Proposal for

Entrepreneurship, Employability and Innovation (EEI) Hub

PANJAB UNIVERSITY, CHANDIGARH

Under

Component – 10, RUSA – 2.0

Submitted to

RUSA – STATE PROJECT DIRECTORATE, CHANDIGARH

by

PANJAB UNIVERSITY
SECTOR 14, CHANDIGARH – 160 014

www.puchd.ac.in

Proposal for

Entrepreneurship, Employability and Innovation (EEI) Hub

at PANJAB UNIVERSITY, CHANDIGARH

Submitted to

Ministry of Human Resource and Development

Government of INDIA

under

COMPONENT-10: RUSA 2.0

State Project Director (RUSA)

Department of Higher Education, U.T., Chandigarh

Proposal for
Entrepreneurship, Employability and Innovation (EEI) Hub
Panjab University, Chandigarh

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1. BASELINE DATA - PARTICULARS OF PANJAB UNIVERSITY

1.	Name of the University (As given in list u/s 12(B) of UGC Act)	Panjab University
2.	Full Postal Address	Panjab University, Sector-14, Chandigarh-160014
3.	Name of the Affiliating University	Panjab University
4.	Whether covered under Section 2(f) and 12(B) of the UGC Act, 1956	Yes
5.	Whether Autonomous	Yes
6.	Whether recognized as College with Potential for Excellence / University with Potential for Excellence	No
7.	NAAC / NBA Accreditation details. (Date, Grade, CGPA, validity)	PU is NAAC accredited A Grade (June, 2015) with score 3.35 on a 4 point scale
8.	Whether the institution is Aided and receiving General Development Assistance from UGC or self financing?	Aided and receiving General Development Assistance from UGC
9.	Name, designation and Contact details (Telephone/fax/mobile/email) of Website URL of the University Head of the Institution.	Prof. Raj Kumar, Vice Chancellor, Panjab University, Chandigarh-160014 Telephone: +91-172-254 1945 Fax: +91-172-254 1022 E-mail: vc@pu.ac.in
10.	Any other relevant information college/University may like to provide	PU Campus is located in Sector 14 and Sector 25 of Chandigarh, and covering an area of around 550 acres. The Campus at Chandigarh accommodates 78 Departments, 15 Centers/Chairs for teaching and research and a University School of Open Learning (USOL) to cater students through distance learning. Currently, 194 degree colleges, 6 Constituent Colleges, 4 Regional Centers in Punjab, Government Medical College at Sector-32, Chandigarh, and Chandigarh College of Engineering & Technology at Sector-26, are affiliated to PU. The University's commitment to a research-led education means that our students are exposed to leaders in their discipline, to the latest knowledge & ideas, and to an education that emphasizes analytical skills and creative thinking, and gives students an opportunity to develop a broad range of skills by engaging in personal research (further details in Section #2).

2. PANJAB UNIVERSITY IN PURSUIT OF EXCELLENCE

The Panjab University (PU), originally established in Lahore in 1882, has been delivering high quality, nationally/Internationally recognized education based on a foundation of excellence in research and scholarship for the last many decades. It has the honor of being one of the first four universities established during the British rule and was the first teaching university in the country.

At present, the Panjab University Campus is located in Sector 14 and Sector 25 of Chandigarh, and covering an area of around 550 acres. The Campus at Chandigarh accommodates 78 Departments, 15 Centers/Chairs for teaching and research and a University School of Open Learning (USOL) to cater students through distance learning. Currently, 188 degree colleges, 6 Constituent Colleges, 4 Regional Centers in Punjab, Government Medical College at Sector-32, Chandigarh, and Chandigarh College of Engineering & Technology at Sector-26, are affiliated to Panjab University. The University School of Open Learning, a multi-disciplinary department, caters to more than 22,000 distance learners and offers 23 traditional and job oriented courses. Currently, the Panjab University has 188 affiliated colleges spread over Punjab and having one rural Regional Centre at Kauni, and 3 Regional Centres at Muktsar, Ludhiana and Hoshiarpur. University has 6 Constituent Colleges located at Sikhwala (Sri Muktsar Sahib), Balachaur (SBS Nagar), Nihalsingh Wala (Moga), Dharamkot (Moga), Mokham Khan Wala (Ferozepur) and Guru Harsahai (Ferozepur). Government Medical College at Sector 32, Chandigarh, and Chandigarh College of Engineering & Technology, Sector 26, are also affiliated to Panjab University.

The University is committed to attract and support the best students and faculty, who excel at teaching and research. By virtue of its history, experience, achievements and philosophy, the Panjab University has a national character. The Panjab University promotes learning keeping in view the concern for Access, Equity Quality Relevance and Value Based Education. The University also promotes a dynamic, decentralized and transparent Governance System. The Departments of Physics, Chemistry, Mathematics, Geology, Zoology and University Institute of Pharmaceutical Sciences are some of the most prestigious departments, which cater excellence in their respective domains.

Regional Sophisticated Instrumentation Centre, Energy Research Centre, Centre for the Study of Social Exclusion and Inclusive Policy, Centre for IAS and Other Competitive Examinations, Centre for Industry Institute Partnership Programme, Centre for Medical Physics, Centre for Study of Mid-West and Central Asia, Centre for the Study of Geopolitics, and Centre for Swami Vivekananda Studies are other facilitating centres providing services at the University. Panjab University attracts brilliant students to train them by highly talented and innovative teachers to compete in facing global challenges. The university promotes a dynamic, decentralized and transparent Governance System.

The layout of the University Campus has been conceived to meet the academic, administrative, sports/recreational, residential and other requirements of a growing University. The University Campus has 8 hostels for boys and 10 hostels for girls to accommodate nearly 7000 students. There also exists a Working Women's Hostel, one International Hostel and 2 Sports hostels. Apart from Library in each Department, the AC Joshi Main Library is housed in a centrally located 5 storey building and contains 6 Lac books. It has a seating capacity of 500 readers.

Dr. A.P.J. Abdul Kalam Computer Centre of the University provides Fibre Optic high speed network and Wi-Fi connectivity to all the Departments, Centres, Hostels and Administrative Block. Apart from the conventional Sports grounds and facilities, the University has an air-conditioned gymnasium hall, an international level Swimming Pool, Diving Pool, One Hockey Astroturf, an international standard 10 meter shooting range. University owns Community radio station, Radio Jyotirgamaya FM 91.2 MHz. A cluster of prominent buildings like the Gandhi Bhawan, Student Centre, the University Library and the University Administrative Block are also considered part of the architectural heritage of Chandigarh.

The university provides a unique and vibrant student experience that adds significant value to students' personal development, and we are proud to have generations of leaders, decision-makers, innovators and entrepreneurs. The university has the honour of various illustrious alumni like Professor Hargobind Khurna, Noble laureate; Professor S.S. Bhatnagar (First Director General of CSIR, First Chairman of UGC & Founder president of INSA); Dr. Manmohan Singh and Shri Inder Kumar Gujral; Former Prime-Ministers of India, Professor Yash Pal (Eminent Physicist and Former Chairman UGC); Shri Ashok Thakur and Shri Jagdish Singh Khehar (former Chief Justice of India); Smt. Sushma Swaraj

(Former Union Minister); Shri Pawan Kumar Bansal (Former Member of Parliament and Minister in Lok Sabha) and Smt. Kiron Kher (Member of Parliament) among several others.

Panjab University in Pursuit of excellence:

Panjab University is scoring almost equal to Central universities like JNU, Hyderabad, Delhi University in academic world in rankings.

- PU is NAAC accredited A Grade with score 3.35 out of 4;
- Ranked First in India as per US News Best Global Universities Rankings 2016-17;
- Ranked 601-800 in the THE World Ranking (2017/18);
- 135 in BRICS Ranking, and 121-130 in the 251 Asian University Ranking;
- 4th Among Universities and 15th Among Institutes of Higher Education;
- PU got Award for Excellence in Collaborative Research in 2017;
- Ranked 21st in the University category and 34th in the overall institutions of Higher Education by NIRF 2019;
- 9th ranked in Atal ranking Institutions on Innovation Achievements (ARIIA) 2019 rankings and placed 3rd among Indian Universities.
- PU ranked 2nd in US news rankings 2018 among Indian universities and Department of Physics, PU, ranked numero uno.
- Ranked 7th in the country for 2017 Swachhata Ranking conducted by the MHRD;
- Recipient of PURSE grant for Research - among top 3 research Universities of India.
- Recipient of prestigious Maulana Abul Kalam Azad (MAKA) trophy for beat all-round performance in sports among Indian varsities for the year 2018-2019.
- 'University Institute of Pharmaceutical Sciences' (UIPS) secured 2nd place amongst Pharmacy Institutions of the country.
- Department of Physics of PU has been declared top ranking department in India by US ranking.

Panjab University has established Meta Institute 'Chandigarh Region Innovation and Knowledge Cluster' (CRIKC), a cluster of about 30 institution of higher education and research in the Chandigarh region for promotion of excellence in research. Also, it has established 'Policy Research Centre' (PRC) through DST to develop policy frame work for any Govt. initiatives for promoting Industry-Academia interface. PU has been selected by

DST as one of the nodal centres in the region for establishing the Technology Enabling Centre (TEC). The Ministry of HRD, Govt. of India, has selected PU as a node connected to National knowledge Commission (NKN) with high network bandwidth. Consolidating, its wealth of International collaborations, PU has entered into 15 MOUs related to Research and Training with Industry/HEI of National/International repute such as Nottingham Trent University (NTU) and University of Wolverhampton from United Kingdom.

3. ON-GOING COURSES AT PANJAB UNIVERSITY

(i) Faculty of Science

Panjab University is successfully running the Science courses under Honours School System since inception in 1918-1919. It is a unique feature in itself and among all Indian universities. After completing 10+2 Schooling, a student is eligible to take admission in a Honours School Course at Panjab University. The undergraduate students are taught by highly talented and inventive Faculty. Until 1991, the M.Sc. (Hons. School) was a 4 years integrated degree course where the student used to join the 3 years (6 Semesters) B.Sc. (Hons. School) Course after 10+2 class and continues for 1 year (2 Semesters) M. Sc. (Hons. School) Course. In 1991, the duration of M.Sc. (Hons. School) Course was extended to 5 years with three years (6 semesters) of B.Sc. (Hons. school) followed by two years (4 semesters) of M.Sc. (Hons. school). In 2016, the Choice Based Credit System (CBCS) of University Grants Commission (UGC) was adopted in B.Sc. (Hons.) under the framework of Honours School System. It is an improvised version of UGC-CBCS with 152 credits and maintains the plus points of the existing Honours School courses. The B.Sc. (Hons.) Syllabi consist of 14 Core Courses, 4 Discipline Specific Elective (DSE) and 6 Generic Elective (GE) Courses having both the Theory and Practical Components. Ability Enhancement Courses (AEC) and Skill Enhancement Courses (SEC) courses (2 each) constitute the integral part of the Curricula to provide skill-based knowledge and promote entrepreneurship qualities through field work and hands-on training. The improvised version of CBCS adopted by PU, the students are allowed to choose Generic Elective subject from the various available science subjects. The UGC-CBCS system has been implemented in M.Sc. (Hons. School) courses from the academic session 2019-2020 with 80 Credits. In 2019, the Panjab University is successfully completing 100 years of Honours School courses. At present,

Panjab University is running Bachelor of Science (Honours) and Master of Science degrees under the Framework of Honours School System in the Departments of

Chemistry	Geology	Biochemistry
Mathematics	Anthropology	Biophysics
Computer Science	Botany	Biotechnology
Physics, Physics (specialization in Electronics)	Zoology	Microbiology

In addition, the Panjab University is running Master's courses in the following Science Departments

Medical Physics	Bioinformatics	Fashion Technology
Nuclear Medicine	Statistics	Public Health
Nano Science and Nano Technology	Computer Science	Forensic Science
Microbial Biotechnology		Environmental Studies

(ii) Faculty of Pharmaceutical Sciences

University Institute of Pharmaceutical Sciences is running B. Pharma Courses and M.Pharma Courses.

(iii) Faculty of Engineering & Technology

University Institute of Engineering & Technology (UIET)

Dr. S.S.B. University Institute of Chemical Engineering and Technology (SSBUICET)

UIET is running Bachelor's and Master's courses in Information Technology, Computer Science and Engineering, Electronics and Communication Engineering, Electrical and Electronics Engineering, Mechanical Engineering and Biotechnology.

SSBUICET is running Bachelor's and Master's courses in Chemical Engineering and Food Technology.

Both the institutes are TEQUIP I and II funded and running various events under these schemes to make the students employable apart from routine skill development courses as part of curricula.

(iv) Faculty of Arts

Panjab University is running Master's degrees in the following departments. Department of Economics is running UG and PG courses. Institute of Social Science Education and Research is running 5 years integrated course in Social Sciences.

Department of Ancient Indian History, Culture & Archaeology
Department of Philosophy
Department of Economics
Department of Gandhian and Peace Studies
Department of Geography
Department of History
Department of Library & Information Science
Department of Political Science
Department of Defence & National Security Studies
Department cum Centre for Women's Studies & Development
Department of Public Administration
Department of Sociology
School of Communication Studies
Centre for Social Work
Centre for Police Administration
Centre for Human Rights & Duties
Department of Psychology
Centre for Study of Social Exclusion and Inclusive Policy

(v) Faculty of Languages

Department of Chinese & Tibetan Languages
Department of Dayanand Chair of Vedic Studies
Department of English & Cultural Studies
Department of French & Francophone Studies
Department of German
Department of Hindi
School of Punjabi Studies
Department of Russian
Department of Sanskrit
Department of Urdu & Persian
Guru Ravi Das Chair for Sant Sahitya Studies

(vi) Faculty of Education

Panjab University is running Master's degrees in the following departments:

Department of Community Education & Disability Studies
Department of Education
Department of Physical Education

(vii) Faculty of Design and Fine Arts

Department of Art History & Visual Arts

Department of Indian Theatre

Department of Music

The departments are running UG and PG Courses

(viii) Faculty of Business Management and Commerce

University Business School (UBS)

University Institute of Applied Management Sciences (UIAMS)

UBS is running Master of Commerce (Honours), Master of Business Administration (Human Resource), Master of Business Administration (International Business), Master of Business Administration for Entrepreneurship, Master of Business Administration for Executives.

UIAMS is running MBA Courses in Infrastructural Management, IT and Telecommunication Management, Pharmaceutical Management, and Retail Management.

(ix) Faculty of Laws

Department of Laws is running Bachelor of Laws and Master of Laws degree Courses.

University Institute of Legal Studies (UILS)

UILS is running B. Com LL.B. (Hons.) 5 years Integrated Course, B.A. LL.B (Hons.) 5 years Integrated Course, Master of Laws and Master of Laws (Evening Course).

4. VISION OF THE UNIVERSITY:

Vision of Panjab University is summarized in ANNEXURE I

5. PROJECT PROPOSAL

Establishment of Entrepreneurship, Employability and Innovation (PU-EEI) Hub

Rapid global economic changes, academic and research institutions are ever more faced with demand to continuously improve and skill students. Advances in technology and globalization have led to an increasing diversification of demand for expertise produced by Universities and Research Institutions in the form of human capital, as well as in practical research and innovation outcomes. Such efforts of strengthening skill, innovation and entrepreneurship components in teaching courses are need of the day for progress of the country. Entrepreneurs convert ideas into economic opportunities through innovations which are considered to be major source of competitiveness in an increasingly globalizing world economy. Entrepreneurship, Employability and Innovation are increasingly recognized as important drivers of economic growth, productivity and employment, and as a key aspect of economic dynamism. Key areas of entrepreneurship education are embedding Entrepreneurship into Education and Training and Engagement with Industry. Panjab University is committed to harness the creative, disruptive promise of innovation for the Chandigarh city and for the country. The university plans to play its part in the renewal of society by providing the best educational environment for learning the skills of business and entrepreneurship, and by working with the research, creative and enterprise communities in a partnership for innovation.

Panjab University plans to establish a new hub of Entrepreneurship, Employability and Innovation, which will embed a culture of innovation and entrepreneurship right across the University. This new hub will permeate the activities of PU's 78 teaching and research departments and a set of research centers. Through this new hub, PU is committed to harness the creative, disruptive promise of innovation for Chandigarh, State and for the Country. PU wants to play part in the renewal of society and the economy by providing the best educational environment for learning the skills of business and entrepreneurship, and by working with the research, creative and enterprise communities in a partnership for innovation. This should be underpinned by an enabling policy mix, with Government and PU working together for India's future. Franklin D. Roosevelt once said, "We cannot always build the future for our youth, but we can build our youth for the future." Offering opportunities for students to participate in performing arts activities is an excellent way to do so.

PROJECT AIM:

The project aims to provide quality education, innovative educational environment, opportunities and experiences to students of Undergraduate and Postgraduate Courses at Panjab University that will enable them to innovate and develop products/techniques and emerge as self-motivated and highly competent Entrepreneurs to serve the society.

Under the present proposal, it is planned to

(a) establish **Panjab University Incubation Centre (PU-IC)**, which will serve as a bridge to translate innovations into novel products and improved analytical techniques.

(a) establish Panjab University Skill Development Hubs (PU-SDH) equipped with facilities for imparting (i) Scientific and Technical-skill training to the students in the fields of Life Sciences, Bio-Medical Sciences, Physical and Chemical Sciences; and (ii) Soft-skill training to the students from Sciences, Humanities, Languages and Performing Arts. The aim is to develop necessary mechanisms to bridge Skill Gaps and make the students capable of translate innovations into novel products.

The present proposal is about forging an entrepreneurial campus, with a focus on bringing forward a new generation of Skilled Graduates, who know how to create new jobs as well as to get them. The Entrepreneurship, Employability and Innovation efforts will underpin a concerted mission to deliver economic, cultural and social value founded on research and scholarship, as well as the education of future generations of entrepreneurial -minded graduates. As the Panjab University is located in the heart of Chandigarh city, it is a natural 'creative incubator' where the city's 'tech', cultural and scientific ecosystems merge. The efforts will act as a catalyst for high-tech and creative clusters by feeding through a talent pool and stimulating knowledge transfer. We aim to make best advantage of this hub for India, helping Chandigarh to position itself among the world's most innovation-intensive cities.

OBJECTIVES OF PROPOSAL:

(i) Provide world-class education that values independence of thought, imparting skills and motivation to be the entrepreneurs and innovators of the future.

(ii) Inclusion of Innovative Entrepreneurship as a component of compulsory study for students, similar to the integration of environment education in the curriculum at the UG level so as to foster innovative entrepreneurship among them.

(iii) Motivate students to think differently and take risks in their pursuit of entrepreneurship. Promote a new approach to education, of which innovation will be a centre piece.

(iv) Nurture the undergraduate, postgraduate and research students at PU campus, and turn good ideas into sustainable jobs. To take initiatives those envisage taking students on industry visits and facilitate them to generate ideas, and arrive at innovative products.

(v) The students will be motivated to contribute their innovations in the direction of – Applications of FPGA, Microcontroller and electronic transducers for Smart city concept, Water purification and Water management, Toilet design and disposal of human excreta, Agriculture waste for biofertilisers etc.

(vi) Promote Woman Entrepreneurship.

(vii) Provide spin-outs and knowledge transfer and knowledge-based services to industry.

(viii) Invite leading scientists and industrialists who have established themselves at the forefront of research and development in their fields, to stimulate students for innovation.

(ix) The undergraduate and post-graduate students from the colleges can also make use of these training programmes during vacation time to be at par with the students enrolled with our University.

(x) To identify and train the untrained manpower that is already in the trade so that they can efficiently enhance their overall dexterity needed in their profession.

(xi) To gather and analyze information in the local, regional and national contexts to explore its relevance and utility for the students in their careers, placements and on-job-training.

(xii) To organize programmes, seminars and guidance workshops for informing students about the emerging professional trends and events, career options, job profiles, leadership roles, entrepreneurship, market needs and risks and implementation of national socio-economic policies and to impart training in soft skills.

(xiii) To promote entrepreneurship and risk taking, and support it through incubation. To promote healthy outlook and positive attitudes towards nation building.

(xiv) To impart soft-skills to students, which will help the students in choosing a lustrous future career, overcome/manage their weaknesses and give best output.

(xv) To dream big and follow up the dreams with action, determination and perseverance.

(xvi) To provide a learning environment for students at their pace, time, suitability and ability.

(xvii) To fit research and entrepreneurship together. It is important to be an academician and an entrepreneur, together.

(xviii) Students will be made to excel at identifying business opportunities and staying focused on opportunities, not problems, learning from their mistakes, action-oriented. They like to get things done and love to turn their ideas into reality. to seek outside help to supplement their expertise

5A. Establishing Panjab University Incubation Centre (PU-IC)

Panjab University abodes vast range of Academic Departments covering Physical, Chemical and Biomedical Sciences, Engineering and Humanities and runs a variety of teaching and research programmes. The university has a reputed Business School and a Department in Applied Management Sciences, that closely interact with the technology departments to give the desired perspective to students for taking knowledge to market place. The University has a well-described Intellectual Property Right Policy and Rules for Consultancy that are administered through a Centre for Industry Institute Partnership Programme (CIIPP). Recently, the DST has established a Centre for Policy Research at PU, and the DBT (BIRAC) has supported PU as member of a University Innovation Cluster. A cluster of research and teaching institutes in Chandigarh region further synergizes the ecosystem. Several such institutes, supported by the central and state governments and industry have been formally brought together on a common platform, called Chandigarh Research and Innovation Knowledge Cluster (CRIKC, http://crikc.puchd.ac.in/). CRIKC endeavors to foster and sustain close academic alliances between institutions of higher education and research in the Chandigarh region, to facilitate innovation and knowledge creation and for achieving excellence in all academic spheres without compromising in any manner the autonomy of the participating institutions.

List of CRIKC institutes:

1. Panjab University, Chandigarh
2. Postgraduate Institute of Medical Education & Research (PGIMER), Chandigarh
3. Institute of Microbial Technology (IMTECH), Chandigarh
4. National Institute of Pharmaceutical Education and Research (NIPER) Mohali
5. Government Medical College & Hospital (GMCH), Chandigarh
6. Institute of Nano Science and Technology (INST), Mohali

7. National Agri-Food Biotechnology Institute (NABI), Mohali
8. Center of Innovative and Applied Bioprocessing (CIAB), Mohali
9. Indian Institute of Science Education & Research (IISER) Mohali
10. Indian Institute of Technology Ropar (IIT Ropar), Rupnagar
11. Centre for Research in Rural and Industrial Development (CRRID), Chandigarh
12. CSIR-Central Scientific Instruments Organization (CSIR-CSIO), Chandigarh
13. National Institute of Technical Teachers Training & Research (NITTR), Chandigarh
14. Terminal Ballistics Research Laboratory (TBRL, DRDO), Chandigarh
15. Snow & Avalanche Study Establishment (SASE, DRDO), Chandigarh
16. Indian School of Business (ISB), Mohali
17. PEC (Deemed University), Chandigarh
18. Centre for Development of Advanced Computing (C-DAC), Mohali
19. Defense Institute of High Altitude Research (DIHAR, DRDO), Chandigarh
20. Semi-Conductor Laboratory (SCL), Department of Space, Govt. of India, Mohali
21. Institute of Development and Communication (IDC), Chandigarh

With these complementing components and technical expertise, the university has evolved a techno-entrepreneurship sensitized environment in Chandigarh region.

Startup Culture at Panjab University:

The Department of Biotechnology (DBT) under the Biotechnology Industry Research Assistance Council (BIRAC) programme has supported PU as member of a University Innovation Cluster (UIC) to foster a culture of applied research and need-oriented (societal or industry) innovation and techno-entrepreneurship among young researchers. It supports for bioincubation which is a crucial determinant for developing a holistic ecosystem of support and network for biotech enterprises. Presently, UIC at Panjab University is operational and working with more than 10 Postdoctoral and postgraduates Innovation Fellows to facilitate their journey towards entrepreneurship. Panjab University under the BioNEST (Bio incubation Nurturing Entrepreneurship for Scaling Technologies) and eYUVA (Encouraging Youth for Undertaking Innovative Research through Vibrant Acceleration) is working on Proposals under Secondary Agriculture/ Food Processing Entrepreneurial Network (Saen) In Punjab.

Startups at University Institute of Engineering Technology, PU : University Institute of Engineering and Technology (UIET) is the engineering department at PU, established in 2002. Students of UIET are trained for entrepreneurial skills through extensive in-house projects, and jointly with industry. UIET students have established Entrepreneurship Development Cell (EDC) that organizes panel-discussions, workshops, camps, competitions etc to promote the spirit of entrepreneurship. “Udyami”, a Panjab University entrepreneurship summit is organised by EDC to bring together entrepreneurs, students, industrialists and investors and develop ideas for

startups. The Summit includes competitions designed to test and enhance the entrepreneurial skills, workshops and panel discussions covering major fields of entrepreneurship. More than 50 start-up companies have successfully rolled out of UIET.

University Institute of Pharmaceutical Sciences (UIPS) is a premier institution of Pharmaceutical Education and Research in the country. In its travelogue for a period of 75 years, the institute crossed multiple milestones and continues to head ahead towards the well-defined goals. The institute is known for its very high value research on steroids which yielded a well-known molecule Candocuronium iodide, for neuromuscular blocking agent. Commercialization of indigenously developed pile medicine, 'Thank OD' by Panacea Biotec Pvt. Ltd., is also a rare distinction for any academic institution. The department has taken a lead on varied new pharma-frontiers which include search for new pharmaceutical entities (NCEs) using molecular modeling approach, synthesis of novel and smart polymers, herbal drug technology and standardization, neuropsychopharmacology, receptor pharmacology and development of innovative formulations, newer and intelligent drug delivery systems and other upcoming nanotech-carriers for transportation of bio-molecules. The institute is fully equipped with the modern day facilities and instruments, which is further strengthened by the super-advanced sophisticated instruments in the adjoining departments on the campus. They include transmission and scanning electronic microscopes, X- Ray diffraction, ultra centrifuge, Freeze-dryer, IR, NMR, HPTLC, CHN analyzer, Microdialyses, Sonicater and Micro calorimeter. Unique Accomplishments of the UIPS include discovery of 3 New molecules, transferring of 7 Technologies, 4 Products in market and 86 Patents.

Apart from this, Faculty members from various departments are working on design and development of nanosensor based platforms for multiplexed detection of contaminant in water and food, novel nanostructured pharmaceutical products for burns and wounds, atopic dermatitis, carriers for anticancer agents.

OBJECTIVES

(i) Creation of technology incubation and innovation platform
(ii) train and hone the potential of next generation of highly skilled students to drive product development
(iii) identifying promising innovations and to provide platforms to develop new products and technologies with ultimate aim of technology transfers
(iv) To provide a platform to industry for sophisticated studies through sharing of resources and intellect

Self-sustainability of PU-IC - Revenue generation through consultancy, technology transfer and royalty of developed products and processes to make PU-IC self-sustainable.

In the present proposal, Panjab University Incubation Centre aims

(i) to initiate 15-20 startups every year in various disciplines with initial funding up to 5 Lac in first year with extendable funding up to 10 Lacs for a period of 2 years.

(ii) To invite Industrial partners to invest to start development activities of their interest at PU-IC with involvement of students and Faculty from PU campus.

(iii) Further, to promote the future incubator activities among students, it is important to invest in skill development of the Students from Science and Humanities streams. The skill developments courses have been introduced in various B.Sc. (Hons.) courses at Panjab University. These are also being introduces at postgraduation levels. It is planned to establish Panjab University Skill Development Centre (PU-SDC). The students from engineering streams are already having skill courses as part of their curricula.

First of all, Governing Body/Project Allocation Committee of PU-**Incubation Centre** (PU-IC) will be constituted. Areas of community needs and market potential will be identified by PU-**Incubation Centre** (PU-IC) through a process of due diligence to invite ideas, available leads and business plans suitable for promoting Startup companies.

The startups will be promoted by PU-IC:

(i) Startup projects related to Areas of community needs and market potential will be identified by the Governing Body of PU-Incubation Centre (PU-IC). Applications will be invited from the interested incubators for possible product solutions alongwith the funding requirements and timeframe.

(ii) Students will be asked to submit the Start up projects of their own related to Areas of community needs and market potential alongwith the funding requirements and timeframe.

(iii) School and College student level small idea based Start Up projects will be selected through small prize awards for encouragement.

(iv) Development projects from the industry will also be entertained at reasonable sponsorship amounts.

The selected proposals will be supported by an initial soft loan from PU-IC for a period of upto two year under suitable MOU, to establish proof of concept in-house at PU-IC. A faculty member will be allocated as Mentor. After proof of concept, PU-IC will establish a system for

selection of Start Ups to be taken to higher level of support with assistance from angel investors. In all cases, suitable Agreements and processes will be evolved to proportionately share the gains and risks. PU-IC may develop a corpus by keeping certain proportion of the gains and the rest will be distributed to the teams and startups. A detailed process will be developed by the Governing Body of **PU-Incubation Centre** for due diligence to promote innovative ideas and leads to encourage the establishment of Startup companies. In long run, PU-IC will aim at becoming self-sustainable on the strength of membership contributions, consultations, training, technology fee, royalty etc.

A1. Budget for Incubation Projects/Soft loans to Start-Ups at PU-IC:

S.No.	Facility	Approximate area/cost
1.	20 incubation projects Level-I (each with average initial grant of ~Rs. 5.0 Lac/year) (Time duration 1-2 years)	**300.0 Lac/year**
2.	Living cost fellowship – minimum of about 50% of the incubation project cost or Rs. 15,000/- per month	**100.0 Lac/year**
Total Amount (After 2-3 years the Centre will start getting returns)		**400.0 Lac for 2 years**

The funding cost will also include living cost component (soft loan) for the fresh passing out students (30 x 1.5 Lac = 45 Lac/year). This amount will be given as soft loan against the business proposals duly approved by technically competent expert committees. Terms of soft loans will be evolved, aiming at nurturing the risks inherent to innovativeness, while also ensuring that the loans are returned to PU-IC, as per the Agreements. In due course of time, PU-IC should become self-sustainable.

In view of the high prospects of catalyzing and nurturing Startups based on engineering technologies, and the interplaying areas in pharmaceutical, biological, physical and chemical sciences, it is proposed to establish the office and core facilities of the Centre for Innovation Driven Entrepreneurship & Start-Ups on the campus of PU. Depending upon the level of available funds, and keeping the future needs to expand, a larger area may be identified in South Campus of PU. The Centre will immediately require building as per the following plan:

A2. Budget for Infrastructure/Building proposed at PU-IC:

S.No.	Facility	Approximate area
Panjab University Incubation Centre - Hubs for various disciplines		
1.	Incubation Hub/Labs. for Engineering and Physical Sciences based innovations (20 bays)	**4000 SFT**
2.	Incubation Hub/Labs. for Chemical Engineering and Sciences and Food processing based innovations (14 bays)	**2800 SFT**
3.	Incubation Hub/Labs. for Pharmaceutical and Biomedical/Life Sciences based innovations (14 bays)	**2800 SFT**
4.	Workshop Facilities (10 bays)	**2000 SFT**
5.	Seminar Hall (6 bays)	**1200 SFT**
6.	Office Rooms and Discussion Rooms (6 bays)	**1200 SFT**
	Grand Total	**14,000 SFT**

Estimated Total Cost (A) = Rs. 350.0 Lac (Includes the A.C. and Furniture)

A3. Facilities at Incubation Hub/Labs. of PU-IC:

S. No.	Facilities	Budget
(a)	Advanced Machining and Welding, Wood workshop, Electronics and Instrumentation workshop, Glass Smithy and Industrial Chemistry.	200.0 Lac
(b)	Computers and Software (Facilities will also be used for Mathematical skills and Communication skills)	100.0 Lac
(c)	Pharmaceutical Sciences (30 L) and Biomedical Sciences [Biochemistry, Microbiology, Biotechnology and Biophysics (20 L each)]	110.0 Lac
	Total Amount	410.0 Lac

FINAL BUDGET FOR PU-IC

S.No.	Description	
1.	Budget for Incubation Projects/Soft loans to Start-Ups	400.0 Lac
2.	Facilities at Incubation Hub/Labs. of PU-IC	410.0 Lac
3.	Capital cost for Building (18,000 sq ft covered area) including power back up, AC, furniture etc	350.0 Lac
4.	Manpower : (i) Director, office & technical staff; Honorarium for expert consultations from concept to business plan; and (ii) Faculty/Manpower for skill development among students to train them for incubation activities	200.0 Lac
5.	Innovation competitions, Workshops, training, Advertisement etc.	20.0 Lac
	Total Amount =	1380.0 Lac

****Additional manpower required for training, if any, will be provided by PU.**

The skill development programmes and Laboratories will be run by the respective Science departments. Main PU-EEI Hub building will be constructed between the Department of Physics and Chemistry, and the other parts will be constructed as per the convenience of students from respective streams. Skill development Workshops for a discipline in the EEI Hub will be responsibility of the respective departments. Computer Laboratory will be maintained by the Department of Computer Science and Applications.

5B. The Panjab University - Skill Development Centre (PU-SDC)

The Panjab University - Skill Development Centre (PU-SDC) aims to promote skill development of the students and facilitating Industry exposure of Student/Faculty and also to inculcate among students the skill which can be the key to competitiveness in the corporate world.

Objectives of Panjab University Skill Development Centre (PU-SDC):

(i) Facilitate students understand their latent skill.

(ii) Align the skill of students with the career of their choice.

(iii) Map the skill of the students with the changing paradigm of employment.

(v) Regular visit to industry in small of groups of 2-3 students followed by intensive presentations and discussions.

(iv) Promote regulars visit of students on individual/small group basis of their own.

(v) Promote Industry Linkage of Faculty through joint workshop/ visits.

(vi) Inculcate a spirit of Entrepreneurship and to enhance creativity and innovation among students.

B1. 'Scientific and Technical Skills' development for the Undergraduate, Postgraduate and Research students – An initiative by Panjab University

India faces chronic on-going and severe skills shortage in Science and Technology qualified workers, a situation that is only going to worsen as the nation aims to rebalance its economy towards innovative and technology-driven industries. The challenges are particularly pronounced in Sciences. There is an urgent necessity to uplift of quality of the Indian fabrication and designing sector. Mechanisms need to be developed and multiplied so that most of the ideas which are coming out from the young talented students can be shaped to reality with ease and within short period. The ideas from the youth need to be well-taken, funded financially and supported facility-wise for implementation. Presently, most of the ideas and suggestions generated by younger minds are lost on papers without any trial. Small and

medium scale industries are mainly demand-oriented and develop products for which technology already exists. In general, industry lacks research and development in our country. There is dearth of industrialists whose products depend on Research and development at root level. Young scientists and students inhibit in sharing their novel ideas with industrialists. To overcome this, Institution Innovation Council (IIC) and Entrepreneurship Development Cell (EDC) at Panjab University will be roped in for the much needed interaction among the students, scientists and the industrialists. Through EDC, students and scholars would be encouraged for setting up startups.

The present proposal is a step towards improving the quality of research and development in the Chandigarh region by delivering skill training to the undergraduate, graduate and research students in the universities and colleges. As the number of girl students has increased considerably in Science streams, the need of the hour is to boost their skill. This Skill Development Centre can work with the Institution Innovation Council (IIC) and the Entrepreneurship Development Cell (EDC) of Panjab University.

Skill development is a part of the newly introduced Choice-based Credit System Syllabi for the Undergraduate students of science Departments and the affiliated colleges of Panjab University. The proposal will also cater to the teaching curricula. Innovation of science researchers based on *Reduce, Reuse and Recycle* will be helpful in various sectors, *viz*., home automation, Renewable energy, Agriculture, Solid waste management, Environment, Conservation and Public health. The facilities will also train our research students who are participating in several international research collaborations in Experimental research fields.

The scheduled programes will be planned based on the requirement of the skills and the experience of our researchers. The following communities will be beneficiaries from the proposal:

(i) ***Undergraduate students:*** With the introduction of the new Choice-Based-Credit-based System, Skill development has become an integral part of the undergraduate studies in Physics, Chemistry, Geology and Life/Agriculture Sciences.

(ii) ***Post graduate students:*** The students who could not take advantage of these courses during their undergraduate studies can make use of these courses.

(iii) ***Researchers:*** As mentioned earlier, these courses will be beneficial in the Research and Development of new technologies that are relevant in the ongoing research programs of our University.

(iv) ***Students from local colleges:*** The undergraduate and post-graduate students can make use of these courses during vacation time to be at par with the students enrolled with our University.

(v) ***Identified untrained manpower that is already in the trade:*** As a pilot project we will initiate training personal who have some basic skills in certain techniques so that they can efficiently enhance their overall dexterity needed in their profession.

As far as the implementation of the proposed courses is concerned we will have mandatory sessions for the degree students and researchers from the university within the regular teaching programme. The college students will be trained during the summer, autumn and winter vacations. Students are required to undergo assessment of their development and training. The students will be awarded certificates on successful completion of the course.

B2. 'Soft-Skills' development for the Undergraduate, Postgraduate and Research students – An initiative by Panjab University

The soft skills training will teach the students to develop communication and listening skills, leadership skills, work ethics, interpersonal skills, emotional intelligence, and adaptability to work in a group. It will help the students in choosing a lustrous future career, overcome/manage their weaknesses and give best output. The **soft skills** training will add significantly to the student's academic degrees and give them an edge over their competitors for successful future. It will also make their job and career more rewarding and enjoyable.

Soft skills form an important component for the students from the various streams including the Science stream. It includes use of Computers for an individual's discipline/subject, Communication skills (Speaking and writing) in various languages, communicating to an individual, small gathering (a committee) or to large gathering (masses), Skills related to Social Sciences, and Performing Arts.

Intellectual Property Right: The main mandate of Higher Education Institutes (HEIs) has been to impart quality knowledge to young minds. However, in the current era, HEIs are being asked to add another responsibility i.e. generating innovations for bringing revenues for the individual/s and the institute/s. To protect the ingenuity of the mind/s i.e. innovation, the governments provide rights, called as Intellectual Property Rights (IPR), to the inventors for a certain period. For the hubs of innovations, it has become imperative to educate researchers/students about Intellectual Property Right (IPR). The students will be educated about the importance of IPR, a

brief about various types of IPR, Indian government organizations dealing with IPR, international treaties governing IPR, and insights into Patents and Copyrights. It will also cover multiple possibilities offered by IPR.

SKILL DEVELOPMENT PROGRAMMES IN VARIOUS DISCIPLINES:

SCIENTIFIC AND TECHNICAL SKILLS COMPONENT:

The skill development in these disciplines is mainly based on Scientific and Technical Skills. It is an important component for the students from various Science streams, *viz*., Physical Sciences, Chemical Sciences, Mathematical Sciences, Life Sciences and Biomedical Sciences.

Facilities for Skill Enhancement courses in various disciplines:

(i) Physical Sciences and Chemical Sciences (Common with PU-IC Facilities)	
Skill	**Machine**
Advanced machining	Lathe Machines, Flat Bed CNC Lathe Machines Drilling & Milling Machines, Manual Surface Grinding Machines, Various kinds of hand drill machines and cutters, Transformer winding machines and accessories
Welding technology	Arc welding, Oxyfuel welding, Resistance spot welding, Solid State welding and other state-of-art welding techniques
Wood workshop tools	Wood and Acrylic Wood Carving CNC Router, Wood shaper and other carpentry tools and accessories
Glass Smithy	Glass Blowing equipments and Gas systems and accessories
Electronics workshop	Measuring Instruments, Analogue circuits, Digital Kits, Softwares, PCB designing, Microcontrollers, FPGA, Transducers, Computer networking, Bioinstrumentation
Industrial Chemistry Workshop	Microwave, thermal Ovens, , Muffle furnace, Ball Milling machines, Vacuum driers, Water treatment units, Reverse Osmosis, Ozone treatment, Distillation plants, Crystallization/Purification Techniques, Oil extraction machines, High and Medium Pressure Liquid chromatography units, UV-Vis-IR spectrometer
Raw materials, Chemicals, Electronic Components and other accessories	
Total Amount = 200.0 Lac	

(ii) Pharmaceutical Sciences (Common with PU-IC Facilities)	
Skill	**Equipment**
(i) Skill to conduct Biochemical tests in patients (ii) Skill to prepare cosmetics & Pharmaceuticals on small scale (iii) Skill for organic farming of Medicinal products (iv) Basic training on Food & Water testing	Semi-autoanalyzer for Biochemicals, Blood Glucose Monitors, Blood Pressure monitors, Haemocytometers, Cold Centrifuge, Tableting Machine, Colloid mill, Lipstick moulds, Weeder cum Tiller to substitute small tractor, Polyhouse (750-1000 sq. metre), Workstation to train students on various softwares related to drug information, ADRs, QSAR: Drug Delivery Software PK-PD, Conductivity meter, pH Meter, Spectrophotometer, Turbidity meter
	Total Amount = 30.0 Lac

BIOMEDICAL SCIENCES (Common with PU-IC Facilities)	
(a) BIOCHEMISTRY	
Skills in Clinical Biochemistry : measurements of various disease specific parameters in Blood *Skills in Nutritional Biochemistry* : Examining food quality and possible adulteration. measurements of proteins, carbohydrates, fats, minerals and vitamins, Cell staining, Counting and analysis (Inverted Microscope) *Skills in immunology*: RNA / DNA isolation and visualization, Ion Exchange chromatography, Gel Filtration chromatography	Auto pipettes, pH meters, kits for measuring clinical parameters, Autoanalyser, Centrifuges, tests for carbohydrates and amino acids, Separation of amino acids by thin layer chromatography, Inverted Microscopes, Immunology experiments, RNA / DNA isolation and visualization, ELISA kits, Ion Exchange chromatography, Gel Filtration chromatography, Polyacrylamide (PAGE) gel electrophoresis, Refrigerator, Chemicals, Glassware and other consumables.
(b) MICROBIOLOGY	
'Skill development programmes' in (i) Fermentation Technology (ii) Molecular Biology (iii) Environmental Microbiology (iv) Medical Microbiology and Immunology	Laminar Air Flow systems, Cold Centrifuges, UV-VIS Spectrophotometer, Refrigerators, Hot air Ovens, Fumehood, Incubators, Autoclaves, Microscopes, Water Baths, Incubator Shakers, PCR Machine, ELISA Reader, Laboratory Fermenters, Chemicals/Glassware and other consumables
(c) BIOTECHNOLOGY	
'Skill development training programmes' in Biotechnology for the UG, PG students and teachers. (i) Plant cell culture and transformation, (ii) Fermentation Technology (iii) Bioinformatics (iv) Animal cell culture	pH meters, Laminar flow, Auto Claves, Auto pipettes, Midi Protein and DNA gel electrophoresis apparatus and accessories, PCR Machines, Double beam spectrophotometer, Computers and Bioinformatics Software, Sonicators, Microscopes, Inverted microscopes, Fermentation Facility.
(d) BIOPHYSICS	
'Skill development training programmes' in Biophysics and Sports for the UG, PG students and teachers. (i) Bioinstrumentation (ii) Biophysical & Biochemical techniques (iii) Biomaterials & Biomechanics Skills	Bioinstrumentation: Electronics Workshop for skill in Physics will be used. Biophysical & Biochemical techniques - Computers and Designing Software, UV-VIS spectrophotometer, Nanodrop and accessories, Midi electrophoresis apparatus and accessories, Agarose gel apparatus, Lypholizer/Vacuum concentrators, pH meters, Laminar flow, Auto Claves, Auto pipettes, High speed cold centrifuge, PCR for semi-quantitative analysis, Elisa plate reader, Glassware and consumables.
	Total Amount = 20.0 Lac each = 80.0 Lac

<table>
<tr><td colspan="2">(vii) Botany</td></tr>
<tr><td>(a) Medicinal Botany</td><td></td></tr>
<tr><td>Experiments</td><td>Instruments</td></tr>
<tr><td>(i) Collection and identification of species.
(ii) Processing of the collected materials
(iii) Preparation of extracts in solvents
(iv) Screening of Phytochemicals
(v) Elemental analysis
(vi) GC-MS analysis of selected species</td><td>Compound Microscopes, Dissection Microscopes, Electronic Balances, Refrigerator, Soxhlet Apparatus, Water Baths, pH meters, Grinders, Plant materials drier (Microwave), Vacuum driers, Units for large scale processing for handling various kinds of leaves and seeds, Glassware, Chemicals</td></tr>
<tr><td colspan="2">Skill
➢ Identification of herbals on morphological basis.
➢ Screening of different secondary metabolites.
➢ Conservation of herbs of medicinal importance.
➢ Evaluation of randomly collected unknown herbal formulations.
➢ How to popularize the herbal medicines.</td></tr>
<tr><td colspan="2">(b) Mushroom Culture Technology</td></tr>
<tr><td>Experiments</td><td>Instruments</td></tr>
<tr><td>(i) Isolation of mushroom.
(ii) Spawn preparation/production.
(iii) Spawning and mushroom cultivation.
(iv) Harvesting & marketing of mushroom.</td><td>BOD Incubator (for incubation of cultures and spawn); Deep Freezer (for storage of culture and spawn); Laminar Flow (for inoculation); Autoclave (for sterilization); Air-conditionrs-2 (temperature maintenance of inoculated bags for mushroom production); Polyhouse with sprinkler system (for incubation of mushroom production bags); Air Dryer (for drying of mushroom); Polyethylene bag sealing machine; Wheat/paddy straw; Autoclavable Polyethylene bags; Minor equipments for culturing and chemicals.</td></tr>
<tr><td colspan="2">Skill
(i) Collection and Identification of mushroom.
(ii) Isolation and preservation of mushroom in pure form.
(iii) Preparation of spawn.
(iv) Preparation of compost.
(v) Spawning of compost.
(vi) Procedures to be adopted for inoculation for production of mushroom.
(vii) How to harvest and dry the mushroom for marketing.</td></tr>
<tr><td colspan="2">(c) Technologies for utilization of Agriculture Waste Management</td></tr>
<tr><td colspan="2">(d) Management Practices for Planting Ornamental Plants, handling and packaging</td></tr>
<tr><td colspan="2">Total Amount = 20.0 Lac</td></tr>
</table>

(viii) Zoology	
Apiculture	
Skill	**Equipment**
Artificial bee rearing (Apiary) Methods of extraction of honey Bee keeping equipment	Langstroth movable frame hives, Comb foundation mills, Nucleus hives, Demonstration hives, Honey extractors, Refrigerator (for storage of pollen), Smokers, Hive tools, Bee veils, Bee brushes, Queen excluders, Queen cages, Queen cell protectors, Dummy boards, Pollen traps, Sugar feeders, Queen gates, Propolis Zali, Uncapping knives and tools, Binocular stereo-zoom microscopes, Field binoculars, Field cameras
Fish Keeping	
Experiment	**Equipment**
To enhance the skills of students for fish/ ornamental fish keeping and maintenance	Establishment of a dedicated air-conditioned laboratory with different kinds of aquarium for keeping different fish with provision for water filters, aerators, heaters, decorative plants- both natural and artificial flow through hatchery system for the induced breeding of the fish with provision for stored water, Water testing kit, Fish feeders/nets etc.
	Total Amount = 20.0 Lac
(ix) Geology	
Skill	**Requirement**
Geological Fieldwork and Skill Development	Field Equipments : GPS units, Hammers, Bruntons and other accessories Lab Equipments : Stereo zoom and Petro graphic Microscopes, Magnetic stirrers and hot plates, Flame Photometer, UV Spectrophometer, Centrifuge
Skills in Mineralogy and Petrology	Mineral & Rock specimens, Crystal sets, Auto Sieve Shakers, Resistivity meters, Student's Polarisation and Stereozoom microscopes
Skills in Ground Water Hydrology	EH/PH meters, Analyses and reporting of ground water quality, Aquachem software, Water level contour maps and depth of water level maps, hydrographs, permeability in field, ground water flow, Hydraulic conductivity measurements, Ground water exploration, Rain water harvesting
Skills in Remote Sensing and GIS	Aerial Photo interpretation, identification of rocks and various landforms. DIP and GIS software, Digital image processing, analysis of satellite data and interpretation of various objects; Creation of FCC from raw data. Registration of satellite data with a toposheet of the area, Enhancing the satellite images; Generating NDVI images and other image ratio and its interpretation. DEM analysis: generating slope map, aspect map and drainage network map and its applications.
	Total Amount = 15.0 Lac

(x) Anthropology	
Skill	**Requirement**
Anthropology Fieldwork and Skill development	***Skills for Human Anatomy, Anthropometry and Human Growth*** Anthropometry sets (Holtain/ Harpenden), Sliding Calipers, Spreading Calipers, Skinfold Calipers, Tubular Craniophores, Mollison's Craniophores, Martin's Needles, Cubic Craniophores, Martin's Diagraphs, Goniometers (Mollison's), Mandibulometers, Auricular height needles, Osteometric Boards, Diaptographs, Parallalographs, Bone Stands, Palatometer, Weighing Machines, Head Spanner, Verificator, Eye-colour Charts, Hair colour chart, Skin colour chart, Portable field survey scales with baby-pan attached, Somatotype turntable (Harpenden) ***Skills for Ethnographic and Audio visual Studies*** DLP Projector, Ethnographic, Softwares for analysis of qualitative data, Laptops, HD compliant DVD Handycam with accessories, SLR Digital Camera with lenses and accessories, Quality Digital portable voice recorders, Sound/DVD playback equipment, LED TV, Software and computers for image processing, Soundproofing, High quality Boom mikes and camera stands
	Total Amount = 10.0 Lac

(xi) Geography	
(a) Disaster Preparedness and Response Skills i. Use of disaster response equipment ii. Vulnerability Assessment iii. Preparedness Assessment and Plan Formulation iv. Rescue and First Aid v. Evacuation Plans and Mock Drills	Evacuation and first aid equipment, GPS, Compass, Toposheets, Satellite imageries, Total station equipment, Clinometer, Laser distance meter, Voice recorders, Transcription software, Video recorders
(b) Field Surveying Skills i. Use of fieldwork equipment ii. Reading maps and toposheets iii. Processing and analysis of satellite imageries iv. Training in hiking and trekking	
c) Conducting Social Surveys Skills i. Social survey training ii. Perception and behaviour analysis iii. Preparing interview schedules and questionnaires iv. Conducting focus group discussions v. Data collection and analysis vi. Mapping and representation of data vii. Report writing	
	Total Amount = 10.0 Lac

B. SOFT SKILLS in VARIOUS DISCIPLINES:

(xii) Computer Science and Applications
Skills for various softwares - Statistical Software Tools, Mathematics Softwares and Documentation Softwares
Computer systems, Workstations and Servers, Software and Accessories, Softwares for incubation Centre, Intellectual Property Rights
Total Amount = 100.0 Lac
(xiii) Communication Skills
For the students of all the departments of university from Faculty of Languages, Faculty of Science, Faculty of Pharmaceutical Sciences, Faculty of Laws, Faculty of Arts
To enhance skills of students by conducting training programmes on various Indian and Foreign language communication (Speaking and Writing) skills, Interview Skills, Career Guidance, Counseling and Personality development for the UG, PG and Research students.
Computer Systems, Audio-Video recording, Software for different Indian and Foreign languages, Journalistic Skills, Interpretive Skills, Reporting Skills, Broadcasting Skills, Interviewing Skills, TV Anchor Skills, News casting.
Total Amount = 25.0 Lac
(xiv) Humanities/Social Sciences and Performing Arts
Self-awareness and the ability to identify own strengths and weaknesses (i) Organisational skills - project management and time management. (ii) Communication skills - (To include presentation and academic writing). Networking, team-building and team-working skills. (iii) Community Participation (understanding the philosophy, skills required and field experience through project work) (iv) Case Study skills: Comprehension, Analysis (including using statistical tools) and Reasoning Ethics (Through case-study method)
Academic tours/ Various students' related activities will be planned throughout the year. Quizzes, innovative ideas, working models *etc.*), special lectures, placement activities.
(a) Skills in Indian Theatre and Music Skills in Music, Acting, Playing, Dancing, Theater Director, Stage Manager, Audio and Video Recording, Advertising skills, Time Management and Organisation Skills. Innovations in dance, acting and music, Study of Music Therapy and Dance Therapy of living beings. **(b) Skills in Art History & Visual Arts** (i) Short-term courses in History of Art as well as in Appreciation of Art & Aesthetics (ii) To organize exhibitions, art camps and art workshops in the Museum of Fine Arts. (iii) To start an internship programme with the Museums and Art Galleries. (iv) To introduce the students to the different avenues in the field of art history & visual arts. (v) To organize get-togethers of artists and art historians, special lectures by scholars of eminence from related fields and interactive sessions within its premises. (vi) The Museum of Fine Arts with the permanent collection of modern Indian art is used an education aid for the students To conduct regular exhibitions of artists from the region, the country and also from overseas to provide the students an opportunity to interact with professionals in the field.
Total Amount = 20.0 Lac

Summary of budgetary requirements for part of skill enhancement courses including facilities that are common with PU-IC:

A. HARD-SKILL COMPONENT for Science disciplines		
(a)	Skill enhancement courses in Physics, Chemistry, Mathematics, Pharmaceutical and Bio-medical Sciences and Computers are already covered	Same as for PU-IC
(b)	Skill enhancement courses in Botany	20.0 Lac
(c)	Skill enhancement courses in Zoology	20.0 Lac
(d)	Skill enhancement course in Geography	10.0 Lac
(e)	Skill enhancement course in Geology	15.0 Lac
(f)	Skill enhancement course in Anthropology	10.0 Lac
B. SOFT-SKILL COMPONENT		
(f)	Skill enhancement courses in Communication (Individual, Committee and Masses) Skills Laboratory	25.0 Lac
(g)	Skill enhancement courses in Humanities and Social Sciences and Performing Arts	20.0 Lac
	Total Amount =	**120.0 Lac**

OVERALL SUMMARY OF BUDGET ALLOCATION FOR FACILITIES RELATED TO TECHNICAL-SKILL and SOFT-SKILL DEVELOPMENT COURSES		
(i)	Skill enhancement courses in Physics and Chemistry	200.0 Lac
(ii)	Skill enhancement course in Pharmaceutical Sciences	30.0 Lac
(iii)	Skill enhancement course in Biochemistry	20.0 Lac
(iv)	Skill enhancement courses in Microbiology	20.0 Lac
(v)	Skill enhancement courses in Biotechnology	20.0 Lac
(vi)	Skill enhancement courses in Biophysics	20.0 Lac
Facilities (i)-(vi) are common with PU-IC		
(vii)	Skill enhancement courses in Botany	20.0 Lac
(viii)	Skill enhancement courses in Zoology	20.0 Lac
(ix)	Skill enhancement course in Geology	15.0 Lac
(x)	Skill enhancement course in Geography	10.0 Lac
(xi)	Skill enhancement course in Anthropology	10.0 Lac
SOFT-SKILL COMPONENT		
(xii)	Skill enhancement courses in Computer Science & Applications	100.0 Lac
(xiii)	Communication Skills Laboratory	25.0 Lac
(xiv)	Skills for Students from Humanities, Social Sciences and Performing Arts	20.0 Lac

6. Summary of budgetary requirements for Panjab University Entrepreneurship, Employability and Innovation (PU-EEI) Hub: PU-IC and PU-SDC

S.No.	Component	Allocation
PU-Incubation Centre		
1.	Budget for Incubation Projects/Soft loans to Start-Ups (PU-IC)	400.0 Lac
2.	Facilities at Incubation Hub/Labs. of PU-IC for Engineering/Physical Sciences, Pharmaceutical Sciences and Biomedical Sciences**	410.0 Lac
3.	Capital cost for Building (18,000 sq ft covered area) including power back up, AC, furniture etc	350.0 Lac
4.	Manpower for PU-IC and PU-SDC (i) Director, office & technical staff; Honorarium for expert consultations from concept to business plan; and (ii) Faculty and Technical Manpower for skill development**	200.0 Lac
5.	Innovation competitions, Workshops, training, Advertisement etc.	20.0 Lac
PU-Skill Development Centre		
6.	Facilities for Hard Skill Enhancement courses in Botany, Zoology, Geology, Geography and Anthropology; and soft-skills (Communication, Humanities & Social Sciences), which are exclusively for skill development of students.	120.0 Lac
	Total Amount =	1500.0 Lac

****Facilities common with Skill Development Centre. Additional manpower required for training, if any, will be provided by PU.**

7. PROPOSED TWO YEAR IMPLEMENTATION PLAN

1.	First Year	(i) Building plan of Panjab University Incubation Centre & other Infrastructure for Botany and Zoology Skills will be finalized and the construction work of the building will be started. (ii) Incubation Projects for First year will be selected and started using space available in various departments. (iii) Equipments for PU-Incubation Centre and PU-Skill Development of various disciplines will be procured. (iv) Skill development in all the disciplines where equipment is not required will be started.
2.	Second Year	(i) Construction work of the Building of Panjab University Incubation Centre will be finished. (ii) Incubation Projects allotted in the First year will be evaluated for the next stage. (iii) Incubation Projects for the second year will be selected and started. (iv) Leftover equipments for Skill Development Workshops will be procured. (v) Internal infrastructure for incubation Laboratories at Panjab University Incubation Centre will be established.

The University will start new professional, vocational and interdisciplinary courses at PU-EEI Hub with minimum of inputs by properly scheduling the classes at different hours. The funds will also be generated from the training of persons other than students.

8. EXPECTED RESULTS FROM THE PROPOSAL

The implementation of project proposal will be of great help to inculcate inclination to innovate and entrepreneur mindset in the students at the early stages. It will enable experimentation, practice and refinement of ideas, products and services. Progress of all the students will be monitored and recorded, and selected proposals will be encouraged for realization. The project will deliver a range of programmes in innovation and entrepreneurship, supporting creative entrepreneurs; it will draw on interdisciplinary skills, expertise from across the academic departments. An emblematic well-equipped building to house the Skill-development laboratories will facilitate varieties of activities supporting innovation and entrepreneurship. It will also facilitate teaching of inter-disciplinary Generic elective courses to large number of students from different streams.

It will build collaborative communities with entrepreneurial individuals at the centre, attract diverse members with heterogeneous knowledge and facilitate creativity and collaboration in physical and digital space. Further, it will be supportive in implementing future Government innovative programmes. It is expected that Innovations will transform the outcomes of education and research into real world impact and value. Soft-skill trainings will offer qualities in leaderships, ideation, management and organization, operation management, design thinking and marketing. Programmes, Seminars and guidance workshops will be organized for informing students about emerging professional trends and events, career options, job profiles, leadership roles, entrepreneurship, market needs and risks. PU will be able to position itself as a partner of choice for industry and business, supporting access to intellectual property and providing knowledge-based services to corporate sector. Refresher courses for college teachers conducted during vacations would give them an exposure to modern techniques, which they will further transfer to the students in colleges. Short term trainees coming from other institutions or universities would learn scientific techniques being used in the subjects of Life Sciences, Biomedical Sciences, Earth Sciences and Physical Sciences. The setting up of the advanced skill Centre in biomedical sciences at Panjab University will enhance the capability of our students in the field of agriculture, animal and industrial biotechnology, genetic engineering, bioinformatics for better employability and entrepreneurship. Training in these laboratories will help to impart the best methodologies for manufacturing products, animal cell culture, plant biotechnology, fermentation, bioinformatics and genetic engineering knowledge to the students which is required by Research laboratories and Industry. The practical training of the students will be enhanced by the Plant tissue culture facility, Animal cell culture facility and Fermentation facility.

9. Proposed five-ten-years strategic Plan:

The Vision is a dream that can be translated into reality only when all concerned act with responsibility and determination. Now that we have started the journey we hope to reach somewhere. The University aims at becoming an international institution of repute. It plans to produce best of the students most sought after in the international market. The University will facilitate interaction between renowned teachers and researchers

internationally specially with those successful NRIs who can be easily motivated to pay back something to their nation and the students of our University through video conferencing, guest lecture series and Internet website mode.

The experiences gained by the PU-EEI project will be transferred to various colleges affiliated to Panjab University. Efforts will be made to introduce job-oriented and socially relevant courses in the colleges.

The University will intensify its efforts to provide greater access to the marginalized groups of our society to affordable quality education through its Departments of Correspondence Studies and Evening Studies. Special attention will be given to colleges affiliated to the University by periodic inspection by teams from the University to ensure the colleges are equipped with proper infrastructure and facilities. University will regularly arrange lectures by distinguished teachers at the colleges. At the national level the University will continue to interact with other universities in the country and develop faculty and student exchange programme. Co-curricular activities with other institutions will be probed and encouraged.

To covert the dream of becoming a world class institution of higher learning into reality, the University proposes the following steps:

(i) Attracting and retaining the best minds across the globe in each faculty;

(ii) Build world-class state of art infrastructure, including scientific laboratories and hostels by utilizing global capital;

(iii) Continuous faculty development programmes and up-gradation of infrastructure to international standards;

(iv) Inviting eminent scholars as visiting professors for a longer duration;

(v) Developing partnership with top ranking universities for teaching, research, training and consultancy;

(vi) Promoting international exchange of faculty and students by Introducing the practice of dual degrees; Attracting more foreign students through cultural exchange programme;

(vii) Encouraging students for internship with MNCs and top ranking research institutes/laboratories;

(viii) Encouraging the patenting of research outcome;

(ix) Offering single window on the spot admission to students of developing countries;

(x) Activating already signed Memoranda of Understandings (MoUs) with the foreign universities/institutions and also entering into fresh Mo Us in future with international institutions of repute.

10. Roadmap of the EEI Hub

Entrepreneurship and innovation (EI) is a sophisticated skill set that has broad application from employability to venture creation and beyond. To be successful, EI needs to be embedded in the ethos of a university—for staff and for students. A strong university culture that supports and celebrates EI, with visible university leadership, will draw students and graduates to new entrepreneurial ventures and increase their employability.

University graduates have enormous potential for innovation and economic development. Mobilizing them for entrepreneurial careers, enhancing their entrepreneurial skills, and providing support for business start-up are important, and often new, tasks for higher education institutions that are only now being fully recognized. The overall purpose of this EEI hub is to help develop a more entrepreneurial culture, thereby assisting the country to become more innovative/ competitive and reduce unemployment.

Under RUSA 2.0 Scheme, PU will establish state-of-the-art EEI hub to leverage the talent and aspirations of graduates of the University for Opportunity Creation and Wealth Generation while meeting the immediate and future needs of the society and industry alike. The facility will consist of various Skill Development Laboratories and Learning Facilities at an estimated cost of Rs. 15 Crores and will train at least 2000 students per year to build skilled workforce and entrepreneurs. The main stakeholders of this hub will be students, rural youth, women, industry, parents, alumni, technical and administrative staff of PU and its affiliated colleges. EEI hub will be able to foster entrepreneurship, employability and innovation by developing activities that have substantial and positive impact at all stages of the entrepreneurial process. PU will collaborate with experts from around the world to contribute to the improvement of entrepreneurship, employability and innovation in society.

Entrepreneurship Awareness Raising Campaign and Events in Support of Entrepreneurship will be two major activities of EEI hub. These activities at EEI hub will combine the interests of the entrepreneurial, employable and innovative ecosystems both within and

outside PU and will serve the society at large through these activities. PU's new hub of Entrepreneurship, Employability and Innovation will embed a culture of innovation and entrepreneurship right across the University. Finally, it is expected that through EEI hub, PU will be able to develop good, well rounded, and creative individuals, thereby empowering students to become enterprising and creative innovators.

Action plan for EEI Hub

(i) Assist the education and training system to embed the culture of entrepreneurship

(ii) Organize awareness raising campaign to change society's perception of entrepreneurship

(iii) Organize conferences, fairs, competitions and related events to promote entrepreneurship at all levels of society

(iv) Benchmark the level of entrepreneurship in the country on an on-going basis.

(v) Improve Student Engagement using Innovative Teaching Strategies: inquiry-based learning, QR codes, project-based learning, wisely managed classroom technology, and jigsaws.

(vi) Build leadership capacity; build a talent advantage by developing and linking skills for innovation; build a connected innovation community; and leverage existing innovation infrastructure.

a. Improving employability of Students

(i) Organize skill development classes for all-round development of students thereby improving their employability

(ii) Equip the students with required knowledge, skills, values and training for employability in the intensely competitive sector of Employment.

(iii) Encourage more students to avail HRD training.

(iv) Introduce Career Oriented short term training Programs including Computer Literacy. As part of training, Communication Skills and other Skills Development will be made available for all the students with the help of Resource Persons available within the institution and outside

(v) Encourage the students for innovative and entrepreneurial practices

(vi) Training in foreign languages like French, Chinese, Urdu, Spanish, German languages etc, so as to make the students globally competitive

(vii) Through Central Placement Cell (CPC) of PU, local Potential of the Industry and business will be tapped and more number of campus recruitment drives will be organized to increase the opportunities.

(viii) Opportunities for empowerment of women and rural youth will be explored with the help of Government Agencies.

(ix) Entrepreneurship Development in general and Women Entrepreneurship Development Programmes in particular will be introduced to enhance the opportunity of self employment and entrepreneurship.

b. Improving interaction with industry

(i) Centre for Industry-Institute Partnership Programme (CIIPP) cell at PU will endeavor for more number of Industry-Institution linkages.

(ii) CPC will explore the avenues for employment opportunities.

(iii) Some training programmes on IPR and Patent filing will be conducted with the involvement of domain experts.

ANNEXURE-I

Vision of Panjab University, Chandigarh

Forecasting the future of an academic institution like Panjab University with so many parameters and variables is not an easy task. Therefore, the best option is to clearly define the future goals and then go all out to achieve these. The following are the vision and mission statements for Panjab University:

The Vision

To attain and retain coveted position as a premier educational institution engaged in creation and dissemination of knowledge, new ideas, perceptions and methodologies; to arrange for quality teaching, research, outreach activities and for developing intellectual capital to meet societal needs and global challenges.

The Mission

In consonance with its Vision, the Mission of the University is to:

(i) Promote learning keeping in view the concern for Access, Equity, Quality, Relevance and Value Based Education.
(ii) Attract brilliant students and to train them to compete in facing global challenges.
(iii) Search for highly talented and innovative teachers and staff and provide them with congenial work environment to retain them.
(iv) Undertake and promote basic and applied research.
(v) Promote a dynamic, decentralized and transparent Governance System.

There is no magic wand to achieve these goals within the given time framework. The success or failure of the mission depends on our will to undertake the remedial steps suggested by the committee in the proposed action plan.

The Strengths

Let us first dwell on the strengths of the University and how these can be utilized to further advantage of the University. One of the important assets of the University is its beautiful campus with sufficient accommodation for most of its departments. The buildings are used only between 9 AM to 5 PM and even during this period many laboratories and lecture halls are not fully utilized. The only exception is Arts Block I where classes for the evening college are held after 5 PM. In contrast, even the most prosperous countries of the world like USA use such resources continuously from 7 AM to 11 PM including the weekends. The University can start new professional, vocational and interdisciplinary courses with minimum of inputs by properly scheduling the classes at different hours.

The University can be proud of its Library which holds about 6.5 lakh volumes and is open for long hours, seven days a week. The access to about 4000 research journals in different subjects on line through INFLIBNET is the dream comes true for any researcher. With

further digitization and net working it may be necessary to have arrangements for installation of more PC's in the library The University can enrich itself by bringing out limited edition reprints of some of its rare books/scripts in possession of the library without infringing upon the copyright act.

The University has excellent support facilities including UGC sponsored Academic Staff College with EDUSAT; DST funded SAIF (earlier called RSIC) providing access to sophisticated instruments to the scientists in the region; workshop facilities at CIL and USIC; Computer Centre that provides scientific computing facilities (7000 Mega Flops) set up by TIFAC (DST) and also works as central hub with 1100 active nodes spread over the campus and an elaborate EPBAX connectivity. The University has sprawling sports grounds and excellent facilities for indoor and outdoor games. The University Botanical and Herbal gardens are the envy of any university in the country and abroad.

The Weaknesses

One of the glaring weaknesses of the University is its archaic and excessively centralized administrative system. This puts undue burden on its important functionaries like the Vice-Chancellor, the Dean of University Instruction and the Registrar. They have to spend lot of their time on routine matters that can be disposed at lower levels. The movement of papers is very slow due to long processing chain and many a times the delays are frustrating to students, teachers and other staff members. Halfhearted attempts have been made in the past to rectify the situation but without any perceptible change. There is lack of coordination between different divisions amounting to hostility in some cases. A dynamic, user friendly decentralized transparent governance system is the crying need of the hour and it should receive the top priority without which it will be difficult for the University to move forward in the academic set up of 21st century. A large scale exercise will have to be taken to completely computerize the various wings of the administration and to arrange for the training of the concerned employees.

Most important things in an academic institution are men and ideas. The University has 800 faculty members and 3700 other employees but their average age is on the higher side. The recruitment programme for all categories of employees should be so regulated that every year some new recruits with new ideas are inducted. This not only brings freshness in the organization but also increases its functional efficiency over the years. Particular attention has to be paid for the recruitment of teachers. Special measures will have to be adopted for search of talented and gifted teachers and also for creating congenial environment for them to stay This is particularly important as in some subjects much more lucrative opportunities are available to them outside the university system. Rating of a University depends on the standing of its faculty members amongst their peers. During 1960-1985, many prestigious awards and honours were bestowed on the faculty members and their advice was sought after by various government departments

and agencies. It is a matter of grave concern that we have been left behind in the race during the past 20 years and there has been only a trickle of few laurels for our teachers. Is it the result of complacency or lack of motivation on the part of the teachers or it is due to some structural deficiency in the functioning of the departments? How can we develop interdisciplinary areas when there is lack of team work in a single department? The University will have to give due consideration for multidisciplinary appointment of a teacher so that he may be associated with more than one department and may prove a link for the interdepartmental projects.

Recently a host of private universities and institutions of higher education have been set up in the territory that earlier used to be the exclusive domain of the University Although these have been set up with commercial interest, they have many advantages due to their flexible approach. They can create necessary infrastructure quickly without any budgetary constraints; can attract faculty members with higher emoluments wherever necessary and can start new courses attracting adequate number of students ready to pay higher fees. The University will have to devise innovative strategy to meet the new challenge by starting socially relevant revenue generating courses and also to propose incentives for meritorious faculty members.

Having taken cognizance of the strength and weaknesses of the university and to convert dreams into reality a practical action plan is required.

Action Plan

The University aims at becoming an international institution of repute. It plans to produce best of the students most sought after in the international market. The University will facilitate interaction between renowned teachers and researchers internationally specially with those successful NRIs who can be easily motivated to pay back something to their nation and the students of our University through video conferencing, guest lecture series and Internet website mode.

To covert the dream of becoming a world class institution of higher learning into reality, the University proposes the following steps:

(i) Attracting and retaining the best minds across the globe in each faculty;
(ii) Build world-class state of art infrastructure, including scientific laboratories and hostels by utilizing global capital;
(iii) Continuous faculty development programmes and up-gradation of infrastructure to international standards;
(iv) Inviting eminent scholars as visiting professors for a longer duration;
(v) Developing partnership with top ranking universities for teaching, research, training and consultancy;
(vi) Promoting international exchange of faculty and students;
(vii) Introducing the practice of dual degrees;

(viii) Encouraging students for internship with MNCs and top ranking research institutes/laboratories;
(ix) Increasing the problem solving inputs in the courses as per international standards;
(x) Encouraging the patenting of research outcome;
(xi) Presentation and viva voce of Ph. D. research scholars through teleconferencing;
(xii) Undertaking exercise for major restructuring of the courses on regular basis incorporating global changes taking place in respective fields;
(xiii) Attracting more foreign students through cultural exchange programme;
(xiv) Offering on the spot admission to students of developing countries;
(xv) Offering single window based admission to foreign students;
(xvi) Allocating additional seats for the foreign students;
(xvii) Activating already signed Memoranda of Understandings (MoUs) with the foreign universities/institutions and also entering into fresh Mo Us in future with international institutions of repute.

The Vision is a dream woven around ideals, good intentions, wishes and imagination. It can be translated into reality only when all concerned act with responsibility and determination. Now that we have started the journey we hope to reach somewhere. Let us remember the famous lines "If you want to reach the tree, sky should be your aim".

Studio for preparation of Massive Open Online Courses (MOOCs): The Panjab University Skill Development Centre will also have a Lecture Preparation Studio to prepare lectures for UGC recommended Massive Open Online Courses (MOOCs). It will cater to all the departments.

Repair of Instrumentations :

Biotechnology Industry Research Assistance Council (BIRAC) has developed a focused strategic action plan to foster the culture of innovation and techno-entrepreneurship in Indian Universities, leveraging the University Innovation Cluster (UIC) and Cluster Innovation Centre (CIC) model.

Panjab University has been identified to establish Cluster Innovation Centres:

2. Panjab University, Chandigarh

Cluster Innovation Centre in Biotechnology (CIC-B), hosted in these University, are acting as the nerve centre to manage the University Innovation Cluster activities. Along with facilitating the creation of networks, partnerships between stakeholders to strengthen the innovation ecosystem, the CIC-B is providing pre-incubation support to innovative ideas, innovators for effective translation into products thereof. Such support will include:

- A Cluster for **5-6 students/young Entrepreneurs** to test their ideas/discoveries and take them to Proof of Concept
- An incubation space-2500-3000 Sq.ft;
- BIRAC Innovation Fellowships for two (2) Post Docs. and four (4) Post M.Sc. Fellows per university
- BIRAC Innovation Grant:
    - **Post Doc**. Fellow: BIRAC Innovation Fellowship @ Rs. 50,000/- p.m. & Innovation Grant of Rs. 5,00,000 p.a. for three years
    - **Post M.Sc**. Fellows: BIRAC Innovation Fellowship @ Rs. 30,000/- p.m. & Innovation Grant of Rs. 2,00,000 p.a. for three years
- Industry Participation for training, mentoring, sponsored research and networking opportunities and IP & Technology Management; access to risk finance among others.

Activities for each UIC

- Identification of the technology/ market led projects for Post Doc. (2) and Post Graduate pass-outs (4) in collaboration with industry
- Creation of the website and databases
- Entrepreneurial Activities/cluster development activities
- Constitution of the dedicated mentoring group from industry and academia
- Develop and standardized policy of Intellectual Property Rights, Technology Transfer, Industry

- Sponsored Research, new venture creation by students and facultyInitiation of HUB & SPOKE model of operation for UIC-B i.e integrating different university departments including Technology Transfer, Bioincubator for UIC-B Cluster Development Activity in specified area of science