degree (honors with research)	Doctorate degree will include course work and a thesis with published work and/or creative work	8

**Admission will be open to those who have met the entrance requirements, including specified levels of attainment, in the programme admission regulations along with 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.*

ii. MULTIPLE ENTRY- MULTIPLE EXIT (ME-ME) IN HIGHER EDUCATION- AICTE

Academic Level	Entry Qualifications at various levels.	Exiting Qualifications at various levels	National Credit Level (NCrF)
9th Grade	8 Grade pass	ξ 9th Class/ ξ 1 year of ITI after 8th class	**2.5**
10th Grade	◣ 9 grade pass ◣ 1 year of ITI after 8 grade pass	ξ 10th Class ξ 2 Year of ITI after 8th Class	**3.0**
11th Grade. **/1st yr. Diploma**	10 grade pass / 2 Year of ITI after 8 grade pass + NIOS	ξ Class 11 ξ Certificate of Voc. (Eng) ξ Class 11+ + QPs/ NOCs enabling lateral entry in 2nd Year of Certificate of Voc.	**3.5**
12th Grade. **/2nd yr. Diploma**	◣ 10+ Certificate of Voc ◣ Class 11 ◣ Class 11+ QPs &NOCs	ξ Class 12 ξ Industrial Training Certificate (Eng) ξ Class 12+ QPs and NOCs enabling entry in UG Certificate	**4.0**
Final yr. Diploma/ **1styr UG Degree**	◣ Class 12 ◣ 12+ Industrial Training Certificate (Eng) ◣ Class 12+ QPs & NOCs	UG Certificate (Eng.)	**4.5**
2ndyr UG Degree	UG Certificate (Eng.)	UG Diploma(Eng.)	**5.0**
3rdyr UG Degree	UG Diploma (Eng.)	B. Voc (Eng.)	**5.5**
Final yr UG Degree	B. Voc (Eng.)	B.E./B. Tech.	**6.0**
1st Year PG (Eng)	B.E./B. Tech.	M.Voc (Eng.)	**6.5**
2nd year PG (Eng)	M.Voc. (Eng.)	M. Tech	**7**
Ph.D.	M. Tech	Ph.D.	

Note:

At each entry, Institution/ University has to identify the educational gaps/ skill gaps and suitable bridge courses may be offered.

- *To make the students employable after every exit, the skill component with progressive enhancement in skills in respective disciplines may be introduced in the curriculum right from the 1st year of the program by the concerned regulatory body/ University/ Technical Board, as the case may be.*

- *The levels of exit, assessed through and learning outcomes are the basis of equivalency, not the duration of the courses. For example: Dual Degree etc.*

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