University of Delhi

Research Profile

RESEARCH COUNCIL

Viceregal Lodge, University of Delhi, Delhi 110007

Website: www.du.ac.in

Email: research-council@du.ac.in

researchcouncildu@gmail.com

Vision Statement of the Vice Chancellor

The primary duty of a university is to give direction to society and to channelize the energies of youth for productive and creative purposes. The University of Delhi has, in keeping with its traditions and growth, moved from strength to strength. The University has maintained its number one rank in the list of Indian universities. This is a tribute to the inherent strengths in the systems and institutions of the University of Delhi. The University has delivered high quality research in niche areas, strengthened its facilities and professional networks to be an academic leader while serving the country in an effective and dedicated manner.

Prof. Dinesh Singh

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Prelude to the Research Profile

The University of Delhi is ranked No.1 in the Nielsen Ranking while it is ranked 78 in the QS Asian University rankings for the year 2013-14. It is a premier University of the country, having eminent scholars as its faculty and known for its high standards for research. Ever since its inception in 1922, a strong commitment to excellence in teaching and research has made the University of Delhi a role model and path-setter for other Universities in the country.

At present, there are 16 faculties and 86 academic departments covering diverse areas such as sciences, social sciences, humanities, law, management, medicine and engineering. In each department, experts and researchers are active in vast areas of research.Eminent scholars of science, arts, social sciences, law, politics, management and diplomacy from all over the worldare the alumni of the university.

More than 400 doctorate degrees are awarded at the annual convocation of the university each year. More than 5000 articles have been published in journals of high repute in the last five years. The publishing profile has seen a sharp rise from about 650 in 2008 to more than 1000 in 2013.

Several of our science departments have been awarded the status of the Centres of Advanced Studies by University Grants Commission (UGC). These centres have carved a niche for themselves as centres of excellence in teaching and research in their respective areas. The Arts and Social Sciences faculties have highly renowned and eminent scholars who have won international and national recognition and awards for their outstanding research work. These departments host the recipients of various fellowships like Fulbright, Commonwealth, Humboldt, DAAD, Rockefellerand have fellows of organizations such as INSA, NASI, etc.

Several science departments are receiving grants under the 'Special Assistance Programme' of the UGC and other grants such as DRS from UGC and FIST from DST in recognition of their outstanding academic work. The University received more than ` 300 crores from extramural sources in the last 5 years from funding agencies like DST, DBT, CSIR, DRDO etc.More than 70 croreshas been received through DST PURSE grant.

The faculty at the University is actively engaged in international exchange programs with universities such asHarvard University, Brown University, University of Pennsylvania, Columbia University, Yale

University, Cornell University, University of Chicago, University of California, Berkeley, Rutgers University, University of Michigan-Ann Arbor, Duke University, Northwestern University, State University of New York, Emory University,University of North Carolina, University of Tennessee, Ohio State University and University of Minnesota, to name a few.

Several initiatives are being taken by the university to further strengthen its research. An important step in this direction was to subscribe to digital libraries and databases and, providing connectivity to them via the University wide fibre-optic network connecting all colleges and departments in its north and south campuses. Other steps in this direction are the "catch them young" scheme promoting innovation at undergraduate level by way of Cluster Innovation Centre, Innovation Projects at undergraduate level and adding a serious component of research in undergraduate curricula, Memorandum of Understanding are being signed with more universities/organizations at national as well as international level.

Besides the campus wide network, the university provides to its faculty and scholars Central Instrumentation Facilities at north campus and south campusesthat house substantial high-end research instruments. Besides, each department provides elaborate infrastructure to its research scholars.

Preface

The University of Delhi turned ninety years old on May1, 2012. At the Research Council, constituted by the Vice Chancellor two yearsago, a decision was taken to create a contemporary Research Profile of the university to emphasize the range and depth of work that is quietly and diligently undertaken throughout this vast institution.

Ranked No.1 according to the Nielsen survey in India and claiming the highest grant from DST, this university has records of stellar achievements in almost all fields. This handbook by the Research Council compiles an easy reference guide based on public sources.While it has attempted to create a portrait on sharp lines, it may have glossed over in-depth details that belong to a different category of documentation.

The inspiration for this handbook has been the Vice Chancellor, Prof. Dinesh Singh who had the foresight to expand the horizons of research administration by creating the Research Council comprising of a Chairperson and three Deans, one each for major areas of Physical & Mathematical Sciences, Life Sciences and Humanities& Social Sciences. The Research Council oversees research grants for faculty, innovation projects for colleges, doctoral programmes, student fellowships and other administrative responsibilities of research and is understood as a continuum from the undergraduate curriculum to the highest end of scientific enquiry.

The international aspect of research has become increasingly important and the Council works closely with the Dean, International Relations for the activities relating to MoUs of the partner universities.

Technology too has emerged as a significant tool of research. The wider capacity of the library's e-resources and the Computer Centre's role in maintaining efficient technical support is duly recognized.

In all, a university research output is often known by its stellar awards, of which University of Delhi has an impressive score. National and international awards, prestigious

fellowships, patents and technical incubation programmes are endorsements of its steady research output. Many are listed in this research profile.

The University of Delhi looks ahead to strengthen its administration of research through setting up a rigorous IPR policy, a patent cell and a technology transfer facility. These will serve to take research findings into the domain of public service and global processes.

The University of Delhi's ninety years have seen renowned scientists, public intellectuals, writers, philosophers, honorary doctorates like Madam Curie, C. V. Raman, Jawaharlal Nehru, Noam Chomsky, J. C. Bose in its records.

The handbook presents the contemporary face of the University of Delhi and shows the way forward as it strides towards the centenary celebration in 2022.

Prof. Malashri Lal

Chairperson, Research Council

Acknowledgements

We thank the following for their active cooperation and sincere contribution towards compiling the Research Profile of the University

Prof. Malashri Lal, Chairperson, Research Council

Prof. Ajay Kumar, Dean Research (Physical Sciences & Mathematical Sciences)

Prof. Girishwar Mishra, Dean Research (Humanities & Social Sciences)

Prof. M. M. Chaturvedi, Dean Research (Life Sciences)

Dr. Deepika Bhaskar, Dep. Dean, Reaseach

Deans/Heads/ Scientists from various Faculties/Departments

Finance Officer

Planning Unit

Council Branch

International Relations Office

Annual Report Unit

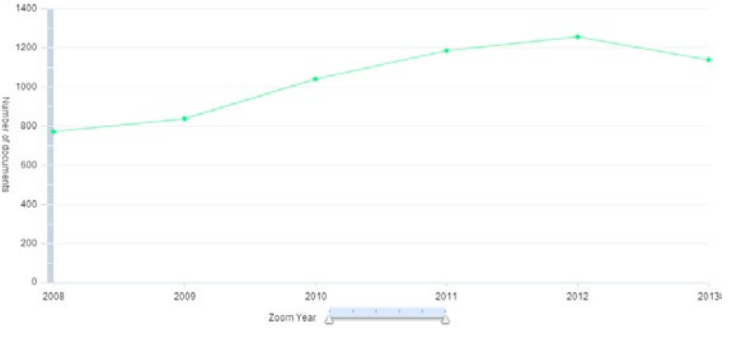
and

Dr. Neelima Gupta, Computer Science

Publication Profile

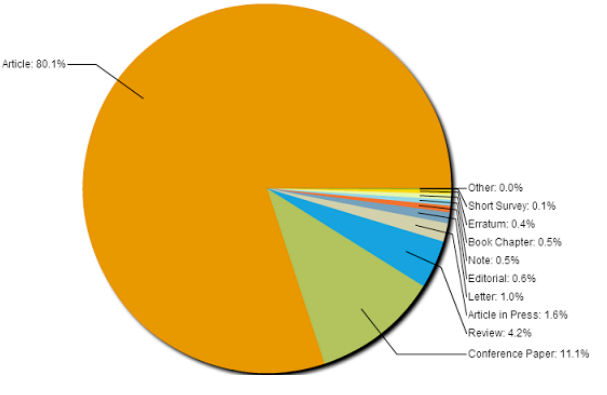
Number of total publications from University of Delhi from 2008 to 2013

The faculty of the University of Delhi has published 5554 documents in last five years. Out of these, starting with 662 documents in 2008, the number rose to 720 in 2009 and 935 in 2010. The lastthree years have documented publications above 1000 from the University, most of them in prestigious journals of repute.



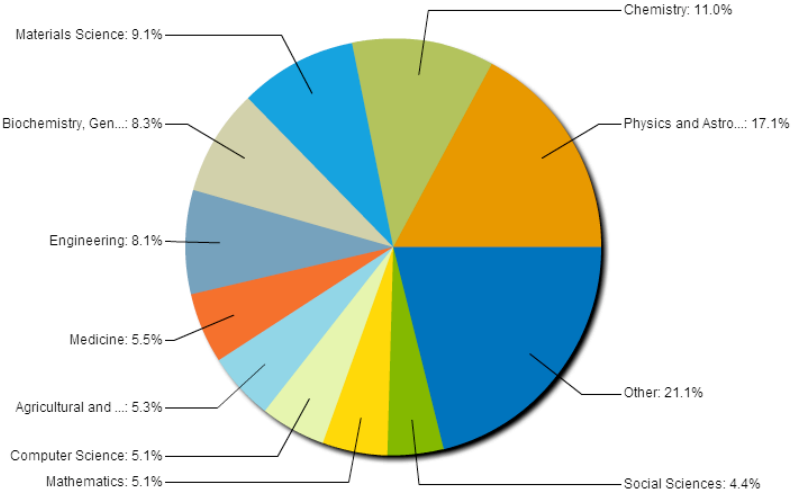
Type of documents published from University of Delhi from 2008 to 2013

Out of the 5554 documents published by the faculty of the University, 4438 are articles in journals i.e. research papers. Of the remaining, 624 are papers published in conference proceedings. 228 review articles have been published in the last five years. Ninety-five articles are in press. Fifty-four documents are in the form of letters. Editorial columns number at a total of 32 while 29 are notes.

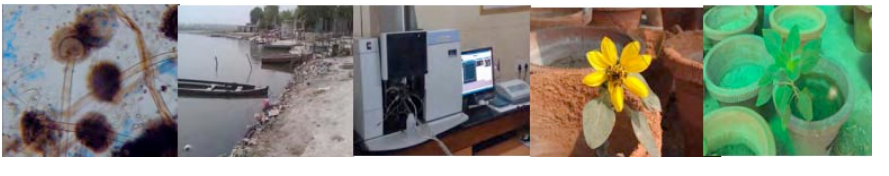


Percentage of total publications subject wise from University of Delhi

The maximum number of publications have been found to be in the area of Physics and Astrophysics (15.7%, 1486 articles). Chemistry comes a close second with 11.9% of the total articles havingpublished in this specialized area. 8.7% of the total articles are published in Biochemistry, Genetics and Molecular Biology while 3.7% of total articles published in journals of repute are from Social Sciences.



Scopus database covers 50 million records, 21,000 titles and 5000 publishers. It is the largest abstract and citation database of peer-reviewed literature. It delivers the most comprehensive overview of the world's research output in the fields of science, technology, medicine, social sciences and Arts and Humanities. It covers more than 4300 titles of the subject area of Life Sciences, more than 6800 titles from Health Sciences field with 100% Medline coverage, more than 7200 titles from Physical Sciences and more than 5300 titles from Social Sciences and Humanities.



Financial Support

Extramural Funding(2008-13)

Total externally funded projects	Three hundred and forty (340)
Major research proposals	Two hundred and fifty-one (251)
Funds for Major research proposals	Rupees one hundred and seventy crores
Minor research proposals (<10 lakhs)	Eighty-nine (89)
Funds for Minor research proposals	Rupees thirty-seven crores

Departments with Special Assistance Programme Grant from UGC

S.No.	Department
1.	Linguistics
2.	Economics
3.	PhysicsandAstrophysics
4.	PoliticalScience
5.	Geology
6.	Sociology
7.	East Asian Studies
8.	English
9.	Buddhist Studies
10.	Modern Indian Languages&Literary Studies

Sponsored Research and Development Science Projects (2008-13)

Name of the Department/Centre	No. of Sponsored R&D Projects	Amount (` in lakh)
Dr. B.R. Ambedkar Centre For Biomedical Research	26	975.61
Anthropology	42	
Biochemistry	32	3117.45
Biophysics	8	90
Botany	14	554.99
Chemistry	56	1445
Computer Science	2	23.28
Electronic Science	18	300
Environmental Studies	23	550
Genetics	51	5,337
Geology	38	732.74
Microbiology	67	2310
Operational Research	**20**	31.97
Plant Molecular Biology	41	2852
Physics & Astrophysics	39	1022.44
Zoology	70	3500

DST PURSE Grant

University of Delhi highest recipient of DST PURSE Grant-2014

The University of Delhi has been awarded rupees 40.8 crores as DST PURSE Grant, the highest amount from amongst 14 selected recipients of the grant for research in the university sector. This is a recognition grant based on significant increase in total number of publications and improved performance in publications with H-index values.

This is the phase II of the grant released from DST. Earlier, DST had released rupees 30 crores to the University of Delhi in 2009 in the first phase of the DST PURSE grant, the highest amount sanctioned to just three varsities out of which DU had the highest H-index.

Research Projects

With sanctioned grant Rupees one crore or more (2009-2013)

S.No.	Name of the PI	Department	Amount (`in crores)
1.	Prof. Anil Tyagi	Biochemistry	4.84
2.	Prof. V.K. Chaudhary	Biochemistry	2.94
3.	Prof. V.K. Chaudhary	Biochemistry	1.82
4.	Dr. Suman Kundu & 7 others	Biochemistry	2.52
5.	Prof. V.K. Chaudhary	Biochemistry	1.76
6.	Prof. A.K. Bhatnagar	Botany	4.50
7.	Dr. Sunil Kr. Sharma	Chemistry	1.42
8.	Prof. A.K. Pradhan	Genetics	8.0
9.	Prof. B.K. Thelma	Genetics	2.14
10.	Prof. R.C. Kuhad	Microbiology	14.84
11.	Dr. Md. Naimuddin	Physics & Astrophysics	1.61
12.	Dr. B.C. Choudhary	Physics & Astrophysics	2.0
13.	Prof. R.K. Shivpuri	Physics & Astrophysics	3.60
14.	Prof. Vinay Gupta	Physics & Astrophysics	1.03
15.	Prof. J.P. Khurana	Plant Molecular Biology	7.51
16.	Prof. J.P. Khurana	Plant Molecular Biology	1.52
17.	Dr. Arun K. Sharma	Plant Molecular Biology	1.89
18.	Prof. J.P.Khurana	Plant Molecular Biology	1.08
19.	Dr. Saurabh Raghuvanshi	Plant Molecular Biology	1.36
20.	Dr. Sanjay Kapoor	Plant Molecular Biology	1.28
21.	Prof. Rup Lal	Zoology	1.67
22.	Prof. Rina Chakrabarti	Zoology	1.24
23.	Dr. Sihbnath Mazumdar	Zoology	2.98
24.	Prof. Vinod Kumar	Zoology	1.0

Ongoing Research Initiatives—A Select List
(Grants, Awards and Patents)

Prof. Dinesh Singh
- Padma Shri Awardee
- Scientific Advisor to the Prime Minister of India
- Function theory in Hardy spaces
- Bohr's inequality for uniform algebras

Prof. SudhishPachauri
- SubramaniamBharati Prize for contribution to Indian Literature in the field of literary criticism
- BhartenduHarishchand award
- Literary Theories, Post Modernism, Post Structuralism, Media Studies, Cultural Studies

Prof. UmeshRai
- Fellow of the National Academy of Sciences, India
- Immuno-endocrinology & Reproductive Physiology

Prof. M.K.Pandit
- Threats from India's Himalaya Dams (Science)
- The Himalayas must be protected (Nature)
- Climate-induced elevational range shifts and increase in plant species in a Himalayan Biodiversity epicentre

Prof. Rup Lal
- US patent for Cloning vector and a process for the preparation thereof
- Patent for Production of Rifamycin B Analog
- Genome of Rifamycin B producing Amycolatopsis, Acinetobacter, Sphingobium, Thermus sp. sequenced
- Metagenomics of Extreme Environments

Prof. Malashri Lal
- Rockfeller, Fulbright, American Research and British Council grant awardee
- Post Colonial Translations: The Case of South Asia (Partner—Newcastle University, UK)
- Women's writing in cross-cultural perspectives

Prof. Anil K. Tyagi

- Shanti SwarupBhatnagar Awardee
- Three new vaccine regimens against Tuberculosis developed for human clinical trials.
- The genome of Mycobacterium indicuspranii known for its immunomodulatory properties against several diseases completely sequenced at the University of Delhi South Campus. This is the first new bacterial genome to be completely sequenced and annotated in India.

Prof. Vijay K Chaudhry

- Immunochemical test for culture confirmation of *Mycobacterium tuberculosis* complex
- Diagnostic instrument for detection of *M. tuberculosis* by unskilled personnel
- Invention:On-site Detection of HIV (AIDS)—Best Invention Award

Prof. Ajay Kumar

- DAAD, DFG, JSPS, Commonwealth fellow
- Potential theory of stratified nilpotent Lie groups
- Ideal structure of tensor product of C* algebra

Prof. Girishwar Mishra

- National award in the field of Social Science
- ICSSR National Fellow and Fellow of the National Academy of Psychology
- Cultural Psychology of Self and Emotion

Prof. Rehana Khatoon

- Padma Shri Awardee
- Persian literature in India

Prof. B K Thelma

- Whole Genome Association Analyses in Complex Diseases
- Functional characterization of SNPs/SNP haplotypes in candidate genes
- Identification Novel Gene(s) for familial Parkinson's Disease
- Pharmacogenetics of anti-epileptic drugs, antitubercular drugs and warfarin
- Effects of Yoga on circadian rhythms, cognitive functions and social burden in major mental disorders
- Publication in Nature Genetics

Prof. Pami Dua

- Expert on RBI Advisory Group
- Business Cycle Analysis, Macroeconomics, Econometrics, Forecasting
- United Nations, Project LINK
- ICICI Research Centre

Prof. Debi P Sarkar

- Virosome Mediated Anticancer Drug Delivery
- Mass production of targeted delivery of antigens through nanoparticles
- Novel nanoscale materials with anti-microbial and anti-cancer activities

Prof. Deepak Pental

- Development of transgenics in four major crops—Cotton, Rice, Mungbean and Tomato
- US patent for regulation of lethal gene expression in plants
- Indian patent for insulator construct for controlling leaky expression of a lethal gene
- Indian, European and US patent for method and DNA construct for improved fertility restorer lines for male sterile crop plants developed using transgenic approaches

Prof. R. C. Kuhad

- Pectinase for retting of plant fibres
- DNA library from wood decaying soil and termite mounts for novel lignocellulolytic enzymes
- Decolorization of dye waste waters using laccase over-producing fungi
- Bioconversion of lignocellulosics and cellulosics into ethanol as biofuel
- Xylanase and laccase at pilot and mill scale in pulp and paper industry

Dr. Anu Kapoor

- Amartya Sen Awardee for distinguished contribution towards the advancement of knowledge in any field of social science
- Empirical and theoretical research in the past three decades has centred around three critical themes: Environmental Geography, Geography in India and the Study of Disasters

Prof. R.K.Saxena

- Biotechnology for leather: Towards cleaner processing
- Microbial cellulose: A sustainable alternative to conventional fibers
- Butanol: A sustainable alternative fuel

Prof. M.M. Chaturvedi

- Studying inflammation: Mechanism of oscillatory response ofNuclear factor kappa B
- A novel histone H3-specific protease from chicken/mouse liver

Prof. C.S.Dubey

- Tectono-metamorphic and Geochronology vs. P-T-t relationship of the metamorphic Rocks
- Remote Sensing and GIS studies of Tehri dam Environs
- Geoenvironmental studies in relation to health hazards

Dr. Dinabandhu Saho

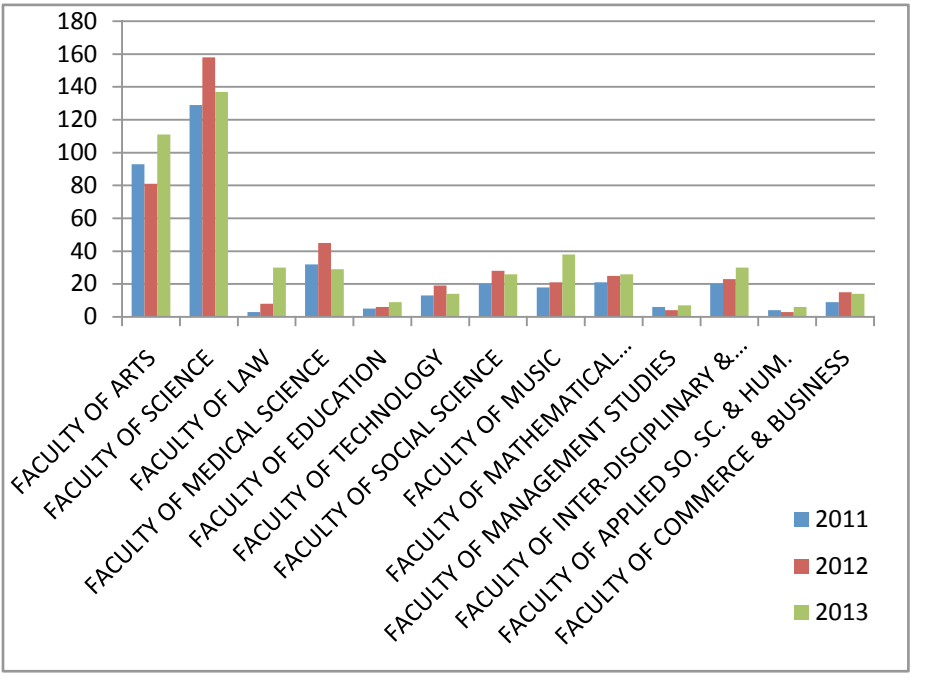
- Developed "World's first carbon capture vehicle" (Indian, US and European Patent)
- Chilika: Scientific intervention to provide livelihood
- Carbon sequestration by higher plants and algae at elevated CO_2 levels

Prof. Vinay Gupta

- Major research grants from DRDO, DST, UGC
- Semiconductor and Surface acoustic wave (SAW) sensors, Amperiometric/Photometric biosensors, Surface Plasmon Resonance sensor, Nanostructured materials, Piezoelectric and ferroelectric thin films/ceramics

Doctor of Philosophy Degrees awarded in past three years

S.No.	Faculty	2011	2012	2013
1	Faculty of Arts	93	81	111
2	Faculty of Science	129	158	137
3	Faculty of Law	3	8	30
4	Faculty of Medical Science	32	45	29
5	Faculty of Education	5	6	9
6	Faculty of Technology	13	19	14
7	Faculty of Social Science	20	28	26
8	Faculty of Music	18	21	38
9	Faculty of Mathematical Science	21	25	26
10	Faculty of Management Studies	6	4	7
11	Faculty of Inter-Disciplinary & Appl. Sc.	20	23	30
12	Faculty of Applied So. Sc. & Hum.	4	3	6
13	Faculty of Commerce & Business	9	15	14



Some Patents filed at the University of Delhi

S. No.	Publication Number	Title	Inventor
1	IN190838A1	A Process For The Preparation Of Water Based Stable Micro-Emulsion Formulation Of Neem Oil	MaitraAmarnath | Thakur Lalitesh Kumar | SenguptaDibyendu
2	US6579519B2	Sustained Release And Long Residing Ophthalmic Formulation And The Process Of Preparing The Same	Maitra, Amarnath | Gupta, Ajay Kumar | Majumdar, Dipak | Madan, Sumit
3	US20110201634A1	Dihydropyridimidinone Compounds For The Treatment Of Cardiovascular Diseases And Process For Preparing The Same	Parmar, Virinder Singh | Raj, Hanumanthrao Guru | Prasad, Ashok Kumar
4	WO2009157020A1	Coumarin Compounds For The Treatment Of Cardiovascular Diseases And Process For Preparing The Same	Parmar, Virender Singh | Raj, Hanumanthrao Guru | Prasad, Ashok Kumar | Jain, Subhash Chand
5	US6322817B1	Formulations Of Paclitaxel, Its Derivatives Or Its Analogs Entrapped Into Nanoparticles Of Polymeric Micelles, Process For Preparing Same And The Use Thereof	Maitra, Amarnath | Sahoo, Sanjeeb Kumar | Ghosh, Prasanta Kumar | Burman, Anand C. | Mukherjee, Rama | Khattar, Dhiraj | Kumar, Mukesh | Paul, Soumendu
6	US6555376B2	Process Of Entrapping Genetic Materials In Ultra-Low Size Nanoparticles Of Inorganic Compounds To Form Non-Viral Carriers	Maitra, Amarnath | Mozumdar, Subho | Mitra, Susmita | Roy, Indrajit
7	CN102076349A		Gupta Antje | Connor Paul | Ravindranath, Vijayalaksmi | Sehgal, Neha | Jain, Subhash Chand | Thakur, Suman
8	WO2003010612A3	Multifunction Interface Device For Use	Jolly, Prathiba | Vijayaraghavan, R. | Mehendru, Prashant | Verma, Mallika
9	US7943361B2	Mutants Of Mycobacteria And Process Thereof	Tyagi, Anil Kumar | Singh, Ramandeep | Rao, Vivek | Ramanathan, VadakkuppattuDevasenapathi | Paramasivan, ChinnambedyNainarappan | Narayanan, ParanjiRamaiyenger | Singh, Yogendra

10	US7741541B2	Method For Obtaining Improved Fertility Restorer Lines For Transgenic Male Sterile Crop Plants And A DNA Construct For Use In Said Method	Bisht, Naveen Chandra | Jagannath, Arun | Gupta, Vibha | Burma, Pradeep Kumar | Pental, Deepak
11	US7576263B2	Gene Osisap1 Of Rice Confers Tolerance To Stresses And A Method Thereof	Tyagi, Kumar Akhilesh | Arnab, Mukhopadyay | Vij, Shubha
12	WO2004098271A1	Development Of Cytoplasmic Male Sterile	Verma, Jagdish, Kumar | Sodhi, Yaspal, Singh | Arumugam, Neelkantan | Mukhopadhyay, Arundhati | Pradhan, Akshay, Kumar | Gupta, Vibha | Pental, Deepak | Srivastava, Alka
13	US7410801B2	Lambda Phage Display System And The Process	Chaudhary, Vijay Kumar | Gupta, Amita | Adhya, Sankar | Pastan, Ira
14	EP1589983A1	A Process Of Preparing An Extract Of AnnonaSquamosa For The Treatment Of Diabetes |	Tandon, Vibha, Dr.B.R.Ambedkar Cen. For Biomed. Res | Watal, Geeta, Chemistry Dept. | Chandra, Ramesh, Dr. B.R. Ambedkar Cen. For Bio.Res | Gupta, Kumar, Rajesh | Kashari, Narayan, Achyut
15	EP1590332B1	A Process For The Synthesis Of Bisbenzimidazoles And Their Derivatives.	Jain, Akash, Dr. B.R. Ambedkar | Tawar, Urmila, Dr. B.R. Ambedkar | Chandra, Ramesh, Dr. B.R. Ambedkar | Dwarakanath, B.S., Dr. B.R. Ambedkar | Chaudhury, N. K., Dr. B.R. Ambedkar | Tandon, Vibha
16	US8030548B2	Cytoplasmic Male Sterility System For Brassica Species And Its Use For Hybrid Seed Production In Indian Oilseed Mustard Brassica Juncea	Sodhi, Yashpal Singh | Pradhan, Akshay Kumar | Gupta, Vibha | Arumugam, Neelakantan | Verma, Jagdish Kumar | Mukhopadhyay, Arundhati | Pental, Deepak
17	US7728122B2	RTBV Plant Promoter And Process Thereof	Dasgupta, Indranil | Mathur, Saloni
18	US20090035775A1	Pcr-Based Detection Method For Chlamydia Treachomatis	Saluja, Daman | Chaudhury, Uma | Ali, Mashook | Sachdeva, Poonam
19	WO2011030353A3	Regioselective Acylation Of Nucleosides	Parmar, Virinder, Singh | Prasad, Ashok, Kumar | Saxena, Rajendra, Kumar | Shakya, Gaurav
20	EP877087A1	Cloning Vectors For Amycolatopsis Sp. And A Process For The Preparation Thereof |	Lal, Rup, Prof.

21	EP1276367A1	Novel 'Oxy' Cms Brassica Napus Plant Corrected For Chlorosis Using Hexaploid Bridging Material Generated Through Protoplast Fusion | Erzeugtem Material	Pental, Deepak | Mukhopadhyay, Arundhati | Gupta, Vibha | Arumugam, Neelakantan | Sodhi, Yashpal, Singh | Verma, Jagdish, Kumar | Pradhan, Akshay, Kumar
22	EP1220601A1	Stable Cytoplasmic Male Sterile Brassica Campestris Plant Which Contain "Polima" Cytoplasm And Method For Obtaining Such Plants	Verma, Jagdish Kumar | Sodhi, Yashpal Singh | Arumugam, Neelkantan E 4 First Floor | Mukhopadhyay, Arundhati | Pradhan, Akshay Kumar | Gupta, Vibha | Pental, Deepak
23	EP1220600A1	Fertility Restorer Gene For "Polima" Cytoplasmic Male Sterility |	Verma, Jagdish, Kumar | Sodhi, Yashpal, Singh | Arumugam, Neelkantan | Vukhopadhyay, Arundhati | Pradhan, Akshay, Kumar | Gupta, Vibha | Pental, Deepak
24	US20100311049A1	Pcr-Based Kit For Detecting Chlamydia Trachomatis And NelsseriaGonorrhoeae	Saluja, Daman | Chaudhary, Uma | Ali, Mashook | Sachdeva, Poonam | Patel, AchchheLal
25	US6833494B1	Regulation Of Lethal Gene Expression In Plants	Pental, Deepak | Jagannath, Arun | Bandyopadhyay, Panchali | Arumugam, Neelakantan | Gupta, Vibha | Burma, Pradeep Kumar

Global Research Initiatives

Memorandum of Understanding signed by the University of Delhi with various Foreign Universities during 2009-13

S.No.	Universities	Month/Year signed
1	Foundation of Castellano Y Leones Institute of Language, Burgos, Spain	February 2009
2	National Tsing Hua University, Taiwan	March 2009
3	Korea Research Institute of Bioscience and Biotechnology (KRIBB), Korea	April 2009
4	Konkuk University, Korea	May 2009
5	Universita Della Calabria	July 2009
6	Kangwon National University, Korea	September 2009
7	University of Zagreb, Croatia	November 2009
8	Korea University, Korea	November 2009
9	University of the Fraser Valley, Canada	November 2009
10	Norwegian University of Science and Technology, Trondheim, Norway	November 2009
11	University of Calgary, Canada	February 2010
12	Hokkaido University, Japan	February 2010
13	Bielefeld University, Bielefeld, Germany	March 2010
14	Lund University, Sweden	March 2010

15	Korea National University of Arts, Seoul, Korea	April 2010
16	University of Wales, Newport, UK	April 2010
17	Fudan University, China	April 2010
18	The Georg-August-Universitat Gottingen, Germany	April 2010
19	Albama State University, USA	May 2010
20	University of Rhode Island, USA	June 2010
21	University of Melbourne, Australia	July 2010
22	International Award for Young People (IAYP), UK	July 2010
23	The National Board for Higher Education, Asmara, Eritrea	September 2010
24	University of Edinburgh, UK	October 2010
25	The University of Koblenz – Landau, Germany	October 2010
26	Trinity College, Dublin	November 2010
27	The University of Maryland, USA	December 2011
28	The Vietnam Academy of Social Sciences (VASS)	March 2012
29	The Vietnam Academy of Science and Technology	March 2012
30	The Vietnam National University Ho Chi Minh (VNU HCM)	March 2012
31	The Vietnam National University, Hanoi (VNU Hanoi)	March 2012
32	University College Dublin, National Univ. of Ireland, Dublin	April 2012
33	Osaka University, Japan (Graduate School of Science)	May 2012

34	National Dong Hwa University, Taiwan, R.O.C.	May 2012
35	Kazakh National Pedagogical University, Kazakhastan	August 2012
36	University Paris-Dauphine, Paris, France	September 2012
37	Massey University, New Zealand	October 2012
38	Lincoln University & Asia Pacific Football Academy, Lincoln, New Zealand	October 2012
39	University of Potsdam, Germany	2011 and 2012
40	University of Wuppertal, Germany	February 2013
41	The Ecole Normale Superieure (ENS), Paris, France	February 2013
42	Seoul National University, Korea	May 2013
43	CASE Western Reserve University, USA	July 2013
44	University of Birmingham, UK	July 2013
45	University of Aizu, Japan	October 2012-13
46	Ataturk University, Turkey	October 2013
47	Kadir Has University, Turkey	October 2013
48	Universite Libre de Bruxelles, Belgium	October 2013
49	GhentUniversity, Gent, Belgium	October 2013
50	Group T, International University of Engineering, Belgium	October 2013
51	University of Michigan	November 2013

International Student Exchange

(2009-13)

Incoming Exchange Students (Duration—One Semester to One year)under existing MoUs

The students of the following universities visited the University of Delhi:

- University of Heidelberg, Germany
- University of Edinburgh, UK
- California University, USA
- Universite Jean Moulin, Lyon 3, France
- University of Hamburg, Germany
- University of Helsinki, Finland
- National Tsing Hua University, Taiwan
- University of Goettingen, Germany
- Norwegian University of Science and Technology, Norway
- University of British Columbia, Canada
- University of Hokkaido, Japan
- University of Asmara, Eritrea

Fulbright Scholars from University of Delhi 2008-14

Fulbright Program	Numbers 2008-2014						Universities visited	Subject areas
Fulbright -Nehru Student Research Program	1		3	4	4	6	Harvard University, Brown University, University of Pennsylvania, Columbia University, Yale University, Cornell University, University of Chicago, University of California, Berkeley, Rutgers University, University of Michigan-Ann Arbor, Duke University, Northwestern University, State University of New York, Emory University	Anthropology, Language and Literature, Business Administration, History, South Asian Regional Studies, Agriculture, Education, Law, Study of India, Sociology, Intellectual History, Environmental Science, Psychology, Medical Science, Visual Arts, Science and Technology
Fulbright-Nehru Lecturer	2							
Fulbright-Hays Doctoral Dissertation Research Program	3							
Fulbright-Nehru Senior Research Fellowships		1	1		2	2		
Fulbright Regional Research Program	1							
Fulbright Senior Specialists		1		1				
Fulbright New Century Scholar Program		1						
Fulbright-Nehru Visiting Lecturer Fellowships			1			1		
Fulbright-Hays Faculty Research Abroad Program			1					
Fulbright-Hays Doctoral Research Abroad Fellowships			2			2		
Fulbright-Nehru Teaching/Research Program					1	1		

US Fulbright Scholars to University of Delhi 2008-14

Fulbright Program	Numbers 2008-2014						Universities	Departments of DU visited
Fulbright -Nehru Student Research Program	1		3	4	4	6	Harvard University, Brown University, University of Pennsylvania, Columbia University, Yale University, Cornell University, University of Chicago, University of California, Berkeley, Rutgers University, University of Michigan-Ann Arbor, Duke University, Northwestern University, University of Illinois, State University of New York, Emory University, University of Virginia, Wesleyan University, University of North Carolina, University of Tenesse, Ohio State University, University of Minnesota	Psychology. Sociology, English, FMS, History, Linguistics, Social Work, Botany, Law, Education, Persian Studies, Anthropology, Urdu, African Studies, Zoology, Music and Fine Arts, Physics and Astrophysics, Environmental Studies, Buddhist Studies
Fulbright-Nehru Lecturer	2							
Fulbright-Hays Doctoral Dissertation Research Program	3							
Fulbright-Nehru Senior Research Fellowships		1	1		2	2		
Fulbright Regional Research Program	1							
Fulbright Senior Specialists		1		1				
Fulbright New Century Scholar Program		1						
Fulbright-Nehru Visiting Lecturer Fellowships			1			1		
Fulbright-Hays Faculty Research Abroad Program			1					
Fulbright-Hays Doctoral Research Abroad Fellowships			2			2		
Fulbright-Nehru Teaching/Research Program					1	1		

Erasmus Mundus Mobility Programme 2009-13

Inbound Mobility to University of Delhi under Erasmus Mundus Mobility Programme (Including Visiting Faculty, UG, PG, PhD and Post Doctoral students)

EMECW Lot 15:Tenstudents visited University of Delhi from the following universities

- Univ. of Vilnius, Lithuania
- Lund University, Sweden
- UvA, Netherlands
- Katholeike Univ.,Lueven, Belgium
- FreieUniversitat Berlin, Germany

MECW Lot 13 and Willpower: Seven students visited the University of Delhi from the following universities

- University of Vilnius, Lithuania
- Albert Ludwig Universitat, Germany
- University of Deusto, Spain
- University of British Columbia, Canada

Outbound Mobility from the University of Delhi to partner European Universities under Erasmus Mundus Mobility (Including Visiting Faculty, UG, PG, PhD and Post Doctoral students)

EMECW Lot 15: Twenty-seven students visited the following universities

- Politecnico di Milano, Spain
- UvA, Netherlands
- Katholieke Univ., Leuven, Belgium
- Lund University, Sweden
- Univ. of Vilnius, Lithuania
- Freie Univ., Berlin
- Pierre &Mareie Curie University, France

EMECW Lot 13: Twenty students visited the following universities

- NTNU, Norway
- Lund University, Sweden
- Univ. of Deusto, Spain
- Freie University, Berlin
- KU, Leuven
- UvA, Netherlands
- Peirre & Marie Curie University, France

Willpower: Eightstudents visited the following universities

- Universitat Politecnica De Catalunya, Spain
- Universitat Degli Studi Di Padova, Italy
- Technische Universitat Munchen, Germany

EMEA Lot 11: Nine students visited the following universities

- University of Milan, Italy
- University College Dublin, Ireland
- Pierre and Marie Curie University, France
- Lund University, Sweden
- University College London
- UvA, Netherlands

Faculty Training Programme—Masters at UK Universities(2010-13)

Fifty-two faculty members completed one year Mastersdegreeprogramme in the following universities and subject areas:

Subject Area	University
Bioinformatics	University of Edinburgh
Financial Mathematics	University of Edinburgh King's College, London
International Accountancy and Finance	University of Birmingham
Economics and Econometrics	University of Nottingham University of British Columbia University of Edinburgh University of Birmingham
Economics and Financial Economics	University of Nottingham
Finance & Investment	University of Edinburgh
Advanced Genomics & Proteomics	University of Nottingham
Accounting , Accountability and Financial Management	King's College London
Palliative Care	King's College London
Computer Security	University of Birmingham
Accounting and Finance	University of Edinburgh
Systems and Synthetic Biology	University of Edinburgh
High Performance Computing	University of Edinburgh
Nanoscience and Nanotechnology	University of Glasgow
Financial Forcasting and Investment	University of Glasgow
Global Media and Post-national Communication	University of London
Cancer Immunology & Biotechnology	University of Nottingham
Critical Theory and Cultural Studies	University of Nottingham
Financial Services and Society	University of Nottingham
MBA Entrepreneurship	University of Nottingham
Translational Neuroimaging	University of Nottingham
Finance and Investment	University of Nottingham

Strategic Initiatives

Four Year Undergraduate Program Research Component

Philosophy and Overview

The University of Delhi works on an extraordinary scale.With 9000 teachers, 15,000 non-teaching staff and over 4 lakh students receiving education through formal and non-formal programmes, it stands out as one of the largest universities in India.The University of Delhi was established in 1922 with three colleges and 750 students.Today it has become one of the most significant centres of higher education in the country and has been ranked number 1 for the last three consecutive years by the India Today-Nielson survey.Surely the traditional methods have to be altered to suit today's needs, and respond to the young people.

The Four Year Undergraduate Programme (FYUP) is complete and self-contained and has distinct advantages over the three-year undergraduate degree so far offered at the University of Delhi. The FYUP is by no means an extended or modified version of the earlier programme. The advantage of the longer duration is that it permits greater flexibility of academic programmes, in-depth learning, interdisciplinary exposure, holistic growth of students through extracurricular activities and other benefits. Also, the four-year programme, each year being divided into two semesters, moves away from rote learning and one-time exams to a more continuous system of evaluation.

Research Component

In the fourth year, the syllabus introduces a major component of research, beginning with a full course in research methodology and moving into research papers for the remaining part of the year. Uniquely, the research will be based on hands-on project work undertaken with a mentor, and will be expected to demonstrate original thinking, analytical argument, and detailed documentation. Keeping to the FYUP philosophy of experiential learning, the research component will encourage students to relate academic enquiry to real-life situations. At the same time, students will be trained to judiciously access the vast corpus of knowledge in the domain of e-resources. For example, according to some teachers, it has been found that Indian knowledge systems are not adequately presented in the virtual network, others have said that India's cultural and oral traditions need to be systematically researched and placed in e-learning portals. The possibilities in undergraduate research are immense. The scheme of innovation projects at Delhi University has already shown the capability for research with undergraduate students. The formal curriculum will hone the talent further.

Technology Based Incubator

For Biotechnology Entrepreneurs

Technology Based Incubator (TBI), housed in the first Biotech park of Delhi in the biotech building of Delhi University South Campus, was established in 2009 with the support of Delhi State Government and subsequently funded by Department of Science & Technology (DST, Govt. of India), with theVice Chancellor as the Chairman, Board of Governors–TBI and Prof. R. K. Saxenaas the Coordinator.

The concept of Technology Based Incubator (TBI) has emerged as a novel and a very pro-active approach where an unique opportunity is provided to gestate fledgling researches to full fledged technologies, capable of being transferred to the industry for ready commercialization. TBI UDSC provides a portal for young entrepreneurs, researchers, small to medium industries and major established industries in the field of industrial microbiology & biotechnology with an emphasis on fermentation technology which offers researchers and entrepreneurs the opportunity to develop their incipient processes, technologies and ideas into commercially viable ventures.

The mission of this TBI is to

- Provide incubation support to the biotech start-ups or entrepreneurs who wish to incubate and develop a juvenile technologies/processes/ideas.
- Build up entrepreneurship values & provide value added service to help new & existing entrepreneurs & industries become more competitive through use of innovative, state of the art technologies.
- Provide industrial manpower and entrepreneur training, in order to foster the spirit of entrepreneurship among the biotech professionals.
- Support and strengthen biotech entrepreneurs through gap filling interventions that facilitate in the development of new technology and hence reduces the barriers to carry out the research incubation.

Technologies developed by TBI available for commercialization

- Microbial Cellulose
- Hydrolytic enzymes — Protease, Lipase, Tannase, nitrilase&Asparaginase
- Organic acids — Succinic acid, Lactic acid, Butyric acid &shikimic acid
- Diols — 1,2-propanediol and 1,3-propanediol
- Second generation Biofuels — Bio-butanol and Bio-diesel
- Sugar alcohols — Xylitol

Cluster Innovation Centre

University of Delhi has set-up theCluster Innovation Centre (CIC) with the objective of fostering an ecosystem of innovation and connecting research with application for the benefit of society. The CIC aims to support application-oriented research to solve real world problems by developing ideas into innovative applications successfully. The CIC focuses on encouraging affordable innovations that reach a large number of people and at the same time remain sustainable and relevant.

The main **objectives** of Cluster Innovation Centre are:

1. Foster an environment of innovation.
2. Create degree and short term programmes that reflect and use innovation.
3. Educate and sensitize students and teachers by launching projects related to innovation in the real world for undergraduate students and college teachers.
4. Enhance potential of faculty and students by conducting training/orientation programmes/modules on innovation and research.
5. Incubate ideas that are highly innovative and relate to society in a practical way.
6. Facilitate collaborations and partnerships with industry, academia and other segments of society.
7. Encourage a culture of entrepreneurship for the University of Delhi as a whole.

The **CIC ecosystem** consisting of the following major elements working at the University of Delhi in order to achieve the above mentioned goals:

1. **Innovative Teaching and Research Programmes:**
   (i) Four year undergraduate programme in **"B.Tech./B.S. in Innovation with Mathematics & Information Technology"**. This course was started in

September 2011 and its third batch was inducted in August 2013.

Highlights of the course:

- Creative and innovative
- Interdisciplinary project based approach
- To work on real world situation based problems and find their mathematics & IT based solutions
- Innovation in relation to technology, management, entrepreneurship, business and communications, social aspects
- Establish two-way links between university, industry and society
- Harmonious blend of theory and hands-on projects

(ii) Four year undergraduate programme in **"B.Tech. Humanities"**—'Design-your-own-Degree' under Meta-college concept. This course was started in September 2012 and its second batch was inducted in August 2013.

Highlights of the course:

- Freedom to students to "design their own degree"
- Enable students to benefit from resources, talent and expertise in different colleges
- Basic courses in semesters one and eight at the Cluster Innovation Centre to gain competence in core areas.
- Students given the freedom to choose courses to specialize in a particular stream such as

"Journalism", "Education", "Historical Tourism", "Counseling" and "Art and Design".

- Emphasis on hands-on projects, virtual learning, internships and group based activities
- Inter and trans-disciplinarity approach to encourage a holistic understanding of Humanities.
- Flexible learning
- Integrated rewards for extra-curricular activities

(iii) Two year postgraduate programme**"Master of Mathematics Education"** under Meta-University concept in collaboration with JamiaMilliaIslamia, New Delhi. This course was started in January 2013 and its second batch was inducted in July 2013.

Highlights of the course:

- A paradigm shift in higher education in India.
- Based on the premise that the 'Whole is Greater than the Sum of the Parts'.
- Utilize, exploit and create synergy between programmes, activities and partner institutions.
- Free students from the tyranny of boundaries and the constraints of location
- Combining "Collaborative learning" and "Trans-disciplinary learning"
- To move away from the conventional pedagogy of teaching mathematics especially at school level and to include methods of facilitating learning through methods such as storytelling, projects, group work and participative modules.
- To establish inter-disciplinarity between mathematics and other subjects from humanities and the social sciences.
- To encourage collaborative learning through group activities and hands-on learning.
- To provide in-service training for school teachers.
- To learn to apply mathematics to real-life situations and help in problem-solving.
- Mentor to serve as the catalyst for learning enhancement

(iv) Setting up of 'Design Innovation Center' approved by Ministry of Human Resource Development, Govt. of India.

2. **Establish linkages between industry and the University for innovation aimed for practical ends:**To create and sustain a two way link between segments of industry and society on the one hand and the University on the other hand. This is to ensure a fruitful exchange of ideas and programmes that will connect meaningfully with teaching and research programmes of the University, as well as bring benefit to society through input from the CIC where students of the degree programmes as well as other UG/PG/Research students shall take part along with faculty and members from the world of industry as well as from the corporate world.
3. **Linkage with a village and/or an urban slum/low income area:** University of Delhi proposes to work closely with villages and/or slum clusters/low income neighborhoods so as to focus on solving local problems. This will provide a clear purpose for the innovation activities by focusing research and innovations on solving real world problems.

Memorandum of Understandings (MoUs) of CIC

To connect with industry/employers/corporate sectors Cluster Innovation Centre has already entered into following Memorandum of Understandings (MoUs):

- **MoU with PHD Chamber of Commerce and Industry and IamSMEofIndia:** Cluster Innovation Centre, University of Delhi on 5th December 2013 entered into a Memorandum of Understanding (MoU) with PHD Chamber and IamSMEofIndia to provide IT infrastructure to micro, small and medium level enterprises. Ms. Alka Sharma, Registrar, DU signed the tripartite MoU on behalf of the University. The project, called 'IT-Maha Abhiyaan' is an initiative of PHD Chamber of Commerce and Industry to build capacities of Micro, Small and Medium Enterprises (MSME) by making them IT ready through an alliance of I am SME of India and Cluster of Innovation (CIC) of the Delhi University.

- **MoU with Indian Institute of Technology, Bombay on e-Yantra:** Cluster Innovation Centre, University of Delhi on July 18, 2013 entered into a memorandum of understanding (MoU) with Indian Institute of Technology, Bombay on e-Yantra a project funded by MHRD with a mission to spread education in the area of embedded systems and Robotics in the country. Cluster Innovation Centre will act as Nodal Centre (NC) to

coordinate all the activities of 20 institutes/colleges in Delhi and NCR region including training of teachers.

- **MoU with Jamia Millia Islamia on Meta University concept:** University of Delhi on September 21, 2012 entered into a Memorandum of Understanding (MoU) with JamiaMilliaIslamia to give an impetus to the concept of the Meta University that the competent bodies of both, the JamiaMilliaIslamia and the University of Delhi have consented, agreed and decided to offer a Joint Degree Programme in the discipline of **Master of Mathematics Education** (equivalent to M.Sc. Mathematics Education).

- **Agreement with NTPC Limited on educational projects for social sensitization:**Cluster Innovation Centre, University of Delhi on January 03, 2014 entered into an agreement with NTPC Limited to provide CIC the total financial assistance of `5.00 lakhs to do 16 educational projects for social sensitization by the students of the course B.Tech (Humanities) at CIC, University of Delhi.

National Knowledge Network

National Knowledge Network (NKN) is a revolutionary step towards creating a knowledge society without boundaries. Establishing and using NKN, all vibrant institutions with vision and passion like the University of Delhi will transcend space and time limitations in accessing information and knowledge. NKN with its multi-gigabit capability aims to connect all universities, research institutions, libraries, laboratories, healthcare and educational institutions in a paradigm shift to knowledge revolution. It is a significant step to enable scientists, researchers and students across the country to work together for advancing in critical and emerging areas.

The NKN is a state-of-the-art pan-India network that facilitates information infrastructure, stimulates research, and creates next generation applications and services.

The applications of NKN include the following:

- Country-wide Virtual Classroom
- Collaborative Research
- Virtual Library
- Grid-Computing
- Sharing of Computing Resources
- e-Governance
- Generic, Community and Special Services

Nationwide Webcast by University of Delhi

1. National Knowledge Network Public Lecture Series with Dr. Sam Pitroda, Advisor to Prime Minister of India and Chairman National Innovation Council, Prof. Michael Sandel, Professor of Philosophy at Harvard University and Prof. Dinesh Singh, Vice Chancellor, University of Delhi.
2. President of India webcast: Shri Pranab Mukherjee delivered new year message to students and faculties of central universities, IITs, NITS and other institutions through video conferencing using National Knowledge Network on January 7, 2014.


National Knowledge Network

Research Facilities at the University of Delhi

Central Instrumentation Facilities, North Campus and South Campus.High-end Instruments

Instruments CIF, South Campus	Instruments CIF, North Campus
7900HT Fast Real Time PCR	Bruker HRXRD
Upgrade 3100-Avant to 3130xl Genetic Analyzer	Oxford SCXRD
J-815 150-S CD Spectrometer	FEI HRTEM
Stopped Flow Mixer SFM- 300/S	TEM Sample Equipment M/s Gatan equipment M/s Quorum equipment
Leica SP-5 Confocal Laser Scanning Microscopy	Jeol FT-NMR
BD FACS Calibur with sorter and Autoloader	Waters DSC
GEN III Omnilog Plus System	Jasco CDS
Water UPLC System	SentechEllipsometer
3730 48 Capillary DNA Analyzer	Critical Point Dryer
4800 plus Maldi-TOF-TOF Mass Spectrometer Analyzer	Laser Capture micro-dissection microscope
Vitek 2 Compact	Scanning electron microscope
Phosphor Imaging SystemFLA 9000	Laser Raman Spectrometer
2D Electrophoresis System with Accessories	Rigaku XRD Spectrometer
Environment Plant Growth Facility	FT-IR Spectrometer
Computational Facility (Servers)	DTA/TGA/DSC
	ESR Spectrometer
	CHNSO Analyzer
	AAS (Graphite-Furnace)
	CHNSO Analyzer

University—IT Network

University Intranet: The University of Delhi has always placed a lot of importance on the vital role of communications and information technology in achieving the University's missions and objectives. As the dependency on information technology has grown, and as more and more digital systems are used and shared by students, faculty and staff, an increased effort has been made at all levels to streamline the ICT set-up in the colleges and departments of the University.

University of Delhi comprises of two campuses, North and South, geographically separated by about 20 kilometres. All academic departments are located on these campuses. Along with the departments, the University comprises more than 70 colleges which are located in various parts of the capital city.

The ICT network of University of Delhi connects all these colleges and departments together as a comprehensive whole, with all the resources such as electronic library resources, application servers and internet being shared freely among all the faculty, staff and students. Using this network, the entire University is connected to the *National Knowledge Network*, which is a state-of-the-art multi-gigabit pan-India network for providing a unified high speed network backbone for all knowledge related institutions in the country.

University of Delhi currently has two 1 Gbps (gigabit) fibre-based network connections (expandable as need grows), one each for North and South campuses to connect to NKN and internet. There are around 13 on-campus colleges which are directly connected to the campuses by fibre and are able to connect to NKN and internet. The off-campus colleges are connected to campuses using 40Mbps links which then connects them to the NKN and internet. There is a 100 Mbps link connecting the North and South campus of the University.

The entire University network is protected by state-of-the-art ***Unified Threat Management*** devices and the network is designed with failover protection and enhanced reliability. Most colleges are Wi-Fi enabled and campuses are completing the process of being Wi-Fi enabled. The data center of the University hosts about 80 servers which are used to maintain the

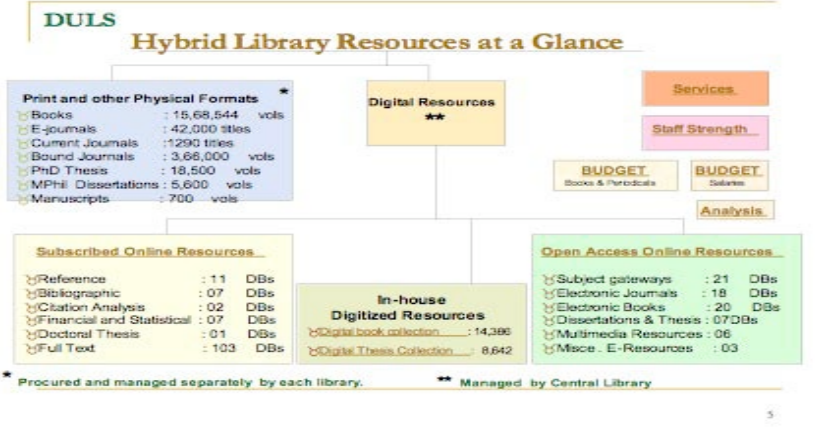
university websites, e-mail systems, databases, networking systems, backups, etc. The University is actively using video-conferencing and web-casting for delivering e-lectures.

Other facilities:

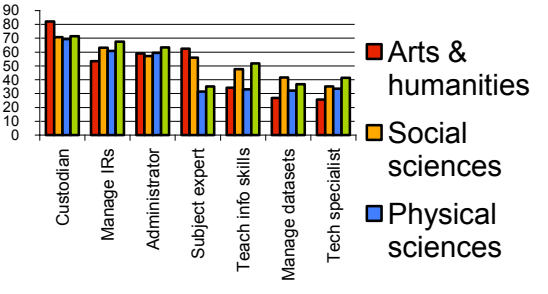
- A 32 nodes high performance computing cluster with Infiniband interconnect at Department of Physics and Astrophysics.
- A 35 nodes high performance computing cluster with Infiniband interconnect at South Campus
- A 48 nodes cluster with one master node connected over gigabit interconnect at South Campus

The above clusters are supported with software and databases like ABySS, EIG4.2, molekel54, mpi4py-1.2.2, amber10, fastlink, mpiblast-1.6.0,amber11, NAMD2, GD-2.45, ncbi-blast-2.2.24+, GDGraph-1.44, openbabel-2.2.3, autodock, GenomeAnalysisTK-1.5-9-ga05a7f2, picard, autodock.mpignuplot, plink-1.07, autogrid, gromacs-4.5, BEDTools, gromacs-4.6.1, R-2.11.0, bwa-0.6.1, Haploview, resp22, Delphi, HMMER, samstat, Delphi4, HMMER_MPI, samtools-0.1.18, Desmond legacy_accessories, Desmond_Maestro_2010 maq-0.7.1, String-Approx-3.26, merlin-1.1.2, xscore_v1.2.1, DSSP, MGLTools-154, zdoc.

Library Resources for Research



Role of library in research



Current List of Databases Subscribed by the Library

1. ABI/INFORM Complete	29 American Society for Micro-Biologist
2. Academic Search Premier	30. Anthrosource
3. ACM	31. Bentham Science E Collection (Organic + Biotechnology)
4. American Geophysical Union Journal	32. British Parliamentary Papers
5. American Phytopathological Society	33. Emerald Management Extra
6. Business Source Premier	34. Kissing's World News
7. Capitalism, Nature, Socialism	35. Legalpundits
8. Capitalline Plus	36. Lexis Nexis
9. Chicago Manual of Style	37. LISA
10. China Core Newspapers	38. LNCS
11. CLA Plus	39. Manupatra
12. Credo (Formerly Xreferplus)	40. Nature Publishing
13. Early English Books Online	41. Omnifile Full Text
14. Ecolit (Abstract Database)	42. Oxford Dictionary of National Biography online & Grove Art Online
15. eJurix	43. Palgrave Dictionary of Economics
16. New York Review of Books	44. Sage Online
17. Encyclopedia Britannica	45. SCC Online
18. Encyclopedia of Cyber	46. Science Direct
19. Encyclopedia of Islam	47. Science Magazine
20. Encyclopedia of Law Enforcement	48. Scifinder Scholars
21. Environment and History	49. Scopus
22. Geoscience World	50. Soc Index with Full text
23. Humanities International Complete	51. Statesmen's Yearbook
24. IEL Online	52. UMI Database
25. Indianjournals.com	53. Westlaw India
26. Indiastate	54. World Development Indicators
27. ISI Emerging Markets (CEIC-ASIA&)	55. World Intellectual Property Search
28. JGR (American Geophysical Union)	56. WTO e-library

Innovative Research Initiatives

Innovation Projects

The Concept

The Innovation Projects were conceptualized by the Vice Chancellor Prof. Dinesh Singh in 2011 against the background of opportunities and limitations reported in undergraduate colleges of the University of Delhi. While teachers often said they wished for research opportunity, the students were often seeking interdisciplinary exposure. Given a curriculum which was bounded by a discipline based syllabus and strict timetables for lectures, the teachers and students did not have the time, or the grants, to consider new ways of learning.

The scheme, 'Innovation Projects in Colleges' were designedto enhance learning experience through student participation'. They were to be conducted by teams of 3 teachers and 10 students from at least 2 departments and to call in a Mentor from outside the institution. The scheme was structured to encourage and support hands-on research by college teachers and students.

Entries & Grants: The response was enthusiastic. The University received 146 entries from 51 colleges in first round and 404 proposals from 65 colleges in second round, several of them submitting multiple projects to be conducted by interdepartmental teams. The University selected 113 Innovation Projects in the first round and 251 projects in the second round. The projects were formally launched on 15 May 2012 after a meeting with the Vice Chancellor and over 300 teachers who had signed up with successful proposals. An Innovation Desk was set up for regular interaction on issues arising from the implementation of theprogramme.

Reports and achievements of the first round, 2012-13: Quarterly reports were received on 14 August andsent for review to senior faculty. On 12 October 2012 five parallel meetings were held for project groups so that progress could be monitored carefully and experience gained from each other. This meeting was attended by faculty and students and by this time, substantial achievement was noted in some projects. Half-yearly reports were submitted around 20 November 2012 and assessed by an expert committee. Several projects had demonstrated the viability of the innovations**.** It is clear that the purpose for which the Innovation Project scheme had been launched, which was to generate excitement in trying out ideas and carrying them through by means of practical output, was being fulfilled. The outcome of the projects may build prototypes for problem-solving in the community. We are glad to report that about 14 projects have received media attention, and 4 are considering patent filing.

Attention in Media: Most projects conducted field trips, seminars and workshops. The hands on approach showed results in public and drew attention to real life problems of shelter, water and air pollution, urban transport, nutrition, preservation of history and culture, weekly markets and such others. Newspapers have periodically carried reports and three books have been published.

Some outstanding projects of 2012–13 are listed below:

S.No	Project Title
1	Glucose detection–abiosensing approach
2	CO_2 Gas Sensing-an ICT based investigation for pollution control
3	Survey-based study to identify the health hazards associated with occupational exposure of textile dyes used by dyers to color the fabrics
4	Development of cost-effective nutritious multi cereal bar and it's sustainable packaging using nano-biopolymer
5	Development and study of alternate packaging materials from agro wastes and its application in food packaging
6	24 x 7 water supply in villages and small towns of India
7	Solution for road management from modeling and simulation of traffic flow on selected roads of Delhi
8	IT model for parking space management: optimal and efficient parking-retrieval of vehicles
9	Symphonies of life in nature and environment: Folksongs of Punjab and Jammu and Kashmir
10	Development of Zoology e-Museum for courses of University of Delhi
11	*Daastaan-e-Nisvan* (Stories of Women)
12	Development of Thin Films/Nano materials for their electronic and biomedical applications
13	To prepare a glossary of technical terms in yoga philosophy
14	Isolation and identification of pigment producing fungi for using as textiles dyes
15	Preserving our common heritage–the monuments of Delhi
16	Conversion of mechanical energy to electrical energy on Metro tracks
17	Mapping the spatial topology of two sub- glacier basins of NW Himalayan for multi class change detection using MODIS, Landsat and IRS data
18	Generating energy consciousness among rural household
19	The imprisoned dove: transcending conflict and building cultures of peace

20	Measuring environmental footprint of university of delhi and transforming it into a zero-impact university
21	Miles on the Yamuna
22	*In vitro* effect of medicinal plant extracts against human fungal pathogen *Candida albicans*
23	An exploratory study of environmental awareness and consumer behaviour towards eco-friendly household products
24	An assessment of consumers' exposure to pesticide in conventional vegetables and vegetables sold with the 'organic' tag in Delhi NCR region, India
25	Fluorescent powder compositions for developing latent fingerprint
26	Strengthening psychological capital for sportsperson
27	Survey of tree species in Delhi region and screening of selected medicinal plants for anti-cancer activity
28	Purification and characterization of Cytochrome P450 from liver for the study of P450 interaction with anti-cancer drug molecules
29	Suggested areas of improvement in the shelters for the homeless in Delhi
30	Feasibility studies to improve quality of living and development of low cost efficient techniques to purify potable water in villages: Case study with reference to villages of Ajmer (Rajasthan)

The announcement for Innovation Projects 2013-14 resulted in massive response from colleges. 404 projects proposals were received. Considering the large number and diversity of projects, a preliminary assessment of eligibility, quality and innovation aspect of these projects was done. The projects were subjected to further rounds of screening and selection to obtain in depth understanding of the projects and obtain perspective from outside the University. The Committees scrutinized and recommended 251 projects based on their trans disciplinary nature. The projects recommended lead towards an innovative concept, idea, productivity or discovery. Several projects are proposed to focus on high-quality research and result in patents and publications whereas several others propose basic ideas thought in an innovative way.

Some notable innovation projects of 2013-14 are listed below:

1.	Mobile healthcare: The future of health management in India-a feasibility study
2.	Development of low cost computer controlled science laboratory using sensors and open source hardware and software tools
3.	Astronomy using archival data
4.	Artificial olfaction using e-nose: Mimicking human nose for gas sensing applications
5.	Digital reconstruction of lost art and craft
6.	Designing innovative working models to explain concepts of physics and mathematics along with IT based module
7.	Modelling metro feeder bus service in university of delhi, north campus-feasibility and financial viability
8.	Template replication-village transformation-replicating the success stories of Hiware Bazar, Maharashtra
9.	Impact of FDI in multibrand retail on local kirana shops
10.	Improving the current system of junk management and recycling
11.	State of life after sixty in the 21st century, Delhi
12.	Developing a cultural and contextual understanding of resilience in urban marginalized girls: Implications for the formal education system
13.	Impact of DilliHaat as a socio-cultural (folk) and commercial oasis on the urban youth: Exchanges and negotiations
14.	Developing a connect between spiritual ecology and sustainability in the university curriculum through empirical study
15.	Identification of Pandava trail in Karsog Valley of Himachal Pradesh and influence of Pandavas/Mahabharat heroes in local culture and folk songs

16.	Fan without electricity
17.	Fostering diffusion of educational technologes in undergraduate learning for the students, by the students
18.	Characterization of corrosion resistance properties of hydroxyl based compounds in mine water environment from Indian mines coal and empirical calculations of thermodynamic parameters
19.	Environmental impact assessment of Gazipurlandfill area
20.	Development of University applications (DU-Apps) for mobile platforms
21.	Phosphonium compounds as corrosion inhibitors for microbial corrosion
22.	Designing of integrated portable water purifier with reusable nano-chitosan for individual use
23.	Role of nano-crystals in energy harvesting using SnS thin films
24.	Identification of weapon holders in crime cases
25.	Role of team sponsorship in promoting women sports: A case study approach of badminton & hockey In India
26.	Development and challenges in sports—a case study of Indian cricket
27.	Analysis of Ecological Footprints (EF) of populations from various socio-economic strata
28.	Development of a user-friendly android-based mobile app for providing awareness and information on spinal cord insult and injuries
29.	Studies on circadian variation in secondary metabolites composition and/or concentration in commonly used medicinal plants of Delhi using HPLC fingerprints and its socio-economic impacts
30.	Design, synthesis and biological evaluation of novel oxygen heterocyclics as potential antitubercular, antibacterial and antiviral agents
31.	Immunohistochemical evaluation of candidate makers for sebaceous differentiation and their association with aggressive eyelid sebaceous gland carcinoma
32.	Determinants of sovereign ratings and its implications for economy and financial system-an empirical study
33.	Design, synthesis and evaluation of novel chalcone and coumarine derivatives as anti-cancer agents
34.	Potential of organic farming in combating salt stress and its socio-economic aspects
35.	Mathematical modeling and simulation of neural network based controllers of robots

Major Areas of Research

African Studies

Social Theories, Sociology of religion, political sociology, social change, culture and development, African environment, natural resource management, disaster management, regional development, economic and social issues of Africa, Liberation Struggle of Southern Africa, SADC Secretariat, Dar-es-Salaam,Tanzania, HashimMbita Research Project on India, Indonesia, Sri Lanka and Yugoslavia, GeopoliticsFederation: A Vision of North and South Sudan.

Anthropology

Comparative religion, caste system, family dynamics, medical systems, and anthropological theory and methods, Gender and Women's Studies, Caste studies with special interest in Dalit studies,Ecology and Environment and Border and Margins of Society, Human Genetics, Human Cytogenetics, Recombinant DNA Technology, Reproductive Immunology, Medical Anthropology; Qualitative Research; Public Health; Disaster Impact Assessment Tools; Anthropology and Mountain Communities, Genetic Structure, Diversity and Health Dynamics Among Human Coastal Populations, Association of variants of uncoupling protein 1(UCP 1) with levels of obesity, cardiovascular and metabolic complications among adolescent and adultin two homogenous groups, Human Ecology, Human Growth & Development, Physiological Anthropology, Applied Anthropology, Tribal health.

Arabic

Modern Arabic Literature, Islamic studies and Translation, Classical Arabic Literature, Indo-Arab Literature, Arab Civilization and Islamic Studies.

B.R. Ambedkar Centre for Biomedical Research

Functional Genomics of Mycobacterium tuberculosis, Epigenetics and Developmental Biology, Molecular Biology of Cancer, Molecular Virology & Human Genetics, Molecular diagnostics and basis of pathogenesis by*Neisseria gonorrhoeae and Chlamydia trachomatis*Regulation of gene expression.

Biochemistry

Basic and applied aspects of human diseases—Macromolecular delivery, vaccine development and diagnostics, Gene regulation and pathogenesis of *Mycobacterium tuberculosis,* identification and validation of new drug targets of TB, vaccine development in TB, identification of diseases like AIDS, hepatitis and tuberculosis, functional genomics, target delivery of drugs and DNA vaccines, studies

on novel hemoglobin and hemoglobin disorders, novel therapeutic strategies against cancer, algal biotechnology.

Botany

Developmental and Reproductive Biology, Functional Genomics, Proteomics and Genetics, Physiology and Biochemistry, Plant Biotechnology, Systematics and Ecology, Plant-Microbe/Plant-Pest interaction, Biodiversity Conservation and Evolutionary Biology, Climate change and Abiotic Stress.

Buddhist Studies

Theravada Abhidhamma Philosophy, Theravada Buddhist Psychology, Theravada Buddhist Para-Psychology, Theravada Buddhist Eschatology, and Pali (Language and Literature), Buddhist Philosophy, Theravada, Mahayana, Logic &Tantra.

Business Economics

Business Policy, Industry Studies, Regional Economic Development, Environmental Economics, Foreign Trade, Macro Economic, Policies, International Finance and International Marketing.

Chemistry

Bioorganic chemistry, synthetic organic chemistry, natural products and non-covalent interactions in chemistry & biological fields and supramolecular chemistry, Theoretical polymer chemistry with special reference to electrically conducting polymers and biopolymers such as proteins and DNA, Nanomaterials and conducting polymer composites for fabrication of biosensors, Clay polymer nano composites as fire retardants and for synthesis of organic compounds, Physical Chemistry, Quantum Chemistry, Spectroscopy, Computational Chemistry, Nanoscience, Theoretical Physical Chemistry, Complex Systems in Electrochemistry and Materials, Synthesis of novel heterocyclic compounds; Sonochemistry, Application of microwaves in organic synthesis; Synthesis, characterization and applications of ionic liquids in organic synthesis; Preparation, characterization and applications of metal nanoparticles in organic synthesis; Synthesis of heterocycles bymulti-component reactions, photophysical studies, Corrosion Science and Technology, Semiconducting nano materials for environment, Organic Synthesis, Medicinal Chemistry (synthesis of biologically active compounds: anti-cancer, antiviral, antibacterial, antifungal, and antimalarial), Natural and Marine Natural Products (bioactivity guided isolation of natural/marine natural products). Process development of drugs/drug intermediates.

Commerce

Corporate Laws, Labour Laws, Corporate Governance, CSR, Business Ethics, Marketing,Consumer Affairs and International Business, Marketing and International Business, Research Methodology, Banking

&Finance, Industrial Economics, Environmental Economics, Market Efficiency, HR Accounting, HCIS, and Management of Transformation, Human Resource Management, Organizational Behaviour, Direct and Indirect Taxation.

Computer Science

Computer Networks, Data Mining, Computational Intelligence, Algorithms, Web Intelligence, Multi-agent systems, Software Engineering, Steganography and Steganalysis, Information Hiding, Coding Theory, Intelligent Data Analysis.

East Asian Studies

China's foreign policy, security policy, and political economy, Chinese Politics and Education, Ancient Indian History, Silk Road and Buddhist settlements, Chinese language, Socially engaged Buddhism, Chinese Nationalism, Chinese Ethnic Minorities, Chinese Foreign Policy, Tibet, Taiwan, Xinjiang, Hong Kong, India-China Relations, Sociology, East Asian Society, Japanese Society and Religions, Japan's Social, political, intellectual And Cultural History, Japanese Language and Literature; Japanese society and Gender Studies, Dynamics of Social Stratification in China.

Economics

International Trade, Industrial Economics, Game Theory, Econometrics, Law & Economics, Information Economics, Applied Econometrics, Applied Micro, Growth and Development, Macroeconomics, International Economics, Economics of discrimination, Aspects of the Chinese economy,Forecasting, Microeconomic Theory, Welfare Economics, Development Economics, Agricultural Economics, Health Economics, Public Economics, IPRs and Technology Transfer.

Education

Elementary Education; Cultural Studies; Study of Marginalized; Cognitive Psychology; Pedagogy of Environment Studies, Public policy in education; teacher education; elementary education curriculum and pedagogy; comparative education; developmental and social psychology and gender studies, Cognitive Psychology, Pedagogy, Science Education and Teacher Education, Sociology and History of Education, Elementary Education, Curriculum Studies, Girls Education, Peace Education, Education for the gifted children, Special education, In-service teacher education with specific reference to ESL , Education of Children with Visual Impairment, Mental Health, Guidance and Counseling, Human Development, Personality, Psychology of Gender, Science Education, Gender and Education, Elementary Education and Policy Analysis.

Electronic Science

Semiconductor and Nano Materials, Solid state Devices, Opto-Electronics, Photovoltaics, Fibre/Integrated Optics, Optical Electronics, Microwave Photonics, Microwaves, Communication and Microwave Photonics, Communication, Microelectronics, Microwaves.

English

Renaissance studies, gender studies, visual culture, Modernism, Queer Theory, Dalit Literature, Autobiographical Studies, Indian Literature, Post-colonial Studies, Oriya Literature, Translation, Postcolonial Literature and Theory; Literary Gerontology; Families in Literature; Urban Cultures; Portuguese colonialism, Land laws and property rights, the nineteenth-century novel, history of Goa, 19th and 20th century American fiction and poetry.

Environmental Studies

Environmental Biotechnology & Bioremediation, Nanobioscience, Ecogenomics, Himalayan Ecology, Conservation Biodiversity & EIA studies, Allelopathy, Invasion Ecology & Soil Communities, Behavioral Ecology, Foraging and nesting ecology, Evolution, Biodiversity conservation, Urban Ecology, Fish biology & Herpetology, Systematics, Biodiversity Conservation, Molecular phylogeny & Evolution, Soil Microbial Ecology; Bio-/Phyto-Remediation; Plant-Microbe Associations; Bioresources& their Utilization, Ecology and Conservation, AMF studies Diversity *of symbiotic micro-organisms,* Legal regimes and policy frameworks in conservation programmes, Ecotoxicology, Environmental Pollution & Health, Bioprospecting, Protein Biochemistry, Environmental Biotechnology, Plant invasions, phenotypic plasticity in plants, Ecosystem studies and function in invaded systems, evolutionary perspectives in plant invasions, Plant Diversity, Bioacoustics, Behavioral and community ecology of Invertebrates, Tropical forests and biodiversity conservation.

Faculty of Management Studies

Growth & Behavior Patterns of Companies in India, Marketing, Financial, Human Resource and Organizational Dimensions of Modern Industry & Business.

Financial Studies

Quantitative Finance; Investment Management and Fuzzy Decision Making, Strategic Management of Information Systems, e-commerce, Bank Management, Corporate finance; strategic finance; capital markets; venture capital, Corporate Reporting, CorporateGovernance—Transparency and Disclosure Issues.

Genetics

Heavy metal resistance against soil bacteria and fungi, molecular genetic improvement of rhizobacteria and biocontrol bacteria,

metagenomics of soil, DNA marker technology for Brassica, development of transgenic rice, cotton, mustard, delayed ripening fruit ripening, multigene engineering and RNAi approach for developing trangenic tomato and brinjal, identification of susceptibility genes for complex traits like Schizophrenia, Parkinson's etc., Pharmacogenetics and predictive medicine for single-gene disorders, Drosophila genetics, Plant-pathogen interactions using Arabidopsis.

Geography

Quantitative Techniques, Urban and Regional Studies, Programme Evaluation, Indian Geography, Disasters and their Management in India, Political Geography, RegionalGeography of Middle East, Geography of Federal Study, Spatial Studies, Watershed Management; Mountain Hydrology; Ecotourism and Conservation, Environmental Studies, Remote Sensing and GIS, Disaster Management, Climate Change, Urban Environment.

Geology

Igneous & Metamorpic Petrology, Geochemistry, Structural Geology, Igneous Petrology, Geochemistry, Vertebrate Palaeontology, Geochemistry and Geochronology, Metamorphic Petrology, Environmental Geology, Hydrogeology, Biostratigraphy, Engineering Geology, Structural Geology, Sedimentary Geology, Mineralogy, Petrology, Geomorphology, Fluvailsystem, Sedimentary Geologyand Geomorphology, Hydrogeology, Geomorphology, Sedimentology, Micropaleontology, Metamorphic Petrology, Stratigraphy, Sedimentology.

Germanic and Romanic Studies

French Language, French and Francophone Literature, Literary and Cultural Theory, Latin American and Spanish literature, literary and translation, theory, Spanish language, Translation, European Responses to the 1857 Rebellion in India, India in German Literature, Comparative cultural transformationsin the German-speaking world and Europe, Teaching French as Foreign language, French language and Literature, Modern &Contemporary Italian Literature, Italian responses to the 1857 rebellion in India, Mexican Politics, History and Culture, 19th and 20th centuries, Portrayal of Muslims in Spanish 17th century Golden Age Literature, Latin American Literature.

Hindi

Bhakti Literature and Movement and Modern Hindi Literature, Dalit literature, Fiction, Hindi language, Language pedagogy, Media, Indian society & culture, Indian education system, Modern Hindi Literature, Polish English Hindi Translation, Hindi Novel, Poetry, Dalit Literature and Hindi Journalism.

History

Social, economic and cultural history, disciplinary history of archaeology, the interface between landscape archaeology and anthropology, medieval state and ecclesiastical institutions, the nationalist movement in India, peasant and tribal societies and movements, the process of sectarian and majoritarian identity formation, memory history-community, oral and performative narratives and their relationships to constructions of particularistic pasts, the interaction between institutions of governance and newer forms of knowledge, with particular reference to the development of humanistic disciplines and of archaeology and museumology.

Home Science

Food and Nutrition, Human development and childhood studies, development and communication extension, resource management and design application, fabric and apparel science, dietetics and public health nutrition.

Law

Criminal Law, Labour Law, Intellectual Property Laws and Interpretation of Statutes, Freedom of Speech and Expression, Legal Education, Public International Law, Constitutional Law, Information Technology Law, e-commerce and e-governance and convergence, Commercial Laws, Legislative Drafting and Interpretation of statutes and Administrative Law, International Trade Law & Human Rights, Juvenile Justice, Gender Justice, Clinical Education, Judicial Education, Human Rights, Rights of Children,Women, Weak & Downtrodden section of the society, Victimology, Correctional and Rehabilitative Techniques of Offenders, Trafficking in Women and Children, Women prisoners, Constitutional Law, International Labour Standards, Labour law and the Informal Sector, Jurisprudence, Gender and the Law.

Library and Information Science

Marketing of LIS Products , Cataloguing, History of libraries in India and Information Systems, Library, Information and Society, Library Cataloguing, ICT Application in Libraries and Information Activities; Web Designing and Content Development; Library Classification, bibliometrics, Scientometrics and webometrics studies; Government of India Publications, Indian Official Documents, Public Library System, Designing and evaluation of websites, Web-OPACs, e-journals, Social Networking Sites, Syntax, Discourse, Psycholinguistics.

Linguistics

Documentation and description of endangered languages, Historical Linguistics, Phonology, Morphology, Language contact, Psycholinguistics and Neurolinguistics, Linguistic Stylistics, Applied Linguistics,

Generative Phonology, Translation Studies, Sociolinguistics, Lexicography.

Mathematics

Analysis, Coding Theory, Algebraic Topology, Numerical Methods in differential equations, Linear Programming, Coding Theory, Complex Analysis, Semigroups of Operators, Fluid Dynamics, Algebra, Frame Theory, Analysis of pde, Combinatorics, Fluid Dynamics, Algebraic Topology, Coding Theory, Information Theory, Discrete Mathematics, Applied Algebra, Group Rings, Combinatorial Group Theory, Real Analysis, Complex Analysis, Computational Fluid Mechanics, Functional Analysis and Operator Theory, Harmonic Analysis and Operator Algebras, Ordinary and Partial Differential Equations, Ring Theory, Numerical Analysis, and Fluid Dynamics.

Microbiology

Microbial differentiation, food and industrial microbiology, environmental microbiology, agricultural microbiology, microbial pathogens and pathogenicity, medical microbiology, immunology, clinical microbiology, genetic engineering and microbial molecular biology.

Modern Indian Languages and Literary Studies

Indian Drama and Theatre, comparative Indian literature, translations into Indian languages, postmodernism and post colonialism theories in Indian literature, Folklore and Tribal lore of India, Comparative Language & Literature (Telugu & Kannada),Translation from Kannada into Telugu, Medieval Bengali Literature, Women's Writings, Bengali Narrative Literature, Comparative Indian Literature, Translation studies, Modern Manipuri Language and Literature Linguistics, Modern Tamil Literature; Tamil Folklore and Comparative Indian Literature.

Music and Fine Arts

Inter disciplinary Research and applied musicologyand aesthetics, Aesthetics andInstrumental Music, Music of Punjab, Practical aspect of Hindustani Classical Music aesthetically Rag presentation, Khayalgayaki, Voice culture for singing various types of music, Hindustani Classical Music (Vocal) Dhrupad, Dhamar, Khyal, Musical Instruments and Instrumental Music: Classical Music as well as Folk Music, rhythmic and melodic aspects in ritualistic, folk and classical music of Kerala, Ragam Tanam-Pallavi, Dikshitar's kritis, javalis, Hindustani Instrumental Music.

Operational Research

Inventory Management, Supply Chain Management, Statistics, Optimization, Mathematical Programming, Financial Management, Software Reliability.

Persian

Indo-Persian Literature, Persian Lexicography, Medieval Indian Culture and Sufism, Indo-Iranian Literary relations in the context of translations of classical sanskrit and other Texts into Persian and their impact, Modern Persian Literature (Prose) and Translation and Interpretation from Persian into English and viceversa, Persian Novel Writing in Iran and Modern Persian Literature.

Philosophy

Indian Philosophy, Continental Philosophy, Comparative Philosophy, Philosophy of Language, Wittgensten, Philosophy of Religion, Contemporary Indian Philosophy, Philosophy of Mind and Cognitive Sciences, Buddhist Philosophy, Philosophy of Language, Philosophy of Mind, Ethics, Metaethics, Philosophy of Human Rights, Applied Ethics.

Physical Education and Sports Sciences

Wholistic Personality Development, Physical Education Pedagogy, Balancing Education, Measurement & Evaluation Validity, Sports Morphology, Kinanthropometry.

Physics

Condensed matter physics, Material Science, Complex systems computational physics, Non-linear dynamics, Plasma physics, nuclear and particle physics, polymers, Nano-materials physics, Semi-conductors, Bio-physics, Non-equilibrium statistical mechanics, Chemical physics.

Plant Molecular Biology

Stress Molecular Biology, Reproductive Biology, Signal transduction and photobiology, Bioinformatics, Functional genomics, Genomics and proteomics, Transgenics for crop improvement, Small regulatory RNAs, Plant viruses, Plant biotechnology for human health, Intellectual property rights.

Political Science

International Relations Theory, Identity Politics and Political Violence, Gender Studies, South Asian Politics with a special focus on Pakistan & the Kashmir conflict, Public Administration, Modern Indian Political Thought, Contemporary Indian politics, Political theory, comparative politics, Indian politics, Communal Identity formations in modern India; internationalism/cosmopolitanism; history and time, South Asian Studies and Pakistan Studies, State, Constitutionalism and Democracy—Laws and their relationship with state, democracy and constitutionalism, issues of rights and people's movements, Judiciary, Election Commission, International Relations-Strategic Studies, Nuclear Weapons andTerrorism, Indian Political Economy, Indian Political System, Issues concerning communalism and secularism.

Democracy, Development and Peace, sociological, economic, philosophical and cultural dimensions of political science.

Psychology

Research related to Dyslexia, mental retardation, hypertension, schizophrenia, depression, drug abuse, cognition in disabled children, belief systems, ageing, organizational processes.

Punjabi

Modern Punjabi literature and western literary theory, Mythology & the Science of Myth and Gurmat poetry, Folkloristics, Cross-disciplinary Semiotics,Western Poetics and Culturology, Medieval and Modern Punjabi Literature, Literary Criticism.

Sanskrit

Linguistics & Indian Philosophy (especially Nyaya& Vedanta), Indian Philosophy, Literature, Indian Culture and civilization and Religions, Epigraphy and Paleography, Sanskrit Drama, Poetry, History and culture of Ancient India, Veda, Dharma Shastra& Poetics.

Social Work

Social work discipline, Social Work with Older persons, Social Development, Social Legislation, HRM, Ecology and Social Work, Rural and Urban Community Development, Management of Voluntary Organizations, Social Development, Social Work Education, Disaster Management, Social movements, protest movements and community organization.

Sociology

Folk Culture, Narrative Theory, Phenomenology and Everyday Life, Bureaucratic Institutions, Agrarian Relations, Population Displacement, Sociology in South Asia, Socio-cultural aspects of the economy; Caste inequalities and identities in contemporary India and their relationship to social policy; Social space and its interactions with globalization; Contemporary social theory and the history and politics of the social sciences in India; South-South intellectual linkages; Higher education and social inclusion and pedagogy, Gender; Kinship; Care; State and Citizenship; Social Movements; Agrarian Structures; Sociology of Emotion; Fieldwork Methodology; Comparative Sociology, Citizenship, war and counterinsurgency in South Asia, indigenous identity and politics in India, the sociology of law, and inequality, Sociology of Education, Gender Studies, Sociology of Migration, Agrarian Social Structure, Development Studies, Tribal Studies, Kinship, caste, visualanthropology, urban sociology.

Statistics

Order Statistics, Fluctuation theory, Random walk, Rank order statistics, Biostatistics, Demography, Sequential Analysis, Reliability

and Life-Testing, Design of Experiments, Optimization, Time Series, Reliability Models.

Urdu

Fiction & Criticism of Urdu Fiction, Drama, Theatre, Mass Media & fiction, Iqbalyat, Criticism.

Zoology

Animal Physiology, Animal Behaviour, Aquaculture, Cell Signaling, Chromatin and Cancer Biology, Computational Biology, Endocrinology, Entomology, Genomics and Metagenomics, Systematics, Evolution and Biodiversity, Microbiology, Molecular Cell Biology, Radiation Biology, Reproductive Physiology and Toxicology.

Major Awards and Fellowships

Award	Names of Awardees
Padma Shri Awards	Prof. Dinesh Singh, Vice Chancellor Dr. Mahesh Verma, Director, MAIDS Prof. RehanaKhatoon, Persian Shri Keki N Daruwalla, South Campus Prof. Krishna Kumar, Sociology
Members of Scientific Advisory Committee to Prime Minister	Prof. Dinesh Singh, VC Prof. B. K. Thelma, Genetics
Shanti SwarupBhatnagar Awardees	Prof. D.P.Sarkar, Biochemistry Prof. Anil K.Tyagi, Biochemistry A. C. Jain, Chemistry Naba Kishore Ray , Chemistry S. K. Tandon , Geology
Fellows of Indian National Science Academy	Prof. Deepak Pental, Genetics Prof. Akshay K. Pradhan, Genetics Prof. Anil K. Tyagi, Biochemistry Prof. D.P.Sarkar, Biochemistry Prof. A.K. Tyagi, Plant Molecular Biology Prof. J.P.Khurana, Plant Molecular Biology Prof. ParamjitKhurana, Plant Molecular Biology Prof. Anil Grover, Plant Molecular Biology Prof. Madan Mohan, Plant Molecular Biology Prof. H.Y. Mohan Ram, Botany Prof. N.S.Rangaswamy, Botany Professor A.N.Mitra, Physics Prof. AvinashKhare, Physics Prof. Rup Lal, Zoology Prof. K. Muralidhar, Zoology Prof. B.C. Das, ACBR Dr.AshimaAnand, VPCI Prof. H.S. Randhawa, VPCI Prof. N.K. Ray, Chemistry Prof. S.K.Tandon, Geology Prof. Talat Ahmad, Geology Prof. D.M. Banerjee, Geology Prof. Mihir Deb, Geology Prof. AvinashKhare, Physics Prof. Ajit I. Singh, Mathematics

Fellows of National Academy of Sciences, India	Prof. Deepak Pental, Genetics Prof. VaniBrahmchari, ACBR Prof. Anil K. Tyagi, Biochemistry Prof. V.K.Chaudhary, Biochemistry Prof. P.C.Ghosh, Biochemistry Prof. D.P.Sarkar, Biochemistry Prof. A.K.Bhatnagar, Botany Prof. Akshay K. Pradhan, Genetics Prof. M.V.Rajam, Genetics Prof. T. Ahmed, Geology Dr. SuneelKateriya, Biochemistry Prof. Debajyoti Choudhury, Physics & Astrophysics Prof. A.K. Tyagi, Plant Molecular Biology Prof. J.P.Khurana, Plant Molecular Biology Prof. ParamjitKhurana, Plant Molecular Biology Prof. Anil Grover, Plant Molecular Biology Prof. IndranilDasgupta, Plant Molecular Biology Professor K. Muralidhar, Zoology Prof. Rup Lal, Zoology Prof. UmeshRai, Zoology Prof. Madan Mohan Chaturvedi, Zoology Prof. P.K. Jain, Mathematics Prof. R.K. Mohanty, Mathematics
Fellows of Indian Academy of Sciences	Prof. Deepak Pental, Genetics Prof. Anil K. Tyagi, Biochemistry Prof. D.P.Sarkar, Biochemistry Prof. Sanjay Jain, Physics & Astrophysics Prof. Debajyoti Choudhury, Physics & Astrophysics Prof. A.K. Tyagi, Plant Molecular Biology Prof. J.P.Khurana, Plant Molecular Biology Prof. ParamjitKhurana, Plant Molecular Biology Prof. Anil Grover, Plant Molecular Biology Prof. IndranilDasgupta, Plant Molecular Biology Prof.K. Muralidhar, Zoology Prof. Sanjay Jain, Physics
J.C.Bose National Fellow	Prof. Deepak Pental, Genetics Prof. Anil K. Tyagi, Biochemistry Prof. B.K. Thelma, Genetics Prof. G.V.R.Prasad, Geology Prof. A.K. Tyagi, Plant Molecular Biology
Stree Shakti Science Samman	Prof. B.K. Thelma, Genetics
Boyscast Fellows	Dr. Amarjeet Kaur, Physics & Astrophysics Prof. V.S.Parmar, Chemistry

	Prof. Akhilesh K. Verma, Chemistry Prof. R.K.Mohanty, Mathematics Dr. Surajit Sarkar, Genetics Dr. Rupam Kapoor, Botany Dr. Chandra S. Seth, Botany Dr. David Kothamasi, Environmental Studies Dr. Pankaj Gupta, Operational Research Prof. Vinay Gupta, Physics Dr.Amarjeet Kaur, Physics
SERB Women Excellence Award	Dr. Vandana Mishra, Environmental Studies Dr. Tapasya Srivastava, Genetics
Alexander Von Humboldt fellowship awardees	Prof. Rup Lal, Zoology Prof. S.C.Bhatla, Botany Prof. A.K.Bhatnagar, Botany Prof. P.K.Ghosh, Anthropology Prof. S.L.Malik, Anthropology Dr. Amita Chandra, Physics and Astrophysics Dr. SeviMurugavel, Physics and Astrophysics Dr. Parbati Biswas, Chemistry Dr. Tarkeshwar Gupta, Chemistry Dr. RamendraPratap, Chemistry Dr. A. Sakhtivel, Chemistry Dr. SuneelKateriya, Biochemistry Dr.Parbati Biswas, Chemistry Dr.Amita Chandra,Physics
Max-Planck Research Fellows	Prof. B.K. Thelma, Genetics Dr. SuneelKateriya, Biochemistry Dr. Sandip Das, Botany Dr. A. Sakthivel, Chemistry
DAAD (DeutscherAkademischerAustauschdienst) German Academic Exchange Fellows	Prof. Ajay Kumar, Mathematics Dr. VibhaTandon, Chemistry Dr. Chirashree Ghosh, Environmental Studies Prof. D.S. Kulshreshtha, Physics and Astrophysics Dr.VibhaTandon,Chemistry Dr.Pankaj Srivastava,Geology
Commonwealth Scholarship/fellowship/ Inlaks Scholarship	Prof. Dinesh Singh, Mathematics Prof. Ajay Kumar, Mathematics Prof. Ajit I. Singh, Mathematics Prof. T.R. Seshadri, Physics and Astrophysics Dr.Satish Kumar Awasthi, Chemistry
JSPS Fellowship (Japanese Society for Promotion of Science)	Prof. Rakesh K.Sharma, Chemistry Prof.Talat Ahmed, Geology Prof. Ajay Kumar, Mathematics Dr. SupriyaKar, Physics
French Fellowship	Prof.Rama Kant, Chemistry Prof. Ajay Kumar, Mathematics

Faculty Awards/Honors
Year wise (2009-13)
(Source-Annual Report)

Awards received by the University faculty during 2011-13

- Prof. Rup Lal elected fellow of Indian National Science Academy (INSA), New Delhi,
- Prof. B.K. Thelma was awarded J.C. Bose Fellowship
- Prof. M.V. Rajam was awarded Shiksha Rattan Puraskar
- Prof. Deepak Pental was awarded D.Sc. (H.C) by the University of Nottingham
- Prof.Paramjit Khurana was awarded Prof. J.C. Bose Fellowship, 2012 by DST and elected Foreign Secretary, National Academy of Sciences, Allahabad, 2013.
- Prof.R.C. Kuhad was elected as Chairman of National Academy of Microbiological Sciences
- Dr.Mahesh Verma was awarded 'Health Care Personality of the year' by FICCI 2012, 'Special Jury Recognition Award to MAIDS for operational excellence in public sector health Care delivery for the year 2012' by FICCI and Fellowship of Royal College of Physicians and Surgeons of Glasgow.
- Prof. Ajay Kumar was awarded Japan Society for Promotion of Science Fellowship for senior scientist at Gunma University, Japan, June 2012.
- Prof. B.K. Dass inducted as a member of the Planning Committee for the 5-year project of DST. He was elected President, Academy of Discrete Mathematics and Applications, 2012.
- Prof. S.C. Panda was awarded 'Odisha Platinum Jubilee Award' felicitated by Governor of Odisha at Constitution Club, New Delhi in 2012.

- Prof. Ram Singh was awarded Commonwealth Fellow at the London School of Economics, London, U.K. in 2011.
- Prof. Sharmistha Lahiri was conferred by the Italian President 'The State Honours of the Order of Knight, the Star of Italian Solidarity Medal' 2011.
- Dr. Ajay Kr. Singhawarded Gold and Silver Medal and Best Business Academic Award 2011 for two separate projects and Prof. Manubhai M. Shah Memorial Research Award 2011by Indian Commerce Association on 15, December 2011.
- Prof. Anita Sharma was awarded 'Kiran Achievement Award-2011' by Women International Network for Education (Promotion of Chinese Language) and also awarded H.H. SeorakMusan Cho Oh-Hyun International creative Mind Award2012, Korea for contribution in the field of East Asian Studies on March 3, 2012.
- Dr. Rajesh and Dr. J.P. Dubey were awarded 'Fellowship of Adult & Lifelong Learning' by Indian Adult Education Association in 2011.
- Prof. P.B. Kannakumar was awarded the title 'ISAI GNANA SUDAROLI' by the organisation "ApoorvaRagam".

Awards received by the University faculty during 2010-11

- Prof. Nandini Sundar, Sociology was awarded 'Infosys Award for Social Sciences-Social Anthropology' of Infosys Science Foundation by the Prime Minister of India in January 2011.
- Prof. K.V. Bhanu Murthy was awarded 'Dewang Mehta Business School Award' for outstanding contribution to Educationon 24 November 2010.
- Prof. Rehana Khatoonwas awarded Presidential Award of Certificate of Honour for Persian Studies 2009 but conferred in 2010. She also received Abu Raihan-Al-Beruni Award 2011.

- Prof. Sreemati Chakrabarti was awarded India-China Friendship Award by Chinese Premier Wen Jiabaoon 15 December 2010.
- Prof. Rohini Somanathan was selected for Leon Levy Foundation Membership at the Institute for Advanced Study, Princeton, 2010-11.
- Dr. A.K. Sharma, Department of Community Medicine, UCMS was been selected for Penn Rockefeller Scholarship' University of Pennsylvania, USA in April, 2010.
- Dr. Archana Singal, Department of Dermatology, UCMS has been awarded Dr. Sardari Lal Memorial Award for Excellence in Dermatology in October 2010.
- Dr. S.V. Madhu, Department of Dermatology, UCMS has been awarded State Award by the Govt.of NCT of Delhi on 7 April 2010.
- Dr. A. Dixit, Department of Physiology, UCMS has been selected for membership of National Academy of Medical Sciences in August, 2010.
- Dr. S.K. Bhargava, Department of Radiology, has beenawarded Dr.Satya Pal Aggarwal Memorial Oration National Award 2010 by Indian Medical Association in December, 2010.
- Prof. J.P. Khurana was elected Secretary, Plant Tissue Culture Association,India, April 2010 onwards.
- Prof. P. Khurana was elected Fellow of Indian National Science Academy, New Delhi, India. Dr.Yogender Pal Khalsa awarded Young Scientist Award in 'Molecular Microbiology' By Association of Microbiologists of India in Annual Meeting at Ranchi, 14-17 December 2010.
- Prof. Anil Tyagi was awarded the prestigious National J.C. Bose Fellowship and hasalso been awarded 'Vigyan Gaurav

Samman Award' of the Council of Science and Technology, by UP Government.

- Prof. D.P. Sarkar was awarded the prestigious National J.C. Bose Fellowship.
- Dr. Suman Kundu received 'Indo-US Research Fellowship 2010'from Indo-US Science and Technology Forum.
- Dr.Suneel Kateriya Awarded 'Young Scientist Award of Indian Science Congress in New Biology-Section for 2009-10 and also awarded 'Ratna Phadke Award' for young Scientistfor2010 from Indian Biophysical Society.

Awards received by the University faculty during 2010-11

- Prof. Rehana Khatoon, Persian,was conferred the Prestigious Presidential Award of Certificate of Honour in Persian.
- Prof. Tan Chung, Former Professor, History, has been conferred the 'Padma Bhushan', the third highest civilian award, by the Govt. of India.
- Dr.A.Indrayan, Head of the Department of Biostatistics and Medical Informatics, UCMS, has bee neglected as a Fellow of the Indian Academy of Sciences.
- Dr. Surajit Sarkar,Department of Genetics, has been awarded the BOYSCAST Fellowship to conduct advanced research at Californial nstitute of Technology (CALTECH) USA.
- Prof. B.K. Thelma, Head of the Department of Genetics,has been appointed Member of the Scientific Advisory Council to the Prime Minister of India in November 2009.
- Dr.Shipra Paul, Lady Hardinge Medical College, was elected Member of the American Association of Anatomists.
- Prof. S.K. Bhasin, Community Medicine, University College of Medical Sciences, was awarded Fellowship of the International Medical Science Academy in October 2009.

- Prof. Arun Kumar Sharma, Community Medicine, University College of Medical Sciences, was awarded the Penn Rockfeller Fellowship to attend the XVIIII COWHI Meeting at University of Pennsylvania, PA, USA.
- Prof. S.N. Gaur was selected Fellow of the National Academy of Medical Sciences, New Delhi.
- Dr. Jayashree Bhatacharjee, Lady Hardinge Medical College, was elected president of ISARCCON and awarded Fellowship of ACBI.
- Dr. Manisha Chaudhary, Lady Hardinge Medical College, was awarded the Ernest Fernades Award for 2009.
- Dr. Sushma Nangia, Dr. Vikram Dutta, Dr. Sherwal, Dr. Manoj Jais and Dr. Praveen, Lady Hardinge Medical College, were awarded WHO Fellowships.
- Dr. S.B. Sharma, Department of Biochemistry, UCMS, was elected Vice President of the Indian Society for Atherosclerosis Research, India.
- Prof. K.S. Rao, Botany, has been awarded the UGC National Swami Parmanand Saraswati award for Ecology and Environmental Sciences for the year 2009-10.
- Prof. J.S. Virdi, Department of Microbiology, has been awarded the Dr. Y.S. Narayana Rao Oration Award by the Indian Council of Medical Research for his research contributions in the field of Molecular epidemiology of *Yersiniaenterocolitica*.
- Prof. T. Satyanarayana, Department of Microbiology, was conferred the Dr. V. Agnihotri Memorial Award for his distinguished contributions to Mycology, 2009.
- Prof. M.L. Singla, Faculty of Management Studies was awarded the IBM Faculty Award for carrying out research on the topic 'BPR or BPM: Way ahead for India'.

- Dr. B.K. Jain Head, Department of Surgery, UCMS, was awarded the Fellowship of the National Academy of Medical Sciences (India) 2009.
- Dr. Gita Radhakrishnan was awarded 'Evaluation of follicular Dynamics as predictors of success of IUI after COH' in December 2009.
- Prof. I. Dasgupta, Plant Molecular Biology, was awarded Fellowship of the National Academy of Sciences India, Allahabad and Bangalore.