UGC Guidelines for Institutional Development Plan for Higher Education Institutions (HEIs)

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1. PREAMBLE:

World over there is an increasing interest in quality and standards, reflecting both the rapid growth of higher education and its cost to the public and the private finances. Our imperative of nation building, an equitable and just society, and doing justice to the current and future generations of Indians is predicated on achieving our aspiration to be the leading knowledge-based economy in the world. Indian higher education will need to demonstrate that it takes quality to a significantly more advanced level and puts into place the means of attaining, demonstrating and assuring that sustainable quality.

The challenges and demands, which are emerging both inside and outside India in the face of this context and the internationalization of higher education, demand a powerful and concerted response. The commitment of all those involved in the creation, discovery, dissemination, connecting and application of knowledge, augurs well for the fulfilment of a truly Indian approach to the quality and quality assurance of our higher education ecosystems.

Enabling the Higher Educational Institutions (HEI) to undertake the Academic and Professional Excellence journey in pursuance of: Higher level goals set in line with the vision of, National Education Policy (NEP) 2020, Sustainable Development Goals (SDGs), National Credit Framework (NCrF), Integration with Academic Bank of Credits (ABC) etc.

The National Education Policy 2020 enunciates that Quality Higher Education must aim to develop good, thoughtful, well-rounded, and creative individuals. It must enable an individual to study one or more specialized areas of interest at a deep level, and also develop character, ethical and Constitutional values, intellectual curiosity, scientific temper, creativity, spirit of service, and 21st century capabilities across a range of disciplines including sciences, social sciences, arts, humanities, languages, as well as professional, technical, and vocational subjects.

The UGC has developed guidelines for individual HEIs to develop their own Institutional Development Plans to further the aims set out in the NEP 2020.

A. Social and Academic Mission

The social mission is the main purpose of being for an organization or a program in terms of doing social good. In the context of the IDP, this will enable the institutions to not only become self-reliant centres of excellence for academic growth but also contribute to the overall social good by multitude of other aspects such as:

I. Knowledge creation for societal growth and wellbeing through cutting edge research, technical and non-technical solutions to societal problems conceptualised by HEIs.

II. Creation of industry fit and entrepreneurial human resource for improving quality of life, the standard of living, all round development, wellbeing and social good.

III. Access to quality higher education for all.

IV. Accessibility of education to Persons with Disability (PwD)

V. Reducing inequalities and enhancing gender parity, ensuring diversity and inclusivity and environmental awareness towards Sustainable Development Goals (SDGs), and other such overall goals.

VI. Internationalization of higher education, skilling and mobility of workforce at all levels etc.

The academic mission in the context of IDP shall be the portfolio of robust aims of the institution which seeks to help students to develop an understanding and appreciation for the complex cultural and physical worlds in which they live and to realize their highest potential of intellectual, physical and human development. The Mission can further be summarised in the following points:

I. The facilitation and enablement of achieving key learning outcomes from the core learning of the discipline and its curriculum prescribed.

II. Development of character, ethical and Constitutional values, intellectual curiosity, scientific temper, creativity, spirit of service, and contemporary capabilities across a range of disciplines including sciences, social sciences, arts, humanities, languages, as well as professional, technical, and vocational subjects.

III. Strengthening and promoting multidisciplinarity, cross-disciplinarity and interdisciplinarity in the mutually supporting interdependent learning driven world.

IV. Learning to think, understand and do through skills and competencies such as Critical thinking and problem solving, Creative thinking and innovation, Analytical Thinking, Adaptive Thinking, Design Thinking & Creativity, Computational thinking, Social intelligence, Cross cultural competency, New media literacy, Virtual collaboration, Decision Making, Conflict resolution and negotiations among many others.

B. Basic Principles

Emergent India with its multiple states is characterised by its diversity of socio-cultural traditions, languages, and nuanced in aspirations and expectations. This is currently accompanied by a range of institutions including - Universities, Deemed-to-be, Colleges, Professional, Specialised, Vocational etc. While the NEP and its forward looking concomitants provide an overarching policy framework, this makes a single monolithic approach to quality, standards and quality assurance in higher education inappropriate.

In the light of this diversity and variety, generally acknowledged as a strength, the Guidelines avoid a narrow, prescriptive and a rigidly formulated approach. There is a preference to generic principles, while being mindful to the specific requirements. One consequence of the generic principle is that the guidelines focus on a balance of what should be done and how this is best achieved.

In sum, it is important to emphasize that these Guidelines are intended to enable the early stages of this journey towards excellence in Higher Education with a

concomitant continuous improvement, refinement and review based on our collective experience of their pursuit in the years to come.

It is equally important to emphasise that these Guidelines are framed to enable HEis within the statutory, regulatory and mandated requirements of codes & rules as promulgated and applicable by the UGC and other appropriate authorities from time to time.

These Guidelines are underpinned by principles, approaches, frameworks and a playbook which are outlined as enabling guidance for HEIs. Some fundamental principles are that the IDP need to -

I. enable HEIs in achieving academic and research excellence and improving teaching – learning standards

II. enable adequate consideration by HEIs to enhance learner centric teaching, knowledge creation (innovation and research), dissemination, and application of knowledge and skills

III. enable HEIs to follow a multi-disciplinary approach integrating multiple disciplines like science, technology, social sciences, environment, sustainability, economics, humanities, arts, management etc.

IV. enable HEIs to embed & integrate vocation education with general education in order to achieve goal of holistic education as set out by the National Education Policy 2020 and National Credit Framework (NCrF).

V. enable HEIs to exercise full autonomy for social and academic mission impact including academic, administrative, financial, and business autonomy with accountability.

VI. enable such autonomy tempered by a recognition that this brings with it heavy responsibilities and flexibility also in the implementation of the IDP framework

VII. be non-prescriptive and developed on broad principles of participatory engagement, inclusivity, diversity and responsive flexibility

VIII. promote openness, collaboration, creativity, innovation (IP creation and its commercialization) and community engagement

IX. promote good governance mechanisms, and ease of implementation of IDP

X. address the trust deficit among stakeholders

XI. address the interests of students, teachers, staff as well as employers and the society more generally in supporting and promoting high quality higher education

XII. create policy environment for promoting research and innovative initiatives by HEIs

XIII. enable mechanism to facilitate the HEIs to conceive and ideate the IDP

XIV. future proofing the organization (15 years' perspective)

XV. address the need for external quality assurance and accreditation to be fit for its purpose and to place only an appropriate and necessary burden on institutions for the achievement of its objectives.

C. Main Objectives and Goals to be Achieved by IDP:

The IDP needs to reflect an integrated approach that is mindful of the institution's vision and mission, context, life cycle stage, location, character, and aspirations. While each dimension represents a vertical and has depth, the need to integrate these into an optimal whole cannot be overemphasised. The overarching purpose and aims of each unique institution are the key determinants of the mix of choices that will create excellence for the institution

I. To articulate a clear vision and mission of the institution and align these with National Education Policy 2020, NCrF, SDG and institute's educational and research activities.

II. To assess institutional developmental needs through wide consultative processes.

III. To identify Capacity (human and financial) and Organizational Gaps, based on goals and priorities.

IV. To develop Annual Activity Plans to build capacity and remove gaps.

V. To establish a transparent system for holistic and inclusive growth and development of HEI through the application of all relevant opportunities (esp Digital Technologies) for ensuring optimal utilization for balanced overall growth.

VI. To establish an operative framework to promote the Internationalization, entrepreneurship, employability, and integration of skilling into Higher Education.

VII. To ensure meaningful engagement of all stakeholders in the development and implementation of its IDP.

VIII. To quantify the institution's goals using Indicators and Time-Bound Targets, and Implementation Plans.

IX. To undertake Periodic Reviews and appropriate measures for continuous improvements.

D. Strategic Goals and Development Objectives

I. **Strategy Formulation** needs institutional leadership with a coherence of direction and sustained efforts over time. Hence tenure and quality of Leadership and direction are key factor at the very heart of a good strategy. Equally important is the flow from strategic goals (as directional) into tangible (measurable milestone) Objectives. Indicative basic steps for all HEIs would be –

a) **Identify Strategic Goals:** Define the purpose, vision, and goals of the academic institution, including what the institution wants to achieve and why.

b) **Conduct a SWOC Analysis:** Assess the Strengths, Weaknesses, Opportunities, and Challenges (SWOC) of the institution to determine opportunities and choices that need to be leveraged and areas that need improvement.

c) **Utilize S-Curve Analysis:** Plot the institution's progress using S-Curve Analysis to visualize its growth trajectory and identify potential bottlenecks. This will determine if the "Path is clear for scale and impact" especially for younger institutions.

d) **Determine the sustainability and viability** proposition for all stakeholders over time as an anchor / beacon.

e) **Analyze and align Interlinkages:** Examine the interlinkages between different areas of the institution, such as academic programs, pedagogy, research initiatives, field/ community/ industry engagement, and student and faculty support services, to ensure alignment with overall goals & Industry.

f) **Define Objectives:** Break down the goals into specific, measurable, attainable, relevant, and time-bound objectives.

g) **Identify Tactics:** Determine the most effective choice of ways to achieve the objectives, including the allocation of resources, partnerships, thrust areas and initiatives. The enabling processes and incentivisation (material and intangible modes) of garnering support and energy for success).

h) **Prioritize Initiatives:** Determine which initiatives are most important, and allocate resources accordingly.

i) **Identify and garner / mobilise resources**.

j) **Develop a Plan:** Outline a detailed plan of action, including timelines, milestones, and responsible parties for each initiative.

k) **Implement the Plan:** Execute the plan and monitor progress, making adjustments as needed.

l) **Review, Evaluate and Report:** Regularly review and evaluate the plan, including measuring progress against objectives, using the S-Curve and analysing interlinkages, and making changes as needed to ensure continued success.

II. Strategic Goals

These are indicative only. Institutions can set their strategic goals in their own words

a) Providing easy and equitable access in terms of equality, affordability, transparency to the students for entry/ admission to HEIs;

b) Enabling and supporting the hiring, training, motivating and retention of qualified faculty for desired educational outcomes;

c) Impart higher order skills with a learner centric approach and build faculty competencies for improved educational/ skilling and institutional outcomes. Build reinforcing mechanisms for these approaches;

d) Inculcate an entrepreneurial mindset and orientation among students and faculty including emphasis on experiential learning and acquisition of vocational skills of appropriate levels;

e) Contribute to the overall social, emotional, and intellectual development of the students and faculty for academic and research excellence and its reinforcement;

f) Follow a holistic perspective concerned with the development of every person's intellectual, emotional, social, physical, artistic, creative, spiritual potential and overall well being;

g) Adopt a holistic approach including building communities, nourishing cultural values, connecting students with nature, and advocating for student voices;

h) Preparing the students for the real world to become good global citizens through true internationalisation of higher education;

i) Supporting students and faculty for achieving overall success in their professional, career and personal goals;

j) Increasing overall student enrolment, retention and graduation rates;

k) Increasing the enrolment, retention and graduation rates of the students from socially, economically, locationally marginalised and under-represented sections; Enhancing and ensuring policies and adequate institutional support and mechanisms for the success of the marginalised sections of students;

l) Creating opportunities to acquire knowledge, skills, and credentials in their chosen fields, including emerging areas/ emerging technology areas of national and global relevance;

m) Create supportive, inclusive and transparent systems for hiring and retention of qualified teachers; build teacher competence through continuous faculty development programs;

n) Promote Digital Learning and teaching;

o) Identifying new sources of revenue generation and funding for the institutions for improving their financial sustainability;

p) Enhancing the HEI’s regional, national and global reputation and rankings;

q) Embedding and integrating high quality skill education with higher education’

r) Imparting skills and competencies for improving the overall employability of students both nationally & internationally'

s) Build a sustainable and efficient research and innovation ecosystem for faculty, scholars and students;

t) Creating and sustaining the networks for institutional growth and development through engagement with alumni, local communities, industry and other stakeholders;

u) Fostering close Academia-Industry and Academia- community Partnerships through projects/ research projects, writing and using teachable live cases, internships, apprenticeships and joint academic programs;

v) Implementing National Credit Framework (NCrF) and Academic Bank of Credits (ABC) for seamless student mobility between or within degree granting HEIs through a formal system of credit recognition, credit accumulation, credit transfer, and credit redemption to promote distributed and flexible teaching learning;

w) To establish robust system of accreditation of institutions based on basic norms, public self-disclosure, autonomy, quality, good governance and quality outcomes.

III. Development Objectives

These are indicative only. These objectives may be classified as below and conceived of as discrete but integrated dimensions of the institutions development.

a) **Academic and Fiduciary Governance:** This category includes objectives related to the management of the institution, and oversight of the institution's academic programs and processes.

b) **Curriculum and Pedagogy:** This category includes objectives related to the design and delivery of academic programs, such as curriculum excellence and pedagogical excellence.

c) **Integration of Skills into Academics at all levels:** This category includes objectives related to integration of vocational education/ skills into general education as required under holistic education as envisaged by NEP 2020/ National Credit Framework (NCrF) through National Higher Education Qualification Framework (NHEQF) aligned courses or National Skill Qualification Framework (NSQF) aligned courses and Qualifications.

d) **Faculty and Staff:** This category includes objectives related to the recruitment, development, retention, and promotion of faculty and staff.

e) **Governance and Compliance:** This category includes objectives related to the institution's administrative, and financial governance, as well as its compliance with legal and regulatory requirements

f) **Research and Development.** An institutional research and academic portfolio management strategy should cover the following:

i. **Research goals and objectives:** Identifying the areas of research that align with the institution's mission and strategic plan, and setting specific goals and objectives for the research program.

ii. **Research funding:** Developing a plan for identifying and securing external funding to support the research program, including identifying potential funding sources and developing strategies for proposal writing and submission.

iii. **Research infrastructure:** Ensuring that the necessary infrastructure is in place to support the research program, including lab space, equipment, and IT resources.

iv. **Human resources:** Developing a plan for recruiting and retaining a strong research faculty, including strategies for mentoring and professional development.

v. **Collaboration and partnerships:** Identifying opportunities for collaboration and partnerships with other institutions, industry partners, communities and government agencies to support research initiatives.

vi. **Research integrity:** Establishing policies and procedures to ensure the integrity of the research program, including compliance with ethical guidelines, data management, and dissemination of research results.

vii. **Research dissemination:** Developing a plan for disseminating research results to the academic community, industry partners, and the broader public, including strategies for publishing in academic journals and presenting at conferences, and in popular media.

viii. **Research Monetization:** Developing mechanisms to facilitate the monetization of research outcomes and support the growth of Innovation especially start-ups through incubation centre ecosystems by supporting following key components:

- Developing an autonomous start-ups governance and social innovation / entrepreneurship
- Technology Transfer Offices
- Intellectual Property Management
- Incubation Centres and Start-ups Support
- Entrepreneurship Programs and Training
- Funding and Investment Networks.

ix. **Evaluation and assessment:** Developing methods for evaluating and assessing the impact and success of the research program,

including metrics for measuring productivity, impact, and contributions to the field.

x. **Intellectual property:** Developing a policy and procedures for protecting and commercializing intellectual property arising from the institution's research activities.

xi. **Research management:** Developing a system for managing the research program, including budgeting, reporting, and single-window governance structures.

g) **Infrastructure and Technology:** This category includes objectives related to the physical and digital infrastructure of the institution, as well as its use of technology.

h) **Planning and Implantation: The HEIs to prepared a detailed plan of action for:**

i. how to align exiting courses with NEP, NCrF, NHEQF and NSQF

ii. faculty development, capacity development and training

iii. how to prepare students on new age skills, including upskilling and rescaling of existing workforce in the economy

iv. multi-disciplinary skills, micro-credentials, and new age certificate, diploma and degree programs

v. improving enrolment in all courses with integrated skilling

i) **Outreach:** This category includes objectives related to the institution's research and engagement with the community.

j) **Student Services:** This category includes objectives related to the welfare, support, and development of students.

E. Operationalisation

Since the IDP shall be undertaken by the HEIs, it is imperative that the autonomy of the institutes is maintained while developing and operationalising such plan. Therefore, the IDP guidelines are self regulating in nature. However, to provide an institutional support and infuse collaboration in operationalisation a two tier structure to effectively implement the IDP development & implementation is proposed as below:

I. In House IDP Strategy Teams: Each HEI may form a 'IDP Strategy Team' responsible for creating the vision, plans and for monitoring the adherence to plans as envisaged in guidelines. This team shall also make future roadmaps based on skill requirements, market & social trends, economy, etc The IDP Strategy team shall also be responsible for monitoring & evaluation of IDP. The alignment of interdisciplinary, inter-functional aspects within the HEIs and challenges to be identified and friction removal, other enabling processes possess a huge potency for institutional impact enhancement through such a mechanism.

II. IDP Governing Council: Regional governing councils for each State/UT may be formed comprising of educationists, industry representatives, and govt representatives. The council shall not undertake any direct operational & monitoring activity with respect to IDP functioning in HEIs but shall provide periodic strategic inputs and guidance to HEIs based on National & International Policies, Market trends, Employment markets and Innovation Ecosystems, New Technology Direction and other such important developments.

2. Institute Development Plan (IDP) FRAMEWORK - Major Components (Parameters for Institutional Excellence)

The IDP needs to reflect an integrated approach that is mindful of the institution's context, life cycle stage, location, character, and aspirations. While each dimension represents a vertical and has depth, the need to integrate these into an optimal whole cannot be overemphasised. The overarching purpose added with aims of each unique institution are the key determinants of the mix of choices that will create excellence for the institution. The eight infrastructure elements are enumerated here and elaborated in the Annexure section in some detail. While significantly interconnected and interdependent, they are articulated in a logical flow from Governance to Academic, Research & Intellectual Property, Physical, Digital, Financial, Networking & Collaboration and Supportive & Facilitative. The sequence of approaching these has benefits to the planning process a subsequent iterations. While these are substantive and have "stand alone" depth, they provide the web of parameters for thinking through the plan, warranting an iterative and concurrent approach.

A. Physical Infrastructure

I. Overview:

A physical infrastructure consists of the basic physical structures needed for an economy to function, such as transportation networks, electricity grids, sewage systems, and waste disposal facilities. Creating an attractive physical infrastructure can support brand building. Physical infrastructure should support both academic and research activities of various schools and departments of universities. In public universities, the physical infrastructure investment is done by the government through various independent authorities whereas, in private universities, the decision is taken by a sponsoring organization.

II. How to improve the Physical Infrastructure:

Physical infrastructure can be developed to any extent by financial investment. By identifying investors as partners, a university in the private sector can create large and essential infrastructure. But due to present heavy competition in the higher education service business, huge investment by means of borrowing money from lenders/banks with high annual interest is not the only plausible solution. And therefore alternative & innovative measures to fund the infrastructure may be explored.

Major principles for building a strategic physical infrastructure are as below:

a) General Campus Planning Principles:

Campus buildings, open space, circulation, and utility systems should be arranged so that:

i. To ensure that academic, research, outreach, cultural, and operational activities interact positively;

ii. The campus is protected and strengthened as an integral part of the University's mission of living and learning;

iii. Preserve and enhance the aesthetic appeal of campus;

iv. Encourage environmental stewardship;

v. Reduce energy waste, improve energy efficiency, and decrease energy impacts;

vi. Adequate infrastructure facilities and equipment have been provided/ integrated with departments for Vocational Education, Training and Skilling

vii. Various parts of the campus are accessible for Persons with Disability (PwD); The campuses support integration of all genders and promote zero tolerance for gender based discrimination, ragging and bullying etc including on social media bullying;

viii. The optimization of safety and facilitation of risk management are essential;

ix. Facilities for expression of artistic abilities, creativity and pursuit of sports and fitness regimes and interests;

x. Basic Health facilities are developed and functional including for mental health like psychosocial counselling and wellbeing centers;

xi. Principles of Resource Generation and Management are followed especially in terms of Knowledge Management.

b) Green Initiatives through Strategic Planning:

Protecting the Ecological Footprint by Adopting a Natural Preservation and Conservation Strategy, Minimizing Carbon Footprint, Preserving Natural Resources and Water Conservation, Retaining the Natural topography of the Land, Environmental Awareness and Sensitivity, Built up areas and construction material and design for heat island effect, Minimizing Fossil Fuel Consumption through Transport Demand Management Strategies, Use of Recycled Materials and Products, Alternative Energy Utilization, Technology Adaptation

The list of physical infrastructure given in **Annexure 1** can be developed by any university within one or two years if they get suitable investment partner.

B. Digital infrastructure:

I. Overview

Digitalization has taken the world by storm due to its capacity to cause substantial transformations in how institutes function by improving their internal processes. Information and Communication Technologies (ICT) and its infrastructure support

have become an integral part for existence and learning experiences in all aspects of life. ICT has fundamentally changed the systems and processes of nearly all forms of institutes within their learning activities and governance. The presence of ICT in the education and research domains / sectors has made a substantial impact in the last few years and it is virtually at par with the other functional fields.

There are various advantages to digitalization including increased efficiency, increased productivity, lower operational costs, improved learner experience, higher agility, enhanced morale, improved communication, increased transparency, improved competitive advantage, and faster decision making.

With the entire world moving very rapidly into digital media and other niche areas of technology, the role of ICT in education is becoming more and more significant and this significance will continue to foster and advance in the 21st century. The ICT infrastructure of the Institute would definitely contribute in transforming the delivery quality of the teaching and learning process activities and seeks to explore the impact it would make for a much more effective way the academic programmes would be offered and delivered in the years to come.

The HEIs must also create a road map along with requisite modes of learning and teaching using the ICT and virtual technologies to move towards the idea of 'Digital Universities'. NEP 2020 also envisages to invest in creation of open, interoperable, evolvable, public digital infrastructure in the education sector that can be used by multiple platforms and point solutions, to solve for India's scale, diversity, complexity and device penetration

II. Framework for Digital & Information and Communications Technology (ICT) Infrastructure and Roadmap:

a) To provide a robust ICT Infrastructure on all campuses to facilitate high speed, internet, communication and access to online/ digital information;

b) Dedicated Campus area network, fibre-optic with at least two alternative internet connectivity sources, Information and Communication Technology Centre (CICTC);

c) To house the servers, inhouse Data Centre or cloud based data servers, Broadcasting/ Simulcast, Media Lab for Audio and Video Content Management, Central Command Room for Real-Time Monitoring, Security Monitoring, Management of UIMS and RMS Networks, Structured and Wi-Fi Networks, Intranet, and Internet, etc;

d) Development of online teaching platform & tools with two-way video and two way-audio interface along with, rich set of assistive tools for monitoring progress of learners;

e) Establishment of a digital repository of content including creation of coursework, cases, publications, Learning Games & Simulations, Sandboxes and playful learning, Augmented Reality and Virtual Reality;

f) Dashboard to be created & used as a standard tool for real-time monitoring of physical infrastructure, environmental and biodiversity, utilization of resources, and grants provided for physical infrastructural development;

g) Electronic storage of certificates & credentials in National Repositories like National Academic Depository with Digi Locker and Academic Bank of Credits (ABC);

h) The Guidelines for the repository of information about every Student, Staff, and Faculty which shall be connected through the Unique Identifiers allocated as per Government norms and as proposed in the National Digital Education Architecture (NDEAR);

i) The Guidelines for the maintenance of records by each University will be guided by the UGC policy defined in the ABC Document, NSQF, and NHEQF Framework of UGC;

j) Ensure easy access, secure data, enhance mobility of students/ faculty/ staff, Credit Transfer, support Academic Bank of Credit (ABC) besides creating a centralized infrastructure to ensure the credibility of the system and policy framework;

k) The robust ICT Infrastructure to be designed for Cyber Security protocols, expansion, and incremental growth with all safety measures for access, Natural disaster mitigation, and environmental and pest control;.

l) Data Privacy of students be ensured through processing of digital personal data in a manner that recognises the right of individuals to protect their personal data, the need to process personal data for lawful purposes and for other incidental purposes;

m) Disaster Recovery Site (DRS);

n) The Universities/ institutions shall create an ICT backbone to absorb future growth and expansion and become significant partners in the expansion of National Missions to fulfill the needs of a developing nation.

III. How to develop the Digital Infrastructure:

a) Digital infrastructure includes a paperless office system using an automatic learning management system which includes digital information processing of all teaching, learning, examination, and evaluation activities. All the stakeholders get online information from both push and pull format.

b) The university website centered on the admission process, payment of all fees by the students and faculty compensation are in digital payment format. Digital infrastructure of a university can be improved by implementing educational ERP/ LMS, having a dynamic website, systems for online teaching, computerized examination and evaluation system, Digitized marks cards/credit score cards, online e-placement supporting systems, online alumni networking, etc.

c) The university needs one to two years to digitize its infrastructure either by its own efforts or by outsourcing digitization work for an internationally experienced information technology enabled services organization or they may use Platform as a service from some Ed Tech technology company that meets their requirements.

C. Academic infrastructure

I. Overview

The Academic Infrastructure is a set of reference points which give institutions a shared starting point for setting, describing and assuring the quality and standards of their higher education courses. A good academic infrastructure ensures a healthy and progressive learning environment resulting in energy and interest which ultimately promotes better learning performance.

It is the responsibility of an institution to create an environment that not only assures learning, but also pays special attention to the mental and physical well-being of the students. They should provide a learning atmosphere to every student where they acquire knowledge and skills to grow as a responsible individual.

II. How to develop & improve Innovative Academic Infrastructure:

a) Development:

Innovative academic infrastructure can be developed by means of various activities for creating innovators by means of Planning, Implementation, Evaluation, Feedback, & Self-study report. The following steps may be helpful for developing innovative academic infrastructure:

i. Institutional SWOC/SWOT analysis.

ii. Developing best practices by doing ABCD analysis.

iii. Developing future strategy through predictive analysis.

iv. Creating & retaining a strong faculty base through faculty performance analysis and regular trainings.

v. Designing flexible curriculum and introducing multidisciplinarity in HEIs including integration of Vocational Education, Training and Skilling into curriculum.

vi. Using appropriate industry experts in curriculum design & implementation.

vii. Appropriate mechanism & infrastructure for Upgradation of Curriculum.

viii. Developing leaders as role models through commitment & multi-tasking analysis.

ix. Developing students by offering confidence building education model through student integrated development model.

x. Adhering to a specified/defined/regulated Student-Teacher Ratio for various forms of learning & assessment.

xi. Growth & expansion of the university through environmental analysis.

xii. Introducing technology in the form blended mode of learning, Creation and delivery of digital content etc.

Once a University decides to invest in innovative academic structure, it needs 3 to 5 years' time for its optimization. The academic infrastructure should provide a unique

teaching-learning model as a student integrated development model to enhance their employability and ability to innovate.

b) Improvement:

i. Learning and Teaching excellence, cooperative education, and research.

ii. Imparting high-quality professional and application-based education in a wide range of interdisciplinary areas.

iii. Approach by academia by ensuring 360° access to teaching & learning, skill & capacity building resources, research and Intellectual Property (IP) creation, protection & deployment.

iv. Embedding skills and employability skills, including soft skills and life skills and foundational technology skills into learning. The details are in Annexure 3.

v. Curriculum to be a suitable blend of theory and practice and also available digitally that fosters potential minds to be active contributors in the process of social transformation of the habitat.

vi. Intensive and balanced use of the latest technology, i.e. AR, VR, ML/AI

vii. Practice-oriented and industry required research and pedagogy to make teaching and research unique, such as including Industry 4.0/5.0

viii. Implementation of blended mode of learning including digital and online learning

ix. Academic excellence and Professional Education delivery – student centric teaching and learning process, top quality professional education to students

x. Faculty: a high proportion of full-time faculty (75-80%) with Ph.D. or required industry expertise and quality research publications, IP Creation, Protection & Deployment. Incentivising industry and socially linked collaborative teaching and development of pedagogic material is a powerful enabler.

xi. Regular and continuous capacity building of faculty through refresher programs and training of trainers (in case of VE) especially in the following areas:

    a. Implementation and operationalisation of National Credit Framework (NCrF)

    b. Implementation and operationalisation of Academic Bank of Credits (ABC)

    c. Implementation and operationalisation of National Higher Education Qualification Framework (NHEQF) with level descriptors

    d. Integrating Vocational Education, Training & Skilling into HEIs

    e. Implementation and operationalisation of National Skills Qualification Framework (NSQF) with level descriptors

    f. Implementation and operationalisation of Indian Knowledge System (IKS) and Future Skills

xii. Curriculum for sensitization in terms of providing educational program for inculcating virtues like empathy and also towards environment, PwDs and other special sections of the society.

xiii. Excellent physical and soft infrastructure, modern Labs, with ubiquitous technology and learning platforms embedded

xiv. Create world class Open Online/ Digital/ Blended learning Resources for a Global student/ Audience (OCW, MOOCs)

xv. Provide Educational Leadership to other Institutions, Nationally and Globally

xvi. Inspiring and motivating learning environment - student or learner-centered; knowledge- centered; innovation-centered; and community-centered

xvii. Promote commercial business ideas while mentoring the student and becoming part of their Start-up ecosystem.

D. Research & Intellectual Property Infrastructure

I. Overview

Intellectual infrastructure, such as basic research, ideas, general-purpose technologies, and languages, benefits society primarily by facilitating a wide range of downstream productive activities, such as information production, innovation, and product and service development, as well as education, community building and interaction, democratic participation, socialisation, and many other socially valuable activities. The importance of intellectual infrastructures in cumulative, dynamic, and complex systems cannot be overstated. Intellectual infrastructure resources are frequently referred to as "building blocks" by courts and commentators to capture their role as basic inputs.

While the metaphor of "building blocks" is evocative, it needs to fully reflect the complex relationships among intellectual system participants who derive value from intellectual infrastructures as producers, users, consumers, or incidental beneficiaries. Intellectual property rights act as driver and means to protect, license, and commercialize their research and teaching outcomes. By establishing ownership, exclusivity, and market advantage, intellectual property fuels the quality research, monetization process, attracting investment, enabling technology transfer, and facilitating the creation of start-ups or spin-off companies.

II. Role of Research and Intellectual Property Infrastructure:

a) Emphasize the 4C's skills (Critical Thinking and Analysis, Creativity, Communication, and Collaboration and Team Work).

b) Focus on quality research and innovations while ensuring effective deployment and management of related resources.

c) Establishment, maintenance, and upgrade of advanced research and development labs, library, IT infrastructure, including social innovation labs and import of appropriate equipment for all disciplines.

d) Thrust towards Internationalization: Internationalization has been a powerful driving theme, enabling the Indian higher education sector to be both in line

with global standards and emerge as a global leader in higher education and research.

e) Trans-disciplinary Research and Social and Technology Lab/Park: to advance methodological understanding and practice in order to generate IP for development, as well as to ensure the use of research infrastructure across academia, allowing sciences to connect with social sciences and society.

f) Trans-disciplinary Innovation Lab by focussing on the upstream part of innovation.

g) Focus on Research for solving local regional and national issues

III. How to develop Research & Intellectual Property Infrastructure:

Development of Intellectual Property infrastructure is one of the biggest challenges for a university.

a) A HEI can enhance its intellectual property infrastructure by implementing many strategies which include:

i. Involving all stakeholders in research, innovation, & documentation in the form of scholarly publication.

ii. Creating a culture of innovative thinking through research and societal contributions.

iii. Promoting systematic institutional research with high performance and output at a low cost.

iv. Collaboration with numerous universities and research centres, including community based organisations, both locally and globally to strengthen joint research and publications.

v. Inviting industry and community to be a partner in their research and development activities, as well as intern gaining in IP infrastructure.

vi. Focusing on quality research programmes and infrastructure leading to increased M.Sc./ M.Tech./ M.S. (By research), Ph.D., Postdoctoral certificates, Postdoctoral degrees such as D.Sc., D.Litt., and others, in addition to mandatory journal publication and patents/ copyrights.

vii. Encouraging faculty members through incentives to bid for government & industry funded research projects.

b) To quantify the output, it is proposed that:

i. Institutions are encouraged to set aspirational goals for patents/ research projects/ publications through a collaborative, participative and consultative process

ii. A centralized Research and Development Cell with centralised Chief Technology/ Coordinating Officer (CTO/ CCO) enables institutions to improve the efficiency of their research operations. Centralization also allows for the optimization of research resources.

iii. Industries should be suggested to contribute to the research activities so as to do the research on live projects and quantify the output, which becomes a win-win situation for both the academics in terms of resources and the industries in terms of live projects.

iv. Through university policy, motivating faculty members through faculty ranking/ assessment based on research-based Academic Performance Indicators (API) scores and subsequent additional incentives.

v. Since developing intellectual property infrastructure is a long-term activity that is dependent on many factors, universities take a long time to establish themselves in this area, typically 05 to 07 years to reach a substantial amount even if they are completely focused on such activities.

c) Research monetization Infrastructure: It has been a challenge to convert acquired IP as a tangible benefit. While direct monetisation of Technology patents and IPR are relatively easier to discern and pursue, the pursuit of process IPR and Copyright monetisation in case writing and pedagogic material is also important. To enable the monetization of research and innovation, universities and other higher education institutions (HEIs) should consider the following steps:

i. Identify commercially valuable research outcomes by engaging with researchers, reviewing publications, and collaborating with technology transfer offices or IP experts.

ii. Establish or enhance a dedicated technology transfer office (TTO) with experienced professionals to manage IP protection, licensing, and technology transfer activities. The TTO can guide researchers and facilitate the identification of monetization opportunities.

iii. Conduct training programs to educate researchers and staff about research monetization and IP protection, including the process of identifying valuable outcomes and navigating the commercialization landscape.

iv. Foster collaborations with industry stakeholders through joint projects, technology-sharing agreements, or sponsored research collaborations, creating pathways for commercialization and gaining market insights.

v. Define clear processes and guidelines for licensing and technology transfer, including royalty structures and licensing fees. Streamline the licensing process and provide support for negotiating fair agreements.

vi. Provide infrastructure, mentorship, and business development support to startups, leveraging the institution's resources to enhance their chances of success.

vii. Explore funding mechanisms by securing internal funding, establishing partnerships with funding agencies, or connecting with investors to support research projects or emerging startups.

viii. Cultivate an entrepreneurial culture by organizing entrepreneurship programs, seminars, and competitions, encouraging researchers and staff to consider the commercial potential of their work and supporting their entrepreneurial aspirations.

ix. Continuously monitor and evaluate the effectiveness of the research monetization infrastructure using key performance indicators such as patents filed, licensing agreements, startups created, and revenue generated. Use these metrics to refine and improve the infrastructure.

d.) There are many social research findings that have policy and programmatic relevance or have potential for initiating action on ground and therefore con be monetised only in these terms. Therefore the universities also need to bring community in the picture – stress on research for community level action – Promote 'Research to Action for Community'. And 'Community led Research concepts/ strategies.

IV. Specialised Structures to Enable Research in Indian Academic Institutions:

a. Government, Industry, Academia and ultimately Society are the chief stakeholders of R&D activities, performing various roles in the research ecosystem. The roles performed by these stakeholders across the R&D (including the dissemination of knowledge) lifecycle have evolved over the years from mutually exclusive to developed ones with blurred boundaries. The belief stems from the idea of a 'knowledge-based Society and economy', which appreciates the amplification of organised R&D that shapes research and looks at various stakeholders in the research cycle as co-dependent and interlinked, requiring channels for effective translation of invention to innovation.

b. HEIs need to assume a central role in advancing knowledge and is the incubator of basic scientific knowledge in the quest for a knowledge Society & Economy. Besides conducting research and training personnel, academic institutions also provide opportunities for interaction with global and local counterparts that access avenues for scientific communication, collaboration and knowledge sharing.

c. It then becomes a powerful enabler to create a robust research ecosystem at academic institutions such that Society, Industry and Government can leverage the advances to drive innovation, economic growth, inclusive development and a sustainable society.

d. HEIs must look at the key ingredients required for building a successful research ecosystem within an academic institution in the form of functionalities and offices to provide researchers with opportunities that enhance their research outcomes through required linkages between the Government, Society, Industry and Academia.

e. **Opportunities for HEIs:**

i. A few HEIs have set a high benchmark in terms of research and innovation, often the disengagement between stakeholders of R&D,

can become the opportunity for the more effective translation of research outcomes into new technology and approaches. Better trained personnel and better structures facilitating the ease of doing research can be also be improved with rigorous academic standards.

ii. A powerful Research vision, better Resource availability; and understanding of the value of R&D within HEIs and an enabling ecosystem for robust R&D are essential enablers.

iii. Creating channels that remove obstacles for performing research is the first step to building a solid foundation for an effective research ecosystem. Academic institutions are perfectly placed to facilitate stakeholder interactions, which is the first point of any intervention and should thus be strengthened with appropriate skills that initiate the creation of a solid research community.

f. **Enabling Interventions HEIS:**

i. Several new roles and professionals in areas such as research management, enabling stakeholder collaborations, assisting in commercialising research outcomes, fundraising, and managing alumni networks are major value adding activities. These need to occupy a 'third space' - roles not entirely administrative but also non-academic. The establishment of Research and Development Cells (RDC) in HEIs to strengthen research ecosystems in terms of governance, administration, human resource management, financial management, and promotion of collaborative research is a enormously helpful and is aligned with the National Education Policy 2020. (Illustrated in Annexure XX are the functionalities that are essential conduits to building an ideal research ecosystem).

g. These structures will provide enabling support to the Faculty and Researchers while ensuring all stakeholders of research are engaged with utmost priority. HEIs will significantly benefit with such research management structures (research offices, industry liaison offices, fundraising offices, or offices in other names as may already exist in some institutions) that offer a specified list of functionalities for the institute and the researchers.

h. The illustrative functionalities that are essential conduits to building an ideal research ecosystem are given in Annexure 9.

E. Supportive and Facilitative Infrastructure

I. Overview:

We often talk of infrastructure in physical terms. However, there are also other infrastructures such as intellectual infrastructure and emotional infrastructure where intellectual infrastructure involves people and their competencies and capabilities while emotional infrastructure involves the egos and emotions of the people in the institutions and their emotional contribution and bonding with their institutions. It is rightly said that physical infrastructure can be built easily but it is very tough to build both intellectual and emotional infrastructure. This infrastructure acts as a supportive framework to inculcate not just the strong

sense of belonging but also facilitate a sense of pride, security and ownership in its constituents. The constituents are students, professors, teachers, staff and all other relevant stakeholders of the university.

II. How to develop Supportive and Facilitative Infrastructure:

a) Creation of emotional surplus with respect to employees and customers is a big challenge for every organization. Universities also should strive for emotional surplus as their essential infrastructure in order to accelerate their growth. Providing a good working environment for all stakeholders with ethical policies and transparent academic and administrative system and giving extra care in all service areas of both higher education and research activities are the necessary and sufficient conditions for developing such support & facilitative infrastructure for emotional surplus in the HEI organizations. Creating a substantial amount of such infrastructure for a university takes a long time since it has to prove its long time credibility & identity through its dedicated and committed service to the society. Some of the strategies which support to develop emotional surplus as supportive & facilitative infrastructure in universities are listed below:

   i. All regulations related to various services should be framed as learner centric.
   ii. Honest effort of providing transparency in administration with democratic touch may be given.
   iii. Leaders should be visionary and have inherent intention to treat every stakeholder as the family member.
   iv. Atmosphere to be created to build mutual trust and respect between stakeholders.
   v. Develop an institutional tradition and culture from local tradition and culture.
   vi. Develop core values of commitment, dedication, and service among all stakeholders.
   vii. Create a system where everybody should know their responsibility and struggle to achieve it.
   viii. Create a system where every stakeholder gets security and justice.
   ix. Openness & transparency in all administrative decisions.
   x. Accountability based on job description at all levels of the university.
   xi. University social responsibility for economically weaker sections & locals.

b) To create such infrastructure in substantial amounts and use it as a resource for brand creation, the university has to make sustainable efforts for a long time period. Most of the existing universities all throughout the world with more than 100 years of existence have an advantage in accumulating emotional infrastructure compared to recently started universities. However, using innovative strategies, it should be possible for the present generation

universities to create substantial emotional infrastructure for a time period of 10 to 30 years.

c) **Inclusion and Diversity:** Steps to be taken by all HEIs to develop Institutional Development Plans that contain specific plans for action including but not limited to the following items:

i. Support under-represented learners ensuring access to education.
ii. Collaborate with communities by identifying local learning needs.
iii. Bring diversity in the composition of students, faculty, and staff in terms of gender, class, religion, region, caste, and nationality.
iv. Mitigate opportunity costs and fees for pursuing higher education
v. Provide more financial assistance and scholarships to socio-economically disadvantaged students
vi. Conduct outreach on higher education opportunities and scholarships
vii. Make admissions processes more inclusive
viii. Make curriculum more inclusive
ix. Increase employability potential of higher education programmes
x. Develop more degree courses taught in Indian languages and bilingually
xi. Ensure all buildings and facilities are Persons with Disability (PwD) friendly
xii. Develop bridge courses for students that come from disadvantaged educational backgrounds
xiii. Provide socio-emotional and academic support and mentoring for all such students through suitable counselling and mentoring programmes
xiv. Ensure sensitization of faculty, counsellor, and students on gender-identity issue and its inclusion in all aspects of the HEI, including curricula
xv. Strictly enforce all no-discrimination and anti-harassment rules – establish women and gender cells, Internal Committees for sexual harassment cases; and gender champions

F. Infrastructure for Networking and Collaborations

I. Overview:

a) The students remain in the institute for 2 years (Post graduate) to 5 years (integrated Masters / PhD programmes) and are dependent on Brand of HEI for next 40 years (Active professional life) and carry the Brand name like IIT with them to 60 Years (while giving back to the society). Therefore, the Alumni as the real trustee of the Brand of HEI to be the major stakeholders in its Governance, Management and Growth of the HEI. HEI requires to set up a mechanism to win their trust and enable their constructive and hassle-free engagement with the

Institute for life with networking and connectivity in getting endowment, new projects, funds, knowledge, mentorship

b) Networking and Connect with Society

i. Contribute not only to academia but also to civil society and the development sector through quality education, research, field action, or advocacy.

ii. Moving from monitoring inputs to incentivizing outcomes and impacts.

iii. Partnerships with various Centres of Excellence and institutions across boundaries for outstanding research and teaching.

iv. Deeper engagement with other actors such as other academic/research institutions, industry, and civil society

II. How to develop Networked Infrastructure:

a) Through effective networking with industries, other HEIs and various research organizations, universities can prosper and develop as one among world leaders. The network collaborative model should have a systematic plan of involving industry experts in the teaching-learning process. Starting from planning the courses and the subjects, developing the curriculum, collaborative training, and collective evaluation, and offering employment, industry-institute interaction has the opportunity to add value to their services. Connecting with the industry, with the alumni, with other higher education & research institutions creates synergy for collective development.

b) The following steps may be helpful for developing networking infrastructure for universities and HEIs:

i. Universities should realize that they are by the society and for the society so that by working with more organizations in a team, they can fulfill their objectives and contribute substantially for the society.

ii. Involving alumni in close confidence in many processes, universities can get huge benefit for their brand building exercise.

iii. Identifying and involving various industries which provide internship and employment opportunities in curriculum design.

iv. Networking with student feeding institutions by means of involving/admitting faculty members of such institutions in university research programmes.

v. Collaborating with national and international universities for joint research & publications, Credit transfer Courses, Dual degree programmes, etc.

vi. International student exchange programs

vii. By means of properly planned collaborations and implementing the objective of collaboration leads to a positive-sum game. Organizations which focus on effective networking can encash more opportunities for self and mutual developments along with their brand image.

Collaboration and partnership with local, national, and global agencies can be used to support other infrastructures like innovative academic infrastructure, intellectual property infrastructure, and emotional infrastructure.

G. Governance Infrastructure

I. Overview

a) Governance can be defined as: “The system by which entities are directed and controlled. It is concerned with structure and processes for decision-making, accountability, control and behaviour at the top of an entity. Governance influences how an organisation’s objectives are set and achieved, how risk is monitored and addressed and how performance is optimised”. Governance is a system and process, not a single activity and therefore successful implementation of a good governance strategy requires a systematic approach that incorporates strategic planning, risk management and performance management. Like culture, it is a core component of the unique characteristics of a successful organisation. It includes the authority, accountability, leadership, direction and control exercised in an organisation.

b) Governance encompasses the structures, relationships and processes through which, at both, national and institutional levels, policies for tertiary education are developed, implemented and reviewed. Governance comprises a complex web including the legislative framework, the characteristics of the institutions and how they relate to the whole system, how money is allocated to institutions and how they are accountable for the way it is spent, as well as less formal structures and relationships which steer and influence behaviour. (OECD, 2008, p. 68).

c) Governance has become a major leverage tool for improving quality in all aspects of higher education. Meanwhile, quality assurance has increased worldwide with a view to address the balance between autonomy granted to institutions and accountability. The governance arrangements may:

   i. Result from the will of institutions to show they can make good use of the autonomy given to them.

   ii. Aims to help institutions adopt corporate governance in line with the New Public Management (NPM) philosophy.

   iii. Be a response to protect institutions from fraud or mismanagement by framing their autonomy and providing advice.

II. Why is good Governance important

The fundamental reasons why organisations should adopt good governance practises include:

a) to preserve and strengthen stakeholder confidence

b) to provide the foundation for a sustainable high-performing organisation

c) to ensure the organisation is well placed to respond to a changing external environment

d) to support implementation of the Institution development plan

e) to support employability as well as the start- up ecosystem

f) to promote institutional excellence through autonomy and accountability and better performance

g) to cater to new modes of delivery such as distance learning and e-learning

h) to inclusively address requirements of the heterogenous student body- increased female participation in HEIs

i) to address the growing internationalization of Higher education and ranking and leveraging knowledge through research and innovation

j) effective governance promotes quality assurance

III. How to improve Governance:

Ensuring fully functional BOG/ Senate/ Syndicate

a. Providing autonomy with full accountability wrt all aspects of governance in HEI

b. Putting in place processes and quality assurance mechanisms

c. Involving all stakeholder including alumni in the processes leading to appointments/nominations/selections in the BoG/Senate/Syndicate

d. Various levels of financial autonomy to be defined including striving for self-sustainability

e. Focusing on good governance- Good governance can be understood as a structure which strives to preserve the integrity of the academic value system while at the same time positioning universities vis-à-vis their larger societal environment to make them receptive and answerable to external messages, demands and expectations.

f. Ensuring effective leadership, strategic direction making, and operational excellence

H. Financial Infrastructure and Funding Models (Resource Generation)

I. Overview

Financial infrastructure is the heart of the financial system and a prerequisite for its operation. A financial infrastructure comprises the technical systems that deal with payments and financial instruments. A robust financial infrastructure would enable the institutions to make and receive payments safely and efficiently along with creating routes for sustained research funding options.

A crucial enabler for HEIs would also be the inculcation of a professional and contemporary Financial Management approach within the compliance, regulatory and statutory boundaries. While Compliant Accounting is a non-negotiable requirement, Management accounting and data-based decision support can hugely strengthen the HEIs ability to navigate issues and options for financial structuring and resource mobisation.

II. How to improve Financial Infrastructure:

a. **Funding Sources:** Identify and prioritize the sources of funding for the development of financial infrastructure such as government grants, alumni donations, private sector partnerships, and fundraising campaigns.

   The public funded as well as other HEIs must strive to work on a sustainable revenue model where the revenues are derived from the following main sources such as:

   i. tuition fee from the students

   ii. government grants and subsidies

   iii. overheads earned on the sponsored research and development projects from the Government and private/ corporate sector

   iv. endowments, philanthropic contributions and other income like CSR, royalties on intellectual property (IP)/ patents etc.

   In a fully developed HEI, each of these sources must contribute about a similar percentage to the total revenue, depending on the size of the HEIs. Therefore, HEIs must also focus on expanding their undergraduate programs as additional students mean more revenue.

b. **Budget Allocation:** Determine how the budget will be allocated among different areas of the institution, such as infrastructure development, faculty and staff salaries, student services, and research initiatives.

c. **Transparency:** Ensure that all financial transactions are transparent, accountable and auditable to maintain trust and credibility with stakeholders.

d. **Financial Sustainability:** Develop a long-term financial plan that includes measures to ensure financial sustainability, such as diversifying income streams, controlling costs and increasing efficiency.

e. **Investment Strategy:** Develop an investment strategy that maximizes returns while minimizing risk, to ensure that the funds generated from investments are used effectively to support the development of financial infrastructure. The garnering of resources and their deployment including constructive policy recommendations for Funding Regulation and management can also be significantly aided.

f. **Collaboration:** Foster collaboration and partnerships with government agencies, private sector entities, and other institutions to leverage resources and expertise to support the development of financial infrastructure.

g. **Stakeholder Engagement:** Engage with key stakeholders, such as students, faculty, staff, alumni, governments, local industry, and local communities to understand their needs and priorities for the development of financial infrastructure.

h. **Additional Outreach Modules for Fund Generation**

3. IDEAL INFRASTRUCTURE & TIMELINES

A. Timelines

The estimated time period required for development of the essential infrastructures for a university in a private sector where the board of directors have autonomy to make investment decision is shown in Table below:

S. No	Essentials infrastructures for attaining Excellence	Time period required for reaching optimum level
1	Physical Infrastructure Requirements	02 - 03 years
2	Digital Infrastructure Requirements	01 - 02 years
3	Innovative academic Infrastructure Requirements	03 - 05 years
4	Research and Intellectual Property Infrastructure Requirements	05 - 07 years
5	Supportive and Facilitative Infrastructure Requirements	3 to 5 years initially And thereafter a continuous process
6	Infrastructure Required for Networking and Collaboration	05 - 10 years
7	Effective Governance Structure	03 - 05 years
8	Financial Independence and Stability Requirements	03 - 05 years

B. List of Ideal Infrastructures required for attaining global excellence and their focus:

S. No	Essentials Excellence for attaining	Primary Focus	Optimal Scenarios
1	Physical Infrastructure	Enablement Accessibility Capacity	Open outdoor disturbance natural place without any. The Indicative List of Physical

		Comfort Easement	infrastructure Requirements for a University is given in *Annexure 1*
2	Digital Infrastructure	Openness & Ubiquitous accessibility, increased efficiency, increased productivity, lower operational costs, improved learner experience, higher agility, enhanced morale, improved communication, increased transparency, improved competitive advantage, and faster decision making	Ease of accessibility of information and content for agility, effectivity and higher efficiency. Enablement of NEP 2020, NCrF & NEADR. Integration with other Government Systems/Programs The Indicative List of various types of digital infrastructure required for a university is given in Annexure 2
3	Innovative academic Infrastructure	Academic excellence, multi-disciplinarity, focussed & experienced faculty, flexible curriculum, Innovativeness, all round learning & future readiness, Confidence building	Models and pedagogies to make a learner proficient, skills, experience leading to heightened confidence. Teacher-Student Ratio The Indicative List of various components of innovative academic infrastructure required for a university is given in Annexure 3
4	Research and Intellectual Property Infrastructure	Creating new knowledge & Innovation	Optimum and Sustained ability to create new knowledge & new innovation (IP) by students & faculties. The Indicative List of various components of intellectual property infrastructure required for a university is given in Annexure 4.
5	Supportive and Facilitative Infrastructure	Belongingness & Connectedness of all stakeholders	Sustained sense of belongingness and ownership The Indicative List of various types of emotional infrastructure required for a university is given in Annexure 5.
6	Networking and collaboration Infrastructure	Industry Interactions for Training, Placement, & entrepreneurship	Strongly networked with multiple domains of industries globally. The Indicative List of various types of networked infrastructure required for a university is given in Annexure 6

7	Effective Governance Structure	leadership, strategic decision making, autonomy including financial, quality assurance, defined process	Effective governance structure with full autonomy and accountability. Striving for Sustainability and to establish quality assurance mechanisms with effective leadership
8	Financial Independence and Stability	Standardization of process for financial transactions, Effective assets management	An effective financial management system streamlines the invoicing and bill collection process, eliminates accounting errors, minimizes redundancy in records, ensures compliance with tax and accounting regulations helps employees plan their budgets, and allows change and growth to be accommodated.

4. Centers of Excellence

(a) HEIs must also create Centers of Excellence (CoE) where different aspects of the framework could come together to create impact. For example, a COE in IOT in medical devices, COE for AI in green energy, and so on, COE on Mental Health for Kisan and Jawans welfare etc.

(b) COEs should build on interdisciplinary educational disciplines on one side and address a societal problem on other side. An HEI must look forward to create more than 1 (one) CoE and must try to collaborate with international HEIs and othe organisations for the same.

(c) These CoEs may also look forward to address larger social, local or environmental issues and can identify goals and target timelines for themselves.

(d) The COEs performance could be measured by progress on patents/ papers/ POCs/ real world impact etc

Annexure 1: Indicative List of Physical Infrastructure Requirements

S. No.	Types of Physical digital	Details of physical infrastructure & its usage
1.	Smart Campus	• A Smart Campus creates the best balance of cost, comfort, risk and resilience. • When a campus is "smart," it detects and fixes small problems before they grow into big ones or cause distractions for students, staff, and visitors. • It creates a performance infrastructure where building systems "talk to each other" in order to coordinate common outcomes, such as lighting, security, and environmental controls. • It focuses on the uptime of facilities, performance of campus buildings on demand, greenhouse gas reduction targets, protection and mitigation against variable energy prices, and adopting new technologies.
2.	Green/ Sustainable building	• Constructing green buildings on university campuses involves using resources as efficiently as possible during the structural process and for future use of the building. (Basic requirements) • It is based on the principle of open environment by using optimum models of water & energy consumption. • Internally, the campus uses green energy, harvested water, renewable and recycled resources to produce and provide air, water, food, light, and electricity in a sustainable way. • Central Air Conditioned High Tech Buildings With modern clean-green environmental concept. (Aspirational requirements)
3.	Infrastructure to commute	• Better infrastructure along with signs on the streets and separate spaces for commute for differently-abled • Students and staff should have access to high-quality motorways and bicycle paths so they can commute by bicycle or battery-powered vehicles. • Accessibility for PwD
4.	Administrative Block (Admission & Counselling Area)	• Having adequate space for administrative activities (such as admission and counseling activities) is essential. • Different departments may have their own buildings
5.	Library/ Digital resource centre	• Adequate in size with reading rooms, stock areas for books & Journals with online information access facility. • Departmental Libraries with reference books & online digital information resources (Desirable Requirements).
6.	Lecture Complex, Classrooms	• Students should have access to Lecture complexes, classrooms, tutorial rooms, discussion rooms of different sizes with comfortable seating arrangements

	Tutorial rooms	and teaching-learning facilities. ● Video Recording Facilities
7.	Examination branch	● There should be a separate examination branch with strong room large enough to accommodate confidential documents and examination papers.
8.	Facilities to Faculty and Staff	● There should be an adequate number of well-equipped faculty chambers to accommodate all permanent faculty members, visiting faculty members, part-time faculty members, research scholars, etc. (Basic Requirements) ● Faculty Cubicles in adequate numbers as per the demands (Desirable Requirements) ● The Campus shall have 2-3 bedroom facilities/ quarters for the resident faculties/ staffs. (Desirable Requirements)
9.	Meeting rooms	● Meeting rooms with enough space (as per standard norms), furniture, and electronic communication/presentation equipment.
10.	Office Rooms	● Suitable for meeting the needs of all staff members
11.	Laboratories and Research Centres	● Modern laboratories and advanced super specialty research centers in a wide variety of scientific and technological fields.(Basic Requirements) ● Departmental Libraries with reference books & online digital information resources. (Desirable Requirements)
12.	Computer Centre/ Multimedia Studios	● Computer Centre having appropriate Computer: Student Ratio as per standard norms. (Basic Requirements) ● Multimedia Studios for creation of digital contents with optimum sound control & recording facilities. (Aspirational requirements)
13.	Cafeteria/Dining Room/ Mess Facility	● Cafeteria/ Dining room/ Mess facility equipped with modern cooking apparatus/equipment to ensure quality, cleanliness, and hygiene. (Basic Requirements)
14.	Games & Sports facility	● Playground and indoor Stadium of sufficient size to accommodate variety of games.(Basic Requirements) ● Gymnasium and workout center, Swimming Pool, Stadium and High Tech Playgrounds, Modern type indoor stadium with multi-purpose arena (Aspirational requirements)
15.	Auditorium add conference rooms	● One auditorium of sufficient size and or conference rooms of various capacities depending upon the size of the institution (Basic Requirements)
16.	Hostels	● Student Hostels : for at least 60 % students, especially for out stationed students. (Basic Requirements) ● Research Scholars Hostels with contemporary facilities (Desirable requirements) ● International Student Hostels (Aspirational requirements)
17.	Parking	● Suitable for meeting the needs of all stakeholders

18.	Exhibition Hall	● In order to fulfill the requirements of all curricular activities (Academic/Vocational/Skilling), there should be an adequate number of exhibition halls/ space.
19.	Guest Accommodation	● Suitable guest house for meeting university requirement (Basic Requirements) ● Star hotel type guest hostels with accommodation, food, and recreation facility (Desirable requirements)
20.	Commercial Shops/ centers	● Convenience Shops for students and staff to purchase essential items (Basic Requirements). ● Shopping Complex/ Centers suitable for all kinds of shopping (Aspirational requirements)
21.	Health and well being	● Modern Dispensary / hospital that offers inpatient and outpatient services 24 hours a day, 7 days a week. (Desirable requirements) ● Student recreation facilities with appropriate blend of modernity and functionality (Desirable requirements)
22.	International student centres	● With contemporary student amenities whenever international students are large in number (Aspirational requirements)
23.	Incubation centre and Research park	● With in-house industry R & D units & collaboration (Aspirational requirements)
24.	Botanical Park/ Garden	● Natural type, with a documented collection of living plants that may be used for the purpose of scientific research, conservation, display, and education. (Aspirational requirements)
25.	Vocational Education, Training and Skilling infrastructure	● Adequate well equipped building space with appropriate equipment, machinery and tools, including computer labs and technology labs for learning skill/ vocational education as part of course curriculum

Annexure 2: Indicative List of Various Types Of Digital Infrastructure Requirements

S. No.	Types of infrastructure digital	Details of digital infrastructure & its usage
1	Internet usage	● Connecting external world through an electronic device to the stakeholders
2	Website	● For providing institutional information to the public
3	Online Messaging stakeholders' groups	● For vertical and horizontal communication between Stakeholders
4	Online Blogs & sites for every course	● To provide course information and day to day progress of the students who enrolled in the course to stakeholders and publics.
5	Wi-Fi Campus	● To access online ubiquitous information in the campus and classes.
6	Online Study material	● Development of study materials both in audio, video, and text form as per the curriculum and providing them to concerned students online as additional support to classroom teaching – learning process. The study material in the form of a PDF book to be stored in a smartphone, tablet, or laptop computer will help provide a ubiquitous reference for the covered portion of the course subjects.
7	Digital Library	● Developing and updating digital library and providing digital library membership to every stakeholder of the university for ubiquitous access of books, periodicals, study materials, magazines, annual/year books of organizations, journals in digital form is the responsibility of University digital library. For this purpose, the University digital library can collaborate with national digital libraries and Global digital libraries.
8	Digital Publication	● The university should have its own publication for books, newsletters, magazines, journal proceedings, and printing question papers for examinations. Online digital publication as open access publication globally is the best practice.,
9	Paperless office	● By developing academic administrative software the university should provide an online office environment to cater the services of stakeholders.
10	Paperless exams	● Adopting a digital examination system eliminates the wastage of papers in the examination process.

11	Online Evaluation	● Automated & digitized online evaluation system eliminates the wastage of time of evaluators & speeds up the evaluation process.
12	Website based result announcement	● Ubiquitous reachability.
13	NAD markscards Facility	● A convenient and completely secure digital academic depository solution.
14	Online admission test	● A ubiquitous facility for global admission
15	Education ERP	● To integrate various departments of the university for timely exchange & access of information.
16	Plagiarism software facility	● A software facility available to every stakeholder to check plagiarism content in the documents.
17	Online digital magazine & Student publication	● In online publication. Digital format through University
18	Online placement (Project, internship, & final)	● Online ubiquitous support.
19	Video documentation of each course & each College	● For open information access from globally
20	Video documentation on online public platforms	● For open information access from globally
21	Social Media based promotions	● Information access & Brand building promotions
22	Use of ICCT underlying technologies like AI, BA, CC, DS, MB, OC, VR & AR	● Adopting present technologies in automating the services
23	Studio for video online classes	● Studio for digitization of sound and scene
24	Video conference facility	● For global information exchange in digital format
25	Online open Publication system	● For exchange of new knowledge generated to everybody through open access system

Annexure 3: Indicative List of Various Components of Innovative Academic Infrastructure Requirements

S. No.	Types of Innovative academic infrastructure	Details of innovative academic infrastructure & its usage
1.	Courses catering to professional/future requirements	● The institutions must provide for giving a varied choice of relevant programs. ● Courses to allow for in-depth learning of students as per their interest allowing for future growth of the student. ● Multidisciplinary and relevancy of programs
2.	Curriculum- updated as per industry requirements	● The curriculum should be updates regularly to cater to the dynamic requirement of the changing employment landscape. ● programs to suit the industry requirements both in short term and for future readiness. ● Industry linked/ internship/ apprenticeship embedded programs. ● Modularization of curriculum to enable Multiple Entry-Multiple Exit options
3.	Curriculum embedded with Employability Skill	● The curriculum needs to focus on inculcating basic skills important for increasing the employment avenues and readiness. ● Adding Employability Skills (ESs) across all disciplines like Constitutional values/ Citizenships, universal values; Career Development & Goal Setting; Becoming a professional in 21st Century; Communication Skills; English Skills; Inclusivity and Diversity including Gender sensitization, PwD etc.; Digital Literacy/ Skills/ digital fluency; Financial & Legal Literacy; Start-up management and Entrepreneurship; Customer Service orientation; and Job readiness and exam preparation ● Concept of Vasudhaiva Kutumbakam : वसुधैव कुटुम्बकम: one earth one family one future
4.	Curriculum embedded with Skill Enhancement Courses	● Curriculum to focus on competencies and skills like Critical thinking and problem solving; Creative thinking and innovation; Analytical Thinking; Adaptive Thinking; Design Thinking & Creativity; Computational thinking; Social intelligence; Cross cultural competency; New media literacy; Virtual collaboration; Decision Making; Conflict resolution and negotiations etc
5.	Curriculum embedded with emerging	● HEIs in education & skilling ecosystem need to bring the core skills that are used in the era of digitization and automation like AI, Block-Chain, IoT, drones,

	technologies to be integrated with future of work	Industry 4.0 and beyond, etc. as also integrate 21st-century digital skills wherever required. ● The future skills would need to be developed in the emerging technology areas keeping in view the important foundational technologies fundamentally changing the nature of work. ● Some of these technologies are Artificial Intelligence and machine learning; Robotic Process Automation/ hyper automation; Data Analytics; IoT/ IIoT; Blockchain; Cyber Security; Cloud Computing; Social & Mobile; 3D Printing; Augmented reality/ virtual reality/ extended reality (AR/VR/ XR); Digital content development: simulators, digital twins, Metaverses. etc
6.	Center for Curricular & Life Skills Development (CCLSD)	● Development of centers that will continuously upgrade the curriculum and at the same time incorporate 21st century skills in the credit system – which includes communication, collaboration, creativity, problem solving, initiative, emotional stability, physical fitness, confidence to be best at the world stage etc
7.	Faculty/ teaching Staff	● Full strength as per sanctioned post ● Qualified, Experienced, and committed faculty is an asset of the organization. ● Regular upgradation of knowledge ● Focused on research activities and motivated students to involve in research to create new knowledge or to do innovations. ● SMEs from the industry may be engaged as teaching staff/trainers/ instructors. ● Be role models for students by providing appropriate guidance
8.	Center for Faculty Development (CFD)	● Create new projects (aligned to COE), develop expertise and present it in peer conferences and create a platform for continuous improvement ● Exchange/internship programs with industry to cross pollinate skills ● Facilities to learn from the best in the world, with appropriate tools for research as well as tools for imparting new age education such as videography, games, AI, robotics, metaverse, AR/VR as a means to deliver content
9.	Non-teaching staff	● Appropriate non-teaching staff to support the organization. ● Must have requisite qualification, experience for the relevant post
10.	Session wise teaching plan	● Systematic planning in teaching and learning process is required which includes session wise teaching plan and following such teaching plan.

11.	Learning material like Study books	● Relevant and updates course material and books ● To provide equal amount of essential information to all the students in a class ● essential to provide study books prepared as per the syllabus of the subject.
12.	Question bank	● Question bank- to have a resource pool of all possible questions prepared as per the examination pattern. ● Such question bank eliminates the chance of asking questions out of the syllabus. ● Question bank should be such that it enables evaluating the holistic learning of a student
13.	Assignments	● Relevant assignment of varying types and nature to be conducted ● This could include term papers, practicums, or assigning students with task of preparing answers for question banks. ● The students are encouraged to work more by answering all question bank questions in the form of assignments. ● Periodic assignment submission with due date ● Internal assessment for these assignments for doing work time bound manner.
14.	Assessments	● Timely and relevant assessments. ● All kinds of assessment strategies to be used. ● Mode of assessment could be online, offline or blended. ● Opportunities like on demand assessments, make-up assessments etc to be given
15.	Value added skills enhancement Papers	● The syllabus must not be restricted to core and elective subjects. ● Provision of providing modules on general skills for enhancing the employability of the students by improving their professional knowledge. ● can be introduced as skill development-based value-added papers should be offered as separate papers and taught by industry or professional people in the field.
16.	Pedagogy	● The teaching – learning pedagogy should contain substantial amount of experimental learning part related to their specialization trough either real environment or virtual environment ● The pedagody should be an appropriate mix of traditional and modern methods ● Usage of technology must be encouraged ● enhanced usage of blended mode of learning ● Teaching learning material for PwDs to be made available ● Must be learner centric

17.	Other activities as part of learning	● Activities to support the overall development of students like sports, music etc must be integrated in the core curriculum. ● Integration of these activities as core ● Proper assessment and weightage of marks to be assigned ● Develop additional skills with them by involving in inculcating cultural and traditional skills which enhances their design thinking ability ● Activities in teams or groups related to social work and social contribution also moulds good character and team working skills of the students and incorporates collective responsibility in them. ● These activities support all-round development of students and enhance their competency and confidence in facing any challenges.
18.	Earn while learn facility & flexibility	● To support students who are from financially weaker background ● Earn while learn model has dual objectives : it gives working skills for a student with responsibility and it also supports financial needs of a student so that he need not depend on his parents for his pocket money.
19.	Flexibility and multidisciplinarity	● The course design needs to be varied, multi-disciplinary in nature ● Universities can design and implement UG/PG programs to suit the requirement of students at various levels ● Additional certificate programs across the field may be offered. ● Universities can also offer certificate programs by having MoUs with industries, reputed international organisations, etc.
20.	Opportunities to develop & utilize Research & innovative thinking skills.	● The UG & PG curriculum must allow students to explore and work independently on their projects/research under the guidance of their research guide ● students should be encouraged to work either individually or in a team. ● Enhancing the innovative ability of students and increasing their competency and confidence. ● Academic support to raise knowledge, skills, attitude, and experience-based competency to improve confidence in doing innovation. ● Organising Hackathons and other similar competitions
21.	International Exposure	● Overseas Exchange programs ● International Collaboration ● Foreign Faculty (visiting) ● International Scholarships ● International Conferences

Annexure 4: Indicative Lists of Research and Intellectual Property Infrastructure Requirements

S. No.	Types of intellectual property infrastructure	Details of intellectual property infrastructure & its generation
1	Quality Research	● increased intake of students in research based curriculum ● undertaking quality research projects ● establish quality research facilities and research labs ● self-sustaining model ● undertake basic and applied research ● enable development of disruptive and affordable technologies
2	Research oriented experienced faculty members	● Faculty members who are research oriented are usually research inclined. ● They encourage participation in research and innovation among academics, staff, and students, strengthening the university's framework for intellectual property.
3	API based faculty compensation	● The creation and implementation of a faculty compensation scheme based on Academic Performance Indicator (API) scores encourages faculty participation in research and publication activities. ● API based compensation creates healthy competition among the faculty members for accelerated IP contribution.
4	Targeted research and collaborative research	● The institution finds some new fields in several disciplines and helps the competent faculty members in such fields do research, publish papers, and file patents. ● This is called targeted research and the university can create IPR as well as an international brand through such efforts.
5	More Ph.D. & post-doctoral research scholars	● The university must admit more research scholars within its capacity of support. ● The institution should exercise its autonomy to appoint more research professors, who may eventually retire from active employment, only for the purpose of supervising research scholars. ● Universities should create post-doctoral research programmes as well to maintain the Ph.D. graduates' contributions to ongoing research.
6	More Faculty members with Ph.D.	● The university ought to adopt a strategy to boost the proportion of Ph.D. holders among its faculty. ● The Ph.D. degree holders are ready to mentor the research scholars for Ph.D. programmes in addition to acting as teaching faculty.

7	Faculty encouragement for Book Publications, Research Publications and Patents	● The university should have a policy to promote IPR contributors, who are none other than UG & PG Students, Research scholars, and Faculty members, in order to increase the intellectual property rights (IPR) of the institution. ● The institution can improve its IPR infrastructure by setting up supportive policies that stimulate research and publications at all of the aforementioned levels. Such a task will be assisted by numerous incentives and funding plans.
8	More conferences (At least two conferences per year per College	● Research scientists, faculty members, and students are kept active through the periodic organisation of conferences for the presentation of research papers. ● These conferences offer an opportunity for goal-setting and networking with other academics.
9	Student involvement in Research	● The most valuable resource in the university system is its students, who, when properly supervised, can create innovations by creating patented inventions. Similarly, through systematic research, they can also come out with scholarly publishable results. ● By involving students at the graduate and postgraduate levels, the university can boost its IPR infrastructure.
10	Industry and institutional collaboration & Consultation	● Supports collaboration-based research so that the university can create IPR along with industry personnel. This also gives the opportunity to use industry research facilities by university personnel. ● Further collaborative research leads to more patents & publications. ● Industries' contribution to the research activities so as to do the research on live projects and quantify the output.
11	University Incubation centres	● University business incubators assist students who want to establish their own companies after graduation. ● Any ideas generated while working on a project or an internship might be fostered and encouraged as a business plan to initiate self-employment.
12	University Publication through its own press	● To hasten scholarly publications, many colleges launch their own publishing houses. Additionally, this streamlines or lowers the cost of publishing and encourages academic members to use their press for the dissemination of newly developed knowledge. ● Online and digital publications are prevailing and recognized as one of the most significant initiatives of top colleges.
13	University publications & Citation service	● Universities have been offering citation services to their academic members, stakeholders, and the general public as a convenience to researchers that will aid researchers in improving the caliber of their articles.

14	Compulsory patent claim for UG & PG projects in Professional subject areas	● Setting goals for undergraduate and graduate students in terms of internships and regular mentoring and supervising them as they prepare and submit patent applications for their inventions enhances the outcome.
15	Faculty Ranking (Annual) system	● Faculty members generate a winning spirit and constantly strive for excellence when their annual API rankings are announced and they are graded according to different levels. ● Faculty oversight at every stage can be reduced in such scenarios.
16	Chief Technology Officer (CTO)	● A centralised office to operationalise and monitor research activities as planned
17	Research Monetisation	● Technology transfer office (TTO) with experienced professionals to manage IP protection, licensing, and technology transfer activities ● Training programs to educate researchers and staff about research monetization and IP protection ● Clear processes and guidelines for licensing and technology transfer, including royalty structures and licensing fees ● Internal & External funding mechanisms in place

Annexure 5: Indicative List of Various Types of Supportive And Facilitative Infrastructure Requirements

S. No.	Types of emotional infrastructure	Details of emotional infrastructure & its generation
1	Accessibility/ Proximity	● Proximate leadership is not about just one individual; it is about the pervasive leadership style in the organization. It is something that groups of leaders cascade and as a result, every leader makes himself or herself available more in a pull-based than in a push-based manner
2	Rich Communication	● Rich communication is real-time, multi-media and encourages high interactivity that ensures the message is understood as intended as well as shaped as it emerges. The other critical difference between communication and rich communication is what we call simultaneity. ● Emotional infrastructure thrives when there is zero latency between the need to communicate, the conveyance of thought, and its return. Emotional infrastructure means substantive collaboration. People who are engaged are people who are willing to collaborate.
3	Role Model	● Universities must develop leaders who have a shared vision of developing the university in a planned manner. ● The leader himself must be an all-rounder and role model in terms of motivating & target setting to others.
4	Institutional values (Core Values)	● For example, (1) Character, Commitment, Competency, & Confidence, (2) Respect, (3) Responsibility, (4) Ethics, (5) Quest for excellence (6) Social service, (7) Team Work, (8) Tech-savviness & Scientific thinking, (9) Etiquette, (10) Continuous improvement, and (11) Promotion of Open systems.
5	Vision	● The essence of a vision is that it takes a long view of time and works in an opportunity-backward manner and not a constraint-forward manner. ● In an organization with a strong emotional infrastructure, there is an articulated vision that is often bold and ambitious. The style of thinking changes from present-forward to future-backward.
6	Trust among stakeholders and outsiders	● University system should develop trust (self & mutual) among all stakeholders based on their commitment and contribution to the system.
7	Institutional Tradition Rituals	● The objectives, values, rituals, and traditions cultivated by the seniors of the institution over several years should be carried further as an institutional culture to involve every stakeholder in strong emotional bondage. This improves the commitment of stakeholders to fulfill their responsibility toward organizational development.

8	Alternative strategy & Support network	● Stakeholder service is very important in gaining emotional support to the university. Thus to provide continuous services which are promised in the beginning must be provided in any situation. Accordingly, the university should think of an alternative strategy to fulfill promises. ● College facilities, Hostel facilities, food & drinking water facilities, transportation facilities, quality faculty members to cover the syllabus, conducting exams and announcement of results in time are very essential in an academic environment and require alternative strategy and support network.
9	Goal setting in every student	● Goal setting in every student by creating awareness about opportunities is a major responsibility among students. ● The university system should motivate every student and identify the best among them and support them to set a vision to prosper.
10	Safety & Security	● The university should give priority in providing hassle-free ambiance to every student. ● Safety and security are prime factors in the university campus for every stakeholder.
11	Search for proximity (Local friends. Local food, local culture)	● Students usually search for proximity during the first year of their study. Seeking local friends, local food, and local cultures are common expectations among the students. University has the responsibility of creating such an environment to keep students from feeling lonely.
12	Comfortability but need not luxury	● The university should establish all facilities for students' basic needs and focus on providing students with a certain level of comfortability in their campus life.
13	Legacy of the system	● The university should carry further the traditions, cultures, and hence the legacy of the system by arranging the required number of such programmes, festivals, and other decent entertainment programs. ● The university also maintains organizational hierarchy in a dignified way.
14	Respect & perception about the organization	● The legacy of the system should be maintained in such a way that every individual stakeholder of a system should show a positive perception of the university and respect heartily as their alma-mater.
15	Openness in terms of information	● As a part of the emotional infrastructure of the university, it has to maintain openness and transparency in doing business. Openness & transparency in the admission process, academic teaching-learning processes, examination and evaluation system, research & publications, and investments & profitability are important.
16	The Ability of the institution to fulfill the promises	● One of the major challenges of higher education institutions is their inability to fulfill their own promises. Using the autonomy of the university if it can solve its failures it can establish a good name in a short span of time.

17	Accountability measures	● The university should adopt a system to check the Accountability of every stakeholder and both positive incentives and negative punishments should be incorporated in the annual evaluation process
18	Mental Health	● The Institute must ensure that the students are in good mental health. For this appropriate infrastructure for mental wellbeing like clinics, councillors etc. must be maintained

Annexure 6: Indicative List Various Types of Infrastructure Required for Networking and Collaboration

S. No.	Types of Networked infrastructure	Details of networked infrastructure & its creation
1	Collaborations – Horizontal, Vertical & Diversified	• MoUs with Industries both in relevant domains and the local units • MoUs with other INIs (Institutes of National Importance) • MoUs with other domain institutions (Universities and Colleges) • Partnership and community engagement for multiple ventures • MoUs with research bodies and Think Tanks – specialised inputs • Collaborations with the Rural and Urban Local Bodies and communities such as in the case of Unnat Bharta Abhiyaan (UBA)
2	Alumni Association & Networks	• Alumni connect through Alumni conclaves and meet periodically • Domain and Research workshops with Alumni as key partners • Alumni funding for research, infrastructure, and other areas • Mentorship programs with Alumni as centre-stage stakeholders • Alumni's contribution to various ventures and programs of the University and Colleges • Creation of Incubation centres to fund start-ups from invertor alums
3	Industry Integrated Collaborations	• Industry-based internships and Apprenticeships which may provide for captive placements. • Industry partnership in the design of curriculum, and content across the various disciplines • Upgradation of curriculum basis the emerging and future skills of the industry • Open and Live projects which are a win-win situation both for the industry and the learners • Industry can partner with the institutes to create various forms of center of excellence (CoEs) for the dynamic industry needs • The integration of hands-on skilling with the curriculum shall only be possible with Industry stakeholder consultations

		● Collaborations by the placement cell of the universities and colleges for final placements
4	Academic Integrated Collaborations	● Collaborating with other academic institutions which have developed their core competency in related academic areas for co-research, co-curriculum design, etc. ● Intermobility of learners/students between the collaborating institutions ● Synergy for dual degree programs, research internships, etc. ● Subject MoUs with other domain institutions for training ● International Collaborations ● Usage of each other's workshops and Labs and common OJT arrangements.
5	Research Collaborations	● Multiple researching entities working in the same domain can be a force multiplier to lead to faster and better outcomes. ● Research databases may be shared so as to have access to better data sources and research methodologies and tools ● Access to each other's libraries, journals – physical and cloud ● Partnership amongst the research associates for better outcomes ● International Research Projects, Government led research Projects
6	Consultancy Collaborations	● Faculty-based consultancy needs to be promoted as this brings in additional revenues as well as makes the faculty up to date with contemporary industrial and client practices. ● This will improve industry-institute relationships and networking leading to enhanced synergy.
7	Placement Collaborations	● The university should develop networking with local, national, and international companies of many industry sectors both for training the students during the internship and to provide campus job placement services. ● Students should be core to this exercise as they
8	Collaborations for students - Earn While Learn model	● Live projects for learning and earning opportunities for the student ● Allowing the student flexibility or a hybrid learning model to undertake such opportunities. ● Partner with industries that provide such possibilities

9	Collaborations with NGOs & Social service Organizations	● Rural outreach, Fieldwork, Participatory Rural Appraisal (PRA) for sensitising and crediting the rural immersion for both faculty and student ● Partnering with government programs such as Unnat Bharat Abhiyan (UBA), National Service Scheme (NSS), etc. for the same cause ● Operating on technical and non-technical areas for areas such as capacity building, extension services, product development, and usage for the betterment of the catchment area. ● Creating possibilities for rural internships and development internships. ● Partnering with local, global, and national NPOs, NGOs, development organizations, etc. among others for the identification of key areas of development in the vicinity.
10	Membership with National & International Accreditation bodies for Quality & Credibility	● The university should also improve its quality service by means of educational innovations and best practices. ● The quality and credibility of the organization can be verified by its recognition by national and international accreditation bodies. ● Certifications, accreditations, and rankings will go a long way in upgrading the brand value of the institutions and making them aspirational. ● Quality assurance frameworks must be adopted by such agencies for enhancing internal quality assurance and in turn the learning outcomes. ● Alignment of courses for international accreditation.
11	Startup Network Infrastructure	● Incubation centers - generic and domain-specific ● Funding tracks for the startups ● Ideation and network boards for startups ● Digital Infrastructure for supporting startups

Annexure 7: Indicative List Various Types of Infrastructure Required for Effective Governance Structure

S. No.	Types of Infrastructure	Details of its usage
1.	BoG/ Senate/ Syndicate	• full functional • fully/ Majorly staffed • defined roles and responsibilities and accountability • involvement of alumni as major stakeholder
2.	Quality Assurance	• Well defined Processes • Processes to capture various aspects of governance • Clearly defined deliverables and outcomes
3.	Financial autonomy	• Striving for self-sustainability • Generating external revenue sources • Creation of Chair for Research in specific areas
4.	Leadership	• Effective leadership • Strategic management • Laying down objectives and targets
5.	Vision, Mission and Roadmap for the HEIs	• Prepare Vision and mission document. • Evolve Shared Vision through detailed discussions with stakeholders. • Short, medium and long-term (2, 5, and 10 years) Plan document • Outsource the Punjab Technical University, Jalandhar vision to a top consultant. His stamp would be necessary for attracting investments, partners, and high growth. • Template be designed and given to HODs/ Section In-charges for Roadmap preparation. • Compilation of Report to be done by the Chief Educationist.
6.	Close monitoring by IT/ Web-based based Management Information System	• Parameters for performance to be finalized by Dean's Committee. Source of feedback, Also UGC, and AICTE guidelines to be kept in mind. • Academic system should be implemented on priority.

7.	Risk Management Analysis	● At least yearly meeting with insurance company representatives to discuss scenarios for mitigating risks (legal, safety, financial, natural disaster preparedness, environmental, hazards, etc.)
8.	External Advisory Boards	● Each School establishes an external advisory board consisting of prominent industrialists, academics, and governmental officers to advise on the running and make-up of the School. ● The board is to meet at least once per semester in conjunction with a student presentation or other function (such as the recently held Mock Parliament by the Law School
9.	Student Feedback	● Evolve Regular 360 Degree feedback for all faculty and consistently monitor and act upon the observations. ● Methodology to be proposed by Faculty members through HODs. ● Feedback to be taken on a weekly basis and faculty members to be motivated to improve their delivery

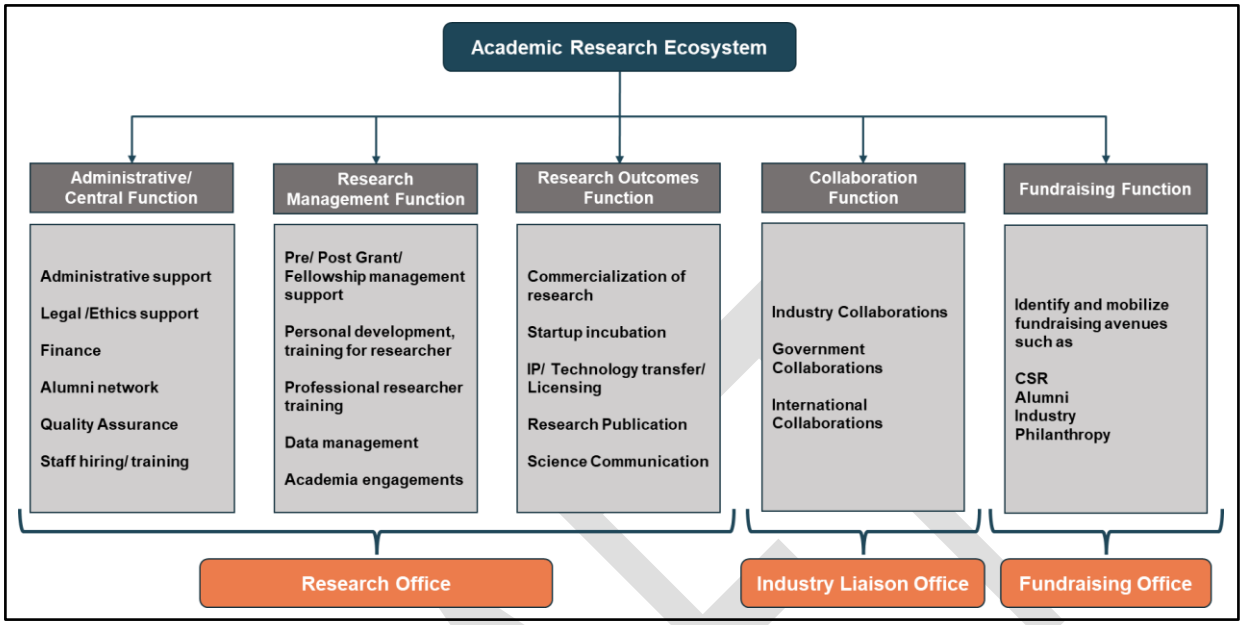
Annexure 8: Indicative List of Financial Independence, Stability and Funding Models Requirements

S. No.	Types of Financial infrastructure	Details of financial infrastructure
1.	Financial Policies	• The policies shall outline the roles and responsibilities of various university/ institution officers and organizations in managing the university's financial assets.
2.	Action Plan and Budgets	• Finalize Action Plan based on the proposed IDP • Define budget line items (Income: fees, grants if any, research projects, endowments, CSR funds, donations, etc., Expenses: salaries, utilities, maintenance, etc.) • Budget granularity to be monthly for the first year, quarterly for the next 4 years • Indicate clear responsibility, milestones, and timelines for each activity • Finalize 1-year and 5-year budget forecast • Detail out one year Capital Budget, Recurring Budget • Allocate funds and put these in a separate account • Utilize funds and track spending against milestones per budget. • Revisions to the budget are to be approved only after a meeting and discussion with the budget committee. • Planning of recurring and non-recurring expenditures for each department. Consumables, etc. • Separate budget for Non-Recurring and Recurring expenditures. • HODs to prepare details for departments.
3.	Main sources of revenue to be developed	• tuition and another fee from the students • government grants and subsidies • consultancy fees and overheads earned on the sponsored research and development projects from the Government and private/ corporate sector • endowments, philanthropic contributions, and other income like CSR, royalties on intellectual property (IP)/ patents etc.

4.	Close liaison with GOI ministries/ agencies and others for funding and Access to external grants and funding	● More than 20 ministries of the Government of India offer Projects/ Research Projects for HEIs. ● Proforma for financial assistance is to be procured from the concerned Ministries. ● Every HoD must get grants from any source ● Standardized proforma/ template for new R& D / Modernization proposals for funding by the Government of India/ other external agencies. ● Templates to be designed and prescribed in consultations with respective institute heads. ● All Departments to fill up these.
5.	IRG scheme in each department	● Commercial Utilization of existing facilities: Collection of information indicating the strength of each department & the lab equipment/instruments available for use by external agencies ● Consultancy by Each Department: The strength of each department May be circulated and advertised in Newspapers. ● Funding from external funding agencies
6.	Financial/ Investment Committee	● A financial/investment committee is responsible for making decisions regarding the investment and reinvestment of funds, purchasing and selling securities belonging to the endowment, or other long-term university assets, as well as prescribing and approving investment policies for university investment agents.
7.	Staff providing financial services	● Finance team including a chief financial officer, chief investment officer, treasurer, assistant treasurer accountants, clerks, Data Entry Clerks, CA, etc.
8.	Software/ Technical support	● Software/ Technical support for providing efficient payments, settlement, and clearing system
9.	Internal Audit department	● Internal Audit assists university/ institution officials in fulfilling their responsibilities effectively. ● As part of its oversight, Internal Audit examines and evaluates (1) systems of internal control and their related accounting, financial and operational policies, and (2) procedures for monitoring and reporting financial and compliance data.

Annexure 9: Ideal Research Ecosystem

Illustrated below are the functionalities that are essential conduits to building an ideal research ecosystem.



i. The Academic Institutions may be in different stages of adoption of these functionalities. For example, research management has been setup in some shape and form (Office of Research Grants (ORG) and Society for Innovation and Development (SID) at IISc Bangalore, IIT Madras Research Park and IIT Madras, Society for Innovation and Entrepreneurship (SINE) at IIT Bombay. At these institutes, there is a need to assess the gaps in terms of the kinds of functionalities offered and the quality of the offering.

j. For a vast majority of the institutes, the existence of support for researchers in the form of research management is a far cry. It is proposed to set up structures where these functionalities can be housed to create a holistic and robust research ecosystem.

k. Structures such as Research Offices, Industry Liaison Offices, and Fundraising Offices house the personnel that caters to these functionalities. These structures play crucial roles in research universities, supporting research initiatives, fostering partnerships between academia and industry, and securing the necessary financial resources to support the university's mission and goals. These offices work together to create a supportive environment for researchers, promoting cutting-edge research, innovation, and academic excellence.

i. Research Office:

Research offices are vital in research universities. They are responsible for pre and post-grant activities, supporting and promoting research initiatives, and ensuring that research is conducted in an ethical and compliant manner.

ii. Roles and responsibilities:

1. **Pre/Post Grant support:** Help researchers identify funding opportunities, assistance in writing grant proposals, secure funding for their research projects, and assist in funds utilisation.
2. **Compliance and ethics:** Research offices ensure that research is conducted in accordance with ethical principles and regulatory requirements. They provide guidance on research ethics and ensure that researchers are aware of the policies and procedures related to conducting research.
3. **Research dissemination:** Research offices play an important role in disseminating research findings to the broader academic community and the public. They may organize conferences, workshops, and other events to showcase research, and they may also assist researchers in publishing their findings in academic journals.
4. **Administrative Support:** Activities pertaining to infrastructural support, ensuring an effective system of institutional communication, adequate hiring, and maintenance of quality pertains to administrative support that the Research office provides.

iii. Industry Liaison Office:

Industry liaison offices are another important component of research universities. They serve as the bridge between academia and industry, facilitating partnerships and collaborations between researchers and industry partners. Its roles and responsibilities include:

1. **Foster industry partnerships:** Industry liaison offices work to establish partnerships between researchers and industry partners, leveraging their expertise to support the development of new products and technologies.
2. **Transfer research into practical applications:** Industry liaison offices help researchers translate their findings into practical applications, such as new products, services, and technologies.
3. **Promote innovation:** Industry liaison offices promote innovation by supporting the development of new products and services and fostering partnerships between academia and industry.

iv. Fundraising Office:

Fundraising offices play a critical role in securing the financial resources necessary to support research initiatives, students, and the overall mission of the university. The primary responsibilities of fundraising offices include:

1. **Soliciting donations:** Fundraising offices solicit donations from individuals (HNIs), corporations, and foundations, raising the

necessary funds to support research, students, and university programs.

2. **Stewardship:** Fundraising offices are responsible for stewarding donations, ensuring that they are used in accordance with the donor's wishes and for the purpose for which they were given.
3. **Relationships:** Fundraising offices are responsible for building and maintaining relationships with donors, providing updates on the impact of their gifts, and engaging them in the life of the university.
4. **Alumni networking:** Creating and maintaining relationships with Alumni, curating outreach programs, alumni meet, and fundraising events.