



Panjab University
Chandigarh



**Criterion III:
Research, Consultancy
and Extension**

CRITERION III: RESEARCH, CONSULTANCY AND EXTENSION

3.1 Promotion of Research

3.1.1 Does the university have a Research Committee to monitor and address issues related to research? If yes, what is its composition? Mention a few recommendations which have been implemented and their impact.

University have Research Promotion Cell Committee to monitor and address issues related to research. Composition of the said Committee is as under:

Prof. A.K. Grover, Vice-Chancellor	... Patron
Prof. L. K. Bansal, Dean Research	... Chairman
Prof. Pushpinder Syal, English & Cultural Studies	
Prof. Ramanjit Kaur Johal, Public Administration	
Prof. C. Nagaraja. Kumar, Physics	
Prof. Sanjay Chhibber, Microbiology	... Convenor

Since inception, the committee made many crucial and research driven recommendations on regular basis, few recommendations are given below:

a. Research Monitoring Committee (RMC):

As per the recommendation of Research Promotion Cell, Research Monitoring Committee (RMC) has been constituted in each Department/Centre/Institute to monitoring the progress of each full time or part time research scholar in the respective department/centre/institute. Each research student required to give a presentation of 10-15 minutes, twice a year, before the Research Monitoring Committee on the research work carried out by him/her during the last six months.

b. Direct Benefit Transfer (DBT):

Implementation of Director Benefit Transfer (DBT) to provide hassle free and timely fellowship/scholarship to the Research Scholars has been initiated.

c. Separate Research Scholars Hostel:

As per the recommendation of Research Promotion Cell Separate Research Scholar Hostel has been developed to provide better accommodation and well as constructive research atmosphere in the Hostel itself.

d. Open Access to sophisticated Instruments:

All instrument labs of various departments are opened on Saturday and Sunday to access of Research Scholars and new instruments is being installed as and when required.

3.1.2 What is the policy of the university to promote research in its affiliated / constituent colleges?

- The University has facilitated the development of its affiliated colleges as research centres with the respective PU department serving as their nodal agencies so that there is a 'capacity building' through which a larger research community gets distributed to these research centres and will eventually go on to contribute at universities and colleges. These colleges will be able to conduct MPhil and PhD courses at these centres.
- According to the guidelines framed by the University, the research centres will be set up for a term of two years and these colleges should have at least three PhD teachers (among them one should be of the rank of associate professor) in a particular subject to conduct PhDs in specific subjects and should have adequate infrastructure for the same. Post graduate programmes in these subjects should also have been running in the college for a minimum of five years, besides teachers publishing two research papers or books in four years.
- The University has facilitated the introduction of pre-PhD course work followed by examination in those colleges that have been identified as research centres by Panjab University (PU). The enrollment to a PhD programme in these colleges is being done on the basis of an entrance test conducted by PU. The aim is that each college with research centers should get students for research.

The following colleges of Panjab University are running Research Centres:

- ✓ D.A.V. College, Sector-10, Chandigarh
- ✓ G.G.D.S.D. College, Sector-32, Chandigarh
- ✓ Post-Graduate Govt. College for Girls, Sector-42, Chandigarh
- ✓ Chandigarh College of Engineering & Technology, Sector-26, Chandigarh
- ✓ Post Graduate Govt. College, Sector-11, Chandigarh

3.1.3 What are the proactive mechanisms adopted by the university to facilitate the smooth implementation of research schemes/ projects?

The mechanism adopted by the university to facilitate the smooth implementation of research schemes/ projects is given below:

- * Advancing funds for sanctioned projects.
- * Providing seed money
- * Simplification of procedures related to sanctions / purchases to be made by the investigators

- * Autonomy to the principal investigator/coordinator for utilizing overhead charges
- * Timely release of grants
- * Timely auditing
- * Submission of utilization certificate to the funding authorities

3.1.4 How is interdisciplinary research promoted? a) between/among different departments /schools of the university and b) collaboration with national/international institutes / industries.

Interdisciplinary research between different departments of University is encouraged by motivating the faculty to get joint research projects sanctioned funded by the National/International funding agencies many such projects are in progress on the campus. Promotion of interdisciplinary research among different departments of the university as well as with national/international institutes/industries is strengthened by organizing various academic events on the campus.

University holds Conferences like Chandigarh Science Congress (CHASCON), Chandigarh Social Science Congress (CHASSCON) in which teachers get opportunities to interact for furthering interdisciplinary research within the University and adjoining Research Institutes of National importance “CRIKC” Attending Conference, Entering MoUs with Industries, Institutes and Universities.

173 Projects of the Panjab University departments in collaboration with other National/International institutions/ Universities are on going on the campus.

Promotion of interdisciplinary research among different departments of the university as well as with national/international institutes/industries is undertaken by organizing various academic events on the campus by inviting eminent scientists/scholars from India and abroad.

List of academic events and names of eminent scientists

1. National Seminar on “SAARC: Problems and Prospects”
2. **International Conference** on “Recent Advances in Engineering and Computational Sciences”
3. **International Seminar** on “Current Trends in Quantum Gases, BEC and Solitons”
4. **8th Chandigarh Science Congress CHASCON-2014**
5. **3rd International Conference** Biomedical Engineering & Assistive Technologies (BEATS-2014).
6. **International Conference** on “Multi-Disciplinary Aspects of Mechanical & Electrical Engineering”(MAMEE-2013)
7. **International Conference** on “Interdisciplinary Areas with Chemical Sciences”

8. **International Conference**, “*NanoSciTech 2014*”, on the theme, “*Nanotechnology in the Service of Health, Environment & Society*”
9. **International Conference** on “Challenges of Electronic Environment in Academic Libraries”
10. **International Conference** on “Advances in Water Resources: Development and Management”
11. **International seminar** on “Pluralist Democracy and National Identity”

3.1.5 Give details of workshops/ training programmes/ sensitization programmes conducted by the university to promote a research culture on campus.

University organized special series of Colloquium Lecture to promote research culture in addition to various programmes specifically for the researchers.

The details of colloquium lectures are given below:

Date and Time	Department	Topic of Colloquium
22nd August, 2014 - 300 P.M.	Dr. S. S. Bhatnagar University Institute of Chemical Engineering & Technology	Life: Where All Sciences Meet
8th August, 2014 - 11:00 A.M.	Dr. S. S. Bhatnagar University Institute of Chemical Engineering & Technology	Socially inclusive growth: Theory and Indian Experience since 1990s
26th July, 2014 - 11:00 A.M.	Department of Political Science	Caste and Religion in the Era of Economic Growth
25th July, 2014 - 15:00	Department of Political Science	India's Democracy: Resilience and Inadequacies
8th May, 2014 - 12:00 noon	Dr. S. S. Bhatnagar University Institute of Chemical Engineering & Technology	Innovation Towards Meeting Challenges of Food Security/Food Safety/Environment Nexus
30th April, 2014 - 3.00pm	Dr. S. S. Bhatnagar University Institute of Chemical Engineering & Technology	Humanistic Economics: A Blueprint by Prof Pulin B Nayak
14th March, 2014 - 3:00 P.M.	Dr. S. S. Bhatnagar University Institute of Chemical Engineering & Technology	War and Peace: Conflict and Cooperation in an Insect Society
25th February, 2014 - 3:00 P.M.	Dr. S. S. Bhatnagar University Institute of Chemical Engineering & Technology	Ideas of Freedom; in the Freedom Movement of India

19th February, 2014 - 2:30 P.M.	Dr. S. S. Bhatnagar University Institute of Chemical Engineering & Technology	From the Indus Valley to Srinivasa Ramanujan: A History of Indian Mathematics
27th January, 2014 - 3:00 P.M.	Dr. S. S. Bhatnagar University Institute of Chemical Engineering & Technology	Aerospace Technologies and Applications: Present and Future
11th December, 2013 - 3.00PM	Dr. S. S. Bhatnagar University Institute of Chemical Engineering & Technology	Citizen's right to Vote by Prof. Virendra Kumar
7th November, 2013 - 15:00	Vice Chancellor's Office	8th PU Coloquium: Plagiarism and its Control in Academic Domain
5th September, 2013 - 3.00PM	School of Communication Studies	De-theorizing Globalization by Professor B.S.Brar
16th August, 2013 - 14:45	A. C. Joshi Library	A C Joshi Memorial Lecture by Shri Ashok Thakur, IAS - Issues of Higher Education in India
19th February, 2013 - 15:00	Vice Chancellor's Office	Lecture by Sh. Mohan Agashe
23rd January, 2013 - 3:00 P.M.	Dean University Instructions	Let's save the self from self inflicted pollution
21st January, 2013 - 12:00 Noon	Department of Chemistry	Spectrum of Creativity in Science: Some Psycho-Social Factors
27th November, 2012 - 15:00	Vice Chancellor's Office	Colloquium By Dr. Pradeep Bamberg on Living with Arthritis
19th October, 2012 - 11:00	Department of Arts History & Visual Arts	Scales micrograph - photo montages an exhibition by Sukant Saran
12th October, 2012 - 9:00 a.m.	University Institute of Pharmaceutical Sciences	Regulatory issues in Nanotechnology
20th September, 2012 - 15:00	Department of Public Administration	Ways of Seeing: The World of the Indian Painter

Some of the other programmes for the researchers:

Sr. No.	Title of the workshop/training programme/symposium/seminar	Organised on
1	Two Day National Workshops on "Research Methodology, Statistical Analysis and Stress Management".	30-31 Jan. 2014
2	One day workshop "Skill Development for Workplace" SD2013	26 Sept. 2013
3	National Annual Maharishi Vishvamitra Veda-Vedanga Workshop-cum-Seminar	21-26 Feb. 2012
4	Two day Workshop on "Parallel Computing using HPCC"	02-03 Mar. 2012

5	Workshop on “Remote Sensing and GIS”	1-3 Feb. 2012
6	Workshop and Hands on Training on Cell and Molecular Biology Tools and Techniques	21-26 Mar. 2011
7	National Seminar-cum-Workshop on “Exploring New Vistas in Biodiversity Research for Sustainable Development”	22-24 Jan. 2011

3.1.6 How does the university facilitate researchers of eminence to visit the campus as adjunct professors? What is the impact of such efforts on the research activities of the university?

The University facilitates the visit of researchers of eminence by inviting them to hold workshops/Labs/Lectures/demonstrations on the campus, especially, for budding researchers. The students are able to introduce newer techniques in their research work. Moreover such interactions also provide them with an opportunity to interact with these projectors and their labs for further help/guidance.

3.1.7 What percentage of the total budget is earmarked for research? Give details of heads of expenditure, financial allocation and actual utilization.

Total budget earmarked for research is Rs. 6845.87 lac (Rs. 671.79 lacs Non-Plan +6174.08 lac Plans)

Total budget estimates 2014-2015 is Rs.50655.37 lacs (Non-Plan+Plan)

Percentage = 13.51 %

Actual Expenditure NON-PLAN (2013-14) - Rs.429.07 lacs

Detail of heads of expenditure, financial allocation, and actual utilization is placed at Annexure ‘R’, which will be shown to the NAAC Team on their visit to Panjab University.

3.1.8 In its budget, does the university earmark fund for promoting research in its affiliated colleges? If yes, provide details.

The University has earmarked Rs 25000/- from College Development Fund for promoting research in each of the following affiliated colleges:

- D.A.V. College, Sector-10, Chandigarh
- S C D Govr Collge, Ludhiana
- Dev Samaj College for Women, Ferozpur
- D A V College Abohar

- S.G.G.S. Khalsa College, Mahilpur

3.1.9 Does the university encourage research by awarding Post Doctoral Fellowships/Research Associate ships? If yes, provide details like number of students registered, funding by the university and other sources.

The University does not directly award Post Doctoral Fellowships/Research Associates in various faculties, however, it encourages prospective candidates to apply for this from National agencies such as UGC, DBT, CSIR etc.

There are postdoctoral fellows (PDFs) working in following departments with support from outside sources as given below:

Department/Centre	Name of PDF	Source of Funding
Computer Centre	Parveen Kumar	UGC
Economics	Amandeep Kaur	ICSSR
Psychology	Kuldeep Singh	ICSSR
Public Administration	Meenakshi Madaan	ICSSR
Public Administration	Anu Jasrotia	ICSSR
Public administration	Promila Kanwar	ICSSR
Geography	Prem Chand	ICSSR
Police Administration	Moirangmayum Sanjeev Singh	ICSSR
Police Administration	Rajkumar Meiraba Singh	ICSSR

3.1.10 What percentage of faculty has utilized the sabbatical leave for pursuit of higher research in premier institutions within the country and abroad? How does the university monitor the output of these scholars?

The percentage is 0.4% Approx.

List of Faculty who has utilized the sabbatical leave for pursuit of higher research during the last five years is as under:

Sr	Name/Department	2010	2011	2012	2013
1	Prof. Deepti Gupta Dept of Eng. & Cultural Studies	--	One year w.e.f. 25/08/2011	--	--
2	Prof Anil Raina, Dept of Eng. & Cultural Studies	--	--	--	One year w.e.f. 01/08/13
3	Prof. Sanjay Chaturvedi Dept of Pol. Science	--	--	w.e.f. 14/08/12 to 13/08/13	--

The university monitor the output of these scholars by asking a report of the work done during leave period.

3.1.11 Provide details of national and international conferences organized by the university highlighting the names of eminent scientists/scholars who participated in these events.

Sr. No.	Title of the National/International Conferences organised by the Panjab University Highlighting the names of eminent scientists/scholars who participated in these events.	Organised on
1	<i>CHASSCONG-14</i> <i>4th "CHANDIGARH SOCIAL SCIENCE CONGRESS"</i> <i>Millennium Development Goals: Retrospect and Prospects (With special Reference to India)</i> <i>Names of Eminent Scientists/Scholars:</i> <i>Prof. Pam Rajput, Chairperson, GOI Committee on status of Women in India</i> <i>Dr. Amitabh Behar, Executive Director, NFI, New Delhi</i> <i>Prof. Kuldip Singh, Dean Alumni Association and Former Chairperson, Department of Political Science, GNDU, Amritsar</i> <i>Prof. Sucha Singh Gill, Director, CRRID, Chandigarh</i> <i>Prof. Meeta K. Mehra, JNU, New Delhi</i> <i>Prof. Navsharan Singh, IDRC, New Delhi</i> <i>Prof. Gopal Krishan, Prof.(Emeritus) P.U. Chandigarh.</i>	26-27 March 2014
2	<i>National Seminar on "SAARC: Problems and Prospects"</i> <i>Names of Eminent Scientists/Scholars:</i> <i>Prof. Baljit Singh from University of Jammu,</i> <i>Prof. Karori Singh from University of Rajasthan,</i> <i>Prof. Matthew Joseph C. from Jamia</i> <i>Millia Islamia – New Delhi,</i> <i>Prof. Ranjani Ranjan Jha from Banaras Hindu University- Varanasi,</i>	24-25 March 2014

	<p><i>Prof. Paramjit Kaur from Punjabi University- Patiala, Dr. Arvind Singh from Muradabad, Prof. Madhurendra Kumar from Kumaun University- Nainital , Prof. Rajpal Budhania from University of Allahabad & Dr. Rajesh Kumar form GNDU- Amritsar.</i></p>	
3	<p>International Conference on “Recent Advances in Engineering and Computational Sciences”</p> <p>Names of Eminent Scientists/Scholars: <i>Prof. Jürgen Bosse, Emeritus Professor of Theoretical Physics Department of Physics, Freie Universität Berlin, Germany Dr. Anu A. Gokhale, Professor and Coordinator of the Computer Systems Technology Program at Illinois State University Prof. Ashwani Kumar, Department of Electrical Engineering, NIT Kurukshetra, Dr. Sanjeev K. Aggarwal, Professor and Head, EED, MMEC, M.M. University, Mullana, Dr. G.N. Pilliai, Associate Prof. Electrical Engineering Department, Indian Institute of Technology (IIT), Roorkee, Ms.. Pamela Kumar, Chair “Cloud Computing Innovation Council of India” Sh.. Sudhanshu Mittal, Leading team as Software Manager Freescale Semiconductor</i></p>	6-8 March 2014
4	<p>International Seminar on “Current Trends in Quantum Gases, BEC and Solitons”</p> <p>Names of Eminent Scientists/Scholars: <i>Prof. Arup Banerjee (CAT, Indore) Prof. A. Bhattacharjee (Delhi Univ., Delhi) Prof. J. Bosse (Freie Univ., Berlin) Prof. B. Dey (Univ. of Pune, Pune) Prof. T.K. Ghosh (IIT, Kanpur) Prof. M. Howard Lee (Univ. of Georgia, USA) Prof. P. Muruganandam (BDU, Tiruchirapalli) Prof. Vasant Natarajan (IISc, Bengaluru) Prof. H. Ott (Kaiserslautern Univ., Germany) Prof. P.K. Panigrahi (IISER, Kolkata) Prof. A. Pelster (Kaiserslautern Univ., Germany) Prof. H. Ramachandran (RRI, Bengaluru) Prof. Umakant D. Raypol (IISER, Pune) Prof. Carlos A.R. Sa de Melo (Georgia Tech, USA) Prof. V.B. Shenoy (IISc, Bengaluru) Prof. G.S. Singh (IIT, Roorkee) Prof. W. Zhang (Renmin Univ., Beijing)</i></p>	3-6 March 2014
5	<p>8th Chandigarh Science Congress CHASCON-2014</p> <p>Names of Eminent Scientists/Scholars: <i>Prof. Y.K. Chawla, Director, PGIMER Dr. Manoj K. Arora, Director, PEC Univ. of Technology Prof. N. Sathyamurthi, Director, IISER, Mohali Prof. (Dr.) M.P. Poonia, Director, NITTTR Dr. S. K. Shukla, Director, CFSL</i></p>	26-28 Feb. 2014

	<p><i>Dr. Manjit Singh, Director, TBRL</i> <i>Dr. Rajender Sangwan, Chief Executive Officer, Bio Processing Unit, An Autonomous Institute under DBT, Govt. of India</i> <i>Prof. Atul Sachdev, Director-Principal, GMCH</i> <i>Prof. K.K. Bhutani, Director, NIPER, Mohali</i> <i>Dr. Girish Sahni, Director, IMTECH</i> <i>Dr. Atam Darshan Kaul Acting Director, CSIO</i> <i>Dr. A. Ganju, Director, SASE</i> <i>Prof. Akhilesh Kumar Tyagi Executive Director, NABI</i> <i>Dr. A.K. Ganguli, Director, INST Mohali</i></p>	
6	<p>3rd International Conference Biomedical Engineering & Assistive Technologies (BEATS-2014).</p> <p><i>Names of Eminent Scientists/Scholars:</i> <i>Prof. Vinod Kumar IIT, Roorkee</i> <i>Prof. H.K. Verma Sharda University, Noida</i> <i>Prof. R.M. Rangayyan University of Calgary, Canada</i> <i>Prof. P.W. Macfarlane University of Glasgow, Scotland, UK</i> <i>Prof. U Rajendra Acharya Ngee Ann Polytechnic, Singapore</i> <i>Prof. V.R. Singh National Physical Lab, New Delhi</i> <i>Prof. Sumeet Dua Louisiana Tech University, Ruston</i> <i>Prof. Thomas M. Deserno RWTH Aachen University, Germany</i> <i>Prof. Reyer Zwiggelaar Aberystwyth University</i> <i>Prof. Rajneesh Arora Vice-Chancellor, Punjab Technical University, Kapurthala</i> <i>Prof. Olaf Dössel Karlsruhe Institute of Technology, Germany</i> <i>Prof. Dinesh P. Mital Health Informatics Department, New Jersey</i> <i>Prof. Yogesh Chawla Director, PGIMER, Chandigarh</i> <i>Prof. Manoj K. Arora Director, PEC University of Technology, Chandigarh</i> <i>Prof. Girish Sahni Director, CSIO, Chandigarh</i></p>	14-15 Feb. 2014
7	<p>International Conference on “Multi-Disciplinary Aspects of Mechanical & Electrical Engineering” (MAMEE-2013)</p> <p><i>Names of Eminent Scientists/Scholars:</i> <i>Prof. Braham Prakash, LTU Sweden</i> <i>Dr. T.S. Arjun, CoE, MS University, USA</i> <i>Prof. Pradeep Rohatgi, Wisconsin, Milwaukee</i> <i>Prof. Ravindra Pandey, Michigan Technological University, Michigan</i> <i>Dr. Manjit Singh, Director, TBRL</i> <i>Dr. Lalit M. Bharadwaj, Additional Dean, R&D, LPU</i> <i>Prof. Sunil Pandey, SLIET Longowal</i> <i>Prof. Jaydev Sharma IIT Roorkee</i> <i>Prof. Vinod Kumar IIT Roorkee</i> <i>Prof. D.T. Shahani IIT Delhi.</i> <i>Prof. Dinesh Kumar, IIT Roorkee</i> <i>Prof. O.P. Gandhi, IIT Delhi</i> <i>Dr. Navin, IIT Ropar</i> <i>Prof Arun K. Lall, PEC Chandigarh</i> <i>Prof. V.P. Singh, PEC Chandigarh</i></p>	21-22 Nov. 2013

	<p><i>Prof. Parveen Kalra, PEC Chandigarh</i> <i>Dr. A. Manna, PEC Chandigarh</i> <i>Prof. H.C. Garg, GJUS &T, Hisar</i> <i>Dr. Sanjeev Kumar, PEC Chandigarh</i> <i>Prof. Rakesh Sehgal, NIT Hamirpur</i> <i>Dr. Rajesh K. Sharma, NIT Hamirpur</i> <i>Dr. Harlal Singh Mali, NIT Jaipur</i> <i>Prof. S. Chander, NIT Jalandhar</i> <i>Prof. Surjit Angra, NIT Kurukshetra</i> <i>Prof. B. S. Pabla, NITTTR Chandigarh</i> <i>Prof. R.N.Sharma NIT Hamirpur</i> <i>Prof. Ashwani Kumar NIT Kurukshetra</i> <i>Prof. L.M. Saini NIT Kurukshetra.</i> <i>Prof. S. Chatterje NITTTR Chandigarh</i> <i>Prof. Sushil Chauhan NIT Hamirpur</i> <i>Dr. Dheeraj Khatod IIT Roorkee</i> <i>Prof. Ratna Dahiya, NIT Kurukshetra</i> <i>Prof. P. C. Tiwari, NIT Kurukshetra</i></p>	
8	<p>International Conference on “Interdisciplinary Areas with Chemical Sciences”</p> <p>Names of Eminent Scientists/Scholars: <i>Prof. C.N.R. Rao (India)</i> <i>Prof. T. Ramasami (India)</i> <i>Prof. S.K. Brahmachari (India)</i> <i>Prof. B.N. Jagtap (India)</i> <i>Prof. S. Sevov (USA)</i> <i>Prof. M. Gradzielski (Germany)</i> <i>Prof. N. Sathyamurthy (India)</i> <i>Prof. G.H. Findenegg (Germany)</i> <i>Prof. D.W. Bahnemann (Germany)</i> <i>Prof. A.K. Sood (India)</i> <i>Prof. K.N. Ganesh (India)</i> <i>Prof. G. Sahni (India)</i> <i>Prof. S. Bhattacharya (India)</i> <i>Prof. M. Aratono (Japan)</i> <i>Prof. Y. Masuda (Japan)</i> <i>Prof. Martin Gijs (Lausanne)</i></p>	30 Oct. -1 Nov. 2013
9	<p>International Conference, “NanoSciTech 2014”, on the theme, “Nanotechnology in the Service of Health, Environment & Society”</p> <p>Names of Eminent Scientists/Scholars: <i>Sh. Ajaz S Hussain, Director, Insight, Advice & Solutions, LLC, Frederick, USA</i> <i>Sh. Alberto Vomiero, Sensor Lab CNR-IDASC, Brescia, Italy</i> <i>Sh. Anton Liopo, Senior Scientist, TomoWave Inc., Houston, USA</i> <i>Sh. Antmisiaris Sophia, Director –Pharm Technology, University of Patras, Greece</i> <i>Sh. Ashish Ranjan, Oklahoma State University, USA</i> <i>Prof. Bernard Deconihout, Normandie University, France</i> <i>Prof. Diane J Burgess, Pharmaceuticals, University of Connecticut, USA</i> <i>Prof. Frederic Guittard, University of Nice, Antropolis, France</i></p>	13-15 Feb. 2014

	<p><i>Sh. Gilberto Brambilla, Researcher-Optoelectronics Research Centre, University of Southampton, UK</i></p> <p><i>Sh. Gilles Divita, Research Director, Molecular Biophysics & Therapeutics, Montpellier, France</i></p> <p><i>Prof. Jagat R Kanwar, Deakin University, Geelong, Australia</i></p> <p><i>Prof. Kamalinder K Singh, School of Pharmacy and Biomedical Sciences, University of Central Lancashire Perston, UK</i></p> <p><i>Sh. Mandip S Sachdeva, Head, Pharmaceuticals & Nanotechnology, Florida A & M University, USA</i></p> <p><i>Associate Prof. Martin C Garnett, University of Nottingham, UK</i></p> <p><i>Sh. N Sriranganathan, Director, Center for Molecular Medicine & Infectious Diseases, Virginia, USA</i></p> <p><i>Associate Prof. Pradeep K Karla, Howard University, Washington D.C, USA</i></p> <p><i>Prof. Rajendra Rathore, Marquette University, Milwaukee, USA</i></p> <p><i>Sh. Umesh Banakar, President, Banakar Consulting Inc., Indianapolis, USA</i></p> <p><i>Sh. Jagmohan Bajaj, Expert, UNESCO, Republic of Kosovo</i></p>	
10	<p>International Conference on “Challenges of Electronic Environment in Academic Libraries”</p>	29-30 Oct. 2013
11	<p>International Conference on “Advances in Water Resources: Development and Management”</p> <p>Names of Eminent Scientists/Scholars:</p> <p><i>Sh. Sushil Gupta, Chairman, Central Ground Water Board</i></p> <p><i>Sh. Arun Kumar, Member, SML and Member Secretary, CGWA</i></p>	23-27 Oct. 2013
12	<p>International seminar on “Pluralist Democracy and National Identity”</p> <p>Names of Eminent Scientists/Scholars:</p> <p><i>Dr. W. Frederic Shaw, Chief Executive Officer, Indigenous Resources, USA</i></p> <p><i>Sh. Consul General, Canada</i></p> <p><i>Sh. P.S. Sahai, Ambassador , IFS</i></p>	22-23 Oct.2013

3.2 Resource Mobilization for Research

3.2.1 What are the financial provisions made in the university budget for supporting students’ research projects?

Financial Assistance to the student for innovative work/Project is Rs.10.00 lac. Many research scholars are working presently in various departments as fellows of UGC-JRF, ICSSR, Rajiv Gandhi Fellowship, Inspire fellowship etc.

3.2.2 Has the university taken any special efforts to encourage its faculty to file for patents? If so, how many have been registered and accepted?

Yes, the special efforts have been undertaken by Panjab University to encourage its faculty to file patents by

- Organizing workshops to make the researchers aware about patent searching, patent drafting and patent filing procedures.
- Providing financial assistance for ₹ 30,000/- for patent filing.
- Celebrating the World IP day on April 26 every year, with a special lecture by an expert and to felicitate the patent holders/ filers of the University.
- 9 patents have been granted while 44 have been filed/published/examined. The detail is given here below

List of Patents Granted to the Inventors from Panjab University

S.No.	Inventors	Title	Application no.	Filed/Granted	Year
1.	O. P. Katare, B Kumar, R. Agarwal	A Novel Inter and Intra Multilamellar Vesicular Composition.	Australian Patent No. 2006/225991	Granted	2010
2.	O. P. Katare, B Kumar, R. Agarwal	A Novel Inter and Intra Multilamellar Vesicular Composition.	Russian Patent No. 2007/138829	Granted	2010
3.	V.R. Sinha	A process of preparing a directly compressible delayed release matrix formulations of Aceclofenac and product there of	Patent No 1238193	Granted	2010
4.	Ranju Bansal Sheetal Guleria, Gaurav Narang, Rolf W Hartmann	Novel series of Imidazolyl substituted steroidal and indan-1-one derivatives	European Patent no. EP 1 934241B1, 2012	Granted	2012
5.	Ranju Bansal, Sheetal Guleria, Gaurav Narang, Rolf W Hartmann	Novel series of imidazolyl substituted steroidal and indan-1-one derivatives	US 8,361,996 B2, 2013	Granted	2013

List of Patents Filed by the Inventors from Panjab University

Sr#	Inventors	Title	Filed/ Grante d/ Publish ed	Year	Application no.	Indian/ Internati onal
1.	Shishu Nidhi aggarwal Ranjit Khurana Manu Sharma	Colloidal Composition Of Griseofulvin	Filed	2009	208/DEL/2009	Indian
2.	Rohit Sharma, J Kaur, VI Thakur, S K Rana, N K Birkeland	Lipase/esterase- catalyzed synthesis of alkyl esters by transesterificati on.	Filed	2009	Indian Patent Application no. 2562/ DEL/2009	Indian
3.	Indu Pal Kaur, Cheena Rana, Gautam Bakshi	Pharmaceutical Nanoelastic Vesicular Systems	Publish ed	2010	2390/DEL/2008	Indian
4.	Indu Pal Kaur, Cheena Rana, Shilpa Kakkar, Gautam Bakshi	A Method for Preparation of Nanoelastic Vesicular Systems. Patent of addition	Publish ed	2011	1447/DEL/2010	Indian
5.	Rohit Sharma, S. Sharma, M. Sharma, E. Khullar, K. Bansal, A. Sharma.	Nitrile hydrolyzing microbes for industrial use.	Filed	2011	Indian Patent Application No. 2883/ DEL/2011	Indian
6.	Rohit Sharma, S. Sharma, M. Sharma, E. Khullar, K. Bansal, A. Sharma.	Low cost culture medium for nitrile hydrolyzing microbes.	Filed	2011	Indian Patent Application No. 2882/ DEL/2011	Indian
7.	M Sharma, S. Khanna, S. Sharma, J. Kaur, Rohit Sharma.	Anti- carcinogenic extract from Pithecellobium dulce.	Filed	2011	Indian Patent Application No. 2972/ DEL/2011	Indian
8.	Indu Pal Kaur, T. Geetha, Meenakshi Kapila, Gautam Bakshi	Pharmaceutical Topical Composition Comprising Sesamol Solid Lipid Nanoparticles	Filed	2010	428/DEL/2010	Indian
9.	Indu Pal Kaur, Rumjhum Agrawal	Topical Curcumin Formulation	Filed	2010	2335/DEL/2010	Indian

10.	Indu Pal Kaur, Gautam Bakshi, Pramod Kumar Singh	Probiotic Containing Triforked Pharmaceutical Compositions	Filed	2010	3052/DEL/2010	Indian
11.	Manoj Kumar Sharma	Electronics Preferential Voting Machine (EPVM)	Filed	2010	854/DEL/2010	Indian
12.	Jagdeep Kaur Pushpender Kumar Ranvir Singh	Engineering of the metagenome derived lipase	Filed	2010	1279/DEL/2010	Indian
13.	Praveen Rishi, C. Raman, Manu Chaudhary	Rapid Detection of Gram Negative Bacterimia Using Novel Nano Bio- Probe	Filed	2011	3788/DEL/2011	Indian
14.	Indu Pal Kaur, Rohit Bhandari	Solid lipid nanoparticles entarping hydrophilic/am phiphilic drug and a process for preparing the same	Filed	2012	127/DEL/2012	Indian
15.	Indu Pal Kaur, Rohit Bhandari	Solid lipid nanoparticles entarping hydrophilic/am phiphilic drug and a process for preparing the same	Filed	2012	PCT/IN2012/000154	PCT
16.	Indu Pal Kaur, Manoj Kumar Verma.	Solid Nanolipidic particulates of retinoic acid and vitamin D ₃	Filed	2012	79/DEL/2012	Indian
17.	Karan Vasisht, Maninder Karan, Mahaveer Dhobi	Novel compounds as memory enhancers.	Filed	2012	1650/DEL/2012.	Indian
18.	Maninder Karan, Karan Vasisht, Meenakshi Verma	Novel polyherbal composition for prevention and treatment of inflammation	Filed	2012	1651/DEL/2012.	Indian

		and arthritis.				
19.	O. P. Katare	Stabilised mucoadhesive neon-vesicular combinatorial vaccine formulation.	Filed	2012	1564/DEL/2012	Indian
20.	Indu Pal Kaur, Manoj Kumar Verma.	A process for preparing solid lipid sustained release nanoparticles for delivery of vitamins	Filed	2012	PCT/1B2013/050169	International
21.	Indu Pal Kaur, Harinder Singh	Preparation of Solid Lipid Nanoparticles of Rifampicin to improve bioavailability and limiting drug interaction with Isoniazid	Filed	2012	3356/DEL/2012	Indian
22.	Indu Pal Kaur, Manoj Kumar Verma, Mandeep Singh	Oral nanocolloidal aqueous dispersion (NCD) of streptomycin sulphate	Filed	2012	3093/DEL/2012	Indian
23.	Renu Chadha	A new Polymorphic Form of Telmisartan	Filed	2012	833/DEL/2012	Indian
24.	Indu Pal Kaur	Topical preparation containing drug in solid lipid nanoparticles for anti psoriatic use	Filed	2012	3850/CHE/2012	Indian
25.	Sanjay Chhibber, Saloni Singla, O.P. Katare, Kusum Harjai, Ms. Sheetu Wadhwa	Lipoidal Delivery System for Delivery of Bacteriophages	Filed	2013	3301/DEL/2013	Indian

3.2.3 Provide the following details of on going research projects of faculty:

173 ongoing research projects approved during last four years worth Rs. 319541826

Summary of Ongoing Projects

Ongoing Projects	
UGC	21267133
DST etc	237612398
DAE AICTE etc	60662295
Total	319541826

Further details are given below:

AGENCY	NUMBER OF PROJECTS
AICTE	6
CSIR	16
ICSSR	7
DAE	8
ICAR/ICAR DOCTROAL FELLOWSHIP	7
INSA	3
ISRO	1
GOI	6
PB. GOVT.	1
HARYANA GOVT.	1
DRDO	4
DBT	10
DST/SERB(DST)	48
ICMR	7
UGC	38
Others	10
TOTAL	173

The details are available at an Annexure 'H' which will be shown to the NAAC team on their visit.

3.2.4 Does the university have any projects sponsored by the industry / corporate houses? If yes, give details such as the name of the project, funding agency and grants received.

Yes, the university does have a few projects sponsored by the industry /corporate house. The detail is given here below:

Sr.No	Description	Sponsoring Agency	Amount
1.	Petrographic Analysis of silt and water sample	M/s Satluj Jal Vidyut Nigam Ltd, Rampur	₹ 177638
2	Pilot Plant studies for producing ethanol from biowaste	M/S Krofta Engineering Ltd, New Delhi	₹ 905600
3	Study and Energy & Environment Testing for Tepp Project powdered Bio-mass fired burner at Navodya Vidyalaya Chd.	M/s Technology Information Forecasting & Assessing Council, New Delhi	₹ 20000
4	1) Development of some Novel Formulations of Isotretinoin, Etodolac, Methotrexate 2) Development of Novel Formulation – Acyclovir and EMLa	M/S IPCA Laboratories Ltd.	₹ 1200000 ₹ 420000
5	Isolation and Production of lipase for the synthesis of biologically active and enantiomerically pure isomers	M/s Bioage Equipment and Services	₹ 73200
6	Trial of project using Liquid- Liquid Extractor from the pilot plant	M/s Ind. Swift Laboratories Ltd.	₹ 20000
7	Screening and Formulation development of Novel Phytochemical Drugs for Various CNS Disorders	Advance Physiotherapies Pvt.	₹ 400000
8	Anti diabetic activity of Fenugreek Extract	M/S Chemical Resources, Panchkula,	₹ 210100
9	Aromatase inhibitors and adenosine kinase inhibitors	M/S Sanative Therapeutics Pvt. Ltd	₹ 138650
10	Genotoxicity studies on impurities of Active Pharmaceutical Ingredients	M/s Jubilant Organosys Ltd., Noida	₹ 327034
11	Development and scale up of liposomal preparation”	M/S Lifecare Innovation, Gurgaon	₹ 377880
12	Evaluation of the efficacy of subgingival irrigation in patients with moderate to severe chronic periodontitis otherwise indicated for periodontal flap surgery	M/S Waterpik Inc, USA	₹ 507628
13	Citizen Centric Services GAMADA in Mohali	GMADA, Mohali	₹ 370000
14	Nitrile hydrolyzing enzymes(s) from novel extremophile their production, purification & applications	Span Biotech, Panchkula.	₹ 79200

15	Competency mapping and Performance Management System in Tynor	M/S Tynor Orthotics Pvt Ltd, Mohali.	₹ 54000
16	Analysis of plant samples	M/S Chemical Resources	₹ 197424
17	Petrographic Analysis of Silt Samples	M/s Kathua Sub Division, Malikipur	₹ 64608
18	To develop a formula for a medical paste”	M/S Medical System, Chandigarh	₹ 144383
19	Evaluation of Goneflex in Arthritis & Diabetes	Dr. DOZO Laboratories	₹ 503016
20	Acute Toxicity Testing of Satcon and Goniflex	Dr. Dozo Laboratories, Mohali	₹1,71,686/-
21	To act as an expert witness towards a patent litigation	M/s Goodmans L.L.P, Toronto, Ontario, Canada	₹10,43,640/- (\$ 18736)
22	Petrographic Analysis of rocks on the bank of Chakki River	M/s Water Irrigation, Gurdaspur	₹34,494/-
23	Royalty for commercialization of Products	M/s Life Care Innovations Pvt. Ltd.	₹15929/-
24	Consultancy to review of all XRD and DSC data from previous study	M/s Sentiss Research Centre	₹20,000/-
25	Petrographic analysis of water sample	M/s Binwa Power House Division, HPSEB, LTD.	₹21,570/-
26	Area of English for Specific Purposes (ESP) and Soft Skill Development	Ghubaya College of Engineering Technology	₹51,680/-
27	Nano Particle Preparation Project	M/s Murali Krishna Pharma Pvt. Ltd.	₹2,48,878/-
28	Development of expression platform using yeast for Human Papilloma Virus (HPV)- expression, fermentation, harvest, purification and process scale-up	M/s Biobridge Healthcare Solution Pvt. Ltd. Pune	₹90,000/-

3.2.5 How many departments of the university have been recognized for their research activities by national / international agencies (UGC-SAP, CAS; Department with Potential for Excellence; DST-FIST; DBT, ICSSR, ICHR, ICPR, etc.) and what is the quantum of assistance received? Mention any two significant outcomes or breakthroughs achieved by this recognition.

SAP/CAS = 9 SAP/DRS=11 DSA=1 FIST=7

UGC-SAP,CAS And Centre with potential of Excellence in particular area							
Sr. No.	Project Name	Period	Grant received in 2010-11	Grant received in 2011-12	Grant received in 2012-13	Grant received in 2013-14	Total Grant received

1	DRS in Zoology	1.04.06 to 31.03.11	575971	727607			1303578
2	DRS in Zoology	01.04.07 to 31.03.2012	519049				519049
3	CAS -VI in Geology	01.04.06 to 31.03.2011	907168				907168
4	DRS Economics SAP	01.04.2007 to 31.03.12	444201	304529			748730
5	SAP under CAS Pharmacy	2006-2011	505455				505455
6	DSA in Bio-Physics	01.04.09 to 31.03.14	347939	452209	4631464		5431612
7	CAS in Chemistry	01.04.07 to 31.03.12	435894	460358			896252
8	DRS-III Education	01.04.07 TO 31.03.12	113307	113815			227122
9	DRS-II Botany	01.04.07 TO 31.03.12	470170	330901	464984		1266055
10	CAS-I Physics	01.04.8 to 31.03.13	431503	441303	459904		1332710
11	CSSEIP	1.4.2007 to extended up to 12th plan 31.3.2017	0	0	0	0	0
12	DSA-I Biotech	01.04.07 TO 31.03.12	358988	343749			702737
13	CAS-I Sociology	01.04.07 TO 31.03.12	609284	364370			973654
14	DRS-I Bio-Chem	01.04.09 to 31.03.14		277885	1172305		1450190
15	DRS-I Microbiology	01.04.09 to 31.03.14	575257	412537	899761		1887555
16	DSA-III Pol. Sci	01.04.09 to 31.03.14	335234	1807797			2143031
17	CAS-I Geography	01.04.09 to 31.03.14		605523	5600000	341685	6547208
18	CAS-V, Maths	01.04.10 to 31.03.16	725000	486444	572500	5750000	7533944
19	CAS-I, Anthropology	01.04.11 to 31.03.16	475000		359358		834358
20	DSA Statistics	01.04.10 to 31.03.15		1756415	478291		2234706
21	DRS-I, Chemical Engg	01.04.11 to 31.03.16		5490000			5490000
22	DRS-III, UBS	01.04.11 to 31.03.16		640000			640000
23	DRS-I, English	01.04.11 to 31.03.16		1210000		447019	1657019
24	CAS VII Geology	01.04.12 to 31.03.17	0	11020000	0		11020000
25	CAS II UIPS	01.04.12 to 31.03.17		790000			790000
26	DRS-I UIET	01.04.12 to 31.03.17		3560000			3560000
27	DRS-III, Botany	01.04.13 to 31.03.18	0	0		540000	540000
28	DRS-II, Biotech	01.04.13 to 31.03.18				200000	200000

29	CPEPA under Prof. B.S. Bhoop "Application of Nanomaterials Nanoparticles and Nanocposites"	18.01.12 to 17.01.17		17750000			17750000
30	CPEPA under Prof. Rajesh Gill "Cultural Fixation on "honour" A Gender Audit of Punjab and Haryana	18.01.12 to 17.01.17		9250000			9250000
	Total		7829420	58595442	14638567	7278704	88342133

3.2.6 List details of

- i. Research projects completed and grants received during the last four years (funded by National/International agencies).
- ii. Inter-institutional collaborative projects and grants received
 1. All India collaboration and 2. International

210 Research projects approved and completed during the last four years worth Rs. **156049776**

Completed Projects	
UGC	44151590
DST etc	20804245
DAE AICTE etc	2751808
SAP CAS	88342133
Total	156049776

List attached as Annexure 'H' which will be shown to the NAAC committee on their visit.

3.3 Research Facilities

3.3.1 What efforts have been made by the university to improve its infrastructure requirements to facilitate research? What strategies have been evolved to meet the needs of researchers in emerging disciplines?

The University has been granted money by U.G.C./DST(PURSE) to inspire the infrastructure of the research labourites/departments. In fact under the PURSE grant of DST, special PURSE laboratories/ classrooms have been created in all the Science departments of the University.

Recently Panjab University has been granted additional land by the U.T. administration for the creation of space/infrastructure for carrying out research work in the emerging areas. Solar power Generation, Wi-Fi Campus, PURSE Labs, Smart Classroom for researchers, FIST, Research promotion Cell

research scholars to ensure seminar on plagiarism seminar how to write a project.

3.3.2 Does the university have an Information Resource Centre to cater to the needs of researchers? If yes, provide details of the facility.

The issues related to researchers are addressed by the Dean Research. In addition to this, University has Research Promotion Cell (RPC) to deal with the issues related to research. The functions of RPC include:

- Encouraging researchers to get projects funded by National/International agencies.
- Solving their administrative problems
- Inviting eminent researchers to share their research experiences
- Informs the researchers about the availability of grants/scholarship in their respective areas.

The RPC has senior Faculty members and research scholars' representative as its members and is the contact point of sponsors and agencies for research work.

3.3.3 Does the university have a University Science Instrumentation Centre (USIC)? If yes, have the facilities been made available to research scholars? What is the funding allotted to USIC?

Yes, Panjab University has a USIC centre as a part of the SAIF facility from DST, New Delhi and is available to research scholars in and around Panjab University. It may be noted that USIC does not have any independent funding from any agencies. However, the SAIF facility is fully financed by Department of Science and Technology, New Delhi.

3.3.4 Does the university provide residential facilities (with computer and internet facilities) for research scholars, post-doctoral fellows, research associates, summer fellows of various academies and visiting scientists (national/international)?

Yes, the University provides residential facilities for research scholars, Doctoral and Post -Doctoral Fellows in the hostels. In all hostels, Internet facility, Wi-Fi facility, newspapers and magazines, TV/DVD etc are available for the benefit of the students.

3.3.5 Does the university have a specialized research centre/ workstation on-campus and off-campus to address the special challenges of research programmes?

The university have a specialized research centres such as CIL/SAIF/RSIC/UCIM, Centre for Human Genome Studies & Research etc. In addition, all departments are working as research centres to address special challenges of any research programme.

Cluster Innovation centre in Biotechnology and Policy Research centre have become operational for research work.

3.3.6 Does the university have centres of national and international recognition/repute? Give a brief description of how these facilities are made use of by researchers from other laboratories.

Yes, Departments/Centres having national and international recognition/repute are as:

1. CIL/SAIF/RSIC/UCIM

The University has a DST-supported Regional Sophisticated Instrumentation Centre along with the Central Instrumentation Laboratory (CIL) and the University Science Instrumentation Centre (USIC) to serve the scientific community on the campus and in the region. The Centre also undertakes the design, fabrication and repair of electronic instruments required by students and teachers from the University and the colleges around. This facility is also made available to the industries.

2. Dept Cum National Centre for Human Genome Studies & Research

The Centre imparts current knowledge of biotechnology, genomics, proteomics and cutting edge research both in theory and practice. NCHGSR offers post graduate and PhD research programs. The Centre aims at generating accomplished brains in different areas of molecular biology, which not only serves biotech related industries but also provides trained and motivated persons required by other institutes. The department is one of the best research institutes providing an excellent theoretical as well as hand on laboratory experience.

3. University institute of Pharmaceutical Sciences

The institute is actively collaborating with other research institutions at the national and international level, and with the pharmaceutical industries to help evolve novel ideas and outcomes. The synergistic three tier-tie of academia- industry-medical research institutions (PGIMER, Chandigarh) has been enforced to help transfer research ideas from laboratory-shelf to the clinician's desk. The Ranbaxy Laboratory, New Delhi, Panacea Biotec Pvt. Ltd., New Delhi, Albert David Ltd. Calcutta, Himalaya Drug Company, Bangalore, Dr Reddy's Laboratory and Life Care Innovation Pvt. Ltd., Gurgaon are the some of the major Pharma players which have been collaborating. The institute is also known for its very high value research on steroids which yielded a well known molecule Candocuronium iodide, a for neuromuscular blocking agent and also commercialization of 'Thank God', a pile medicine by Panacea Biotec Pvt. Ltd., which is a rare distinction of any academic institution.

4. Department of Physics

The department is participating in the prestigious International High Energy Research Programmes at Fermilab (USA), KEK (Japan) and CERN (Switzerland). At present the University is involved in a big way in CMS and ALICE Experiments at CERN (European Organization for Nuclear Research) Switzerland and Neutrino Programme at Fermilab, USA.

Through the participation in the CMS Project, the Panjab University has become a part of a major discovery of the century i.e. Higgs boson which was announced on July 4, 2012 at CERN.

5. Computer Centre (National Knowledge Network)

Ministry of HRD, Government of India has selected PU as a node to be connected to National Knowledge Commission (NKN) with high network bandwidth. The University Computer Center has established 10 Gigabit campus wide Network to provide high speed connectivity to various departments through National knowledge network (NKN). Almost all the Departments are connected through optical fiber. All Hostels have been made Wi-Fi and students can access internet free of cost with hardware fire-wall installed at Computer Centre with three wide area network links of 1 Gbps (NKN), 1 Gbps (NME-ICT), 155 Mbps STM1(1:1)(Reliance).

6. University School of Open Learning (USOL)

The objective was to take university based education beyond the four walls of the University. It is the consistent Endeavour of the USOL to introduce new and relevant courses and explore and adopt e-learning in order to reach more and teach more.

3.4 Research Publications and Awards

3.4.1 Does the university publish any research journal(s)? If yes, indicate the composition of the editorial board, editorial policies and state whether it/they is/are listed in any international database.

Yes. University publishes the following research journals:

1. Journal of University Institute of Legal Studies
2. Journal of University School of Open Learning
3. Journal of Arts
4. Journal of Social Sciences
5. Journal of Science

The composition of the editorial board, editorial policies for the above mentioned journals is placed at Annexure 'I' which will be shown to the NAAC Team on their visit.

3.4.2 Give details of publications by the faculty:

No.of papers published (national)	3649
No.of papers published (International)	371
Monographs	27
Chapters in books (national)	368
Chapters in books (international)	11
Edited books	105
Books with ISBN no.	162
No. listed in Inter-national Database	1405
Citation	0-8136
SNIP	0-10.53
SJR	0-12.003
Impact factor (range/average)	0-10
h-index	0-27

3.4.3 Give details of

- **faculty serving on the editorial boards of national and international journals: 108**
- **faculty serving as members of steering committees of international conferences recognized by reputed organizations / societies:**
136 National and 61 International

3.4.4 Provide details of

- **research awards received by the faculty and students**
- **national and international recognition received by the faculty from reputed professional bodies and agencies**

No. of teachers getting awards for research work during the last four years:

- National: 63
- International: 26

Table: Awards/recognitions for teachers

Year	State Level	National Level	International Level	Total
2009-10	--	14	04	18
2010-11	--	25	04	29
2011-12	--	25	04	29
2012-13	--	10	03	13

3.4.5 Indicate the average number of successful M.Phil. and Ph.D. scholars guided per faculty during the last four years. Does the university participate in *Shodhganga* by depositing the Ph.D.theses with INFLIBNET for electronic dissemination through open access?

A total of 1027 Ph.D. Scholars have been awarded Ph.D. degrees during the last four years. The university participates in Shodhganga programme and has deposited 11 Ph.D.theses with INFLIBNET for electronic dissemination through open access.

In addition, the University through its web-site (<http://www.puchd.ac.in>) publishes the summary of Ph.D. thesis.

3.4.6 What is the official policy of the university to check malpractices and plagiarism in research? Mention the number of plagiarism cases reported and action taken.

Panjab University has procured Anti Plagiarism Software i.e. Turnitin. Its access is available to all the Departments with login and password for checking the malpractices and Plagiarism in the research. The software is used before submitting any thesis or research papers for publications to journals for knowing the similarity index with already published work, internet resources and to be published/submitted work.

As per the Panjab University policy no thesis can be submitted for the evaluation without going through the Anti Plagiarism software wherein supervisor and the candidate has to certify that no part of the thesis is plagiarized.

3.4.7 Does the university promote interdisciplinary research? If yes, how many interdepartmental / interdisciplinary research projects have been undertaken and mention the number of departments involved in such

endeavours?

Yes, University promotes interdisciplinary research among different disciplines in the University. Many ongoing projects funded by different agencies are being run in collaboration in the following departments:

- Pharmaceutical Sciences
- Microbiology
- Bio-Chemistry
- Bio-Physics
- Microbial Technology
- Botany
- Zoology
- Geology
- Punjabi
- Gandhian Studies
- Public Health
- Anthropology
- Sociology
- Law
- Public Administration
- Management
- English

The collaboration between these departments is directed towards achieving desired goals by utilising the infrastructure & faculty expertise.

3.4.8 Has the university instituted any research awards? If yes, list the awards.

As such, no particular research award has been instituted by the University. However, University has instituted two awards, i.e., Udyog Rattan and Vigyan Rattan for recognising contribution of eminent personalities. These contributions carry a cash award of Rs 1 lakh besides citation.

The Panjab University Teachers Association honoured about 75 teachers on 5th September, 2013 to recognise their research contribution and encourage the young faculty.

3.4.9 What are the incentives given to the faculty for receiving state, national and international recognition for research contributions?

The contribution of the faculty receiving state / national and international recognition for their research contribution is appreciated by the University in meeting of its highest Governing bodies, i.e., Syndicate and Senate.

3.5 Consultancy

3.5.1 What is the official policy of the University for Structured Consultancy? List a few important consultancies undertaken by the university during the last four years.

The official policy for consultancy work is placed at Annexure 'J' which will be shown to the NAAC Team on their visit.

DETAIL OF CONSULTANCY PROJECTS FOR THE SESSION: 2010 - 2011

S.No	Name of the Researcher	Description	Sponsoring Agency	Amount (in Rs.)
1	Dr Kanwaljit Chopra, UIPS	Anti diabetic activity of Fenugreek Extract	M/S Chemical Resources, Panchkula,	210100/-
2	Prof A.R. Rao, UIPS	Aromatase inhibitors and adenosine kinase inhibitors	M/S Sanative Therapeutics Pvt. Ltd	138650/-
3	Dr Indu Pal Kaur ,UIPS	Genotoxicity studies on impurities of Active Pharmaceutical Ingredients	M/s Jubilant Organosys Ltd., Noida	327034/-
4	Dr Naresh Tuli Prof G.S.Gill, Deptt of Geology	Petrographic Analysis of silt and aggregates and chemical analysis of water sample	M/s Himachal Pradesh Power Corporation	14900/-
5	Prof O.P. Katare, UIPS	Development and scale up of liposomal preparation”	M/S Lifecare Innovation, Gurgaon	377880/-
6	Dr Ashish Jain, Dental College	Evaluation of the efficacy of subgingival irrigation in patients with moderate to severe chronic periodontitis otherwise indicated for periodontal flap surgery	M/S Waterpik Inc USA	507628/-

DETAIL OF CONSULTANCY PROJECTS FOR THE SESSION 2011- 2012

Sr.No	Name of the Researcher	Description	Sponsoring Agency	Amount
1	Dr. Suveera Gill, UBS	Citizen Centric Services GAMADA in Mohali	GMADA, Mohali	370000/-
2	Dr Rohit Sharma Deptt of Microbial Biotechnology	Nitrile hydrolyzing enzymes(s) from novel extremophile their production, purification & applications	Span Biotech, Panchkula.	79200/-
3	Dr. Gunmala Suri, Deptt. of UBS	Competency mapping and Performance Management System in Tynor	M/S Tynor Orthotics Pvt Ltd, Mohali.	54000/-
4	Prof. Karan Vashisht, UIPS	Analysis of plant samples	M/S Chemical Resources	197424/-
5	Dr. Ramanjit Kaur Johal, Dept. of Public	Common Wealth Youth Programme,	M/s Asia Centre,	116382/-

	Administration		Chandigarh	
6	Dr.Suveera Gill, UBS	Citizen Centric Services	M/s GMADA, Mohali	370000/-
7	Dr. Rohit Sharma, Deptt of Microbial Biotechnology	Isolation and Production of Lipase for the synthesis of Biological Active and Enantiomerically pure Isomers	M/s Bioage Equipments Pvt. Ltd., Mohali	79200/-
8	Dr. Kanwaljit Chopra, UIPS	Evaluation of Goniflex ® in Arthritis & Diabetes	DOZO Laboratories	350000/-

DETAIL OF CONSULTANCY PROJECTS FOR THE SESSION - 2012 - 2013

Sr.No	Name of the Researcher	Description	Sponsoring Agency	Amount (in Rs.)
1	Dr. Naresh Tuli , Deptt of Geology	Petrographic Analysis of Silt Samples	M/s Kathua Sub Division, Malikipur	64608/-
2	Dr. Indu Pal Kaur, UIPS.	To develop a formula for a medical paste”	M/S Medical System, Chandigarh	144383/-
3	Dr. Kanwaljit Chopra	Evaluation of Goneflex in Arthritis & Diabetes	Dr. DOZO Laboratories	503016/-
4	Dr. Naresh Tuli , Dept. of Geology	Petrographic Model of River bed material	Govt. of India, Central Water Commission	55225/-

DETAIL OF CONSULTANCY PROJECTS FOR THE SESSION 2013 - 2014

S.No	Name of the Researcher	Description	Sponsoring Agency	Amount (Rupees)
1	Prof. Indu Pal Kaur, UIPS	Acute Toxicity Testing of Satcon and Goniflex	Dr. Dozo Laboratories, Mohali	1,71,686/-
2	Prof. Indu Pal Kaur, UIPS	To act as an expert witness towards a patent litigation	M/s Goodmans L.L.P, Toronto, Ontario	10,43,640/-

3	Dr. Naresh Tuli, Department of Geology	Petrographic Analysis of rocks on the bank of Chakki River	M/s Water Irrigation, Gurdaspur	34,494/-
4	Prof. O.P. Katare	Royalty for commercialization of Products	M/s Life Care Innovations Pvt. Ltd.	15929/-
5	Prof. Renu Chadha, UIPS	Consultancy to review of all XRD and DSC data from previous study	M/s Sentiss Research Centre	20,000/-
6	Prof. Tankeshwar Kumar, Computer Centre	Consultancy project for conducting test for clerks	Department of Social Welfare, Chandigarh	42,135/-
7	Prof. Naresh Tuli	Petrographic analysis of water sample	M/s Binwa Power House Division, HPSEB, LTD.	21,570/-
8	Mr. Rajesh Kumar Mishra, Asstt. Prof. PU Regional Centre, Muktsar	Area of English for Specific Purposes (ESP) and Soft Skill Development	Ghubaya College of Engineering Technology	51,680/-
9	Prof. Indu Pal Kaur	Nano Particle Preparation Project	M/s Murali Krishna Pharma Pvt. Ltd.	2,48,878/-
10	Dr. Rohit Sharma	Development of expression platform using yeast for Human Papilloma Virus (HPV)-expression, fermentation, harvest, purification and process scale-up	M/s Biobridge Healthcare Solution Pvt. Ltd. Pune	90,000/-

3.5.2 Does the university have a university-industry cell? If yes, what is its scope and range of activities?

Yes, the university has a university-industry cell, which is called the Centre for Industry Institute Partnership Programme (CIIPP). With a view to bridging the gap between theory and practice and to sensitize university towards needs of the industry, CIIPP was set up in 1996 as a separate entity as a self sustaining centre on Strategic Business Unit concept.

Aims & Objectives of CIIPP

- Create awareness about the Industry Institute Programme and devise strategies for the promotion of synergistic interface with industry.
- Develop methodology for creation of endowment funds and promotion of consultancy/case studies/technology transfer to cater to specific need of the industry.
- Find out ways & means to optimally utilize resources available in industries and institutions.
- Generate R&D programmes and technical components for industrial need.
- Identify specific themes for mutual interest with relevance to present day need.
- Recommend need based courses to industry and prepare learning materials relevant to industries.

Vision of CIIPP

- To bring industry closer to the academia and vice-versa
- To make the curricula particularly the technical courses more relevant to users.
- To generate resources in the form of industry supported projects and consultancy programmes.
- To organize placement interviews on the Panjab University Campus for the graduates of the University.

Mission of CIIPP

- To generate adequate intellectual and financial resources for the mutual benefit of industry and society by focusing on integrated research, planning, curriculum development and instructional software preparation in the areas of science, technology and humanities.
- To organize and promote formal, non-formal, flexible, modular, training programmes in the emerging areas of knowledge and research and in Rural Development, Educational Planning, Information and Management Sciences.
- To organize need-based workshops/symposia in order to promote self-employment among the students (both . General and the marginalized minorities).
- To create environment for fostering close liaison with industry.

3.5.3 What is the mode of publicizing the expertise of the University for Consultancy Services? Which are the departments from whom consultancy has been sought?

The mode of publicizing the expertise of the University for Consultancy Service is by sending the database of the technical expertise collected from the faculty members of the University to different industries. The experts also have the liberty to show case their expertise to different industries at their own level as well. University also organizes specific Industry interaction sessions with various industries for one to one interaction with technical experts with university so that the industry may prepare suitable MOU after mutual agreements.

Departments involved in enriching the university with their consultancy work

- University Institute of Pharmaceutical Sciences
- Department of Geology
- University Institute of Chemical Engineering and Technology
- Department of Chemistry
- Centre for Microbial Biotechnology
- Computer Science
- University Institute of Engineering and Technology
- University Institute of Dental Sciences
- Department of Microbiology

3.5.4 How does the university utilize the expertise of its faculty with regard to consultancy services?

University utilizes the expertise of the faculty members through CIIPP, which generally establishes a linkage with various industries by taking their feedback in terms of their specific requirements in technical consultancy. The same is then circulated among the experts of the University for utilizing their expertise as per the university policy for consultancy work. The CIIPP also organizes specific Industry interaction session with various industries with one to one interaction with technical experts with university so that the industry may prepare a suitable MOU after mutual agreements.

3.5.5 List the broad areas of consultancy services provided by the university and the revenue generated during the last four years.

The broad areas of consultancy are

- Pharmaceutical Sciences
- Geological Science
- Chemical Engineering and Technology
- Computer Science
- Public Health
- Human Resource Management

Year	Amount Generated
2010	2367738
2011	2255945
2012	1761521
2013	4613596

3.6 Extension Activities and Institutional Social Responsibility (ISR)

3.6.1 How does the university sensitize its faculty and students on its Institutional Social Responsibilities? List the social outreach programmes which have created an impact on students' campus experience during the last four years.

The student's participation in academic activities such as departmental seminars, Workshops and extra curriculum activities and relating to student

council social cause, Extra Curriculum students' council activities such as Annual elections, youth festival celebration and departmental functions have created an impact on students campus experience.

The department of Life Long Learning organized awareness generation programmes on the concept emerging from the present situation by celebrating days and interface with the students and the community on the themes of National Integration, Literacy Day, Environment Day, Population Day, World Health Day, Human Rights Day, Women's Day, HIV/AIDS etc. , by involving faculty and students from different departments of Panjab University, especially Education, Psychology, Sociology, Social Work, Police Admn. , University Institute of Fashion Designing and Vocational Development and Human Right. This would help to inculcate the sense of social responsibility of the faculty and the students towards the society. Extension as an third dimension of the University, these programmes would help to generate awareness amongst the faculty, students and community at grass root level.

List of the Important Social Outreach Programmes for the Community including Govt.Schools/ University Depts. etc.

- Reproductive Health and Reproductive Right of Women
- Life Skills and Adolescents.
- Guidance and Counseling for +2 students
- Nutrition and Health
- Adolescent Education.
- Safe Drinking water and Health
- Role of Life skills and Adolescents .
- Managing Stress Guidelines for Adolescents .
- Enhancing the Performance Level of the Students By Managing Stress and Time.
- Role of Life Skills in everyday Life.
- Women Empowerment
- Save Environnent.
- Women and AIDS
- Sexual harassment at work place
- Management of waste
- Environment Education
- Population and Development

3.6.2 How does the university promote university-neighbourhood network and student engagement, contributing to the holistic development of students and sustained community development?

The students participate in seminars organised by the departments of Social sciences of neighbouring universities. Research scholars also participate in conferences organised by State and National level social science organization.

(i) University-Neighborhood Network

The Department constantly involved Panches, Surpanches, NGOs, Govt. Officials and MC Officials for organizing programmes for the community and organized programmes for their improvement in their day to day life. These programmes includes Remedial Coaching for SC/ST Students, UGC/NET Coaching, Research Methodology, Basic course in Computer Science, Vocational course in Beauty Culture and Fashion Design and tie and dye for the community and Soft Skills Development Course for SC/ST students and vocational workshops on life skill education etc.

(ii) Social Initiative undertaken by the students :

- ✓ Camp by community student of Beauty Culture on the eve of Karva Chouth at Student Centre, Panjab University, Chandigarh.
- ✓ Literacy Classes for slum children
- ✓ Rallies for Literacy, Environment Protection
- ✓ Poster making competitions.

(iii) List Of Collaborating Agencies

- ✓ Teaching Departments of Panjab University, Chandigarh.
- ✓ Identified colleges affiliated to the Panjab University in Punjab and Chandigarh.
- ✓ Identified colleges of education affiliated to Panjab University in Punjab and Chandigarh.
- ✓ State Departments of Health, Environment, Population Education etc.
- ✓ Government and Non-government organizations working in the field education and skill development etc.
- ✓ Universities in the state of Punjab.
- ✓ NGOs based in Chandigarh and Punjab.

3.6.3 How does the university promote the participation of the students and faculty in extension activities including participation in NSS, NCC, YRC and other National/ International programmes?

The students are encouraged to participate in NSS, NCC, national level sports and Youth festivals and they are also awarded and honoured for their achievements.

The NSS wing of the University is coordinated by a faculty member of the rank of Assistant Professor and two other faculty members are deputed to assist the Coordinator.

The NSS wing of the University organized activities such as Youth for Clean and Healthy India, blood donation camp, Cleanliness drive, plantation drive, AIDS awareness, lectures on moral values and skill development.

3.6.4 Give details of social surveys, research or extension work, if any, undertaken by the university to ensure social justice and empower the underprivileged and the most vulnerable sections of society?

The following faculty members were appointed for the different posts and they have been undertaking social surveys research and extension work to ensure social justice and empowerment of under privilege section of the society.

Prof S. Sabbarwal	Director, Population Research Centre
Prof. Rajesh Gill	Co-ordinator of Centre with Potential for Excellence in Particular Area (CPEPA) U.G.C. Cultural Fixation on Honour: A Gender Audit of Punjab & Haryana,
Prof. Kiran Preet Kaur	1.Co-ordinator, Centre of Social Work 2. Director of Social Welfare, Haryana sanctioned project for undertaking Survey on Backward Communities of Haryana Castes like Raisikh, Dhobi, Banjara & Nayak report for which has been submitted.

Need based social survey has been done by the department time to time in the community to organized vocational programmes, extension lectures, seminars, workshops, orientation programmes so that the department would give contribution to the society by giving them awareness, changing their outlook towards life and vocational development amongst youth.

The following publications have been done by the department for the last four years:

List of important Research Publications of the Department:-

1. Parent Child Relationship As Cause of Adolescent's deviant behaviour; Prof. Ajaib Singh and Prof. Sween .
2. Anxiety Among Women; Prof. Ajaib Singh, Prof. Sween
3. Enhancing Youth Employability; Prof. Sween
4. "Loneliness and Ageing at Different Levels of the Aged People; A Research Study" Published in Coherence: A Multi-disciplinary Journal Vol. 3 No. 1 June, 2012. ISSN: 0976-5301 An Annual Journal.(jt)
5. "The Process of Life Long Learning and its Influence on the Teachers" Published in Challenges for Education In Knowledge Society by 21st Century Publications, Patiala. ISBN : 97893-80144-67-2. (jt)

6. “Stress, Youth and Values” Published in 21st Century Publications Awakening Youth- Swami Vivekanand’s Vision and Challenges in Education in the 21st Century edited by Dr. Jagdeep Kaur, Ryat College of Education, Panjab March 2013. ISBN: 978-93-80144-35-1. (jt)
7. “Qualitative Improvement of Learners and Teachers by Capacity Building and Competitive Spirit” Published in 21st Century Publications Awakening Youth- Swami Vivekanand’s Vision and Challenges in Education in the 21st Century edited by Dr. Jagdeep Kaur, Ryat College of Education, Panjab March 2013. ISBN: 978-93-80144-35-1. (jt)

3.6.5 Does the university have a mechanism to track the students’ involvement in various social movements / activities which promote citizenship roles?

Although there is no formal mechanism to track the student involvement in different activities but opted for teaching as career (Professors in colleges & Universities) and they are working in different sectors such as health, social welfare and non-government organizations (NGOs). Some of them have been also selected for civil service examinations.

The certificates are to be provided to the students and community after completion of their course and their follow up would be done by organizing the same programmes in the community.

3.6.6 Bearing in mind the objectives and expected outcomes of the extension activities organized by the university, how did they complement students’ academic learning experience? Specify the values inculcated and skills learnt.

Values inculcated and skills learned by the students, analytical critical thinking and problem solving skills, Communication and leadership skill, initiating ideas& handling of projects independently, Values like innovative activities and Cross-cultural interaction.

The department has been working for propagating skill development courses for the weaker section of the society, awareness generating programmes for the students and the community, social initiating undertaken by the community students for university students would helped to improve the communication skills, increase the confidence level and mental horizon amongst students. These programmes not any help them in communication skills but also generate skills of conflict resolution, problem solving, time management, values of hard work, social work and social responsibilities and cooperation towards the community. The learning is two way process and extension activities organized by the department would help not only to the students but also community at large.

3.6.7 How does the university ensure the involvement of the community in its outreach activities and contribute to community development? Give details of the initiatives of the university which have encouraged community participation in its activities.

The Department has evolved a mechanism for outreach activities which contribute to community development which include 'Field Work' (curriculum as Master level) for which students make field visits, collect and analyse data and write reports. Students are made to visit places like slums, orphanage, Senior Citizens home etc. Students participate in extra curriculum activities within and outside University. Most of researches/ survey reports /thesis are undertaken which contribute towards community development.

The list of activities undertaken by the department according to the objectives and expected outcomes of the extension activities is given below:

List of the Important Vocational Courses for the Students and Community on yearly basis:

- a. **UGC/NET Coaching Classes:** FREE UGC/NET Coaching Classes for SC and ST Students
- b. **Remedial Coaching Classes**
 - 1. Coaching Classes for Remediation in English for 10th and 12th class Students
 - 2. Classes on Remediation in Hindi for +2 Students
 - 3. Classes on Remediation for English and Mathematics
- c. **Computer Courses**
 - 4. Certificate Course in Computer Applications
- d. **Vocational Courses**
 - 5. Certificate Course in Block Printing and Tie and Dye
 - 6. Vocational Course in Fashion Designing
 - 7. Certificate Course in Beauty Culture and Skin Cosmetology
 - 8. Vocational course on Entrepreneurship Development
 - 9. Certificate Course in English Speaking & Personality Development
- e. **Vocational Workshops**
 - 10. Workshop on Bridal Makeup
 - 11. Certificate Course on Block Printing
 - 12. Course on Skin Care and Removal of Unwanted Hair
 - 13. Vocational Workshop on Life Skill Education.

3.6.8 Give details of awards received by the institution for extension activities and/contributions to social/community development during the last four years.

One of the faculty members was honoured by the Department of Forest Govt. of Haryana for undertaking project on Community Forest. Another faculty member was awarded and appointed as Co-ordinator for **Centre with Potential for Excellence in Particular Area (CPEPA) U.G.C. Cultural Fixation on Honour: A Gender Audit of Punjab & Haryana, for undertaking research for Community Development.** Another member is Co-ordinator Course for **E-Pathshala.**

- Best Social Worker Award to Mrs. Renu Gandhi, the faculty member of the department by YWCA, Sector 11, Chandigarh in the year 2011.
- Best Teacher in Non-formal Education to Mrs. Renu Gandhi, the faculty member of the department by Inner Wheel Club Midtown, Chandigarh in the year 2013.
- Dr. Prabha Vig, nominated as an Indian Scholar to visit Mauritius under 5th UGC-TEC Consortium Agreement for the year 2012.

3.7 Collaboration

3.7.1 How has the university's collaboration with other agencies impacted the visibility, identity and diversity of activities on campus? To what extent has the university benefited academically and financially because of collaborations?

The university has benefited from the collaborations as the researchers from the university have been able to raise the standard of their research by incorporating newer techniques, ideas generated through mutual interaction between researchers and utilizing the facilities available at two institutes. This mutual collaboration has helped them to publish their work in journals of repute with high impact factor making their work visible to scientific community globally. This has earned the scientists a good citation on their work. On the basis of these achievements the university:

- **Ranked No.1 in India and 32nd in Asia**, as per Times Higher Education Asian University rankings 2014.
- **Number one in India and in the bracket 226-250 internationally in the Times Higher Education World University Rankings, 2013-2014, powered by Thomson Reuters.**
- 141-150 in QS University Ranking: BRICS 2014
- Number one in India and 13th internationally in the Times Higher Education BRICS & Emerging Economies Rankings 2014.

- **ASSOCHAM, 2014:** Adjudged Best Government University in the Country
- **Career 360, 2014:** 2nd amongst Universities, 7th amongst Institutes of Higher Education
- **Center for University World Rankings, 2014:** 5th in the Country; 543rd in world

Its world ranking has also seen an upswing. Financially also the university has benefited from these collaborations as it was awarded DST PURSE grant during 2009-2013. In a recent ranking of different universities of India by DST on the basis of quality of research carried by them, Panjab University was placed next to Delhi University and Hyderabad University and it received another substantial grant for research for the next four years (2014-2018).

3.7.2 Mention specific examples of how these linkages promote

- ✓ **Curriculum development:** Help in developing newer courses relevant to recent advances and societal needs
- ✓ **Internship:** Help in teaching the applied aspect of theoretical training
- ✓ **On-the-job training:** Provides a platform to students to learn the actual processes and challenges on a larger scale with confidence
- ✓ **Faculty exchange and development:** This not only updates the knowledge of the faculty but also gives them a chance to collaborate in their future endeavours.
- ✓ **Research:** Mutual discussions, exchange of ideas and sharing of facilities results in better research avenues.
- ✓ **Publication:** Advanced research gets published in Journals of repute on competitive basis
- ✓ **Consultancy:** Interactions among different groups help them evolve methods that can give the faculty an insight into problem solving approach. This opens the door for consultancy.
- ✓ **Extension:** The knowledge gained can also be utilized for the upliftment of society.
- ✓ **Student placement:** Well trained and groomed students get better opportunity when it comes to getting jobs in organisations of repute in India and abroad.

3.7.3 Has the university signed any MoUs with institutions of national/international importance/other universities/ industries/ corporate houses etc.? If yes, how have they enhanced the research and development activities of the university?

Yes, the university constantly enters into MoUs to have tie ups at regional/national and international levels for exchange of knowledge and

expertise and for the purpose of keeping pace with the latest technological advancements in different fields. The faculty gain experience by undergoing training through exchange programmes with institutions within India and abroad. In the last four years, the University has signed about 26 MoUs, the list of which is available at Annexure 'E' and will be shown to the NAAC Team on their visit.

3.7.4 Have the university-industry interactions resulted in the establishment / creation of highly specialized laboratories / facilities?

The Centre for Industry Institute Partnership Programme (CIIPP) facility has been established by the university to boost interaction between university and industry. An attempt is being made to establish a biotechnology incubator in the university to provide facility to the young entrepreneurs who want to try their ideas by conducting research in a conducive atmosphere. The university has earmarked money for this purpose.