

CRITERION III: RESEARCH, CONSULTANCY AND EXTENSION

3.1 Promotion of Research

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

University has Ordinances for M. Phil., Ph.D., D.Sc., D. Litt. and LL. D. Each School/Department has a Department Research Committee (DRC) constituted as per Ordinance number 18 of the University for Ph.D. It monitors and addresses the issues related to departments' research. Its composition is (i) Dean of the Faculty (ii) Chairperson of Board of Studies (iii) Head of the Department (iv) One University Professor nominated by the Vice-Chancellor (v) Four Ph.D. Supervisors, two from the University and two from affiliated colleges nominated by the Vice-Chancellor. DRC has also been assigned the task of admitting students in Ph.D. through written and oral entrance examinations (as per UGC Regulation, 2009 opted in our new Ordinance No. 18).

There is also a Research Degree Committee (RDC) for each Board of Studies. When Ph.D. Course work is completed successfully by a candidate, the RDC evaluates the Synopsis submitted by the candidate. RDC recommends the candidates for registration for Ph.D. It also accepts the registration applications for Ph.D. supervisors or co-supervisors in a research discipline. Academic Council is the final statutory body to address the issues for research, if any

First meetings of the DRCs were held in December 2012. It interviewed and selected the candidates for the Ph.D. course work after the candidate qualified in the written test conducted by the School. Ph.D. guides to successful candidates for admission in Ph.D. courses were also allotted.

University has also constituted a Ph.D. Cell having a senior professor of the University as its Chairman and four members. Similarly, there is a M. Phil. Cell also. The Cells also formulate policies for transparent admissions through written entrance tests and oral interviews as per UGC Regulations.

University constituted a Task Group for **Fostering Excellence in Research** having one Senior Professor as Coordinator and nine Faculty members. The Task Group has formulated a Research Policy for Fostering Excellence in Research which has been accepted by the University.

The Policy has suggested number of reforms for conducting quality research, provision of the seed money to newly appointed teachers as well as to those teachers who wish to do research but do not have funded research projects. The Group has also suggested steps for encouraging good quality and relevant research for the society.

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

University has recognized six colleges as research centres. There are 25 research departments functioning in the Colleges. Those colleges' Faculty members interested in pursuing/ supervising research have been recognized as Ph.D. supervisors provided by RDCs she/ he fulfils the eligibility criteria. Besides, University also makes below mentioned efforts to promote research in colleges:

Organization of Research Seminars/Workshops/ Sensitization programmes and Research Quality issue related Seminars/Lectures.

Hands on training programmes are also arranged.

University Departments allow college teachers to use their laboratory and library facilities

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

- * Funds are advanced to Principal Investigator as per requirements:

Required funds for contingency are transferred in the School/Institute/Principal Investigator's account.

- * Simplification of procedures related to sanctions/purchases

Simplification of procedures is there. Head of the Department has finance power of up to Rs. 25,000 per day. However, it is clear in our finance code that intentionally orders must not be split into smaller parts. Vice-Chancellor has the financial powers of up to Rs. Two lakhs at one time. Thereafter, sanctioning power is with the Executive Council of the University. Proprietary items can be procured directly without tendering process. Normally purchase of more than Rs.one lakh is done after open tendering.

- * autonomy to the principal investigator/coordinator for utilizing overhead charges

Principal Investigator has autonomy to utilize and spend 60% of total overhead charges for enhancing facilities.

- * timely release of grants

University releases the grants to the Departments/ PIs in time

- * timely auditing

Timely auditing is carried out in almost all cases

- * Submission of utilization certificate to the funding agencies

Mostly done with in stipulated time.

3.1.4 How is interdisciplinary research promoted?

- * between/among different departments /schools of the university

University encourage inter-disciplinary research (IDR) in the UTDs. Many departments have collaborated in research and have also published joint research papers. Our Ordinance also permits Faculty for reorganization as guide/ co-guide in other interdisciplinary discipline. Ordinance provides for Ph.D. registrations with the IDR approach. For example, a Professor of Economics supervised the Ph.D. research of studies in Management and a Professor in Computer Sciences and IT supervises Ph.D. in Electronics and Telecommunication Engineering.

Schools of Pharmacy, Life Sciences and Biotechnology have IDRs among the Faculty researchers. Similarly, Schools of Computer Science & Information Technology, Computer Engineering, Electronics and Electronics and Telecommunication Engineering have carried and encouraged IDRs. Institutes/Schools of Management Studies, Economics and Commerce encourage IDRs. Science departments also encourage Faculty for the IDRs.

- * Collaboration with National/ International Institutes / Industries.

University encourages teaching departments to pursue National/ International collaborations. Our University has several MOUs with National and International Organizations. Collaborations are also there without signing formal MOUs. Executive Council of the University approved the MOUs and University Head of the Institution formal signed the MOUs in the past. [Section 3.7 gives the work carried by researchers in collaboration.]

University-Industry Partnership Cell is formulating guidelines for collaboration with the Industries.

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

The University promotes a culture of research through several activities such as organising workshops, seminars, conferences etc. There are subject specific seminars / conferences as well as skill building workshops organised by the University. Few prominent workshops are as follows:

1. Workshop on 'Fostering Excellence in Research' was held in January 2013 to sensitize the Faculty and students for promoting research culture. Eminent speakers were as follows:

1. Prof. Priyankar Upadhyay UNESCO Chair Professor, Banaras Hindu University, Varanasi.
2. Prof. V. K. Singh, Director, Indian Institute of Science³ Education and Research, Bhopal.

3. Prof. H. Padh. Vice-Chancellor, Sardar Patel University, VallabhVidya Nagar, Gujarat.

2. A unique conference was organised by the University in July, 2009 where 24 Shanti Swarup Bhatnagar Awardees Scientists in Physical, Biological, Mathematical and Engineering Sciences gave lectures on their award winning researches and topics for sensitising the researchers. The conference had big impact on promoting research culture and sensitizing the young researchers. Faculty and students interacted for 3 days with the resource scientists. Besides, lectures by PadamBhushan Dr. T. Alex of ISRO and PadamVibhushan Dr. Anil Kakodar on 'India and its Nuclear Energy Strategy' were attended by nearly 2000 School, College and University students of the City. Schools/Institutes of Physics, Chemistry, Biochemistry, Life Sciences, Biotechnology, Pharmacy Electronics, IET and computer Sciences jointly organised the conference.

3. Besides, a large number of seminars / workshops /training programmes have been organised by several departments during 11th Plan period. University also conducted workshops on Research Methodology, especially for young researchers.

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

University is in process of facilitating the researchers of eminence to visit the campus as adjunct professors from the plan grants of UGC.

3.1.7 What percentage of the total budget is earmarked for research? In its budget, does the university earmark fund for promoting research in its affiliated colleges? If yes, provide details. Give details of heads of expenditure, financial allocation and actual utilization.

External funding for research is major source of budget earmarked for research. Schools/Institutes have project grants from number of funding agencies. All the faculty members are permitted to attend/participate and present papers in National and International conferences. Efforts are done to provide travel expenses, registration charges to researchers from UGC and other grants as per University rules.

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

University encourages Post Doctoral research culture. School of Biotechnology is recognised as research centre with TWAS, FICCI. Recently Dr. Abebe Girma Demissie, from Ethiopia joined as Post Doctoral Fellow with CV Raman International Fellowship of FICCI. A couple of other scientists from other countries are awaiting the award of fellowship from TWAS. Other departments also accept Post Doctoral Fellows with / without fellowships.

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

University encourages its faculty members to update their knowledge and skills. Several faculty members have utilized study leaves for pursuit of higher research. 25% faculty members from Chemical Sciences, 25 % from School of Computer Sciences, 4% from IMS, 4% from IET and 10% from Pharmacy have availed study leaves to pursue research abroad and in India for M. Tech, Ph.D. and other research related activities.

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

Many national and international conferences have been organised in last four years and the names of eminent scientists/scholars who participated in these events and many distinguished scientists and Scholars participated in them. School of Biotechnology hosted 5th World Congress of Cellular and Molecular Biology in collaboration with World Society of Cellular and Molecular Biology, France in November 2009 where more than 500 researchers participated. Scientists from other countries also joined the congress.

Detailed list is given in accompanying evaluative reports of the Schools/Institutes, and in the self study reports at www.iqac.dauniv.ac.in.

The eminent Scholars who participated are as follows:

1. Dr. Y. V. Reddy, Former Governor, Reserve Bank of India
2. Padam Shri Prof. D. B. Phatak, IIT Mumbai
3. Prof. Yashpal, Eminent Scientist, New Delhi
4. Dr. K. L. Krishna, Chairman of Board of Governors and Executive Council, Centre for Economic and Social Studies (CESS), Hyderabad
5. Dr. R.K. Bhargava, Ex Chairman, (Retd.) Heavy Water Board, Indore.
6. Dr. N. Shradha, Professor, TIFR, Mumbai.
7. Prof. Deepak Gupta, IIT Kanpur
8. Shri Babulal Jain, Deputy Chairman, State Planning Commission, Bhopal
9. Prof.SushantShrivastava, Department of Pharmaceutical Engineering, I.E.T., BHU, Varanasi
10. Dr. Praveen Srivastava, Deputy Director General, NSSO, Bhopal

Shanti Swarup Bhatnagar awardees who lectures are as follows:

1. Dr. Anil Kakodkar, Chairman, Atomic Energy Commission of India & Secretary to Govt. of India,
2. Dr. T. Alex, Director ISRO Satellite Centre, Bangalore on “Chandrayan
3. Dr.L. S. Shashidhara Centre for Cellular & Molecular Biology, Hyderabad
4. Dr. Gopal C Kundu, National Centre for Cell Sciences, Pune
5. Prof A. K. Ghatak, Emeritus Professor I.I.T. Delhi

6. Dr. A. Ajay Ghosh National Institute for Inter Disciplinary Science, Thiruvanthapuram
7. Dr. Kanury V. S. Rao, International Center For Genetic Engineering And Biotechnology, New Delhi
8. Dr. D.D. Bhawalkar, Padamshri, Ex-Director RRCAT, DAE, Indore
9. Dr. Narayan Swamy Srinivasan, Indian Institute of Science, Bangalore
10. Dr. Amalendu Chandra I.I.T. ,Kanpur
11. Dr. Ashish Lele, National Chemical Laboratory, Pune
12. Dr. Anil Bhardwa, Vikram Sarabhai Space Centre, Thiruvanthapuram
13. Dr. Subhasis Choudhry, IIT Bombay, Mumbai
14. Dr. Virendra Singh Sangwan, L.V. Prasad Eye Institute, Hyderabad
15. Prof. Kehar Singh, Emeritus Prof. ,I.I.T. Delhi
16. Prof V. Ramgopal Rao, Prof. IIT Bombay, Mumbai
17. Dr. G.P.S.Raghava, (Institute of Microbial Technology, Chandigarh)
18. Dr. Yaswant Gupta, National Center for radio Astrophysics, Pune
19. Dr. Rama Govindrajan, Jawaharlal Nehru Center For Advanced Scientific Research, Bangalore
20. Dr. B. S. Murty, IIT Madras, Chennai
21. Dr. Javed N. Agrewala, Institute of Microbial Technology, Chandigarh
22. Dr. G. P. Pal, Modern Dental College, Indore
23. Dr. Srikanth Sastry, Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore)
24. Dr. M. S. Sodha Padam Shri Emeritus Prof., IIT Delhi, Former Vice Chancellor, Indore, Lucknow and Bhopal Universities

3.2 Resource Mobilization for Research

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

Schools /Institutes support students' research projects from departmental funds. In the School of Biotechnology, School gets funds (@ Rs.50,000/- per student) from DBT for supporting M.Sc. Biotechnology students' research projects. Teachers also support students' research projects from their own research projects. At present, directly University does not have financial provision in the budget for research. However, we plan to make provision in the budget from next year.

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

Efforts are being made to encourage the faculty to file patents. Lectures & Seminars have been organised on Intellectual Property Rights. University has also signed MOU with National Research & Development Corporation (NRDC) for encouraging patents filing.

A series of lectures at a seminar on the theme "Intellectual Property Rights" on October, 13, 2012. Ms. Raunak Dubey, Executive, Intellectual Property

Facilitation Centre, Confederation of Indian Industry, Indore, 452010 delivered talk on “Success story of India related to patents”.

A series of lectures at a seminar was organised on patenting and IPR issues sponsored from NRDC, New Delhi

Dr. Rashmi Dahima of Pharmacy was sponsored for One week training on topic “Intellectual property rights- Patent drafting, procedure and policies ” at M.A.N.I.T., Bhopal(2012)

The following applications have been filed for Patents :-

Dr. Rajesh Sharma & Dr. (Mrs.) Rashmi Dahima on

1. Gastro retentive cytoprotective drug delivery system (GR-CDDS) application No.2049/MUM/2008, and

2. Milk powder as a super disintegrating agent application No. 892/MUM/2011

Provide the following details of ongoing research projects of faculty:

	Year wise	No.	Name of the project	Name of the funding agency	Total grant received
University awarded projects					
Minor projects	Nil -	Nil -	Nil	Nil	Nil
Major projects	Nil -	Nil-	Nil	Nil	Nil
Other agencies - national and international (specify)					
Minor projects	2009-10	1	Women Empowerment*	UGC	80000
	Mar. 12- Sep.13	1	IIPS Internet banking ...%	ICSSR	90000
	2012-14	1	Water Conservation #	MPCST, Bhopal	486000
Major Project	2013-15	1	Decentralised Planning ^	M.P. State Planning Commission	5000000

Remaining details are listed in Sections 3.2.5 and 3.2.6.

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

No, however, University-Industry Partnership cell has been constituted in 2012 is formulating a policy to attract projects sponsored by the industry / corporate houses.

3.2.5 How many departments of the university have been recognized for their research activities by national / international agencies (UGC-SAP, CAS; Department with Potential for Excellence; DST-FIST; DBT, ICSSR, ICHR,

ICPR, etc.) and what is the quantum of assistance received? Mention any two significant outcomes or breakthroughs achieved by this recognition.

1. Centre for Potential of Excellence in e-Management Studies –

IIPS, IMS, SCSIT, EMRC and Future Studies and Planning planned interdisciplinary Centre for potential of excellence in 2002. UGC then sanctioned significant grants of Rs. 3 Crore for establishing then centre. (2002-08).

Significant outcomes are: Building Infrastructure, Equipment, Books, and the UG and PG courses in E-Commerce, and M.Sc. IT Courses and research in recognised thrust areas.

2. UGC-SAP, CAS; DST-FIST; DBT, ICSSR, ICHR, ICPR, NBHM Projects.

School of Biotechnology

The School of Biotechnology has been sponsored by the Department of Biotechnology, New Delhi (since 1991 till to date). It has received a total grant of approx. Rs 2.5 Crores till now under M.Sc. Biotechnology programme. The Bioinformatics sub-centre has received total grant of nearly Rs. Three crore till now. Under Biotechnology, University is being considered for University Innovation Cluster under the joint scheme of National Innovation Council, Planning Commission and Biotechnology Industry Research Assistance Council (BIRAC)

Significant outcomes: It has developed a Laboratory with high-tech equipments. It has resulted in Quality research work substantiated by number of research publications in International Journals, book chapters and books.

School of Chemical Sciences

- * The School has received a support of nearly Rs. 30 lakh under DST-FIST.
- * Significant outcomes: It has developed a Laboratory with high-tech equipments. It has resulted in Quality research work substantiated by number of research publications in International Journals.

School of Computer Science and Technology

The department has received DST-FIST grants worth Rs. 25.0 Lakhs, UGC-SAP grant for Database & Data Mining worth Rs. 50.0 Lakhs.

Significant Outcome: A Database and Data Mining Laboratory Research and Training has been undertaken. Research work in new areas has become possible.

UGC-sponsored Language Laboratory in XII plan at the cost of Rs 25 Lakhs

Significant Outcome: Language Laboratory has been established for developing communication skills of the students

Economics

- * The department received UGC- SAP Project DRS Phase II Research Grant Rs 41,00,000 plus two project fellows under it.

Significant outcomes: 1. Quality Research Work 2. Infrastructure substantiated by number of research publications in International Journals.

- * State Planning Commission, Bhopal created a Chair for Micro Economic Governance for Rs 50,00,000
- * Significant outcomes: Started work in 2012-13

ICSSR: Rs 58,48,182 Grant

Significant outcomes: 1. Quality Research Work 2. Infrastructure substantiated by number of research publications in National and International Journals.

UGC Centre was established for Natural Resource Management in Backward Areas worth Rs. 50 Lakhs

Significant outcomes: 1. Seminar 2. Research Infrastructure .

UGC Centre was established for Tribal Women Studies worth Rs. 50 Lakhs

Significant outcomes: 1. Seminar 2. Research Infrastructure

School of Electronics

UGC Innovative programme for setting up lab and classes for M.Tech (Mobile Computing Technology)

Significant outcomes: 1 First course in India- M. Tech. Mobile Computing Technology (Since 2008-09) 2 Excellent employment opportunities for students in Software industry

School of Energy and Environment Studies

DST-FIST project(2002-07)

Significant outcomes: 1 Modernization of Laboratories 2 Research work of International level

Education

Currently, School of Education is implementing SAP (DRS-Phase III) of UGC. It has been upgraded to Institute of Advanced Studies in Education (IASE) in December 2012, by MHRD.

School of Life Sciences

DST-FIST in Physiology and Molecular Biology, Rs. 25 Lakhs 2002-07

* UGC-SAP Rs. 40 Lakhs 2007-13

Significant Outcome: 1 Purchase of many equipments and 2. quality research work supported by number of research publications in International journals.

School of Mathematics

National Board for Higher Mathematics (NBHM) grant sanctioned for the year 2012-13 is about 8.5 lakhs for library.

Significant Outcome: 1 Good Departmental Library and 2. quality research work supported by number of research publications in International journals.

Physics

FIST programme of DST Rs. 45 Lakhs

Significant Outcome: 1 Advanced Equipment and 2. Quality research work supported by number of research publications in International journals.

3.2.6 List details of research projects completed and grants received during the last four years (funded by National/International agencies).

* Research projects completed and grants received during the last four years (funded by National/International agencies).

Total Rs. 12,52,78,767 has been granted and received during the last four years.

S. No	Title of the funded (major/minor) research project (Supervisor)	Name of the funding Agency (State/ National/ International)	Amount sanctioned in Rs.	Starting date and year	Ending date and year
1.	Isolation and .. (Dr. Rameshwar Jatwa)	MP Biotech. Council	1308800	17-01-2011	16-01-2014
2.	Development of glucagon .. (Dr. Rameshwar Jatwa)	DST	1616000	30-04-2012	29-04-2015
3.	Exploration of ... (Dr. Rameshwar Jatwa)	UGC	622404	16-01-2012	16-01-2014
4.	GIS ...(Dr. VB Gupta)	DST	2998970		
5.	P.G. Diploma Course in Science J. (Dr. VB Gupta)	NCSTC, DST	2500000		
6.	Masters Programme in Sci. Comm.(Dr. VB Gupta)	NCSTC, DST	2387000		
7.	Computer aided drug design (Dr. Rajesh Sharma)	AICTE	1350000	December 2010	December 2012
8.	Computer Aided Drug	UGC	1009800	Feb.	Feb.

	(Dr. Rajesh Sharma)			2011	2014
9.	Computer Aided Drug Design, ... (Dr. Rajesh Sharma)	MPCST, Bhopal	372000	April 2011	March 2014
10.	Antitussive and mast cell .. (Dr. GP Choudhary)	MPCST, Bhopal	180000	01-04-2010	31-03-2013
11.	Antihistaminic ..(Dr. GP Choudhary)	UGC	6 08800	01-02-2010	31-01-2013
12.	Evaluation... (Dr. GP Choudhary)	AICTE	1050000	01-06-2010	31-05-2013
13.	Computer Aided Design... (Dr. LK Soni)	UGC	1036800	01-03-2010	01-03-2013
14.	Exploration of tamarind ... (Dr. Rashmi Dahima)	MPCST, Bhopal	468000	March 2011	March 2013
15.	Formulation of a novel sustained (Dr. MA Khan)	UGC	708000		
16.	Design and prostrate cancer. (Dr. E Manivannan)	AICTE	1050000	2009	2012
17.	Physiological ... (F-500) on soybean. (Dr. KN Guruprasad)	BASF Pvt. Ltd., Mumbai	1000000	01-09-2010	31-08-2013
18.	On the nature of regulation of phytochrome. (Dr. KN Guruprasad)	DST- INDO RUSSIAN INT/RFBR/P-59, New-Delhi	270000	13-07-2009	13-07-2010
19.	Electromagnetic (Dr. KN Guruprasad)	(NFBSRA	1500000	25-05-2007	25-05-2010
20.	Evaluation of predictive/... (Dr. Krishnan Hajela)	UGC No.F. 41-827/2012 (SR)	700000	2012	2015
21.	The effect of mannose .. in Indian population. (Dr. Krishnan Hajela)	UGC	912000	2006	2009
22.	Surface and catalytic oxides. (Dr. R Prasad)	CSR-CRS	306000		
23.	Studies ... cyclization reactions.(Dr. R Prasad)	UGC	764800		
24.	Synergistic extraction andcalix(n) arenes.(Dr. Ashok Kumar)	CSIR	1046000		
25.	Synergistic extraction ... (Dr. Ashok Kumar)	DST	1700000		
26.	Synthetic, Spectroscopic,	UGC	411100		

	... Ligands. (Dr. HPS Chauhan)				
27.	Design, Synthesis, (Dr. Pratibha Sharma)	DRDO	1494000		
28.	Quantum (Dr. R Prasad)	MPCST, Bhopal	295000		
29.	Group 15 Metal and Organometallic (Dr. HPS Chauhan)	UGC	804800		
30.	M.Sc. Biotechnology program.... (Dr. Anil Kumar)	DBT	2000000 0	1991	Till date
31.	Bioinformatics sub centre program ...r M.Sc. students. (Dr. Anil Kumar)	DBT	2000000 0	1993	Till date
32.	Xylanase production ... (Dr. Anil Kumar)	TWAS-DBT	724127	2007	2010
33.	Carbon (Dr. Kiran Bala- PI) (Dr. Anil Kumar-Co PI)	DBT	2372758	July 2012	October 2012
34.	Assistance for updating biotechnology facilities. (Dr. Anil Kumar)	MPCOST	1200000	April 2011	Till date
35.	15 days hands on training “Enzymes and Enzyme technology” (Dr. Anil Kumar)	M P Biotechnology council	145000	June 2012	June 2012
36.	Isolation and ...cardio-vascular problems. (Dr. Anand Kar)	DST	1700000	October 2010	October 2013
37.	Isolation and purification of active (Dr. Anand Kar)	CSIR	758000	October 2006	October 2009
38.	Efficacy eval.. compounds. (Dr. Anand Kar)	UGC	1050000	01-05-2006	31-07-2009
39.	Laserstudies on INDUS-I. (Dr. Ratnesh Gupta)	Board of research in Nuclear Sciences,	1491000	01-02-2006	30-01-2010
	Synthesis of Nano-composite ... Permanent Magnets”,	DST India-DAAD Germany	338000		2008-10
	To investigate AIPES beamline of Indus-I”	UGC-DAE CSR, Indore	710000		2010-13
	To study shape transformation of magnetic nanoparticles Ions	Inter-University Accelerator Centre, New	6,03,000		2012-14

		Delhi			
40.	Optical,and Cobalt (Co). (Dr. Ashutosh Mishra)	UGC IUC	536400	04-11-2008	30-09-2012
41.	Effect of .. BaTiO ₃ . (Dr. Ashutosh Mishra)	UGC, IUC) (National)	382000	26-11-2012	25-11-2015
42.	Structural.... multiferroics. (Dr. Dinesh Varshney)	UGC	730000	01-06-2011	31-05-2014
43.	Structural, ...multiferroics. (Dr. Dinesh Varshney)	UGC IUC	382000	01-05-2012	31-04-2015
44.	UGC innovative program (M.Sc. Physics- Materials Science). (Dr. Dinesh Varshney)	UGC	2350000	01-04-2004	31-03-2009
45.	Physical .. Borides. (Dr. Dinesh Varshney)	UGC	335000	01-05-2006	31-04-2009
46.	Structural ...chalcogens. (Dr. Dinesh Varshney)	DRDO	1856600	01-05-2008	31-04-2012
47.	Effect of (Dr. Dinesh Varshney)	MPCST	300000	01-08-2008	30-07-2010
48.	Transport .. films. (Dr. Dinesh Varshney)	UGC, DAE, CSR, Indore	382000	01-06-2009	31-05-2012
49.	Design .. for free electron laser. (Dr. G Mishra)	UGC	1023800		
50.	Undulator .. laser. (Dr. G Mishra)	DRDO	3200000		
51.	Optimization ..r for free electron laser. (Dr. G Mishra)	DST	2370000		
52.	Study ... films. (Dr. Mandira Banerjee)	UGC-IUC scheme	334300	01-10-2011	31-03-2013)
53.	Electronicthin films. (Dr. P Sen)	UGC-DAE-CSR, Indore	150200	2011	2014
54.	Electronic .. nanostructures. (Dr. P Sen)	DST	1435200	2012	2015
55.	Spin ...quantum dots. (Dr. P Sen)	DST	1558848	2008	2011
56.	Non-... coherence reflectometry. (Dr. P Sen)	UGC	1193800	2008	2011
57.	Study of ferrite .. laser deposition. (Dr. SN Kane)	UGC-IUC	556200	20-08-2011	2014
58.	Experimental ...(Dr. Y Choyal)	DRDO	3066000	01-04-2008	30-09-2010
59.	SAP-DRS (II) (Dr. Anuradha Joshi)	UGC	2994000	2004	2009
60.	Research writing in social sciences (Dr. Avtar Singh)	UGC	100000		

61.	Non destructive (Dr. Shashi Prakash)	UGC	1054860	2008	2011
62.	Grating (Dr. Shashi Prakash)	DRDO	1491600	2007	2009
63.	A study on antioxidative,. (Dr. Deepak Bhatnagar)	MPCST	493000	December 2012	December 2014
64.	Antioxidant and radioprotective. (Dr. Deepak Bhatnagar)	UGC	871800	18-07-2009	30-04-2012
65.	Osmotic stress-... in maize leaves. (Dr. Meeta Jain)	MPCST	390000	01-04-2010	31-03-2013
66.	A study ..maize leaves. (Dr. Meeta Jain)	UGC	100000	01-04-2007	31-03-2009
67.	Climate .. Campaign 2008-2009. (Dr. Meeta Jain)	Environment Planning and Coordination Organization (EPCO), Bhopal	8000	10-07-2009	30-08-2009
68.	Climate (Dr. Meeta Jain)	EPCO Bhopal	7000	01-04-2010	30-05-2010
69.	Biodiversity ... (Dr. Meeta Jain)	EPCO	8000	01-04-2011	30-05-2011
70.	Forests for (Dr. Meeta Jain)	EPCO Bhopal	10000	01-02-2012	15-04-2012
71.	Characterization of ... (Dr. SM Gokhale)	UGC	620000	01-02-2010	01-02-2013
72.	Investigating molecular.... (Dr. A Jajoo)	DST	1488000	23-08-2011	22-08-2013
73.	Characterization of PS II.... (Dr. A Jajoo)	DST, New Delhi	3000000	26-07-2006	26-07-2009

3.3 Research Facilities

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

University is doing efforts continuously to improve its infrastructure to facilitate research.

University has excellent ICT infrastructure for research and all the faculty members are provided with a desktop, printer and an internet connection

University has excellent Library resources including e- Journals and other online resources like Emerald, JSTOR, Science Direct, IEEE etc.

The library and internet resources are available for all faculty, students and researchers of the University.

Schools/Institutes have created separate research laboratories space for research scholars and research work.

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

Yes, University has a well established IT centre. Online access to e-journals and other databases is available to every department. Excellent ICT infrastructure and e-Journals enable the information resources on line.

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

Yes, University has a USIC. The facilities mentioned in the table are made available to research scholars. They can also get help to repair instruments and glass wares etc. The details of the USIC equipments are as follows:-

S.No.	Name of Workshop	List of Major Equipments
1	Mechanical Workshop	HMT Lathe Machine, Batliboi Shaper Machine, HMT Milling Machine, welding Equipments, Radial drilling machine, Power Saw, Shearing Machine, Carpentry Lathe, Carpentry Saw Machine, Carpentry Planner Machine,
2	Glass Blowing Workshop	Burners, Lathe, Optical Equipments, tube cutter
3	Electronic Workshop	CRO, Multi-meters, Current Meters, Mega Meter etc.

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

Residential facility is provided in the form of Hostels. We have Wi-Fi in the entire campus. Researchers use their own laptops. Researchers also have access to IT Centre. Visiting professors are provided quarters meant for teachers. Besides, temporarily, guest house facility is given on arrival.

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

University has specialised National level research centres off-campus in the City. RRCAT of Department of Atomic Energy and IUC UGC-CSIR-DAE facilities (in University Takshila Campus) are used in all basic sciences

research programmes. Facilities of IIM, Indore and IIT Indore research centres are also used by the researchers. Facilities of DSR, Indore used by the researchers in Schools of Life Sciences, Computer Sciences, Pharmacy and biotechnology.

Researchers are utilizing the following facilities of IUC: TEM, SEM, AFM, XRD, ESCA, N₂, He plant.

Facilities of Sophisticated Instrumentation Centre (NMR, SC-XRD, GCMS, LCMS, Elemental and others) of IIT, Indore.

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

School of Energy and Environment Studies Research Facilities have centres of national and international recognition/repute

State recognition: Improved Biomass Cook stove testing Laboratory and Gasifier Testing for MPUVN

National recognition: Bureau of Indian Standard (BIS) approved Laboratory for Testing of Solar Thermal Devices [Ministry of New and Renewable Energy (MNRE) Approved Laboratory]

International recognition

National Accreditation Board for testing and Calibration Laboratories (NABL), [DST, New Delhi]

Accredited Laboratory for Testing of Solar Thermal Devices – Solar Flat Plate Collector and Solar Cooker in India

Biomass and Bio-fuel Conversion Laboratory

3.4 Research Publications and Awards

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

Not at present, however, university plans to start two journals (one science & technology based and another of humanities & management) soon.

3.4.2. Give details of publications by the faculty:

University teaching departments have published research work in national and international journals. Notable among the innovations of the faculty are development of pharmaceutical and antimicrobial compound, antioxidants development of catalysts, nano-materials from Chemistry; somatic embryogenesis of medicinal plants and tree species, anxin transport genes and

their role in differentiation, first time role of a protein involved in immune system was demonstrated to clot blood as normally done by enzyme thrombin, work on Photobiology and Photosynthesis from Life Sciences; New data compression algorithm for data communication using CAN bus in vehicles and automobiles from Institute of Engineering and Technology; and Orchestrator architecture for Mathematical complex computations, Security and Service Oriented architecture from Computer Sciences.

Faculty published in journal 1643 papers, 72 chapters in books, 4 monographs, 14 books edited, 32 Books in four years.

NPPP is abbreviation used for Number of papers published in peer reviewed journals (national / international) in four years, NPPP5 means in five years. .

MN: Monographs

Chapter in Books: CH ; Books edited: BE ; Books with ISBN with details of publishers: BP

Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, EBSCO host, etc.): NLID

Citation Index – range / average CI; Impact Factor: IP; H-index: HI

S.NO	School/ Institute	NPPP	M	C	C	B	B	N	CI	IP and HI
.		4	N	H	E	E	P	I		
1	Bio-chemistry	35							Dr. D. Bhatnagar up to 247	IP: Dr. D. Bhatnagar up to 4.90/2.5; HI: Dr. D. Bhatnagar 15; IP/HI Dr. A. S. Yadav upto 4.90/3.0

2	Bio- technology	42	03	10		10	6			+ Dr. Anil Kumar 20; Dr. H.S. Parmar 08 (as per Scopus) and 12.5 (as per Google Scholar)
3	Chemical Science	95								&
4	Commerce	0								
5	Computer Science and Information Technology	167					8			IP: Dr. Raj Kamal up to 5.1
6	Economics	74	01	29		03		57		
7	Educational Multimedia Research Centre	1								
8	Electronics	6					06			IP: range up to 5.1
9	Energy and Environmental Studies	30		2					1 - 126 / 22	IP: 0.915-6.018/3.57 HI: 10-97/ 54
10	Futures Studies and Planning	12		5						
11	Institute of Engineering and Technology (IET)	206					03			
13	Instrum- entation	30		02						Dr. Ratnesh Gupta: 439 IP: 1.0 – 4.0/2.5 HI: Dr. Ratnesh Gupta -

									11
14	International Institute of Professional Studies	165				02			
15	IMS	84		02		04			
16	Journalism and Mass Communication	36		03					
17	Law	16							
18	Library Sciences	19		13					
19	Life Sciences	94						*	\$
20	Life Long Learning	18		01					
21	Mathematics	10							IP:0.73
22	Pharmacy	193		01		03		@	HI: 11, 4, 4, 4, 7, 3, 1, 8, 1, 10, 2
23	Physical Education	21				01			IP: Prof Deepak Mehta - 02 (5.09)
24	Physics	264						0-400	IP:1-4 HI:4-25
26	Statistics	25		04					IP: (0 – 5.47) / 0.44 HI:0.44

+ IP: Dr. Anil Kumar cumulative ~200 and average 1.732; Dr. H.S. Parmar cumulative 40 and average 2.5; HI: Dr. Anil Kumar 20; Dr. H.S. Parmar 08 (as per Scopus) and 12.5 (as per Google Scholar)

& IP: range Dr. K. K. Pandey 0.063- 12.11 Dr. Ashok Sharma up-to 2.266; Dr. R. Prasad up to 2.28; Dr. Pratibha Sharma 0716-2.338; Dr. H P S Chauhan up to 2.01; Dr. Sheela Joshi up to 2.266; Dr. Savita Khare up to 2.872 / average

* Dr. Suresh Chand 473 ; Dr. K.Hajela 396; Dr. Anand Kar 394; Dr.Anjana Jajoo 240; Dr.Tushar Banerjee 56

\$ IP: Dr. S.Chand 7.69 - 0.184; Dr. K.N.Guruprasad 2.92 - 0.85; Dr. S.Patil 3.59-1.81; Dr.Anand Kar 3.59-1.14; Dr.K.Hajela 5.4-1.83; Dr.Anjana Jajoo 5.6-0.6; Dr. G.P.Pandey 1.63-0.08]; Dr.Tushar Banerjee 2.5-.3; Dr.R. Jatwa 2.068-1.026

HI: Dr.S.Chand-14, Dr.Anand Kar – 14, Dr.Anjana Jajoo-9, Dr.Tushar Banerjee-4

@ Dr. Rajesh Sharma 263, Dr. G.P. Choudhary 43, Mrs. Tamanna Narsinghani 27, Dr. Mrs. Nidhi Dubey 43, Dr. Love Kumar Soni 151, Dr. Mrs. Rashmi Dahima 20, Dr. E. Manivannam 158, Mr. M. C. Sharma 686, Nr. Jitendra Sainyn 27

3.4.3. Give details of faculty serving on the editorial boards of national and international journals and Faculty serving as members of steering committees of international conferences recognized by reputed organizations / societies

Faculty and the research scholars of the University have received best research paper awards and other prestigious awards from various organizations. Two research scholars of the School of Life Sciences have been selected for Indian National Science Academy (INSA), Young Scientist Award and Humboldt Fellowship (Germany).

Following Faculty members are serving on the editorial boards of national and international journals.

Chemical Sciences: Dr. H.P.S. Chauhan and Dr. Ashok Kumar

Computer Science and IT: Dr. Raj Kamal

Future Studies and Planning:

Dr. R.C. Sharma (on leave)

Biotechnology: Dr. Anil Kumar

IIPS: Dr. Yamini Karmarkar Dr. Geeta Nema: Dr. Jyoti Sharma: Dr. Anshu Bhati: Dr. Kapil Jain:

Faculty serving as members of steering committees of international conferences recognized by reputed organizations / societies

Biotechnology: Dr. Anil Kumar, Dr. H. S. Parmar; **Computer Science and IT:** (1) Dr Raj Kamal, Dr M Ingle, and Dr S Tanwani **Energy:** Dr. S. P. Singh **Electronics:** (2) Dr Raj Kamal as reviewer of IEEE Trans on VLSI Systems papers. **Instrumentation:** Dr. Ratnesh Gupta, **Reviewer Elsevier Journals;** **Journalism:** Dr. M. S. Parmar, **Law:** Dr. Archana Ranka, **IIPS:** Dr. Yamini Karmarkar, **Physics:** Dr. Ashutosh Mishra, Dr. A.K. Dutta, Dr. Pratima Sen, Dr. Shashank Kane Dr. A.K. Dutta

Details of research awards received by the faculty and students:

Biochemistry, Biotechnology, Energy, IET, Electronics, Chemical Sciences, Computer Sciences, IIPS, Instrumentation, Pharmacy, Physics and Life Long Learning faculty members and students have been awarded number of research awards. Details are given at accompanying Evaluative Reports of the respective Schools/Institutes.

National and international recognition received by the faculty from reputed professional bodies and agencies

- * SoCh Professor Dr. K.K. Pandey has been awarded prestigious fellowship Alexander von Humboldt Fellowship, Germany by University of Marburg, and has served as Visiting Professor Department of Chemistry, Universitat Autònoma de Barcelona, Spain, and awarded as Emerson Center's Visiting Fellowship for research at Emory University, Atlanta.
- * SoInst. Dr. Ratnesh Gupta has been awarded TRIL associate Fellow from International Centre for Theoretical Physics, Trieste, Italy and visited Univ. of Padova, Italy, Univ. of Ilmenau, Germany.
- * Number of faculty members and students of Schools/Institutes of Biochemistry, Biotechnology, Energy, IET, Electronics, Chemical Sciences, Computer Sciences, IIPS, Instrumentation, Pharmacy, Physics and Life Long Learning have been received national and international recognition from reputed professional bodies and agencies. Details are given at the Evaluative Report of the respective Schools/Institutes.

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

M. Phil. and M. Tech./M.E.s are offered in 26 and 20 subjects. There are 3 students per year completing students per M. Phil, and M. Tech./M.E. There are 350 Ph.D.s in four years with 150 guides. Ph.D. scholars guided per faculty during the last four years = 2.3.

MOU is being signed to Shodhganga from 2013-14.

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

Presently research supervisors are very strict on this count. Each School/Institute has Code of Ethics for research (Respect for intellectual property rights of individuals and institutions). University found no such case for any Ph. D. Theses from the Schools/Institutes so far. The Task Group on Fostering Excellence in Research has drafted a policy for research which has defined a code of conduct for research done at the University.

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

Schools of Pharmacy, Life Sciences, Biotechnology and Energy and Environment studies have undertaken Interdepartmental / interdisciplinary research.

1. Mr. Naveen Dhingra is pursuing Ph.D. at School of Pharmacy under the supervision of Dr. A. Kar, Professor, School of Life Sciences, Indore and Dr. Rajesh Sharma, Reader & Head, School of Pharmacy,
2. Dr. E. Manivannan is collaborating with few research projects in association with Dr.H.S. Parmar, School of Biotechnology,
3. Dr. E. Manivannan collaborated with Dr. R. Sowdhaminiand and Dr. K. Kanakrajdurai for computational approaches to protein-science and Homology Modeling and docking at National Centre for Biological Sciences (NCBS), Tata Institute of Fundamental Research, Bangalore, Karnataka.
4. Schools of Electronics, Computer Sciences and IT, Institute of Engineering and Technology have undertaken Interdepartmental / interdisciplinary research
5. Students have completed Ph.D. in interdisciplinary researches problems in areas of Embedded Systems, Mobile Computing, Networks, Network Security and Artificial Intelligence, and Vehicular technology.

3.4.7. List of University instituted research awards to the faculty of the Department

Planned from 2013-14.

3.4.8. Details of incentives given to the faculty for receiving state, national and international recognition for research contributions. .

Planned from 2013-14

3.5 Consultancy

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

Policy

Executive Council of University has approved guidelines for Consultancy. The guidelines are in operation since 18.07.2008.

University has set a University-Industry Partnership Cell. The Cell is formulating a policy, guidelines, mechanism and plans for participation in activities of the Universities such as teaching, training, research and consultancy.

Few important consultancies undertaken

School of Energy and Environment Studies has strength in consultancies in the area of Solar City Master plan, Energy Audit, Biomass and Bio-energy.. Consultancies have been undertaken by the SEES as follows:

- 1 Detailed Master Plan for Solar City Dewas, submitted to Nagar Nigam, Dewas, 2011
- 2 Detailed Master Plan for Solar City Indore, submitted to Indore

- Municipal Corporation for Ministry of New and Renewable Energy Sources, Govt of India, New Delhi, 2010
- 3 Electrical Energy Scenario of Indore City of Year 2020, submitted to TARU, Indore for Rockwell Foundation, US, 2009
- 4 DPR and monitoring for installation of 24000 lit/day water heating systems and 10 KWp power project with storage batteries for hostels and office building of Daly College ,Submitted to Daly College for Ministry of New and Renewable Energy Sources, Govt of India, New Delhi, 2011
- 5 Detailed Project Report on Grid Connected 35 KW_p Solar PV Power Plant for corporate office building for Ajmer Vidyut Vitran Nigam Limited Submitted , 2011
- 6 Third Party Verification work of Home Light and Street Light Systems installed by the M.P. Urja Vikas Nigam under the Remote Village Electrification Scheme of the MNRE of 80 villages, Report has been submitted to the M.P. Urja Vikas Nigam, Bhopal ,M.P 2011

Energy Audit

- 1 Detailed Energy Audit Reports of 54 Hotels of Madhya Pradesh State Tourism Development Corporation Ltd. Bhopal, submitted to M.P.CDM Agency, Bhopal, M.P, 2011
- 2 Detailed Project Report on Development of Energy Efficient Lighting Network at Kheda Growth Centre, Pithampur, M.P. submitted to the M.P. Udyogik Vikas Nigam, Indore, M.P, 2011
- 3 Detailed Energy Audit of Collector Building, Indore submitted to MPUVN, Bhopal, M.P, 2011
- 4 Detailed Energy Audit of 132 KV/25 KV TSS, Gurla, ,submitted to The SDEE Traction Distribution Kota ,Rajasthan, 2010
- 5 Detailed Energy Audit of Raj Bhavan Buildings, Governor House Complex, Bhopal, Submitted to Madhya Pradesh Urja Vikas Nigam, Bhopal, M.P,2010
- 6 Detailed Energy Audit of Vallabh Bhavan Buildings, M.P. Govt. Secretariat Building, Bhopal, Submitted to Madhya Pradesh Urja Vikas Nigam, Bhopal, M.P,2010
- 7 Detailed Energy Audit of Office Building of MPUVN, Bhopal, Submitted to Madhya Pradesh Urja Vikas Nigam, Bhopal,M.P,2010
- 8 Detailed Energy Audit of Zenith Birla (India) Limited, Khopoli, Raigad, Maharashtra, Submitted to M /S Zenith Birla (India) Limited, Khopoli, Dist: Raigad, Maharashtra, 2009
- 9 Preparation of list of Designated Consumers and Their Consumption in the State of M.P as per Energy Conservation Act 2001; Project of Bureau of Energy Efficiency (BEE), New Delhi, Report Submitted to M.P. Urja Vikas Nigam Ltd., Bhopal, 2008
- 10 Preparation of list of Certified Energy Managers/Auditors, Accredited in the State of M.P as per the provisions of Energy Conservation Act 2001; Project of Bureau of Energy Efficiency (BEE), New Delhi,

- Report Submitted to M.P. Urja Vikas Nigam Ltd., Bhopal, 2008
- 11 Detailed Energy Audit of BSF's Central School of Weapons and Tactics and BSF campus, Submitted to DG BSF, Indore, M.P, 2007
 - 12 Detailed Energy Audit of Satguru Cement, Submitted to Satguru Cement, District Dhar, M.P, 2007

C. BIOMASS AND BIO-ENERGY

- 1 Physical Verification / Survey report of Family Size biogas plants in 3 district of Madhya Pradesh, constructed in the year; Submitted to M.P. Agro Ltd., Bhopal, 2012
- 2 Physical Verification / Survey report of Family Size biogas plants in 4 district of Madhya Pradesh, constructed during the year; submitted to M.P. Agro Ltd., Bhopal, 2013

Biotechnology: Dr. H.S. Parmar received an offer of consultancy from USA based company Herbacraft Pvt. Ltd.; Computer Science and Information Technology: Software project made for Sindhu Sahkari Bank; Life Science: Consultancy with BASF India Pvt. Ltd.; School of Economics: Planning consultancy with the Forward Market Commission, Mumbai. School of Physics: Dr. S. N. Kane is providing consultancy services to RSAL Steel Pvt. Ltd, Indore (India),

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

Yes. University has a University-Industry Partnership Cell. A University Industry Partnership meet for strengthening linkage between Industry and University was held on 8th Feb 2013 where scope and range of activities were discussed.

1. To generate manpower well suited to the requirements of industry.
2. Curriculum development/up-gradation based on inputs from the industries
3. To encourage industries for initiating developmental funds in the form of scholarships, awards, stipends, research fellowship to students etc.
4. To expose the students to actual field work and industrial environment using field visits, workshops, short term training programs etc.
5. To enable the students for taking up internship/projects from industry
6. To provide continuing education with flexible schedules to people working in industry.
7. To engage experienced industry personnel as resource person in the University.
8. To encourage University faculty for taking up research and consultancy projects from industry.
9. Creation of collaborative labs/testing centers of mutual benefit at University/Industry.
10. Joint research publications/patents
11. Use of specialized database/ laboratories of the University by the industry.
12. To encourage the industries for initiating Faculty development/training programs for better understanding of processes in industries.

Additionally, SEES established a Industry Forum named as “National Institute-Industry Forum for Energy” (NIIFE) in 1995. Industries from in and around Indore (Pithampur, Dewas, Dhar and Ghata Billod) and faculty from School and Engineering colleges are the members of the forum. Dr. S. P. Singh is at present General Secretary of the forum.

Through the forum, school staff and students are in direct contact with the industries for their energy and environment related problems. Technical experts from the industry are invited to School for lectures, selection and examination of the students, while school's expertise and laboratory facilities are made available to the member industries. Forum regularly organizes training programmes, seminars, workshops, business meets etc. for the industry on energy and environment topics/issues.

SCSIT: The consulting initiatives taken by the department for modernization of examination system will be replicated in the entire state. The department faculty members along with computer centre staff are engaged in bringing automation to the university system, specially the examinations.

3.5.3. What is the mode of publicizing the expertise of the university for consultancy services? Which are the departments from whom consultancy has been sought?

The expertise of the consultancy services is available at www.dauniv.ac.in at each Institute/School website.

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

Although university has no set policy but expertise of teachers is utilized in administration and technical services of the university from time to time

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

Engineering, Computers, Biological Sciences, Management and Economics

3.6 Extension Activities and Institutional Social Responsibility (ISR)

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

Students and faculty members are sensitized by self motivation, efforts of leadership, and regular organisation of lectures on the eminent personalities.

Students and faculty members are regularly involved in organising and participating activities for social cause. Schools/Institutes promote social services through extension.

Following social outreach programs have created impact on students' campus experience:

The University has a well defined "Green Policy". It has identified 28 calendar days which are of significance from Environment point of view. Activities like Shram Daan (volunteered labour), campus cleanliness drives, and plantations and cleaning of polythene waste from the Schools/Institutes surrounding, Cleanliness drives of River Khan etc. were organised on these days to make the students environmentally conscious.

Other activities undertaken to create social and ethical awareness among student were -Oath to respect human values, ethics and social responsibilities, works and Camps for NSS, blood donation camps and eye donations awareness lectures etc. were organised by several departments.

Inviting eminent speakers is a regular feature at the University. Following lectures and activities have created deep impact on students' campus experience:

1. Bharat Ratna Dr. APJ Abdul Kalam gave message to University and Colleges Youths on June 12, 2013, and also released Green Policy of the University, which has now been adopted by the State for all M.P. Universities.
2. Lecture series on Mahamana Madan Mohan Malviyaji was held on 06/11/2012 and 11/12/2012; Dr. Karan Singh, Hon'ble Justice Shri Girdhar Malviya, and Mrs. Kanta Malviya were the eminent speakers .
3. Lecture on Swami Vivekanand's Contribution and Message to youth was held on Jan.12, 2013
4. Special motivational lecture was organized by SCSIT on 27th Feb, 2013: Topic: "Motivation.....is all that you need" [Mr.Surendra Singh Chauhan, a front ranking Educator, Idealist , Humanist , Writer , Reviewer and keynote speaker of various International conferences)
5. Special lectures of Dr.Bharti Joshi related to population education, gender sensitization and women empowerment in various schools in Indore city organised by Department of Life Long Learning.
6. Seminars on "Tobacco and its harms" by Indian Dental Association and Dental College, "Women Health and Well Being" By- Dr.Perna Jain (Gynaecologist & FOGSI member) was organized on 21st Feb, 2013. The doctor gave an awareness lecture on women health issues and also solved the health queries of many girls. About 250 girls from the department were benefitted.

University also organised several other participative programs for creating social awareness among students. Some of these programs were as follows:-

SCSIT Community capacity Building and Public Awareness Programme for Disaster Management, organized at on 17th February 2012. NSS volunteers along with other students of IET also attended the Programme.

Interdepartmental games (from February 28 to March 02, 2013) and Sports activities inoculate various good human qualities such as discipline, respect sportsmanship.

Celebration of “Basant Utsav”, “Teachers’ day”, Republic day” and “Independence Day” is done every year.

EMRC conducts Film Shows, Nukkad Natak and Health Awareness Programs regularly.

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

University provides opportunities for students formally as well as informally to promote University-neighbourhood network and student engagement for the holistic development of students. Some activities which reflect this aspect of the University are as follows:-

1. An initiative to clean the city river named Khan River was undertaken by the students under ages of NSS.
2. “Dana Paniabhiyan” for saving the birds for Bio diversity conservation was undertaken.
3. Students participated in March against corruption, and a Candle march to prevent crimes against women
4. Woman’s Day Celebration was organised by IET at Mahesh Jyoti Kalyan Blind School (8th March 2013). A Seminar cum motivational speech was organised for the Student and refreshment were given to 100 blind students
5. School of Law organised Legal Aid Camps for poor in City and Villages.
6. Engineers Without Border (EWB) Student Chapter of IET designed and installed water purification system at school in Ralamandal (a Green forest at City border) in September’2012.
7. A National conference on Women’s Security was organised on 9- 10 June 2013 organized by Bhartiya Stree Shakti.

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

University promotes participation of students and faculty in several extension activities.

Schools/Institute level NSS units exist at IIPS, IET and Pharmacy and University level unit for Colleges.

IET has Engineers without Borders (IWB) unit and has number of activities.

SoEc and IIPS have YI unit of C.I.I. Indore to channel young Indians energy for social activities.

SEES is engaged in number of outreach activities like training, of design, installation, maintenance and awareness on Biomass conversion technologies, Manure management, solar thermal and Photo-Voltaic Solar Cells application technologies, for example, solar lantern.

SEES also engages in plantation and gardens' development for Green Environment. SEES Faculty and Student's participate in energy and environmental issues of the institution/University.

Seminars and programs are organized in Schools/Institutes to bring social awareness. Following are the examples: Kabir Sandhya, Kabir Yatra, Yoga, Meditation (Gayatripariwar, Shantikunj, Haridwar), Answers to Youth Questions by Sri Sri Ravi Shanker and Positive Habits (ISCKON)

SADBHAAVNA DIWAS PLEDGE was organized at IET Campus on 22nd August 2013. (Approximately 413 students took the pledge to foster communal harmony.)

Awareness Activities on Voters Day on 25th January 2012 were Organised at IET Indore.

Self study reports of the excellent work done by the units are hosted at www.iqac.dauniv.ac.in.

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

The activities organised by the University range from training programs, surveys, volunteer works etc. for ensuring social justice and empowering the underprivileged sections of society. Some of these activities were:-

1. Training of craft, doll making and making Eco-friendly Ganesh idol, Internet Training for senior citizens, IT training for visually challenged persons were organised to empower the underprivileged and the most vulnerable sections of society.
2. YI-IIPS net Students created *Ansh*- an online database of blood donors in Indore in January 2008. *Ansh* categorizes blood on the basis of blood group, date of last donation, locality etc. Students designed, collected and compiled a data of 10,000 blood donors in Indore. It was made available online to hospitals. Government M.Y. Hospital and other hospitals are using the *Ansh* created database. CII also created a call centre for using it.

3. IIPS students undertook a project for Abhinav Centre for Development of Agriculture Human Resources Samiti (a State Level NGO) in which a survey was conducted named -“A study of vegetable hawkers in Indore for developing a sustainable model for retailing of vegetables”, in 2011. The Research was used by the NGO to develop Retailing business for Organic Vegetables.
4. A collection camp was organised in the IET premises on 12th July 2012. It collected cloths, stationary, and other items to help needy people. Collected items were donated to Jeevan-Shala and Child Line organisations.
5. SCSIT distributes items to poor through sanstha ‘Samarpana’ after collecting cloths from Campus students. The sanstha then helps the needy people in slum areas.

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

No, university does not have any formal mechanism. However, university has records of all activities done through the NSS

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

Outcome of extension activities is in line with the vision and mission of the University. Following are the outcomes of the extension activities mentioned above and they very well complement the students’ academic learning experience:

- * Through NSS, IWB, YI and other activities, students inculcate social awareness, enhanced citizenship and responsible behaviour. Positive thinking have improved overall personality development of students and these activities complement the academic experience
- * Exposure to underprivileged section of the society creates a feeling of gratitude for being in a better position. They developed the qualities of politeness and humility.
- * Students learn the spirit of cooperation in social activities, good human qualities discipline, respect and sportsmanship
- * Students learnt the “Joy of Giving” by sharing resources with the underprivileged section of society, sick persons and elderly persons and others.
- * Students have become environmental conscious. They prepare themselves to take care of the environment and make less harm to the Earth.

3.6.7. How does the university ensure the involvement of the community in its outreach activities and contribute to community development? Give

details of the initiatives of the university which have encouraged community participation in its activities.

Recently university took an initiative of clean and green environment. University Vice-Chancellor, faculty members, Officers, students all along with public along with the officers of District administration, local MLAs, MP initiated clean and revival of Khan river project in Indore.

University also gives messages of pollution free Indore and encouragement of use of petrol/ diesel less vehicle riding from time to time.

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

Students and Faculty are rewarded by the University and Schools/Institutes. They are awarded and given Trophies, certificates and appreciation letters as well as personal cash prizes by Head of the University, the VC. Details are at Self study Reports of the Schools/Institutes are hosted at ww.iqac.dauniv.ac.in

3.7 Collaboration

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

Academic Benefits

Future studies and planning research group is collaborating with following institutions for research and internships: NPL, New Delhi; CSIR Centre for Mathematical Modelling and Computer Simulation, Bangalore; IIMs of Indore and Kolkata, IIT, Delhi and NISTADS, New Delhi. School of Biotechnology (SBT) Dr. H.S. Parmar awarded with DBT-CREST Fellowship-for 2013-14.

Faculty exchange and development

School of Life Sciences collaborates with ICAR, Hungary, USA and Russia. *School of Physics* collaborates with Belgium and France. *School of Biotechnology* has collaboration with Academy of Sciences, Czechoslovakia; University of Poitiers, France and University of Poitiers, Canada. Process is on for collaboration with Kunk University, Korea. *School of Energy* has collaboration with Taiwan.

Schools/Institutes have collaborations at the National level. School of Physics has collaborations with RR CAT, Indore; UGC-DAE CSR, IPR and PRL.

Collaborations are also there with IIT Indore, Directorate of Soybean Research, Inter University Consortium, IIM and other institutes at Indore. School of Physics has taken initiative for joint guiding Ph.D. students (Sandwich model) with one Faculty from the School and other at the International Institute.

The collaborations with NSS, IWB, YI-CII for social and outreach activities have also benefited the students academically. They become dedicated, learn time management and adopt a holistic approach to academics.

Financial Benefits

SBT research laboratory has been financially benefited by funding of Rs. 3,00,000/- from Herbakraft, USA to Dr. H.S. Parmar to work in collaboration.

3.7.2. Mention specific examples of how these linkages promote *

Curriculum development

RRCAT Head Computer Centre Dr Anil Rawat and Sr. Scientist of NRCS participated in SCSIT curriculum design process.

Curriculum development: at SBT has been done after discussing the curriculum in French universities.

Internship

EMRC takes the help of TV channels, Advertising agencies and production houses in providing summer internship to the students, for example, NDTV Profit.

IIPS takes help of its collaboration with Alumni working in senior positions to get internships for present students.

On-the-job training : M.Tech. students trained at RRCAT, Indore for one year project.

Faculty exchange and development

Research: A part of research performed at the collaborators laboratory and joint work with scientists result in joint research publications in very reputed research journals.

Dr. K. K. Pandey has been pursuing collaborative Research work with number of German and American Professors: [Details are at School of Chemical Sciences SSR at www.iqac.dauniv.ac.in].

1. School of Biochemistry (SBC) five students were awarded Ph.D. under research collaboration.
2. A SBT student Ms. Monika Dhote completed Ph.D. in collaboration with NEERI, Nagpur. Research work carried out by students at IIOAB, Medinipur.
3. An I2IT student Mr. Mahesh Deshpande completed Ph.D. in collaboration with SCSIT and supervision of Padam Shri Dr. Vijay Bhatkar, Director I2IT and now Chairman, Senate IIT Delhi.
4. An NRCS Scientist Mrs. Savita Kolhe completed Ph.D. in collaboration with SCSIT Professor Dr. Raj Kamal on application of Artificial Intelligence for identification and diagnosis of disease in Soybean and

joint research work on Mobile based AI techniques with NRCS is being carried out since 2012.

5. An RRCAT Scientist Mrs. Alpana Rajan completed Ph.D. due to collaboration with SCSIT Professor Sanjay Tanwani. RRCAT and SCSIT faculty members are collaborating for research.
6. SCSIT Faculty collaborates with (1) Faculty at IIT Indore for jointly guiding research, (2) IIIT, Jabalpur for advanced research collaboration in compiler design and involved in e-Content development on computer programming subjects for IIIT, Jabalpur.

* Publications

1. SBC collaborations resulted in sixteen joint research publications in four years. Publications were in areas of effect of heavy metals on metabolomics, toxicology, plant physiology and plant virus pathology.
2. SBC, SBT, SCSIT, SoCh and SoPh research laboratories collaborative research work with Scientist has resulted in number of good journal research publications as an outcome of collaborative efforts.

Extension

SCSIT Faculty discussions on emerging trends in IT and starting Indore chapter of ICEIT (Institution of Communication Engineering & Information Technology) with Prof. H.M. Gupta IIT Delhi

SCSSIT discussions with RRCAT, Indore to study high performance cluster and discuss research issues.

SCSIT faculty discussed with IIIT, Allahabad to studying Image processing Facilities, July 2009, IIT Indore for studying virtual class room, July 2011

Student placement

A student Mr. Rajbardhan has been granted a fellowship for Ph.D. at Czech Republic. Another student Ms. Muskan Bhatia was offered Ph.D. opportunity at University of Saskatchewan, Canada.

Technology Adoption

IET is collaborating with NIC, Delhi for technology adoption (CollabCad). IET has developed a Collab CAD Laboratory in collaboration with National Informatics Centre, New Delhi

Joint Ph. D. Student with International Institution Guides

School of Physics has a framework for Indo-French research cooperation. Dr.S. N. Kane, Reader School of Physics, Devi Ahilya University, Indore India and Prof. F. Mazaleyrat, ENS de Cachan, Cachan (Paris), France has produced FIRST-JOINT Ph. D. student: Salil Modak between India and France in 2009.

3.7.3. Has the university signed any MoUs with institutions of national/international importance/other universities/ industries/corporate

houses etc.? If yes, how have they enhanced the research and development activities of the university?

National

1. University has signed MOU with Raja Ramanna Center for Advanced Technology, Indore (RRCAT), IUC UGC DAE CSIR, Indore (IUC) and CEERI, Pilani for research work and students' internship collaboration of Faculty of Engineering and Technology, Physics, Instrumentation, Chemical Sciences, Computer Science, Electronics, and Information Technology with the Scientists, and avail the facilities.
2. School of Biotechnology and Bioinformatics (SBT) has MOU with (1) NCCS, Pune, (2) National Research & Development Corp., New Delhi, (3) Centre for Genomics & Applied Gene Technology, (4) Institute of Integrated Omics & Applied Biotechnology, Purba Medinipur (5) Institute of Transgene Life Sciences, Lucknow, (6) Jain Irrigation Systems Ltd., Jalgaon and (7) NEERI, Nagpur.
3. SCSIT and School of Electronics (SoElx) signed MOU with International Institute of Information Technology, Pune (I2IT).
4. School of Physics (SoPh) has additional MOUs for research collaboration with Institute for Plasma Research, Gandhinagar, Physical Research Laboratory, Ahmedabad and IUAC, New Delhi in addition to RRCAT and IUC.
5. SoEc has signed the MOU with M.P. government for consultancy for decentralized planning.

International

SBT signed MOU for research collaboration with (1) Institute of Animal Physiology and Genetics, Libechov, Czech Republic. (2) Collaboration is on progress with Kunk University, Korea, (3) Collaborate for summer training programme with University of Poitiers, France (4) University of Saskatchewan, Canada.

SEES has signed an MOU with Kun Shan University with Kun Shan University for academic exchanges.

School of Instrumentation (SOI) faculty collaborate with Univ. of Ilmenau, Germany and Univ. of Goettingen, Germany under DST-DAAD project.

* Enhancement or research and development activities of the university

Due to National Collaboration

School of Biochemistry (SBC) research laboratory is doing collaborative research work with Scientist of (1), DSR, Indore, (2) INMAS, DRDO, New Delhi, (3) School of Life Sciences, JNU, New Delhi. (4) NBRI, CSIR, Lucknow, U.P. and (5) IARI Regional Station, Indore.

School of Computer Science and Information Technology (SCSIT) Faculty members are doing collaborative research work with Scientist of (1) National Research Centre for Soybean Research, Indore (NRCS)

EMRC has setup an FM Radio named 'Gyanvani' operating at 105.6 FM in collaboration with IGNOU.

School of Instrumentation Prof. A. L. Sharma has collaborated with Dr. P.C. Pancharia, CEERI, Pilani. And a CEERI scientist Ms. A.H. Kiranmayee has carried research and submitted Ph.D. thesis.

School of Life Sciences (SLS) Faculty research laboratories have been collaborating with (1) Institute of Molecular Genetics, Gaterslaben, Germany, (2) BASF India, Ltd, DST-RFBR Indo-Russian Project, (3) National Institute of Malaria Research, ICMR, New Delhi, (4) DST, (5) MP Biotech Council, (6) Institute of Life Sciences, Hyderabad, and (7) Indian Agricultural Research Institute, New Delhi

Due to International Collaboration

SBT Faculty carried out summer training program for two French students from University of Poitiers, France.

School of Chemical Sciences (SoCh) Professor Dr. Ashok Kumar Visited University of Pecs, Hungary under Indo-Hungarian Exchange Program. School of Chemical Sciences,

School of Life Sciences (SLS) Faculty research laboratories have been collaborating with (1) Institute of Molecular Genetics, Gaterslaben, Germany, (2) BASF India, Ltd, DST-RFBR Indo-Russian Project

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

Highly specialized laboratories /facilities could not be established so far. University has formed a task group established in 2012 for University- Industry interaction. It is hoped that in future the group efforts will materialise.

Any other information regarding Research, Consultancy and Extension, which the university would like to include.

1. University provides 85 % reimbursement to Assistant professor, 70% to Associate Professor and 50% to Professor for membership fee of Top-most International Research Bodies in the field of research. Internet Broad Band charges up to Rs 650 per month are reimbursed to Ph. D. Guiding Faculty. These are two unique measures to enhance the research and enable its Faculty to get abreast with latest knowledge.
2. India@75–2008 India@75 was a path breaking grassroots initiative for realizing the dream of an inclusive, sustainable and developed India by 2022, when India completes 75 years of Independence. Dr. Yamini Karmarkar and YI –IIPS net students to be a part of the team that prepared the vision document for MP. They were trained by Boston Consulting

Group for methodology of preparing the vision document. Interviews, workshops, surveys were conducted for people in cross sections of society. Finally, a vision document was created for MP. The vision document for all states was then clubbed to create India@75 vision document for India. This was then handed over to planning commission of India.