SELF STUDY REPORT

1. **Name of the Department**: School of Physics [Faculty of Sciences]

2. **Year of establishment:** 1971

A.1 Academic programs offered by the department at present, under the following categories and sanctions pertaining to each of the Courses:

(Please see enclosure: File no. A 1)

Programs	Number	Course/Subjects
PG	2	M. Sc. (Physics), M. Sc. (Physics-Material Science)
M.Phil.	1	M.Phil. (Physics)
Ph.D.	1	Ph. D. (Physics)
Any other (please specify)	1	M.Tech (Laser Science and Applications)
Total	5	

A.1.1 Details approval/recognition and recommendations issued by the statutory body (for example, (UGC, AICTE, NCTE, PCI, MCI, DCI) governing the program in case of Professional Programs letters for the first time and Last Academic Year recognitions:

Not required

If the department offers Distance Education Programs (DEP) then Number of programs offered.

Not required

Name of Each Program Letters for approvals by the Distance Education Council:

Not required

A.2 Copy of Ordinances related to the courses in the department

(Please see Enclosure: File no. A 2)

A.3 Number of working days during the last academic year 205

Number of teaching days during the past four academic years:

2008- 09	2009-10	2010-11	2011-12
180	185	182	184

(Please see enclosure: File no. A 3)

('Teaching days' means days on which classes were engaged. Examination days are not to be included)

A.4 Number of positions in the Department, their appointment letters, joining reports and sanctions of each:

Positions	Teaching faculty			Non-teaching staff	Technical staff
	Professor	Associate Professor	Assistant Professor		
Sanctioned by the UGC / University / State Government	02	04	06	03	12
Recruited	01	01	06	01	06
Yet to recruit	01	03	Nil	02	06
Number of persons working on contract basis	NIL	NIL	NIL	04	01

(Please see enclosure: File no. A 4)

A.4.1 Qualifications of the teaching staff

Highest qualification	Professor		Associate Professor		Assistant Professor		Total
	Male	Female	Male	Female	Male	Female	
Permanent teachers							
Ph.D.	4	2	1	0	1	0	8

A.5 Emeritus, Adjunct and Visiting Professors and their sanctions:

(Please see enclosure: File no. A 5)

(Semester-wise Record of Courses offered by Visiting Faculty and their Sanctions)

	Emeritus	Adjunct	Visiting
Number	Planned for 2013-14		

A.6 Copies of Latest Biodata of Faculty in positions in the Department:

(Please see enclosure: File no. A 6)

A.7. 1. Copies of Yearly Performa Based Assessment Records of Faculty in positions in the Department:

(Please see enclosure: File no. A 7.1)

3. Number of teaching posts sanctioned and filled (Professors/Associate Professors/Asst. Professors)

	Sanctioned	Filled
Professor	02	01
Associate Professors	04	01
Asst. Professors	06	06

4. Faculty profile with name, qualification, designation and specialization (D.Sc./D.Litt./ Ph.D./M.Phil., etc.)

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D. students guided for the last 4 years
Dr. Ashutosh Mishra	M. Sc. Ph. D.	Professor & Head	X-Ray Spectroscopy	25	04
Dr. Anup Kumar Dutta	M. Sc. Ph. D.	Professor	Nuclear Physics	32	02
Dr. Pratima Sen	M. Sc. Ph. D.	Professor	Nanophotonics, Laser Physics	32	02
Dr. DineshVarshney	M. Sc., M. Phil., Ph.D., M. B. A	Professor	Materials Science	26	05
Dr. Ganeswar Mishra	M. Sc. Ph. D.	Professor	Undulator and FEL	22	02
Dr. Mandira Banerjee	M. Sc. Ph. D.	Professor	Polymers Physics	27	Nil
Dr. Shashank N Kane	M. Sc. Ph. D.	Professor	Magnetic Materials	22	02
Dr.Yaduvendra Choyal	M. Sc. Ph. D.	Associate Professor	High Power Microwave	17	02

5. List of senior Visiting Fellows, faculty, adjunct faculty, emeritus professors.

(Please see enclosure: File no. A 5)

6. Percentage of classes taken by temporary faculty - program-wise information each semester wise information.

Classes are taken by the permanent faculties only.

Percentage of classes taken by visiting faculty - program-wise each semester wise information.

(Please see enclosure: File no. A 7.6)

Program-wise Student: Teacher Ratio-

M. Sc.: 8:1, M. Phil.: 13:8, M.Tech. : 13:8

7. **Number of academic support staff (technical) and administrative staff: sanctioned and filled**

Academic support: Sanctioned: 12 Filled: 06

Administrative support: Sanctioned: 03 Filled: 01

A.8 Students enrolled in the Department during the current academic year, with the following details:

Students	PG		Integrated Masters		M.Phil.		M.Tech	
	*M	*F	*M	*F	*M	*F	*M	*F
From the state where the university is located	24	34	Nil		03	10	03	07
From other states of India	4	2	Nil		Nil		10	01
Foreign students	Nil		Nil		Nil		Nil	
Total	28	36	Nil		03	10	13	08

***M-Male *F-Female**

Externally registered students?

Yes [ ] No [√]

If yes, how many students avail of this provision annually?

A.8 A. Faculty recharging strategies:

1. **The Department regularly organizes conferences.**
2. **Faculty members regularly attend national/international conferences.**
3. **Teachers regularly use laboratory facilities and interact with scientists from (i) Raja Ramanna Center for Advanced Technology, Indore, (ii) Inter University Consortium (iii) Details of collaborative projects with Inter University Consortium, DRDO, Physical Research Laboratory and other leading institutions etc.**
4. **Department co organized Shanti Swarup Bhatanagar Awardee Conference**

(July 17-19, 2009), where 12 awardees in Physics delivered lectures and interacted with the faculty.

5. School organized refresher course and all faculty members were involved as resource persons and co coordinator.

(Please see Enclosure: File no A 8)

Following lectures were delivered:

1. Dr. Anil Kakodkar, Chairman, Atomic Energy Commission of India and Secretary to Govt of India.
2. Dr. Yashwant Gupta, National Centre for Radio Astrophysics, Pune

   Title: THE MAGNETISM OF NEUTRON STAR.
3. Dr. Amalendu Chandra, I .I .T. Kanpur)

   Title: VIBRATIONAL SPECTRAL DIFFUSION IN HYDROGEN BONDED SYSTEMS UNDER NORMAL AND SUPER CRITICAL CONDITION.
4. Dr. Anil Bharadwaj, Vikram Sarabhai Space Centre, Thiruvanthapuram

   Title: X-RAY EMISSION FROM PLANETARY BODIES.
6. Prof A. K. Ghatak, Emeritus Professor I.I.T. Delhi

   Title: Einstein and special theory of relativity.
7. Dr.D.D.Bhawalkar, Former, Director, RRCAT, Indore

   Title: LASER APPLICATIONS.
8. Prof. M. S. Sodha, Former Vice -Chancellor, Indore, Lucknow and Bhopal Universities

   Title: ELECTRON PRODUCTION AND ANIHILITION IN A DUSTY PLASMA.
9. Dr. Rama Govindrajan, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore

   Title: THE ROLE OF INSTABILITY IN FLUID MECHANICS.
10. Prof. S. S. Sekhon, Department of Physics, Guru Nanak Dev University Amritsar Punjab [March 2012]

    Title: CARBON NANOTUBES AND THEIR FUNCTIONALIZATION.
11. Prof. K. Jayakumar, Department of Physics, Gandhigram Rural University, Tamilnadu [March 2012]

Title: POSSIBILITY OF SEMICONDUCTOR –METAL TRANSITION IN A QUANTUM WIRE.12. Dr. Alka Bansal Garg, Scientist G, High Pressure and Synchrotron radiation Physics

Division, BHABHA ATOMIC RESEARCH CENTRE, MUMBAI [JULY 2013]

Title: HIGH PRESSURE: ITS REVEALING ROLE IN CONDENSED MATTER RESEARCH

Title: ANGLE DISPERSIVE X-RAY DIFFRACTION: PROBE FOR PHASE-TRANSITION IN NOVEL MATERIALS.

13. Dr. Amitabh Das, Scientist G, SOLID STATE Physics Division, BHABHA ATOMIC RESEARCH CENTRE, MUMBAI [DECEMBER 2013]

Title: STRUCTURAL AND MAGNETIC PROPERTIES OF DOUBLE PEROVSKITE MATERIALS

Title: NEUTRON DIFFRACTION FACILITIES AT BARC MUMBAI

A.8 B. Number and list of faculty with course details of faculty development Programmes, academic staff college programs or other faculty recharge Programs

- School of Physics has organized two refresher courses and all faculty members were involved as resource persons and co-coordinator.
- The first refresher course was conducted from 4/2/2010 to 24/2/2010 and the second was conducted from 4/01/2013 to 24/01/2013.

(Please see enclosure: File no. A 8B)

A.9 Student projects

Percentage of students who have done in-house projects including inter-departmental projects:

60%. (Please see Enclosure: File no. A 9)

Percentage of students doing projects in collaboration with other universities / industry / institute:

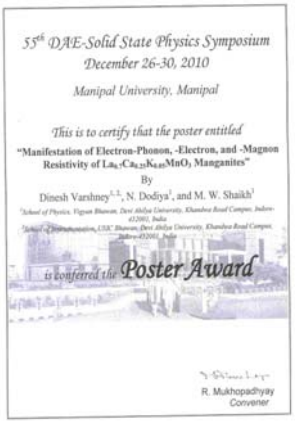
40% (Please see enclosure: File no. A 9)

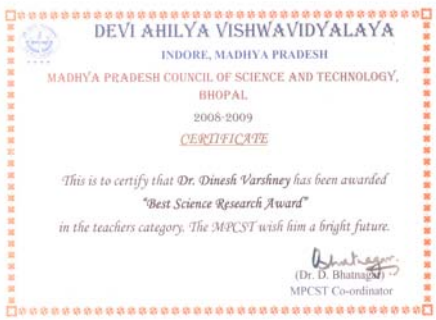
A.10 Awards / recognitions received at the national and international level by Faculty:

- Dr. Kailash Nath Katju Award- 2007 [M. P. State Govt.- Madhya Pradesh Council of Science and Technology] for Sciences, for outstanding contributions in condensed matter physics to Prof. Dinesh Varshney.
- Best Poster Award- 2010, DAE solid state physics symposium to Prof. Dinesh

Varshney, and his researchers.

- Bharat Jyoti Award and Certificate of Excellence- 2011 [India International Friendship Society] for meritorious contributions in Science and Technology Education to Prof. Dinesh Varshney.
- First Best Research Scientist award -2009 of Devi Ahilya Vishwavidyalaya from MPCST Bhopal to Prof. Dinesh Varshney.
- Certificate awarded to Prof. Dinesh Varshney, from International centre for diffraction data, 2013.
- Prof. Dinesh Varshney is nominated as technical representative from Madhya Pradesh in MHRD Scheme "All India survey on Higher Education" [2013].
- Prof. Dinesh Varshney is a member of peer team for redrafting the M. P. Higher University act- 1973 [2012].
- Prof. Dinesh Varshney is a member of peer team for Higher Education reforms in M. P. from 2011.
- Prof. Dinesh Varshney is a member of committee for drafting act of M. P. Higher Education Council constituted by Govt. of M. P. from 2012.
- Prof. Dinesh Varshney is a member of committee for financial assistance for Higher Education in M. P. submitted to Department of Economic affairs, Ministry of Finance [2012].
- Best science research award Prof. S.N. Kane 2012-13.





(Please see enclosure: File no. A 10)

- **Doctoral / post doctoral fellows**:

1. Dr. Arvind Yogi Ph. D student of Prof. Dinesh Varshney gets Post Doctoral fellowship at Indian Institute of Science Education and Research (IISER) Tiruanantpuram.
2. Saikat Chattopadhyay, Ph. D Student of Prof. P Sen gets pre Post Doctoral fellowship at Indian Institute of Science Education and Research (IISER) Pune.
3. Dr. Lalit Gupta, i) Visiting Scientist, Korea Atomic Energy Research Institute, Kaeri, WCI, QRC, Daejeon, South Korea May 2012 to Nov 2013; ii) ICTP fellow, In ENEA, Frascati, Itly Oct 2008 to July 2009 and Nov 2009 to July 2010.
4. Dr. Jitendra Solanki, Ph. D. Student of Prof. P. Sen gets Post Doctoral fellowship at University of Texas A & M 2013
5. Dr. Sumit Tripathi, Ph. D. Student of Prof. G. Mishra gets staff Scientist at DESY, Hamburg, Germany 2011
6. Pinaki Das Gupta, Ph. D. student of Prof. P. Sen gets researcher position at National University of Ireland, Galway 2012
7. Gaurov Pathak, Ph. D. Scholar at Deutsches Elektronen syncrotran DESY, Germany 2012
8. Sapna Tripathi, Ph. D. Scholar at Max Planck Institute for Intelligent Systems, Lives in Stuttgart, Germany 2011
9. Renuka Tayade, Ph. D. Scholar at ENS de Cachan, Cachan, France 2011.
10. Rahul Pandey, Ph. D. Scholar at University of London, U.K. 2013
11. Arpit Saraf, Ph. D. Scholar at University of Quebec, Montreal, Canada, 2010
12. Tanuj Gupta, Ph. D. Scholar at TIFR, 2011
13. Alka Parikh, Ph. D. Scholar at IISC, Banglore, 2011.
14. Birendra Singh, Ph. D. Scholar at Physics Department, University of Delhi, 2009.
15. Sagar Agrawal, Scientist, IPR, Gandhinagar, Gujrat, 2010.
16. Vishu Awasthi, IIT, Indore, 2011
17. Omprakash Chaudhary, SGSITS, Indore, 2011.
18. Mona Gehlot, ICTP fellow, In ENEA, Frascati, Italy 2009.
19. Sofia Aziz, Ph. D. Scholar at IIT, Indore.
20. Deepa Chaturvedi, Ph. D. Scholar at IIT Kanpur.

21. Dr. Shailendra Singh Rajput, gets Project Scientist position at IIT Kanpur.

A.11 Record of each of Seminar/ Conference/Workshop organized and the source of Funding (national / international) with details of outstanding participants, if any.

1. School of Physics co organized **Shanti Swarup Bhatanagar Awardee Conference**, (July 17-19, 2009).
2. **Dr. Anil Kakodkar**, Chairman, Atomic Energy Commission of India and Secretary to Govt of India.
3. **Dr. Yashwant Gupta,** National Centre for Radio Astrophysics, Pune, "The Magnetism of Neutron Star".
4. **Dr. Amalendu Chandra,** I .I .T Kanpur, "Vibrational Spectral Diffusion in Hydrogen bonded systems under normal and super critical condition".
5. **Dr. Anil Bharadwaj,** Vikram Sarabhai Space Centre, Thiruvanthapuram, "X-ray Emission from Planetary Bodies".
6. **Prof A.K. Ghatak** Emeritus Professor I.I.T. Delhi, "Einstein and special theory of relativity".
7. **Dr. D. D.Bhawalkar,** Former, Director, RRCAT, Indore, "Laser Applications"
8. **Dr. M.S.Sodha**, Former Vice –Chancellor, Indore, Lucknow and Bhopal Universities) "Electron production and anihilition in a dusty Plasma".
9. **Dr. Rama Govindrajan**, JNCAR, Bangalore. The role of instability in fluid Mechanics.

1. **A three-day National Workshop on Free Electron Lasers & Applications.** Organized on 21-23 Feb 2008 at Laser Bhawan, School of Physics, DAVV, Indore. Participating eminent Scientists and Professors were as follows: (Grants received from Department of Atomic Energy.)
2. **A two-day International Conference on Recent Trends In Physics (ICRTP-2012)** organized on 4- 5 Feb 2012 by School of Physics. Participating eminent Scientists and Professors were as follows: (Grants received from DAVV, Indore)
    1. **Inaugural Talk**: **F. Mazaleyrat, France**
    2. **Invited Talk**: **J. P. Araujo**, **Portugal**
    3. **Invited Talk**: **M. Coisson, Italy**
    4. **Invited Talk**: Shailendra Kumar, India
    5. **Invited Talk**: J. T. Andrews, India
    6. **Invited Talk**: A. Gupta, India
    7. **Invited Talk**: D. M. Phase, India
    8. **Invited Talk**: M. Gupta, India
    9. **Invited Talk**: B. D. Shrivastav, India
    10. **Invited Talk**: P. H. Borse, India
    11. **Invited Talk**: P. N. Prakash, India
    12. **Invited Talk**: K. P. Maheshwari, India
    13. **Invited Talk**: R. Dasgupta, India
    14. **Invited Talk**: B. T. Rao, India
    15. **Oral Talk**: A. Ghosh

16. **Oral Talk**: A. K. Ray
17. **Oral Talk**: A. K. Shukla **(Please see enclosure: File no A 11)**

A.12 Write up of Code of ethics for research followed by the Departments.

We follow the code of ethics formulated by UGC:

1. **To avoid piracy in research work and acknowledge the persons and funding agencies which helped in successful completion of research activities.**
2. **Encourage the research scholars to carry out independent research work.**
3. **Access to laboratory instruments for users (other Universities and National laboratories).**
4. **Respect for Intellectual property rights of individual and institutions:**
   i. **Explicitly acknowledge the work of others when referring to them in any shape, form or manner in his/ her own work;**
   ii. **Follow principles of ethical and social responsibility.**

A.12 Student profile course-wise:

2008-2009

Name of the Course (Refer to question no. 4)	Applications received	Number of students admitted	Min. and Max. pass percentage in qualifying examination Male		Female	
			Max	Min	Max	Min
M. Sc.	40	18	75	52	78	53
M.Tech.	15	08	82	65	78	62
M. Phil.	33	17	80	58	80	57

2009-2010

Name of the Course (Refer to question no. 4)	Applications received	Number of students admitted	Min. and Max. pass percentage in qualifying examination Male		Female	
			Max	Min	Max	Min
M. Sc.	74	24	79	51	80	55
M.Tech.	25	08	80	64	82	63
M. Phil.	36	19	75	59	82	58

2010-2011

Name of the Course (Refer to question no. 4)	Applications received	Number of student admitted	Min. and Max. pass percentage in qualifying examination Male		Female	
			Max	Min	Max	Min
M. Sc.	69	22	80	52	81	55

			Min. and Max. pass percentage in qualifying examination Male		Female	
M.Tech.	12	03	75	68	-	-
M. Phil.	23	19	75	55	79	58

2011-2012

Name of the Course (Refer to question no. 4)	Applications received	Number of students admitted	Min. and Max. pass percentage in qualifying examination Male		Female	
			Max	Min	Max	Min
M. Sc	59	27	78	51	79	53
M.Tech	31	08	77	63	78	66
M. Phil	42	19	74	56	76	58

2012-13

Name of the Course (Refer to question no. 4)	Applications received	Number of students admitted	Min. and Max. pass percentage in qualifying examination Male		Female	
			Max	Min	Max	Min
M. Sc	102	45	78	52	79	56
M.Tech	54	14	79	65	80	62
M. Phil	36	20	80	58	75	58

A.13 Diversity of students

Name of the Course	% Of students from the same university	% Of students from other universities within the State	% Of students from universities outside the State
M. Sc.	64.4%	13.3%	6.6%
M. Tech.	27.7%	27.7%	16.6%
M. Phil.	55%	11.1%	5.5%

- The PhD theses are submitted only after good publications in Journals of good impact factors and in journals cited in scopus and web of science.

A.14 Record of how many students have cleared Civil Services and Defence Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

National Eligiblity Test (NET), Joint Entrance Screening Test (JEST) and Graduate

Aptitude Test (GATE)

1.	Nidhi Parmar	2008
2.	Akhil Tayal	2013
3.	Anjali Jain	2013
4.	Anuradha Gupta	2012
5.	Kalpana Singh	2011
6.	Kamal Warshi	2011
7.	Gaurav Pathak	2010
8.	Romita Chauhan	2013

A.15 Record of Student progression

Student progression	Percentage against enrolled
PG to M.Phil.	25%
PG to Ph.D.	35%
Ph.D. to Post-Doctoral	5%
Employed • Campus selection • Other than campus recruitment	35%

The following students are pursuing for Ph. D. in our university and in various national and International Universities:

M.Sc. Physics				M.Phil. Physics		
S.No	Name	Year		S.No	Name	Year
1	Shivani Rana	2008		1	Beerendra Singh	2008
2	Partha Khanra	2008		2	Samrath Ninama	2009
3	Surendra Yadav	2009		3	Kamaljeet Singh Sura	2009
4	Sagar Agrawal	2009		4	Garima Jain	2009
5	Sadique Mohammad	2010		5	Kavita Verma	2009
6	Sapna Tripathi	2010		6	Roma Khullar	2010
7	Sanjeev Kumar	2010		7	Geetanjali Sharma	2010
8	Rohan Mittal	2010		8	Varsha Yadav	2011
9	Renuka Tayade	2010		9	Harsha Patil	2011
10	Pinaki Das Gupta	2010		10	Sonam Dwivedi	2011
11	Amit Jain	2010		11	Kalpana Singh	2011
12	Alka Pareek	2010		12	Jyoti Prakash Dwivedi	2012
13	Sonu Yadav	2010		13	Arpana Agrawal	2012
14	Tanuj Gupta	2011		14	Bramh Prakash	2012
15	Sagar Sen	2012		15	Tanveer Ahmad Dar	2012
				16	Manvi Satalkar	2012

M.Tech. (Laser Science and Application)		
S. No.	Name	Year
1	Deepa Chaturvedi	2009
2	Arpit Saraf	2010
3	Vishnu Awasthi	2011
4	Omprakash Choudhary	2011
5	Gaurav Pathak	2012
6	Rahul Pandey	2013

A.16 Record of Diversity of staff:

Percentage of faculty who are graduates:

Of the same university	37.5%
From other universities within the State	62.5%
From universities from other States	Nil
From universities outside the country	Nil

A.17 Number of faculty who were awarded Ph.D., D.Sc. and D.Litt. during the last four years: NA

A.18 Present details of infrastructural facilities in the department with regard to:

a) Library	Yes
No of titles	3084
Volumes	529
Project Reports	198
Video Lectures	Faculty members teach through power point presentations.
b) Internet facilities for staff and students	Yes
c) Total number of class rooms	Five
d) Class rooms with ICT facility	Five
e) Students' laboratories	Five
f) Research laboratories	Seven

(Please see Enclosure: File no A-18) [Books in central Library number]

A.19 List of doctoral, post-doctoral students and Research Associates

a) From the host university: **NIL**

b) From other universities: **02**

1. **Dr. Naveen Kulkarni, (Dr. D. S. Kothari awardee) from Pune University.**
2. **Dr. Arindum Ghosh, (Dr. D. S. Kothari awardee) from Aurangabad University.**

A.19 Records of financial assistance and Number of post graduate students getting financial assistance from the university, UGC, State, AICTE.

AICTE Fellowship given to M.Tech. Students = 05

Post Metric Fellowship: -

Year	Amount Received in Rs.	Category	No of Students
2008-09	17700	ST	02
	12740	SC	01
2009-10	19500	ST	02
	40690	SC	03
2010-11	13700	ST	02
	27960	SC	05
2011-12	13000	ST	03
	52050	SC	03
2012-13	Not Received		

(Please see enclosure: File no. A 19)

A.20 Methodology of need assessment exercise undertaken before the development of new programme (s):

Curriculum feedbacks were taken from the Eminent Scientists and Scholars for examples:

1. **Padmshree Dr. M. S. Sodha, F.N.A, Shanti Swarup Bhatnagar Awardee, ex-Vice Chancellor-Indore, Bhopal, Lucknow.**
2. **Padmshree Dr. D. D. Bhawalkar, ex-Director, Raja Ramanna Center for Advanced Technology, Deptt. of Atomic Energy, Indore.**

A.21 Records of feedback from

a. **Faculty on curriculum as well as teaching learning evaluation? If yes, how does the department utilize the feedback?**

Yes, it has been discussed in the faculty meeting held monthly.

(Departmental minutes Register)

b. Students on staff, curriculum and teaching –learning -evaluation and how does the Department utilize the feedback?

1. The comments given by the students along with the inputs from faculty are analyzed by a committee consisting of senior Professors of the Department. The report regularly hosted on IQAC website of University, Indore.

2. The committee gives a report to the Head who communicates the remarks for due consideration.

c. Alumni and employers on the programs offered and how does the department utilize the feedback?

Yes, analysis in a meeting for the purpose is performed.

Curriculum feedback is taken from experts of comprehensive viva committee at the end of each semester.

(Please see enclosure: File no. A 21)

A.22 List the distinguished alumni of the Department (maximum 10)

1. **Dr. Vasant Sathe, Scientist, (UGC-DAE-CSR, Indore) year 1987**
2. **Mr. Mahesh Sharma, Industrialist, Marketing Centre, Indore year 1981**
3. **Mr. A. Kela, Industrialist, Year 1989**
4. **Dr. P. A.Kekre, Professor, PMB Gujarati Sc. College, Indore Year 1985**
5. **Dr. K. K. Marhase, PRL Ahmedabad, year1995**
6. **Dr. Joydeep Ghosh, Scientist, IPR, Gandhinagar, year 1993**
7. **Mr. Vinod Rawat, Scientist, BARC, Mumbai.**
8. **Dr. Anshuman Dalvi, BITS, Pilani, year 1997**
9. **Dr. Kailash Ruwali, Scientist, RRCAT, Indore year 1994**
10. **Dr. Pooja Gupta, Scientist, RRCAT, Indore year 1999**
11. **Dr. P Prakash, Scientist, IUAC New Delhi year 1985**

A.23 Details of student enrichment programs (special lectures / workshops / seminar) involving external experts.

The list of eminent persons of the student enrichment programmes (special lectures) given below:

1. **Dr. Anil Kakodkar**, Chairman, Atomic Energy Commission of India and Secretary to Govt of India.
2. **Dr. Ramsagar**, Director, ARIES, Nainital, Uttrakhand 4 March 2013.
3. **Dr.D.D.Bhawalkar,** Former, Director, RRCAT, Indore.
4. **Prof. M.S.Sodha,** Former Vice –Chancellor, Indore, Lucknow and Bhopal University.
5. **Prof. A. K. Ghatak,** Emeritus Professor I.I.T. Delhi.
6. **Prof. V.K.Tripathi**, Professor, IIT Delhi.4 Nov. 2012

7. **Dr.P.K.Gupta,** Scientist, RRCAT, Indore. 14 Jan 2012
8. **Dr. Yashwant Gupta** (National Centre for Radio Astrophysics, Pune)
9. **Dr. L. M. Kukreja**, Scientist, RRCAT, Indore 12th Aug 2012
10. **Dr. S. N. Joshi**, Scientist, CEERI, Pilani Sept. 13 2012
11. **Prof. B.D.Shrivastava,** Retd Professor, Vikram Univ, Ujjain.12 Jan 2013
12. **Prof. R.C. Verma**, Environmentalist, Ujjain 28 Feb 2013
13. Dr. Anil Bharadwaj, Vikram Sarabhai Space Centre, Thiruvanthapuram.
14. Dr. Rama Govindrajan, **JNCAR, Bangalore.**
15. Dr. Amalendu Chandra, I .I .T. Kanpur
16. Prof. S. S. Sekhon, Department of Physics, Guru Nanak Dev University Amritsar, Punjab
17. Prof. K. Jayakumar, Department of Physics, Gandhigram Rural University, Tamilnadu,
18. Dr. Alka Bansal Garg, Scientist G, BARC, MUMBAI
19. Dr. Amitabh Das, Scientist G, SOLID STATE Physics Division, BARC, MUMBAI

A.24 Record and List of the teaching methods adopted by the faculty for different programmes.

Using power point presentation and Black Board system.

(Please see Enclosure: File no. A 24)

A.25 Record of Monitoring by the department ensures that program objectives are constantly met and learning outcomes are monitored.

Department of Physics runs M.Sc. Physics and Material Science program of which monitoring is done by a committee of faculty members.

Program Objectives and Learning Outcomes of other programs of the Department are:

Programme	M.Tech. (Lasers and Applications)	M.Phil.
Objectives	The programme is designed to educate foresight experts who help organisations to harness future opportunities in the field of lasers and avoid unnecessary risks. The programme trains students to become professionals who are competent to choose from various methods when facing a particular development challenge.	This program focuses on training the students in specialised areas of Physics in which they can carry on research activities and expertise themselves.

Learning Outcomes	**(i) Fundamental knowledge in** Laser Properties, Their principle of working, Designs, Laser resonators, Laser gain and working threshold, Types of pumping etc. **(ii) Advanced knowledge in** Laser Applications in Material processing, Biomedical applications, Holography, Nonlinear Optics, Laser Plasma Fusion etc. **(iii) Ability for employment in** Laser based Industries; Higher education as teacher, Scientist in National and International Laboratories as well Govt. jobs.	**(i) Fundamental knowledge in** Material Science, Lasers and Photonics, Fiber Optics, Plasma Physics etc **(ii) Advanced knowledge in** Materials Science, Lasers and Photonics, Fiber Optics, Plasma Physics etc. **(iii) Ability for employment in** Higher education as teacher, Scientist in National and International Laboratories as well Govt. jobs.

(Please see Enclosure: File no. A 21, 25)

A.26 Details and Highlight of the participation of students and faculty in extension activities in the Department.

1. **Participation in Indian Physics Association (IPA) Programs. Prof Pratima Sen is President, IPA, Indore chapter.**
2. **We have organized seminars in schools for popularizing Physics amongst young students.**
3. **IPA had also organized seminar for exploring the job prospects of Physics students in Industries at Holkar College.**
4. **IPA Indore chapter had organized two CV Raman Lectures at Indore.**
5. **Prof. A K Dutta is Vice President of Indian Physics Teachers association (IPTA), M P Zone for the session 2013-15.**
6. **IPTA conducts workshops for teachers to enhance laboratory activities at UG and PG levels.**
7. **UGC sponsored "Refresher courses in Physics" have been organized by the department.**
8. **Participation in activities related to the GREEN CALENDER of the University and implementation of University Green Policy released by Bharat Ratna Dr. AP.J Abdul Kalam on 12.6.13.**
9. **Blood donation Camps.**
10. **Clean Campus Drive, March 17, 2013.**
11. **March for awareness for clean river of Indore, March 16, 2013.**

A.27 Details of "beyond syllabus scholarly activities" of the department.

1. **Eminent Experts deliver lectures to the students and inform them about the latest advancements.**
2. **Students and Faculties are involved in activities of Indian Physics Association (IPA) Programs and Indian Association of Physics Teachers (IPTA).**
3. **Students participate in the conferences. This keeps them abreast with the latest knowledge.**
4. **Students attend summer training programs at various National Institutes e.g.**
   (i). Tata Institute of Fundamental Research, Mumbai
   (ii). Institute of Plasma Research, Gandhi Nagar
   (iii). Physical Research Laboratory, Ahmedabad
   (iv). Raja Ramanna Centre for Advanced Technology, Indore.
   (v). Inter University Consortium, Indore.
   (vi). Inter University Accelerator Centre
   Besides this, several students undertake summer training with several faculty members.

(Please see Enclosure: File no. A 27)

A.28 Information about programme/department accreditation/grading by other agencies? If yes, give details. NA

A.29 Write up highlighting the contributions of the department in generating new knowledge, basic or applied.

School is serving the Nation by generation of new basic and applied knowledge since 1971.

1. **School has educated since its inception around 1000 M.Sc.s, 125 M.Tech.s and around 100 Ph.D.s who are serving the Nation as Scientists or Educators. Several of them are serving abroad.**
2. **School research areas are Condensed matter Physics, Materials Science, Nanoscience and Nanotechnology, Nanophotonics, Quantum Electronics, Plasma Physics, Free Electron Lasers, Polymer Science, Magnetic materials, Nuclear Physics, Thin film technology.**
3. **School offered first M.Tech. Laser program in the country from 1993 with the support of Raja Ramanna Center for Advanced Technology, Department of Atomic Energy, Indore.**
4. **School has reputation of excellent research contributions and has published 342 papers in the last five years in internationally and nationally reputed journals.**
5. **Faculty at School of Physics has generated grant tuned to Rs. 294.61 Lakhs. in past five years.**

(Please see Enclosure: File no. A 29)

List of publications of the Faculty [2008 – 2013]		
		Prof. (Dr.) **A. K. Dutta**
1.	**1.**	Semi-classical equation of state and specific heat expressions with proton shell corrections for the inner crust of a neutron star M. Onsi, **A. K. Dutta**, H. Chari, S. Goriely, N. Chamel and J. M. Pearson, **Phys. Rev. C77 5806 (2008), Impact factor: 3.308 ISSN 1089 -490X**
		Prof. (Dr.) **A. Mishra**
2.	**1.**	Elastic constant of Adansonia Digitata AnD in anisotropic longitudinal direction by Non Destructive method, Sushil Phadke, B.D.Shrivastava, **Ashutosh Mishra**, Sunil Ujle, and N. Dagaonkar, **Advanced Materials Research** Vols. 616-618, (**2013**) pp 1889-1893. (ISBN: 978-3-03785-552-2).
3.	**2.**	X-ray K-absorption spectral studies of cobalt (II) hydroxamic mixed ligand complexes. N. Parsai, **A. Mishra**, and B. D. Shrivastava, **Ind. J. Pure & appl. Phys.**, 51, 185-190, (**2013**).
4.	**3.**	Physical and Chemical Properties of Borassus Flabellifier 'BF'. Phadke Sushil, Shrivastava B. D, Dagaonkar N, **Mishra Ashutosh**, **American Journal of Materials Science 2013**, 3(2): 25-28. DOI: 10.5923/ j.materials. 20130302.01
5.	**4.**	Effect of Doping on Structural and Dielectric Properties of $BaTiO_3$ **Ashutosh Mishra,** Niyati Mishra, **Proceeding of International Conference on Recent Trends in Applied Physics and Material Science, AIP Conf. Proc.** 1536, 557-558 (**2013**); doi: 10.1063/1.4810348.© 2013 AIP Publishing LLC 978-0-7354-1160-9/$30.00.
6.	**5.**	XRD and XANES studies of copper complexes using (diethyl 4-amino-1- phenyl-1H-pyrazole-3, 5 dicarboxylate) as ligand **Ashutosh Mishra** and Garima Jain **Proceeding of International Conference on Recent Trends in Applied Physics and Material Science, AIP Conf. Proc.** 1536, 811-812 (**2013**); doi: 10.1063/1.4810475 © 2013 AIP Publishing LLC 978-0-7354-1160-9/$30.00.
7.	**6.**	XRD measurement and EXAFS study using synchrotron radiation of Ni (II) complexes of Macro cyclic ligand, **Ashutosh Mishra** and Samrath Ninama **Proceeding of International Conference on Recent Trends in Applied Physics and Material Science. AIP Conf. Proc.** 1536, 1119-1120 (**2013**); doi: 10.1063/1.4810629, © 2013 AIP Publishing LLC 978-0-7354-1160-9/$30.00
8.	**7.**	Extended X-ray Absorption Studies of Copper (II) Dibenzoyal Methane Diquinoline Complexes **Ashutosh Mishra**, P. Sharma, P.K. Malviya **Proceeding of International Conference on Recent Trends in Applied Physics and Material Science AIP Conf. Proc.** 1536, 1302-1303 (**2013**); doi: 10.1063/1.4810720, © 2013 AIP Publishing LLC 978-0-7354-1160-9/$30.00
9.	**8.**	Thermo acoustic parameters of Adansonia Digitata and binary liquid mixture by NDT method S.K.Ujale, S. Phadke, B.D.Shrivastava, **Ashutosh Mishra** and N. Dagaonkar **The Int. Res.J. Soc. Sc. Hum.,** 2(1), 184-188, (**2013**). ISSN 2320-4702.
10.	**9.**	Acoustic studies of aqueous solution of Adansonia Digitata (AnD) S.K.Ujale, S. Phadke, B.D.Shrivastava, **A. Mishra** and N. Dagaonkar **Res. J. Physical sci.**, 1(4), 32-35, (**2013**). ISSN2320-4796.
11.	**10.**	Frequency and Temperature Dependence of Dielectric Properties of Fish Scales Tissues B.D. Shrivastav, R. Barde, **A. Mishra** and S. Phadake **Res. J. Physical sci**., 1(6), 24-29, (**2013**). ISSN2320-4796.
12.	**11.**	Extanded X-ray K-absorption studies of copper (II) dibenzoyal methane diquinoline

		complexes P.K.Malviya, **A.Mishra** and P.Sharma, **Ind.Res. Comm.,** 7(1), 1-7(**2013**). ISSN 0973-9661
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16.	**15.**	Capacitance and quality factor measurement of Borssus flabellifer by dielectric behavior. Sushil Phadke, B.D.Shrivastava, N. Dagaonkar and **Ashutosh Mishra** **J. Environ. Res. Develop**., 7, no.1A, 387-392, **(2012)** PARIS ISSN 0973-09210.157
17.	**16.**	Analysis of K-absorption extended X-ray absorption fine structure (EXAFS) data of some transition metals. **A. Mishra**, N. Parsai and B. D. Shrivastava **X-Ray Spectrometry** 41, 219- 224 **(2012)** ISSN: 1097- 45391.661
18.	**17.**	K-absorption spectral studies of some mixed ligand copper complexes using synchrotron radiation **A. Mishra**, N.Parsai and B.D. Shrivastava **Solid State Physics AIP Conf. Proc**. 1447, 173-174 **(2012)**; American Institute of Physics 978-0-7354-1044-2
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20.	**19.**	XRD, SEM and EXAFS Investigation of Cobalt (II) Macro Cyclic Complexes **Ashutosh Mishra**, Samrath Ninama and Niyati Mishra **Solid State Physics AIP Conf. Proc.1447**,163-164 **(2012)**; American Institute of Physics 978-0-7354-1044- 2
21.	**20.**	A newly Synthesis and characterization of metal complexes of 3-(N- phenyl) thiourea- pentanone-2 as ligand. **A. Mishra**, S.Ninama, P. Sharma, N. Soni and R. Awate **Journal of Physics: Conference Series, 365**, **(2012) International Conference on Recent Trends in Physics (**ICRTP2012) IOP Publishing, Journal of Physics: Conference Series, 365, (2012), 012039
22.	**21.**	Exafs data analysis of some cobalt complexes. **A. Mishra**, Garima Jain, Samrath Ninama **Journal of Physics: Conference Series,** 365, **(2012) International Conference on Recent Trends in Physics** (ICRTP2012) IOP Publishing, ISSN1742- 6588
23.	**22.**	X-ray diffraction and absorption spectroscopic studies of copper mixed ligand complexes with aminophenol as one of the ligands. **A. Mishra**, Garima Jain and H. Patil, **Journal of Physics: Conference Series,** 365, **(2012) International Conference on Recent Trends in Physics** (ICRTP2012) IOP Publishing,ISSN 1742- 6588
24.	**23.**	Determination of bond lengths from EXAFS using different methods. **Ashutosh Mishra**, Samrath Ninama **Journal of Physics: Conference Series,** 365, **(2012) International Conference on Recent Trends in Physics** (ICRTP2012) IOP Publishing, ISSN 1742- 6588
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51.	**50.**	Exposure to time varying electric and magnetic fields: Take a chance with health. B. D. Shrivastava, **A. Mishra** and Ravindra Barde **Ultra Scientist of physical Sciences,** vol. 22, 67 (**2010**). ISSN 2231- 3478
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324.	**31.**	"Preparation and characterization of Fe-Si-B thin films", M. Satalkar, **S. N. Kane**, A. Pasko, A. Apolinario, C. T. Souza, J. Ventura, J. J. Belo, J. M. Teixeira, J. P. Arajuo, F. Mazaleyrat, E. Fleury, **American Institute of Physics Conf. Proceedings** 1512 (**2013**) 654.
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		Dr. Y. CHOYAL
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327.	**2.**	Analytical and numerical investigation of diffractioneffectsonthenonlinear propagation of ultra-intense few-cycle optical pulses in plasmas Harish Malav K. P. Maheshwari, R. S. Meghwal, **Y. Choyal** And Rakesh Sharma. **Journal of Plasma physics (2010), 76:209- 227.Cambridge University Press, UK 0.944 ISSN: 0022-3778**
328.	**3.**	An exact linear dispersion relation for CRM instability. **Plasma Physics and Controlled Fusion**, **Y. Choyal** and K. Minami. 53, 085002 (**2011**) ISSN 0741-3335
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330.	**5.**	Excitation of an Axisymmetric Arbitrary- Walled Periodic Slow-Wave Structure by an Electron Beam Confined by a Finite-Strength Magnetic Field Prasad Deshpande, **Y. Choyal,** B. Kumar, K. P. Maheshwari, and K. S. Bhat. Electromagnetics**, vol 31, pp. 29–44,** 2011**Taylor and Francis, UK 0.789ISSN: 0272-6343**
331.	**6.**	Analytical and numerical investigation of the pulse shape effect on the longitudinal electric field of a tightly focused ultrafast few-cycle TM01 laser beam. HarishMalav, K.P.Maheshwari and **Y. Choyal.** **Laser and particle Beams, pp. 1-12, 2011.Cambridge University Press, UK3.656 ISSN: 0263-0346**
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339.	**14.**	High Power Microwave Pulse Compression Using a Helical Slow-Wave Structure Vasudha Rajput, N. Parmar, K. S.Bhat, K.P.Maheswari, and **Y.Choyal.** **IOP Conference Series, vol 365 (2012) 012056, doi: 10.1088/1742-6596/365/1/012056 IOP– Conference Series, ISSN: 1742-6588**
340.	**15.**	Study of radial position of pole piece aperture in focusing of multibeam electron gun. Ashok Nehra, R K Gupta, S M Sharma, PC Panda, **Y Choyal,** and RK Sharma. **IOP Conference Series, vol 365 (2012) IOP – Conference Series, ISSN: 1742-6588**
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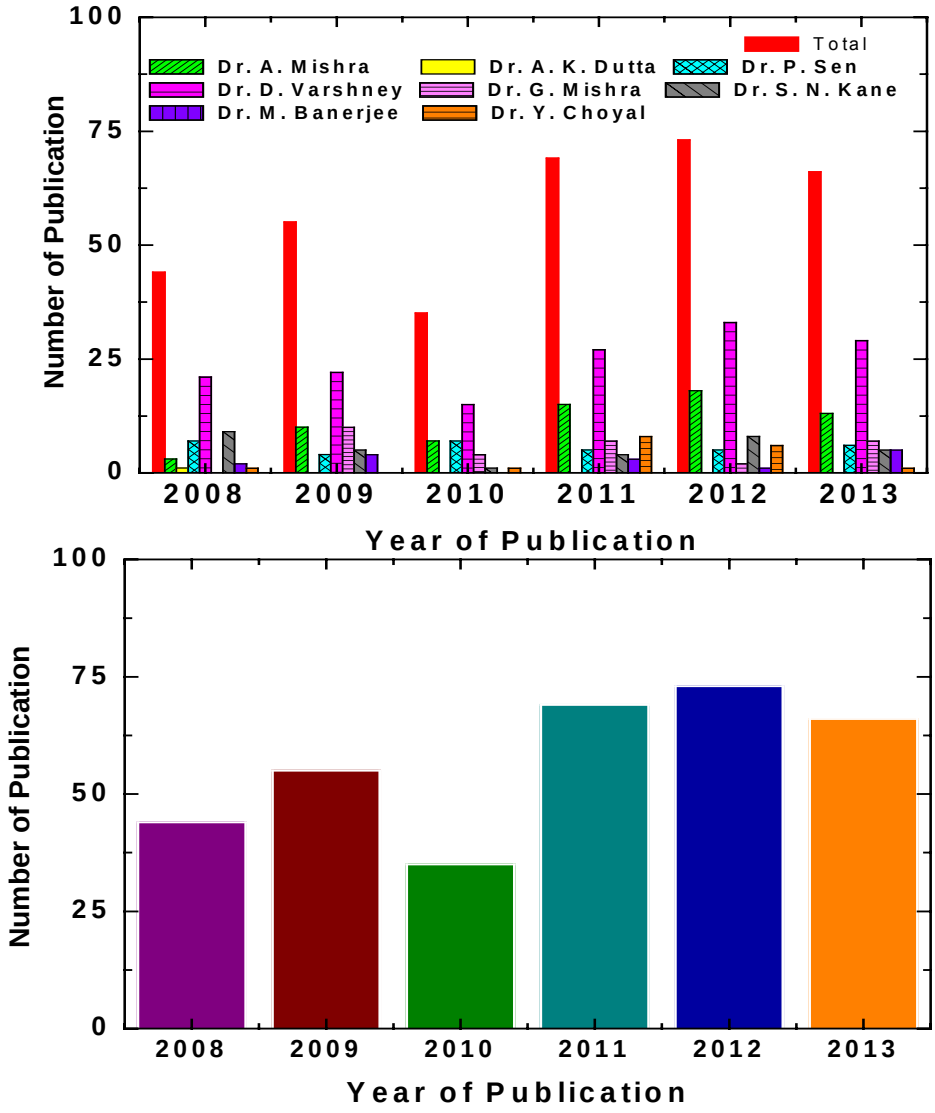


6. School has also trained number of faculty members from physics departments of affiliated colleges.

A.30 Write up of Future plans of the Department:

I. New Courses:

School of Physics is successfully running M. Sc. (Physics); M. Sc. (Physics by research); M. Phil. (Physics); M. Tech. (Laser Science and Applications). Looking to the development of new research organizations and industries, new programs planned are as follows:

a) M. Tech. (Photonics);

b) M. Tech. (Nano materials technology);

c) M. Sc. Physics (Five year integrated program).

II. New laboratories [M. Sc., M. Phil., M. Tech.]

Virtual classrooms, virtual laboratory and simulation experiments are planned. School is planning for virtual classroom as a part of a grid of virtual classrooms in the campus which will enable students to take full advantage of national mission of knowledge connectivity in the campus with 1 Gbps network.

School of Physics allows their students to have an exposure in laboratories as Electronics; Nonlinear Optics; Materials Science; Numerical Techniques, Laser Physics; Fiber Optics; Thin Film Technology, Spectroscopy and High power microwave generation.

The equipments available in these laboratories need up gradation and advanced equipments are planned for a comprehensive training.

III New Research laboratories:

Faculty members of School of Physics are actively engaged in research and development activities. This will enable the Department to meet the new challenges and will allow the students to have better opportunity for employments in national / international laboratories and organizations.

Following facilities are planned:

a) **Advanced Materials Science laboratory;**
b) **Laboratory for Characterizing Materials;**
c) **Undulator development laboratory;**
d) **High power microwave laboratory;**
e) **Applied optics and Nonlinear Optics laboratory;**
f) **Computational Physics Laboratory.**

IV. Library facilities:

Library of School of Physics possesses 3084 titles total 529 volumes on 30.6.13. With a vision of new programs and laboratories, it is also intended to have sound and well-equipped library with recently published books, periodicals, journals, CDs, Video lectures, e-books, and web-downloaded resources in the library.

V. Conferences/ Summer Schools

School is planning to have at least one national / international conference/ Summer School at School of Physics in a year. This enables the interaction of students, researchers and faculty with eminent scientists and Professors. This will enhance their knowledge in the new domains of technology-oriented physics and other streams of physics.

VI. Infrastructure

School of Physics possesses 744 sq. m area. The building was built in 1971. New building is planned with area of 1000 sq. m. Laser Bhawan was constructed in 1999. Plans are there for renovation in Golden Jubilee Year. UGC assistance is expected in XII plan.

VII. Financial support

Research projects funded by several agencies as DRDO, UGC, DST, MPCST, DAE BRNS are in progress. It is planned that the frequency of research proposals should be increased so that the quality of research as well amount of funds generated be raised.

VIII. Memorandum of understanding (MOU)

For the effective development and training of students, new memorandum of understanding (MOU) with other national / international organization must be made. At present School of Physics have MOU's with Raja Ramanna Center for Advanced Technology, Indore, UGC-CSR Indore, Institute for Plasma Research Gandhinagar, Physical Research Laboratory Ahmedabad and IUAC New Delhi.

(Please see enclosure: File no. A 30)

A.31 Record of any five Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department:

Five Strengths:

1. **All faculty members are Ph.D.s, have research projects from national agencies and have experience of carrying out research at top National and International Universities and Laboratories.**
2. **Excellent teaching-learning process.**
3. **Very good laboratories which include laser laboratory, Electronics Laboratory, and Fiber optics Laboratory etc.**
4. **Faculty members collaborate with in- campus Inter University Consortium, and Raja Ramanna Center for Advanced Technology at Indore.**
5. **Teamwork.**

Five Weaknesses:

1. **Poor M. P. State Govt. Funding.**
2. **Trend of Brilliant Students have more inclination for MBA and Engineering than Physics in recent years. How ever this year around 232 students have applied for Physics course.**
3. **Inadequate laboratory staff.**
4. **Need of additional teaching faculty, administrative staff and Technical staff and librarian.**
5. **Need of enhancing the e-learning and mobile-based learning.**

Five Opportunities:

1. **Consultancy.**
2. **Research.**
3. **Student ex-change programmes.**
4. **Developing scientific temper.**
5. **Industry-institute linkages.**

Five Challenges:

1. **To generate interest of brilliant students towards Physics to strengthen basic and applied research work in country.**
2. **To attract International students for study at the School.**
3. **To get industry support.**
4. **To streamline University Governance using new IT tools.**
5. **To move towards intensive use of e-resources and virtual classrooms.**

(Please see enclosure: File no. A 31)

A.32 Write up of efforts for Quality Sustenance and Assurance in the department

Quality is sustained and assured from following actions:

1. **Feedback system from students has been adopted and Feedback is analysed and used to improve the efforts of the faculty members.**
2. **Lectures from eminent scientist form different scientific organization have been called.**
3. **Interaction with the eminent educationalist from different Universities.**
4. **Discussions for yearly up gradation in syllabus in faculty meetings.**
5. **Up gradation of research laboratories.**
6. **Students are given opportunities for summer training programmes in different scientific organization of the country. They also deliver seminars in the department.**
7. **Internal assessment of students by faculty through tests, assignments, seminars and examination in every semester.**
8. **Workshops on Teaching learning processes, Fostering excellence in research, CBCS Quality Issues in paper setting and evaluation was held in the University in 2012-13.**
9. **To inspire the Students University organize lectures of top personalities in 2013 (a). Dr A. P. J. Abdul Kalam, Bharat Ratna on 12.6.13.**

   (b). Prof M S. Sodha Padmshree on Higher Education on 17.6.13

Criterion I: Curriculum Design and Development

1.1.1 Academic Year of Revision, Curriculum of Each Course, Objective and Course plans of each paper taught in the course

Revisions were made in 2007, 2009, 2011 and is proposed in 2013.

Whether uploaded on website

Yes [√] No [ ]

Weblink: **physics@dauniv.ac.in**

1.1.1.A Eligibility for admission to each course.

Name of Course	Eligibility criteria	Minimum % Marks
M.Sc. Physics	B.Sc. with Physics	50%
M.Phil. Physics	M.Sc in Physics	55%
M.Tech. Laser Science	M.Sc in Physics or B. E. (Electronics or Electrical Engineering)	60%

1.1.1.B Whether reflects Vision and mission reflection

Yes [√] No [ ]

1.1.1C Write up on reflection of vision and mission.

Vision:

Many students have accepted the national and global challenges in the emerging areas of Physics and are scientists and Educationists and are serving the society through their active participation in country top organizations (BARC, ISRO, DRDO, IISc, TIFR, IIT's), industry, technical institute and educational institutions.

Mission:

Development of competitive spirits, nurture individual thinking and groom the students in order to enable them to meet with new scientific and technological challenges. To develop professionally competent, environmentally and socially conscious, value imbibed and ethical students.

1.1.2 Details of process followed in last revision of Curriculum

A. Need Assessment:

Departmental committees carry out assessment based on the advices from nationally eminent experts and takes into account the present employment scenario.

B. Faculty involved in curriculum design (List of members):

1. Dr.A.Mishra, Professor
2. Dr.A.K.Dutta, Professor
3. Dr. (Mrs.) P.Sen, Professor
4. Dr.D.Varshney, Professor
5. Dr.G.Mishra, Professor
6. Dr.M.Banerjee, Professor
7. Dr.S.N.Kane, Professor
8. Dr.Y.Choyal, Associate Professor

C. Records of Departmental Committees/Board approvals of the designed curriculum.

D. Records of External Experts Opinion of the designed curriculum.

E. Records of External Experts Feedback of the designed curriculum.

F. Records of Student Feedback opinion on the existing curriculum.

G. Records of Syllabus of National tests, Eligibility Tests and Examinations for GATE, NET, Service Commissions, National Councils, for the each curriculum, if any,

(Please see enclosure: File no. 1. 1. 2 A-G)

1.1.3 Detailed write up out each course in reference to

Employability:

Two technologies related programs are M. Tech. [Laser Science and Applications] and M.Sc. Physics [Materials science] are being run by the department.

M.Tech. [Laser Science and Applications] and M.Sc. Physics [Materials science] programs are aimed to cater the need of highly trained laser/material scientists in the country.

Innovation:

- To train the manpower already engaged in educational and research organization at various levels with up to date knowledge of current concepts and techniques so as to strengthen their professional abilities.
- Teaching Physics, giving laboratory training as well as exposure of scientific work in the reputed scientific laboratories.

Research:

- To conduct research and contribute to the growth of knowledge. To provide educational facilities for preparing young boys and girls to meet the challenges in thrust areas of Physics.

1.1.4 Records of UGC/AICTE/National Council, Regulating bodies Guidelines for the development and restructuring the curriculum, if any, (NA)

Department Faculty members, if any, involved in leading any curricular reform which has created a national impact?

M. Tech. (Laser) program is in progress at very few places in the country. The course curriculum for the above programme is highly useful in developing manpower for Laser applications in different areas. Lasers have applications starting from material processing to medicines.

1.1.5 A. Record of Interactions, Opinions and Feedbacks for the designed curriculum with External Research Bodies.

Opinions and Feedbacks for the designed curriculum of M. Sc., M. Phil., M. Tech. are taken from the scientists from Inter University consortium, RAJA RAMANNA CENTER FOR ADVANCED TECHNOLOGY, Indore as well as from experts belonging to IITs and Universities.

(Please see enclosure: File No. 1.1.2 for A to G and 1.1.5 A)

B. Records of Interactions, Opinions and Feedbacks for the designed curriculum with Industrial Experts, particularly in case of Professional Courses.

MOUs are signed with RAJA RAMANNA CENTER FOR ADVANCED TECHNOLOGY, Indore, UGC-DAE-CSR, Indore.

(Please see enclosure: File No. 1.1.5 A and B)

C. Records of Interactions, Opinions and Feedbacks for the designed curriculum with Stake Holders, such as eminent personalities, Visitors to the departments, parents. Department Minutes

(Please see enclosure: File No. 1.1.5 A and C)

D. Records of Alumni opinion on the existing curriculum

(Please see enclosure: File No. 1.1.5 D, and 5.1.11)

1.1.6 List of Department Courses, which are also introduced in University, affiliated colleges also. List of colleges who introduced those courses. **N.A.**

1.1.7 Details of additional skill-oriented programmes designed for the colleges, Employees, Faculty relevant to regional needs. **N. A.**

1.2 Academic Flexibility

1.2.1 List of Courses taught in Department on campus

* **Overseas programmes offered on campus.** **N. A.**
* **Programmes available for colleges to choose from.** **N. A.**

1.2.2 Records on the following provisions with reference to academic flexibility

a. List of Core/ Elective options: Planned for 2013-14. (Included in the syllabus).

(Please see enclosure: File No. 1.2.2 a and 1.3.1)

b. **List of Enrichment courses:**

Planned for 2013-14. (Please see enclosure: File No. 1.2.2 b)

c. List of Courses offered in modular form **N. A.**

d. **List of courses/papers with Credit accumulation and transfer facility. Being planned for academic session 2013-14.**

(Please see enclosure: File No. 1.2.2 d)

e. Details of Lateral and vertical mobility within and across programmes, courses and disciplines

Being planned for academic session 2013-14.

1.2.3 Records of International students. N. A.

1.2.4 Records of Courses developed targeting international students, if any N. A.

1.2.5 Record of dual degree and twinning programmes. N. A.

1.2.6 A. List of students, Admission Process, Fee structure of each programme.

Admission process is as under:

List of students is enclosed. (Please see enclosure: File No. 1.2.6 A)

Admission process is via entrance test followed by interview.

B. Record of Teacher qualification and salary parity and differences (if any) at par with the aided programmes.

All teachers are qualified and their salaries are as per UGC regulations.

(Please see enclosure: File No. 1.2.6 B)

1.2.7 Operational details of distance Education Course in the department (if applicable).

N. A.

1.2.8 **Details of Choice Based Credit System (CBCS).**

Being planned for academic session 2013-14.

(Please see enclosure: File No. 1.2.2 D)

1.2.9 Records of Departmental Academic Calendars of each semester:

Displayed at the Notice Board and also available in University website.

(Please see enclosure: File No.1.2.9)

1.2.10 Records of Inter-disciplinary programmes, Name of interdisciplinary program and details of students undertaken those programmes. Programmes include interdisciplinary program based on C++.

1.3 Curriculum Enrichment

1.3.1 A. Record of academic years in which each of the courses was revised:
B. Records of review, up-gradation,
C. Records of social relevancy,
D. Records of job orientation.
E. Records of knowledge intensive nature of each course
F. Records of meeting the emerging need of students
G. Records of meeting the emerging need of stakeholders

(Please see Enclosure: File No. 1.3.1)

1.3.2 Details of the last four years during which how many new programmes at UG and PG levels were introduced. N. A.

* **Inter-disciplinary.** N. A.
* **Programmes in emerging areas** N. A.

1.3.3 A. Details of strategies adopted for the revision of the existing programmes

Opinions and Feedbacks for the designed curriculum of M.Sc., M. Phil., M. Tech. are taken from the scientists from Inter University consortium, RAJA RAMANNA CENTER FOR ADVANCED TECHNOLOGY, Indore as well as from experts belonging to IITs and Universities.

B. Percentage of courses underwent a syllabus revision in last four years:
All courses (Please see enclosure: File No. 1.3.1)

1.3.4 A. Details of Value-added courses offered.

(Please see enclosure: File No. 1.3.1 A and B)

B. Details of these courses access to students

(Please see enclosure: File No. 1.3.1 A and B)

1.3.5 Details of higher order skill development programmes in consonance with the national requirements (for examination, innovative M. Tech. /M.E. Courses, CCNA, CCSP,).

M. Tech. (Laser science and applications) and M. Sc. (Materials Science) are the innovative programmes of the country.

1.4 Feedback System

1.4.1 A. Copy of Feedback form to obtain feedback from students/student class representatives regarding the curriculum.

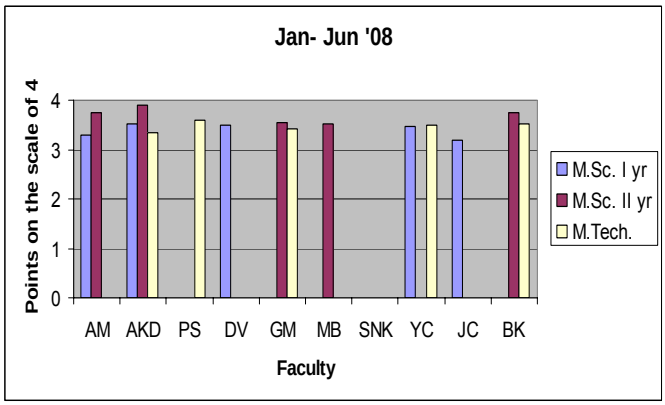
(Please see enclosure: File No. 1.4.1 A)

B. Details of action and use of on feedback from students.

School of Physics, Devi Ahilya University, Indore

Name of Faculty:

AM: Prof. A. Mishra, AKD: Prof. A.K. Dutta, PS: Prof. P. Sen, DV: Prof D.Varshney; GM: Prof G. Mishra, MB: Prof M. Banerjee, SNK: Prof S.N. Kane, YC: Dr. Y. Choyal


Jan- Jun '08
Points on the scale of 4
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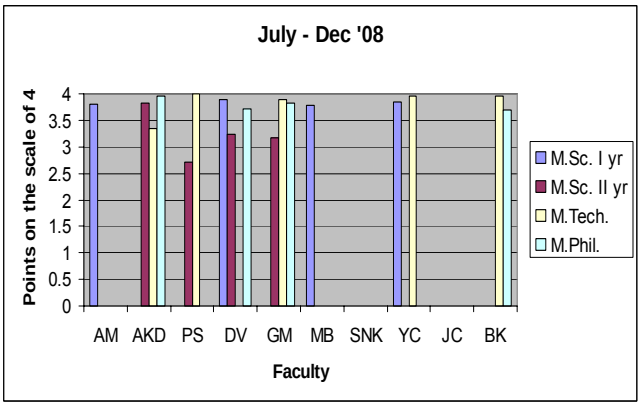
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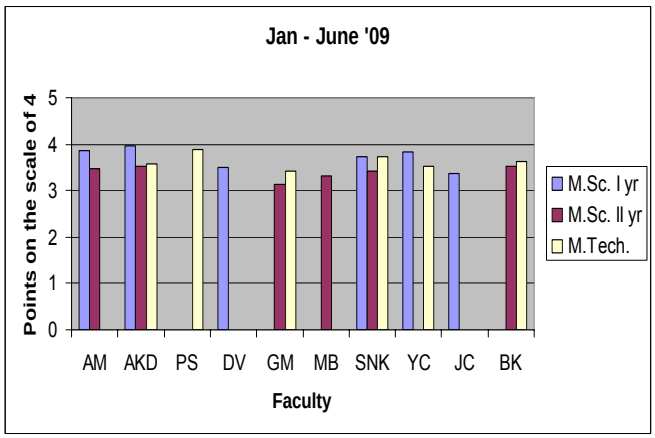
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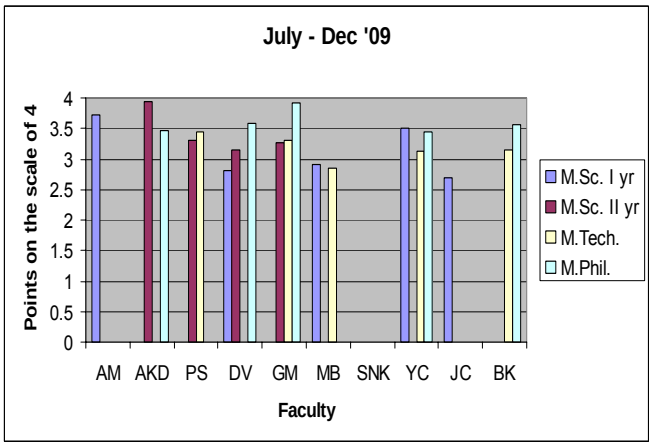
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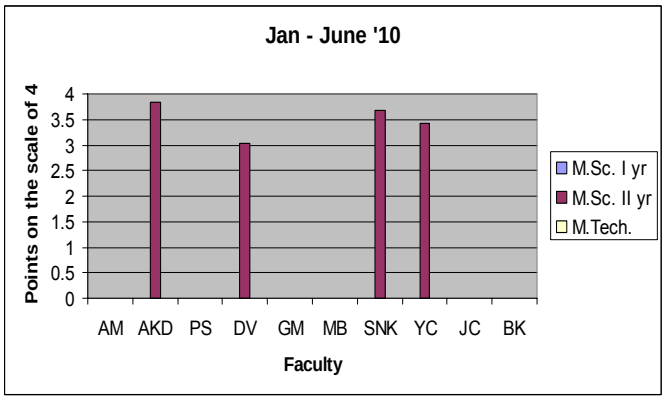
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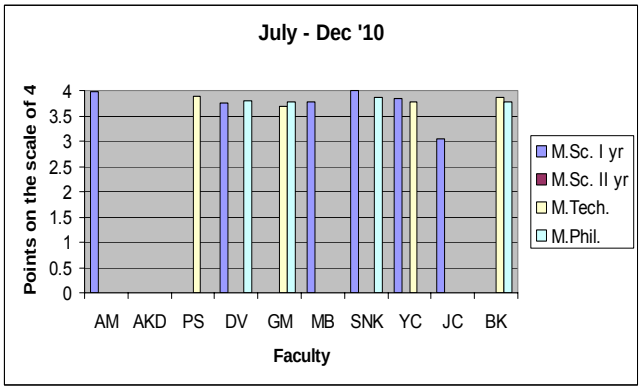
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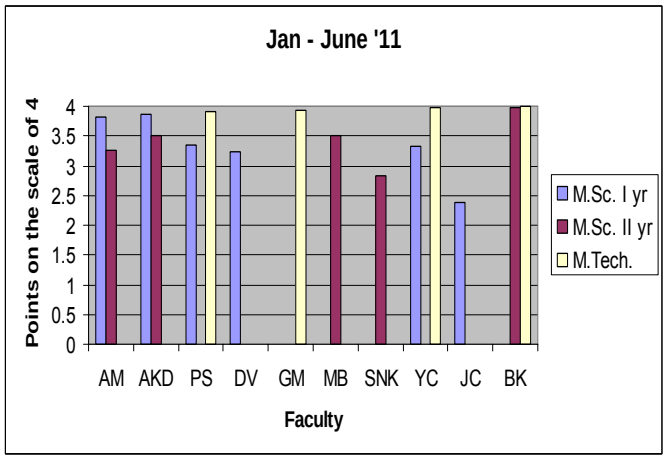
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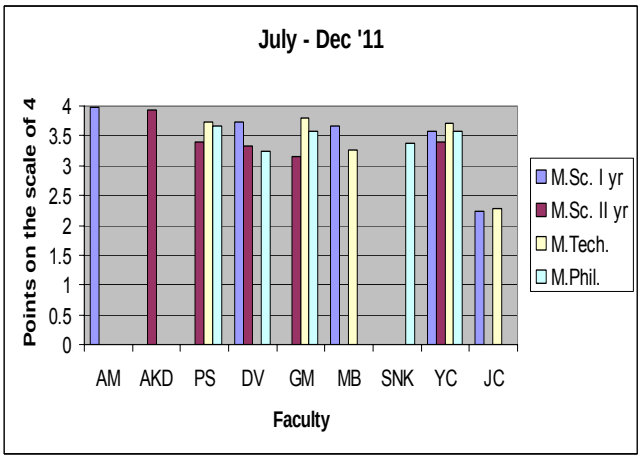
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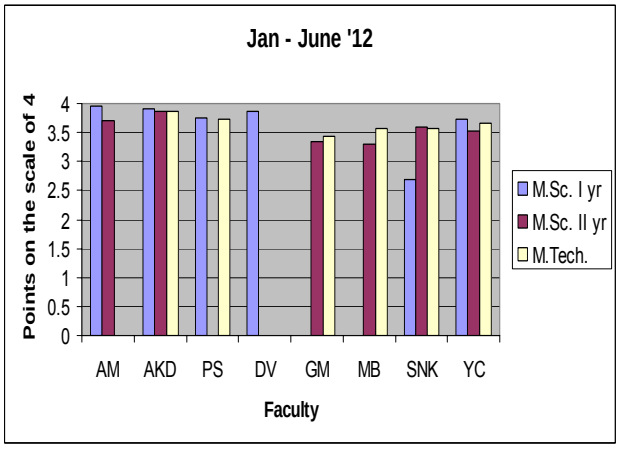
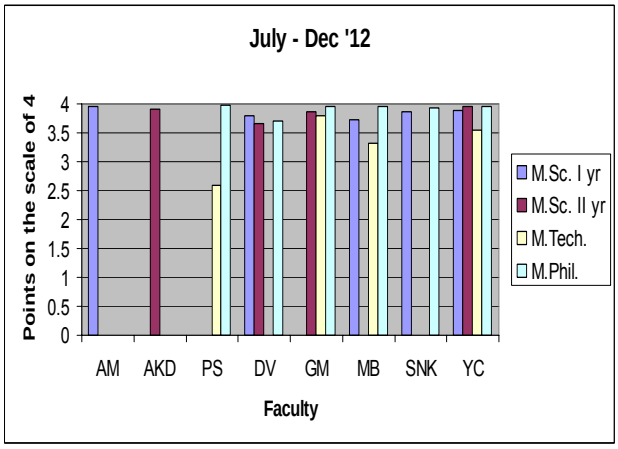
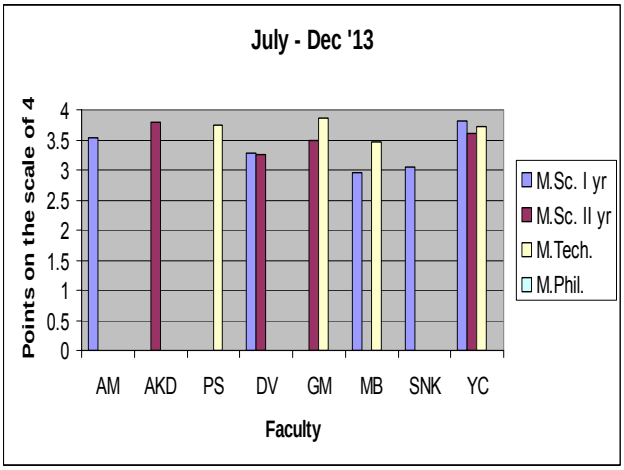
M.Phil.







1.4.2 A. Method used for eliciting feedback on the curriculum from national and international faculty:

The possible reforms based on feedback are discussed in the Board of Studies meeting and in the faculty meeting in the department.

B. Conducting webinars: Being planned for academic session 2013-14

C. Curriculum development Workshops: Being planned for academic session 2013-14

D. Curriculum development online discussions: Being planned for academic session 2013-14

E. Impact of Workshop and discussions: Will be known by July 2014.

1.4.3 Specify the mechanism through which affiliated institutions give feedback on curriculum enrichment and the extent to which it is made use of.

The possible reforms based on feedback are discussed in the Board of Studies meeting and in the faculty meeting in the department.

1.4.4 What are the quality sustenance and quality enhancement measures undertaken by the Department in ensuring the effective development of the curricula?

Opinions on the curriculum are taken from the experts, students and the alumni and the suggestions are discussed in the meeting of Board of studies (BOS). The suggestions of BOS are followed at the earliest. The syllabus of the national level competitive examinations on physics is also taken into account.

1.4.5 Any other information regarding Curricular Aspects which the UTD would like to include.

a) Feedback is regularly taken from the comprehensive viva experts.

b) A student member has been nominated in Board of studies in physics from School of Physics, DAVV, Indore.

(Please see enclosure: File No. 1.4.5)

Criterion II: Teaching-Learning and Evaluation

2.1 Student Enrolment and Profile

2.1.1 Copy of Advertisements and website info for ensuring publicity and transparency in the admission process.

It is a combined advertisement from university authority.

(Please see Enclosure: File No. 2.1.1Advertisement copies in file No. 2.1.1)

2.1.2 A. Write up details of the process of admission put in place by the department

For 2013 - 2014 academic session the advertisement was published in the newspapers. School conducted the entrance test in the month of June 2013 and July 2013.

B. List of the criteria for admission: (e.g.: (i) merit, (ii) merit with entrance test, (iii) merit, entrance test and interview, (iv) common entrance test conducted by state agencies and national agencies (v) other criteria followed Merit,

Selections for various programmes are based on entrance test followed by interview, condcted by School. The admission is based on merit [marks obtained in the entrance test and interview] in the respective category based on results of test.

2.1.3 Details of admission process in the affiliated colleges if department is monitoring the same.

It is monitored by University academic section and state Govt. higher education department. Admissions are done on time.

2.1.4 Student profile analysis:

- The students admitted in M. Sc. are from graduation from different universities of India admitted through selection procedure followed by School as approved by the University.
- The students admitted in M. Tech. program are GATE qualified. A Committee interviews them.
- The students admitted in M. Phil. and Ph. D. program have a procedure of admission using UGC regulation 2009.

2.1.5 Strategies adopted to increase/improve access for students belonging to the following categories:

- SC/ST: Fellowships for State Govt.
- OBC: Fellowships for State Govt.
- Women: Wave off in tuition fees, 33% reservation in respective category.
- Persons with varied disabilities: From Student Welfare Section scholarship.
- Economically weaker sections: From Student Welfare Section scholarship.
- Outstanding achievers in sports and other extracurricular activities
- These are granted/Weightage in norms as per state Govt norms.

2.1.6 Number of students admitted in department in the last four academic years:

Categories	Year 1 2009-10		Year 2 2010-11		Year 3 2011-12		Year 4 2012-13	
	Male	Female	Male	Female	Male	Female	Male	Female
SC	3	2	5	2	7	2	3	2
ST	3	0	3	0	4	1	1	1
OBC	20	6	22	10	15	12	12	17
General	17	21	26	23	19	35	17	46
Others	5	0	0	0	0	0	0	0

2.1.7 A. Record of demand ratio for the various programmes of the university departments.

Session 2008-09

Programmes	Number of applications received	Number of students admitted	Demand Ratio
M. Sc.	40	18	2.2:1
M.Phil.	33	17	1.9:1
Ph.D.	05	05	1:1
M.Tech	15	08	1.9:1

Session 2009-10

Programmes	Number of applications received	Number of students admitted	Demand Ratio
M. Sc.	74	27	2.7:1
M.Phil.	36	19	1.9:1
Ph.D.	03	03	1:1
M.Tech	25	08	3.1:1

Session 2010-11

Programmes	Number of applications received	Number of students admitted	Demand Ratio
M. Sc.	69	22	3.1:1
M.Phil.	23	19	1.2:1
Ph.D.	04	04	1:1
M.Tech	12	03	4:1

Session 2011-12

Programmes	Number of applications received	Number of students admitted	Demand Ratio
M. Sc.	59	27	2.1:1
M.Phil.	42	19	2.2:1
Ph.D.	06	06	1:1
M.Tech	31	08	3.9:1

Session 2012-13

Programmes	Number of applications received	Number of students admitted	Demand Ratio
M. Sc.	102	45	2.27:1
M.Phil.	36	20	1.8:1
Ph.D.	115	109	1.05:1
M.Tech	54	14	3.85:1

B. If yes then highlight the significant trends explaining the reasons for increase/decrease.

The students are interested in basic sciences courses.

2.1.8 **A. Record of any programme discontinued/staggered in the last four years? (N. A.)**

B. If yes, write-up of the reasons. (N. A.)

2.1.9 **Record of Admissions.** **(Please see enclosure: File No. 2.1.9)**

2.2 **Catering to Diverse Needs of Students**

2.2.1 **A. Record of organization of orientation/ induction programme for freshers:**

The University has organisee an Induction Programme on Sept. 15, 2012. The students were administered an oath. Orientation programme were organized at the School. The teaching learning processes, evaluation methods and programme outcomes were explained.

(Please see enclosure: File No. 2. 2.1)

B. Details such as the duration, issues covered, experts involved and mechanism for using the feedback in subsequent years. (N. A.)

2.2.2 **A. Record of analysis of the "differential requirements of the student population" after admission and before the commencement of classes**

1. For outstationed hostel is required and the Head of the department forwards the applications to the hostel authorities.

2. Students also want the membership of the central library and their applications are also forwarded to the competent authorities.

3. A record of issuing the books from departmental library is maintained in the library of the school.

B. Record of key issues identified and addressed.

1.Chief warden, office of hostels Khandwa road campus DAVV, Indore.

2.Librarian of central library Khandwa road campus DAVV, Indore.

3. Librarian of School of Physics, DAVV, Indore.

2.2.3 A. Record of bridge/remedial/ add-on courses.

Remedial courses for the students who fail in tests are for 2013-14.

(Please see enclosure: File No. 2. 2.3)

B. Time table and details of the courses offered in the department-wise for all courses.

(Please see enclosure: File No. 2. 2. 3 B)

2.2.4 A. Record of the academic growth of students from disadvantaged sections of society; economically disadvantaged, physically handicapped, slow learners, etc.

Year	Course	SC Pass %	ST Pass %	OBC Pass %	Physically handicapped Pass %

(Please see Enclosure: File No. 2. 2. 4)

B. Main findings?

Student pass percentage is increasing in successive years or constant in or always 100 %.

2.2.5 Record of identification and responses to the learning needs of advanced learners.

Advanced learners associate with researchers and perform creative projects.

(Please see enclosure: File No. 2. 2. 5)

2.3 Teaching-Learning Process

2.3.1 Records of Plan and organisation of the teaching, learning and evaluation schedules (teaching plan, evaluation schedules and methods)

Course plan is available on website www.dauniv.ac.in, Copy of syllabus, Time Table, Test & Examination schedule etc.

(Please see enclosure: File No. 2. 3. 1 and 2. 2. 3 B)

2.3.2 A. Record and website info of providing course outlines and course schedules prior to the commencement of the academic session.

(Please see enclosure: File No. 2. 3. 2)

B. Methods used for effective implementation.

A deptarmental committee monitors for effective implementation the members are: Dr. A. Mishra, Head, Examination coordinator Dr. A.K. Dutta, Dr. (Mrs.) P. Sen, Professor and Coordinator IQAC, Dr. D. Varshney, Professor and Ex DCDC, Indore.

2.3.3 A. Record of difficulties in completing the curriculum within the stipulated time frame and calendar.

Ordinance 31 provides the flexibility within the stipulated time frame.

(Please see enclosure: File No. 2. 3. 3)

B. Write up of the challenges encountered and the departmental measures to overcome these. (N. A.)

2.3.4 A. Record of student-centric learning activities:

Student's Seminar, Project Presentations and group discussions.

(Please see enclosure: File No. 2. 3. 4 A)

B. List of participatory learning activities, which are adopted by the faculty that contributes to holistic development and improved student learning, besides facilitating life-long learning and knowledge management.

Lectures on Sir C.V. Raman, Einstein's interaction with eminent experts contributes to holistic development. Student Seminars, Open project presentation are done to include participatory learning.

2.3.5 List, record with photographs of activities such as invited experts/people of eminence to deliver lectures and/or organize seminars for students.

The eminent personalities such as Dr Anil Kakodkar and Dr T. Alex enlightened the students and the faculty by delivering the lectures at National Conference Of Shanti Swarup Bhatanagar Award Winners July-17 to 19, 2009.

1. Dr. Anil Kakodkar, Chairman, Atomic Energy Commission of India and Secretary to Govt of India described the Nuclear Energy needs and Action for Nuclear energy in the country.

2. Key note address by Dr. T. Alex, Padam Bhusan, Director ISRO Satellite Centre, Bangalore spoke on methods used to record photographs and communicate by Chandrayan from Moon surface, showed the chain of photography and their interpretation.

3. Dr. A. K Ghatak, Professor, IIT Delhi described "Einstein and his work on Relativity"

Following lectures were conducted from the experts:

1. **Dr. Ramsagar, Director, ARIES, Nainital, Uttrakhand 4 March 2013.**
2. **Dr. D. D.Bhawalkar, Former, Director, RRCAT, Indore.**
3. **Prof. M.S.Sodha, Ex. ViceChancellor, Indore, Lucknow and Bhopal University.**
4. **Prof. V.K.Tripathi, Professor, IIT Delhi.4 Nov. 2012**
5. **Dr.P.K.Gupta, Scientist, RRCAT, Indore. 14 Jan 2012**
6. **Dr. Yashwant Gupta (National Centre for Radio Astrophysics, Pune)**
7. **Dr. L. M. Kukreja, Scientist, RRCAT, Indore 12th Aug 2012**
8. **Dr. S. N. Joshi, Scientist, CEERI, Pilani Sept. 13 2012**
9. **Prof. B.D.Shrivastava, Retd Professor, Vikram Univ, Ujjain.12 Jan 2013**
10. **Prof. R.C. Verma, Environmentalist, Ujjain 28 Feb 2013**
6. **Dr. Anil Bharadwaj, Vikram Sarabhai Space Centre, Thiruvanthapuram.**
7. **Dr. Rama Govindrajan, JNCAR, Bangalore.**
8. **Dr. Amalendu Chandra, I .I .T. Kanpur**
9. **Prof. S. S. Sekhon, Guru Nanak Dev University Amritsar, Punjab**
10. **Prof. K. Jayakumar, Gandhigram Rural University, Tamilnadu,**
11. **Dr. Alka Bansal Garg, Scientist G, BARC, MUMBAI,**
12. **Dr. Amitabh Das, Scientist G, SOLID STATE Physics Division, BARC, MUMBAI**

(Please see enclosure: File No. 2. 3. 5)

2.3.6 Record of Encouragement to blended learning by using e-learning resources

(Please see enclosure: File No. 2. 3. 6)

2.3.7 Record of facilities such as virtual laboratories, e-learning, open educational resources and mobile education used by the faculty for effective teaching.

Students and faculty frequently download the e-learning contents and tutorials freely available on the website of foreign Universities and International laboratories.

2.3.8 Record of activities of designated group among the faculty to monitor the trends and issues regarding developments in Open Source Community and integrate its benefits in the university's educational processes.

Faculty members as Dr.A.Mishra, Dr A. K. Dutta, Dr. P. Sen, Dr. D. Varshney, Dr. G. Mishra, Dr. M. Banerjee, Dr. S. N. Kane, Dr. Y. Choyal are involved in day to day activity related to university development for such programmes.

Implementation plan for virtual classroom, development of e-content for each course taught are the activities planned.

(Please see enclosure: File No. 2. 3. 8)

2.3.9 Record of steps taken to convert traditional classrooms into 24x7 learning places: Classrooms and Laboratories are equipped with Wi-Fi provide 24 x 7 learning environment.

2.3.10 A. Record of actions taken to avail the services of counsellors/mentors/advisors for each class or group of students for academic, personal and psycho-social guidance.

(Please see enclosure: File No. 2. 3. 10)

B. Details of the process and the number of students who have benefitted.

A mentor is allocated for 25 students. He/She periodically discusses social, academic and career problems. The process is under review and the 25 students are benefitted.

2.3.11 A. Record of innovative teaching approaches/methods/practices adopted/put to use by the faculty during the last four years?

(Please see enclosure: File No. 2. 3. 11)

B. Write up of improvement in learning by innovative methods.

The methods adopted for improvement in learning is through Power Point presentations, this helps in teaching. The teaching process is faster and topic is covered within shorter time, this enables more time for interactive discussion in place of time spent in writing and drawing on blackboard.

C. Record of recognition to the faculty due recognition for innovation in teaching

Appreciation letters and falicitation on Teacher's day.

2.3.12 Record of actions for creating a culture of instilling and nurturing creativity and scientific temper among the learners

The students of M. Sc. I semester undertake a training programme at Institutes of National repute during the summer vacation

(Please see enclosure: File No. A 31)

2.3.13 A. Record of student projects (if mandatory in each of the learning programme).

(Please see enclosure: File No. 2. 3. 13)

B. Number of projects executed within the university.

M.Sc.: 91 M.Phil: 82

C. Names of external institutions associated with the University for Student Project Work.

M.Tech.: 32 (Raja Ramanna Center for Advanced Technology, Indore)

D. Role of faculty in facilitating such projects.

(Please see enclosure: File No. 2. 3. 13)

Faculty members have autonomy to develop laboratory facilities for further experimental work, computational work, and guidance and monitoring during the whole course of project.

2.3.14 A. Record of shortfall in qualified faculty to meet the requirements of the curriculum.

Four faculty members are required as per sanctioned post.

B. Record of actions for shortfall supplementation:

Temporary fulltime contracted appointments to Assistant Professor are being offered soon. For appointment of vacant faculty positions university administration has already advitise the posts.

2.3.15 Number of percentage of faculty enabled to prepare computer-aided teaching/ learning materials. 100%

2.3.16 A. Record of Student feedback for evaluation of teachers by the students

(Please see enclosure: File No. 1. 4. 1 A)

The required analysis is available at www.iqac.dauniv.ac.in

B. Record of Alumni feedback for evaluation of teachers by the students

(Please see enclosure: File No. 1. 4. 1 A and B)

C. Methods used and Impact of the evaluation feedback used to improve the quality of the teaching-learning process.

The suggestion given through feedback has been adopted time to time.

2.4 Teacher Quality

2.4.1 Record of how the plan and management of human resources was done to meet the changing requirements of the curriculum:

(Please see enclosure: File No. 2. 4. 1, A 25 and A 21)

Change in curriculum as per the requirements concerned with industries, research laboratories and educational institutes. The academic staff of the department periodically discusses the issues. The minutes of the meeting are on records.

(Please see enclosure: File No. 2. 4. 1)

2.4.3 Diversity in its faculty recruitment:

Department / School	% of faculty from the same university	% of faculty from other universities within the State	% of faculty from universities outside the State	% of faculty from other countries
School of Physics	37.5 %	62.5%	Nil	Nil

2.4.4 A. List of qualified faculty appointed for new programmes/emerging areas of study (Bio-technology, Bio-informatics, Materials Science, Nanotechnology, Comparative Media Studies, Information Technology, Diaspora Studies, Forensic Computing, Educational Leadership, etc.)? N. A.

B. Number of faculty members appointed to teach new programmes during the last four years.

New faculties are not required, as there exists experienced faculty for the Laser and Materials Science programs.

2.4.5 List of academic recharge and rejuvenation of teachers:

Refresher courses, Conferences, Indian Physics Association activities Shanti Swarup Bhatanagar award winner Lectures are the parts of recharge and rejuvenation of teachers.

A. **List of faculty availed and provided research grants by the University.** N. A.

B. List of faculty availed and on study leave.

Name	Designation	Organization	Period
Dr. A. K. Dutta	Professor	Univ of Bruxelles, Brussels, Belgium	Nov. 1 to Dec. 1, 2009
			Oct. 22 to Nov. 19, 2010
			Sept. 13 to Oct. 7, 2011
			Sept. 8 to Oct. 5, 2012
Dr. A. K. Dutta	Professor	Univ of Montreal, Montreal, Canada	June 13- July 17, 2008

Dr. D. Varshney	Professor	LPQ3M Laboratory, Faculty of Science and Technology, Mascara University, Algeria.	9th June to 20th June 2013
Dr S. N. Kane	Associate Professor	ENS de Cachan, France. (Summer vac)	May-June 2012
		ENS de Cachan, France. (Study leave, Invited Prof.)	Sept-Oct 2011
		ENS de Cachan, France. (Summer vac)	May-June 2010
		ENS de Cachan, France. (Summer vac)	May-June 2009
Dr. S. N. Kane	Associate Professor	Pohang, Univ of Science and technology, Pohang, South Korea. (EOL, invited research Prof).	Jan-Dec 2008

C. List of faculty nominated to national/international conferences/seminars, in-service training, organizing national/international conferences etc. 08

Names of faculty:

1. Dr. A. Mishra, Professor
2. Dr. A.K. Dutta, Professor
3. Dr. P. Sen, Professor
4. Dr. D. Varshney, Professor
5. Dr. G. Mishra, Professor
6. Dr. M. Banerjee, Professor
7. Dr. S. N.Kane, Professor
8. Dr.Y.Choyal, Associate Professor

2.4.7 List of faculty received awards / recognitions for excellence in teaching at the state, national and international level during the last four years. Nil

2.4.8 List of faculty underwent staff development programmes during the last four years (add any other programme if necessary)?

Academic Staff Development Programmes	Number of faculty
Refresher courses	02
HRD programmes	01
Orientation programmes	01
Staff training conducted by the university	NOT REQUIRED
Staff training conducted by other institutions	NOT REQUIRED
Summer / Winter schools, workshops, etc.	NOT REQUIRED

Refresher courses: 1. Dr. Y.Choyal 2. Dr. J.Chauhan (On deputation From RGPV, Bhopal)

Orientation programmes: 1. Dr. J. Chauhan (On deputation From RGPV, Bhopal)

HRD programmes: 1. Prof. D. Varshney, Activities on All India Survey on Higher Education for 2010 –2011; 2011- 2012; 2012 – 2013.

2.4.9 Percentage of the faculty has:

- **Been invited as resource persons in Workshops / Seminars / Conferences organized by external professional agencies** 100%
- **Participated in external Workshops / Seminars / Conferences recognized by national/ international professional bodies** 100%
- **Presented papers in Workshops / Seminars / Conferences conducted or recognized by professional agencies** 100%
- **Teaching experience in other universities / national institutions and other institutions** 10%
- **Industrial engagement** 12%
- **International experience in teaching** % Nil

2.4.10 List and details of organization of academic development programmes (e.g.: curriculum development, teaching-learning methods, examination reforms, content / knowledge management, etc.) for its faculty aimed at enriching the teaching-learning process:

The school has organized a one-day workshop on May 10, 2013 for teaching learning best practices. Participation in following workshops was also done:

1. **Fostering Excellence in Research, June 15, 2013.**
2. **Challenges of Higher Education, June 2, 2013.**

2.4.11 A. List of faculty encouraged :

1. **Dr. A. Mishra, Professor**
2. **Dr. A.K. Dutta, Professor**
3. **Dr. P. Sen, Professor**
4. **Dr. D. Varshney, Professor**
5. **Dr. G. Mishra, Professor**
6. **Dr. M. Banerjee, Professor**
7. **Dr. S.N.Kane, Professor**
8. **Dr.Y.Choyal, Associate Professor**

* **Mobility of faculty between universities for teaching** **N. A.**
* **Faculty exchange programmes with national and international bodies.** **N. A.**
* **Record of schemes helping in enriching the quality of the faculty by such mobility and faculty exchanges** **N. A.**

1.5 Evaluation Process and Reforms

(A). All students appear at the end of every semester in the comprehensive viva voce. The Board comprises of an external examiner duly appointed by Hon'ble Vice-chancellor and all academic staff of the department.

(B). Quality issue workshop for Paper Setting and Evaluation was held on Sept. 26, 2012 for reform in the University.

2.5.3 A. Record of time taken by the department for declaration of examination results each semester: 15 days (Please see enclosure: File No. 2. 5. 3 A)

B. Record of means adopted for the mode / media adopted for the publication of examinationination results (Website, SMS, email, etc.).

(Please see enclosure: File No. 2. 5. 3 B)

2.5.4 A. Record of ensuring transparency in the evaluation process:

Answer sheets are shown to students after evaluating in tests and end semester examination.

(Please see enclosure: File No. 2. 5. 4 A)

B. Measures taken to ensure confidentiality.

As per Ordinance 31, the question papers of three-test and semester end examination of each semester are being set by the concerned teacher. The examination section comprises of Examination coordinator, senior superintendent, centre Superintendent and assistant superintendent. The question papers are lying with the examination coordinator and the sealed envelop of examination question papers opened on the examination day before half an hour of start of examination.

C. Record of the Pre-examination processes – Examination Time table generation, student list generation, Invigilators, Attendance sheet, Record enclosed copy of more than one-year time table. 2009- 2012

(Please see enclosure: File No. 2. 5. 3 C)

C. Results of students course wise and its analysis.

Session	Programme M.Sc. Physics	Students Passed
2007-2009	11	11
2008-2010	18	18
2009-2011	17	17
2010-2012	18	18
2011-2013	27	27
Session	**Programme M.Tech. Lasers**	**Students Passed**
2007-2009	8	8

2008-2010	5	5
2009-2011	8	8
2010-2012	3	3
2011-2013	8	8
Session	Programme M.Phil. Physics	Students Passed
2008-2009	17	17
2009-2010	14	14
2010-2011	19	19
2011-2012	19	19
2012-2013	13	13

The result has been declared in due course of time. The ordinance 31 of University is completely followed. Faculty member shows the answer sheets to the students before declaring the result.

2.6. Student Performance and Learning Outcomes

2.6.1 A. Write up of articulation of its Graduate Attributes of the department

Good knowledge of Physics and ability for scientific research in higher national research organization and to become excellent physics educator who has ethical values and environment conciousness. All students must give as per course curriculum, an open oral presentation in the form of seminar. All students appear at the end of every semester in the comprehensive viva voce. The Board comprises of an external examiner duly appointed by Hon'ble Vice-chancellor and all academic staff of the department.

B. Record of facilitation of monitor the implementation and outcome

Notices of seminar are enclosed Copy of Grade sheets with signature.

(Please see enclosure: File No. 2. 3. 4 and 2. 5. 3)

2.6.2 A. Record of learning outcomes for its academic programmes.

(Please see enclosure: File No. 2. 5. 3)

31 students have taken admission in Ph.D Programmes.

B. Record of making students and staff are made aware of these.

(Please see enclosure: File No. 2. 5. 3)

2.6.3 Write up of department teaching, learning and assessment strategies structured to

facilitate the achievement of the intended learning outcomes.

1. Regularity in teaching and examination processes is strategy to achieve intended learning. A compact and strict teaching and laboratory schedule is followed. The academic calendar is declared in the beginning of the semester. Students are thoroughly examined through their comprehensive viva voce at the end of each semester. Conducting regular tests also follows the continuous evaluation process. Exposure to lectures of eminent experts and projects in external institutions ensure the learning outcome.

2. Exposure to lecture of eminent experts and projects in external institutions the learning outcomes.

2.6.4 Record of collection and analysis of data on student learning outcomes and use it to overcome the barriers to learning.

Many of the students opt for higher education, some of them are absorbed in National level scientific Institutions while all other students are employed elsewhere.

2.6.5 Write up of new technologies deployed by the department in enhancing student learning and evaluation and how does it seek to meet fresh/ future challenges.

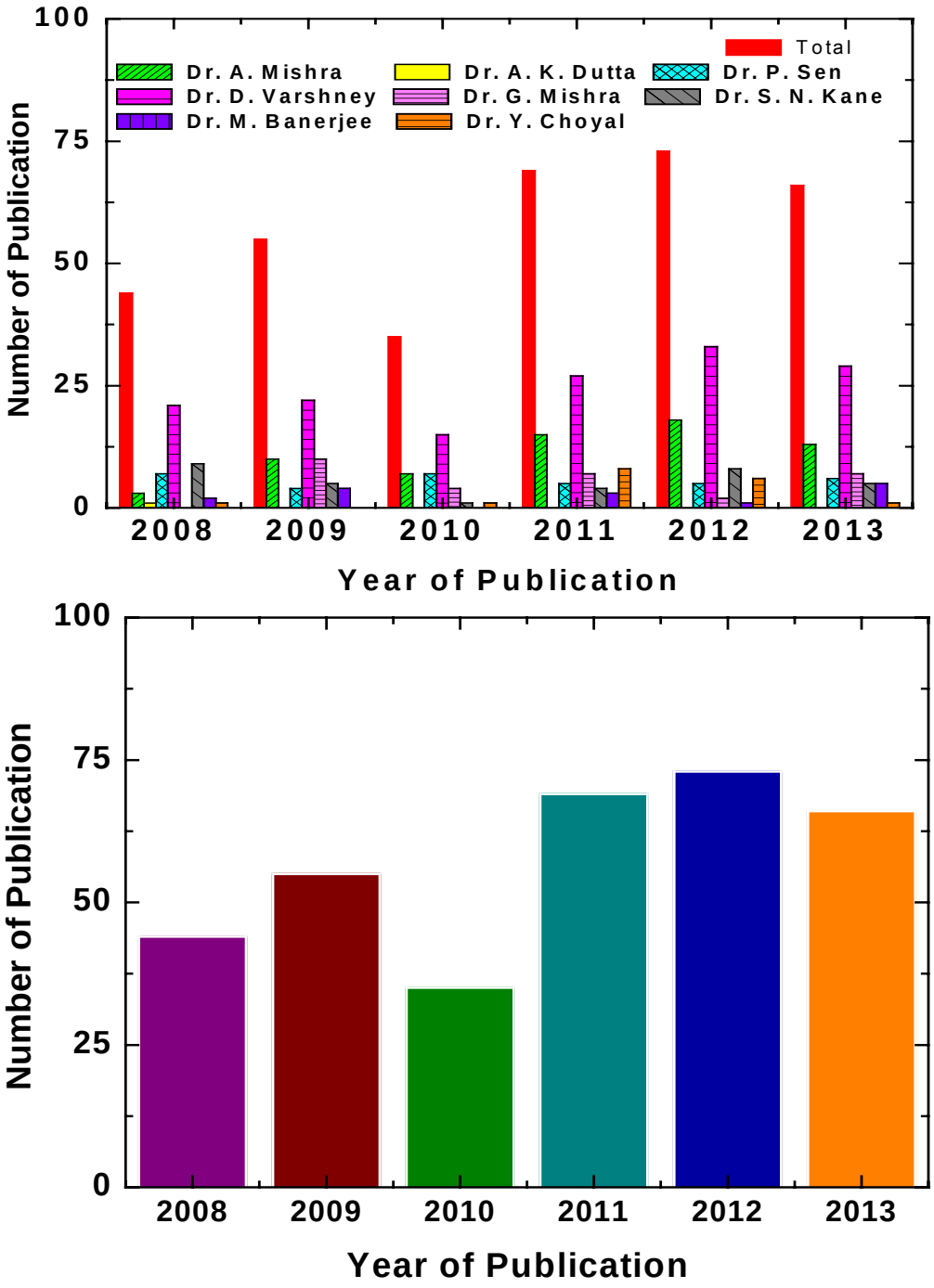
At School of Physics, academic staff, researchers and students have direct excess with equity to latest technology by way of national and international organizations to pursue excellence in science and technology for global good. Efforts are made to involve the academic staff, researchers and students in devising new and newer technology as the fundamental science is done primarily to improve the knowledge.

2.6.6 Any other information regarding Teaching, Learning and Evaluation which the department would like to include.

Academic Autonomy provided to the academic staff and learners under control of Board of studies. Open book system is planned an alternate in the examination system. Liberal administrative procedures and e-Government procedures are planned for faster actions for setting.

Criterion III: Research, Consultancy and Extension

III.1 Year-wises Publications in the department:



(Please see enclosure: File No. 3. 1)

III.2 Number of papers published in peer reviewed journals (national / international): 342 (National and International)

YEAR	Number of Publications
2008	44
2009	55
2010	35
2011	69
2012	73
2013	66

Monographs: N. A.

Chapters in Books: 02

Edited Books: Conference proceedings are published in book form.

(Please see enclosure: File No. A 11)

Books with ISBN with details of publishers:

ISSN 1742-6588 (print) ISSN 1742-6596 (online) Proceedings of International Conference on Recent Trends in Physics (IOP Science, U.K.)

Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.).

Citation Index – range / average: 150

SNIP. N. A.

SJR. N. A.

Impact Factor – range / average. 1 to 5

h-index. 4 to 15

III.3 List and Records and Details of patents and income generated N. A.

III.4 List and Record of Areas of consultancy and income generated

(Please see enclosure: File No. 3. 4)

III.5 List and Record of Faculty selected nationally/internationally to visit other laboratories

in India and abroad.

(Please see enclosure: File No. 3. 5)

III.6 List and Record of Faculty serving in National committees b) International committees c) Editorial Boards d) any other (please specify)

(Please see enclosure: File No. 3. 6)

III.7 Research thrust area recognized by funding agencies for the department

1. **Materials Science,**
2. **Nano Technology,**
3. **Microwave generation,**

III.8 Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies and grants received project-wise.

A. National: 26
B. International: 01
C. Total grants received: Rs. 294.61 Lakhs.

(Please see enclosure: File No. 3. 8)

III.9 List and details of Inter-institutional collaborative projects and grants received.

(Please see enclosure: File No. 3. 8)

a) All India collaboration **(Please see enclosure: File No. 3. 8)**

b) International **(Please see enclosure: File No. 3. 8)**

III.10 List and details of Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, etc.; total grants received. **N. A.**

III.11 List and Details of Research facility / centre with State recognition

National recognition:

1. IPR, Ghandinagar, 2. PRL, Ahmdabad 3. UGC DAE CSR, Indore 4. Inter university accelator centre, New Delhi. 5. CEERI, Pilani. 6. RRCAT, Indore.

(Please see enclosure: File No. 3.11)

- International recognition 1. The Ecole normale superieure de CACHAN, CACHAN (France) (Please see enclosure: File No. 3.11 A)

III.12 List and details of Special research laboratoryoratories sponsored by / created by industry or corporate bodies.

Raja Ramanna centre for Advanced Technology is one of the DAE organizations where Laser is one of the major activities. The department has MOU signed with it and the students of M Tech (laser) carry out one-year project in their laboratories.

(Please see enclosure: File No. 3.11)

3.1 Promotion of Research

3.1.1 A. Composition of Departmental Research Committee, List of members and minutes of its meeting.

(Please see enclosure: File No. 3.11 A)

Departmental Research Committee consists of Head of the school, Dean of Faculty of Science, Chairman Board of Studies, Two Senior Professors of the department and three external subject experts. The list is as follows: add address

1. Dr. Ashutosh Mishra, Head, School of Physics

2. Dr. Sheela Joshi, Dean - Faculty of Science, School of Chemical Sciences, Indore

3. Dr. Pratima Sen, Chairman, Board of Studies in Physics, School of Physics, Indore

4. Dr. A.K. Dutta, Professor, School of Physics, Indore

5. Dr. Dinesh Varshney, Professor, School of Physics, Indore

6. Dr. Ajay Gupta, Centre Director, Inter University Consortium, Indore

7. Dr. V.V.S. Murty, Holkar Science College, Indore.

8. Dr. B.D. Shrivastava, P.G.College, Dhar.

B. Records of DRC regarding monitoring and addressing issues related to research.

(Please see enclosure: File No. 3.11 B)

C. Record of DRC recommendations, which have been implemented, and their impact.

Monitored and selected Ph.D. students and M.Phil. students for admission Ph. D. and M. Phil. programme during July 2012.

(Please see enclosure: File No. 3.11 C)

3.1.2 Information of research centers in its affiliated / constituent colleges which are monitored by the DRC of the department.

1. Holkar Science College, and UGC-DAE- CSR, Indore are the research centres for activities and is affiliated to DAVV, Indore. Faculty members are also supervisors and co supervisors for research/Ph.D. in Physics.

3.1.3 Details of the

- **Advanced funds for the sanctioned projects:**

(Please see enclosure: File No. A 30)

- **Providing seed money: As per the policy of University it is planned for 2013-14.**
- **Simplification of procedures related to sanctions / purchases to be made by the investigators: It is related to university administration. If possible, principal investigator should be allowed to use the funds allocated and get audited by chartered accountant.**
- **Autonomy to the principal investigator/coordinator for utilizing overhead charges. 60% of overhead is available with the principal investigator. Cumbersome process of purchase needs simplification.**
- **Timely release of grants-difficult at present.**
- **Timely auditing –difficult at present.**
- **Submitted utilization certificates to the funding authorities.**
- **Sending utilization by University Administration will ensure timely release of funds.**

3.1.4 Record of interdisciplinary research promoted

* **With other departments /schools of the university and**
* **Collaboration with national/international institutes/industries**

(Please see enclosure: File No. 3. 1. 4)

3.1.5 Details of workshops/ training programmes/ sensitization programmes conducted by the department to promote a research culture on campus add list of eminent speakers, address, and designation

1. A three day National Workshop on Free Electron Lasers & Applications organized by School of Physics, DAVV, Indore during 21-23 Feb 2008 at Laser Bhawan.

2. A two day International Conference on Recent Trends In Physics (ICRTP-2012) organized on 4 and 5 Feb 2012 by School of Physics, DAVV, Indore.

3. Shanti Swarup Bhatanagar awardees conference July 2009.

4. Workshop on fostering Excellence in Research, January 15, 2013.

3.1.6 A. Details of visits of researchers of eminence to visit the campus as adjunct professors. **N. A.**

B. Impact of such efforts on the research activities of the university. **N. A.**

3.1.7 A. Percentage of the total budget of the department which is yearmarked for

Research:

Research activities in the department are executed through the funds generated by the faculty for the research projects sanctioned by various national level funding agencies such as CSIR, DST, UGC, DRDO, MPCST etc. Department funds are not available. University provides for reimbursement of Internet broadband charges to Ph. D. guiding faculty with Rs 650/- pm.

B. Details of heads of expenditure, financial allocation and actual utilization **N. A.**

3.1.8 A. Details of University funded research and awarded Post Doctoral Fellowships/Research Associate ships. It is planned for 2013-14.

B. List of students registered with record of source of funding by the university and other sources.

There is no provision to fund students for research by the University. However, there is a provision by M. P. Govt. for fellowship to reserve category students.

Students appointed in Research Projects are funded from the allocations made in the project.

3.1.10 A. List and percentage of faculty which have utilized the sabbatical leave for pursuit of higher research in premier institutions within the country and abroad.

Name	Designation	Organization	Period
Dr. A. K. Dutta,	Professor	Univ of Bruxelles, Brussels, Belgium	Nov1-Dec 1, 2009
			Oct 22- Nov 19, 2010
			Sept 13-oct 7, 2011
			Sept 8- Oct 5 2012
Dr. A.K. Dutta	Professor	Univ of Montreal, Montreal, Canada	June 13- July 17, 2008
Dr. D. Varshney	Professor	LPQ3M Laboratory, Faculty of Science and Technology, Mascara University, Algeria.	9th June to 20th June 2013
Dr. S. N Kane	Associate Professor	ENS de Cachan, France. (Summer vac)	May-June 2012
		ENS de Cachan, France. (Study leave, Invited Prof.)	Sept-Oct 2011
		ENS de Cachan, France. (Summer vac)	May-June 2010
		ENS de Cachan, France. (Summer vac)	May-June 2009

Dr. S. N Kane	Associate Professor	Pohang, Univ of Science and technology, Pohang, South Korea. (EOL, invited research Prof).	Jan - Dec 2008

B. Record of the output of these scholars.

Number of publications in international journals during 2008-13: 342

(Please see enclosure: File No. A 29)

3.1.11 A. Details with photographs of national and international conferences organized.

(Please see enclosure: File No. 3. 1. 1 A; A 30)

B. List highlighting the names of eminent scientists/scholars who participated in these events.

(Please see enclosure: File No. 3. 1. 11 B)

3.2 Resource Mobilization for Research.

3.2.1 Record of Financial provisions made in the university budget for supporting students' research projects.

There is no provision in the university for such programmes. It is being planned for academic session 2013-14.

3.2.2 A. Record of special efforts to encourage its faculty to file for patents

Being planned for academic session 2013-14.

B. List of registered and accepted patents. **Nil**

3.2.3 Details of ongoing research projects of faculty:

Prof. (Dr.) Ashutosh Mishra, Professor and Head					
S. No.	Funding Agency	Project Title	Project Duration	Amount	Status
1.	UGC – DAE Consortium for Scientific research	Some studies on Magnetic, optical and transport properties of $BaTiO_3$ thin film doped with Cu/Co/Fe	2008–2012	Rs. 06,27,100/-	COMPLETED
2.	University Grants Commission UGC – DAE Consortium for Scientific research	Effect of doping on structural, magnetic, electrical and dielectric properties of sol-gel prepared nano particles and pulse laser deposit thin films of doped $BaTiO_3$	2012–2015	Rs. 06,18,000/-	ONGOING

Prof. (Dr.) Pratima Sen					
S. No.	Funding Agency	Project Title	Project Duration	Amount	Status
1.	Department of Science and technology (DST)	Spin dynamics and coherent control in semiconductor quantum dots	2008–2011	Rs. 15,58,848/-	Completed
2.	University Grants Commission (UGC), Delhi	Non-Invasive detection of blood glucose/urea using optical low coherence reflectometry	2008–2011	Rs. 11,93,800/-	Completed
3.	UGC – DAE Consortium for Scientific research	Electronic and Optical properties of ZnO based multilayered thin films	2011–2014	Rs. 04,50,600/-	ONGOING
4.	Department of Science and technology (DST)	Electronic and Optical properties of pure and doped II-VI semiconductor nanostructures	2012–2015	Rs. 14,35,200/-	ONGOING

Prof. (Dr.) Dinesh Varshney					
S. No.	**Funding Agency**	**Project Title**	**Project Duration**	**Amount**	**Status**
1.	University Grants Commission (UGC), Delhi	Physical properties and superconductivity of metallic Boron in Borides	May 2006 – April 2009	Rs. 03,35,000/-	Completed
2.	University Grants Commission UGC – DAE Consortium for Scientific research	Transport properties of doped Ferrite thin films	June 2009 – May 2012	Rs. 06,26,000/-	Completed
3.	Defense Research and Development Organization (DRDO), Delhi	Structural phase transition and lattice mechanical properties of rare earth semiconducting chalcogens	May 2008 – April 2011	Rs. 18,56,600/-	Completed
4.	Madhya Pradesh Council of Science and Technology, Bhopal	Effect of chemical disorder on the transport properties of colossal magnetoresistive materials	August 2008 – September 2010	Rs. 03,00,000/-	Completed
5.	Council of Scientific and Industrial research	Study of transport properties of doped manganites materials SRF: I. Mansuri	May 2009 – March 2011	Rs. 05,50,000/-	Completed
6.	University Grants Commission (UGC), Delhi	UGC innovative program {M. Sc. Physics-Materials Science}	April 2004 – March 2009	Rs. 23,50,000/-	Completed
7.	University Grants Commission (UGC), Delhi	Structural, electrical and magnetic properties of doped $BiFeO_3$ multiferroics	July 2011 – June 2014	Rs. 07,30,000/-	ONGOING
8.	Council of Scientific and Industrial research	Investigation of structural and transport properties of colossal magnetoresistive materials SRF: M. W. Shaikh	April 2011 – March 2013	Rs. 05,71,000/-	Completed
9.	University Grants Commission UGC – DAE Consortium for Scientific research	Structural, and physical properties of pure and doped $BiFeO_3$ multiferroics	June 2012 – May 2015	Rs. 07,90,000/-	ONGOING

Prof. (Dr.) Ganeswar Mishra					
S. No.	Funding Agency	Project Title	Project Duration	Amount	Status
1.	University Grants Commission (UGC), Delhi	Design and theory of hybrid undulator for free electron Laser	2012-2015	Rs. 10,23,800/-	ONGOING
2.	Defense Research and Development Organization (DRDO), Delhi	Fabrication of undulator, x-y position sensor, straightness interoferometer, laser micrometer	2012-2015	Rs. 32,00,000/-	ONGOING
3.	Department of Science and technology (DST)	Optimization of permanent and electromagnet undulator for free electron laser	2011-2014	Rs. 23,70,000/-	ONGOING

Prof. (Dr.) Mandira Banerjee					
S. No.	Funding Agency	Project Title	Project Duration	Amount	Status
1.	Defense Research and Development Organization (DRDO), Delhi	Investigation of polymer structure and nano-composites	2006-2008	Rs. 14,79,710/-	Completed
2.	University Grants Commission UGC – DAE Consortium for Scientific research	Study of the melting behavior of soft condensed matter thin films	2012-2014	Rs. 03,34,300/-	ONGOING

Prof. (Dr.) Shashank N. Kane					
S. No.	**Funding Agency**	**Project Title**	**Project Duration**	**Amount**	**Status**
1.	**Joint Indo-Italian project in the field of materials science (No: INT / ITALY / POC 2005-2007**	Giant Magneto-impedance in amorphous and nanocrystalline soft magnetic thin films for sensor applications	2005 – 2007	**Rs. 01,73,300/-**	Completed
2.	**UGC – DAE Consortium for Scientific research**	Study of ferrite thin films prepared by pulse laser deposition	2011 – 2014	**Rs. 05,.56,200/-**	ONGOING
3.	**Consultancy services to Ruchi Strips and Alloys Ltd. (RSAL), Indore (M. P.), since August 2009.**	Optimizing material properties of soft magnetic material	2009 – till date		ONGOING
4.	**Madhya Pradesh Council of Science and Technology**, Bhopal	Synthesis, structural and magnetic studies of nanocrystalline Mg based Ni-Cu-Zn ferrite	2013 – 2014	**Rs. 04,48,000/-**	ONGOING
5.	**Department of Science and Technology**, Delhi	Study of energy efficient soft magnetic amorphous and nanocrytalline alloys.	2013 – 2016 31 – 10- 2013 to 30 – 10 -2016		ONGOING

(Dr.) Y. Choyal, Associate Professor					
S. No.	**Funding Agency**	**Project Title**	**Project Duration**	**Amount**	**Status**
1.	**Defense Research and Development Organization (DRDO), Delhi**	**Experimental and numerical studies of high power Cherenkov and cyclotron masers**	**Apr 2008– Sep 2010**	**Rs. 30,66,000/-**	**Completed**
2.	**Council of Scientific and Industrial research (CSIR), New Delhi**	**Analysis of beam-wave interaction to support the development of plasma cathode electron gun driven X-band plasma assisted BWO**	**Apr 2013– March 2016**	**Rs. 28,18,000/-**	**Ongoing**

3.2.4 A. Record of projects sponsored by the industry/corporate houses. Nil

B. Details such as the name of the project, funding agency and grants received. N. A.

3.2.5 A. Details of Department recognition for their research activities by national / international agencies (UGC-SAP, CAS; Department with Potential for Excellence; DST-FIST; DBT, ICSSR, ICHR, ICPR, etc.) and quantum of assistance received. Nil

B. Record of any two significant outcomes or breakthroughs achieved by this recognition. N. A.

3.2.6 List details of

a. **Research projects completed and grants received (funded by National/International agencies).**

(Please see enclosure: File No. 3. 8)

b. **Inter-institutional collaborative projects and grants received**

i) All India collaboration (Please see enclosure: File No. 3. 8)

ii) International (Please see enclosure: File No. 3. 8)

3.3 Research Facilities

3.3.1 A. Infrastructure in the department to facilitate research.

Equipments in the laboratorys

(Photographs of all laboratories)

(Please see enclosure: File No. 3. 3. 1)

B. Strategies have been evolved to meet the needs of researchers in emerging disciplines.

Researchers are encouraged to avail the facilities in National/International level laboratories.

3.3.2 A. Information and Resources catering to the needs of researchers of the department.

Internet and INFLIBNET facilities are provided through central library.

B. Details of the facility.

- **A computational Laboratory having 28 Computers is present.**
- **Departmental Library is equipped with a computer having OPAC software.**

3.3.3 Record of University Science Instrumentation Centre (USIC) facilities has been made available to research scholars.

This facility is available to research scholars.

(Please see enclosure: File No. 3. 3. 3)

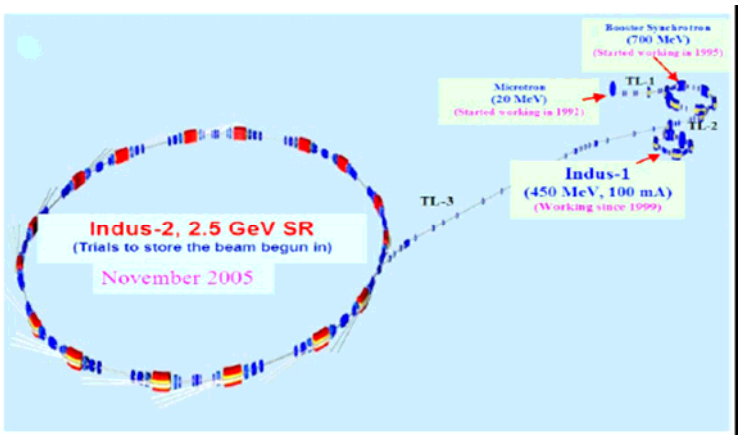
3.3.4 Record of provision of residential facilities (with computer and internet facilities) for research scholars, post-doctoral fellows, research associates, summer fellows of various academies and visiting scientists (national/international).

Hostels for research scholars are equipped with INFLIBNET enabled Internet and Wi-Fi facility. University guesthouse too has a similar facility for visiting scientists.

3.3.5 Details of Uses of the Facilities of INTER UNIVERSITY CONSORTIUM, CAT, NRCS, IIT Indore and other specialized Research Centers for research.

(Please see enclosure: File No. 3. 3. 5)

INDUS-2, RRCAT (INDORE) Facility used by Dr. A. Mishra



3.4 Research Publications and Awards.

(Please see enclosure: File No. A 10)

3.4.1 Research journal published, if any, from the department(s)? If yes, indicate the composition of the editorial board, editorial policies and state whether it/they is/are listed in any international database. N. A.

3.4.2 Details of publications by the faculty:

No. of papers published in peer reviewed journals (national / international): 342

(Please see enclosure: File No. 3. 1)

Monographs: N. A.

Chapters in Books: 02

Edited Books: Conference proceedings are published in book form.

(Please see enclosure: File No. A 11)

Books with ISBN with details of publishers:

ISSN 1742-6588 (print) ISSN 1742-6596 (online) Proceedings of International Conference on Recent Trends in Physics (IOP Science, U.K.)

Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.).

Citation Index – range / average: 150

SNIP. N. A.

SJR. N. A.

Impact Factor – range / average. 1 to 5

h-index. 4 to 15

3.4.3 Details of

* **Faculty serving on the editorial boards of national and international journals.**

(Please see enclosure: File No. 3. 4.3)

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

(Please see enclosure: File No. 3. 4.3)

3.4.4 Details of

* **Research awards received by the faculty and students**

(Please see enclosure: File No. 3. 4.4)

* **National and international recognition received by the faculty from reputed professional bodies and agencies** **N. A.**

3.4.5 A. Number of successful M. Phil. and Ph.D. scholars guided per faculty during the last four years.

Number of successful M. Phil.: **62 (2009-13)**

Number of successful Ph.D.: **32 (2009-13)**

B. University participation in Shodhganga by depositing the Ph.D. theses with INFLIBNET for electronic dissemination through open access.

Yes through central library.

3.4.6 A. Record of Promotion interdisciplinary research

Area of interdisciplinary research is as follows:

(Please see enclosure: File No. A 29)

B. Number of interdepartmental / interdisciplinary research projects undertaken

03 with School of Chemical Sciences, DAVV, Indore.

Number of interdisciplinary research projects = 03

Number of collaborating department = 01

C. Mention the number of departments involved in such endeavours

Number of department = 01

3.4.8 List of University instituted research awards to the faculty of the Department: N. A.

3.4.9 Details of incentives given to the faculty for receiving state, national and international recognition for research contributions. No incentive is given. N.A.

3.5 Consultancy

3.5.1 Important consultancies undertaken by the department during the last four years.

No. of consultancies

(Please see enclosure: File no. 3.4)

3.5.2 A. Department participation in university-industry cell.

A task force has been setup in university for university - industry cooperation.

B. If yes, what is its scope and range of activities?

Physics instrument designs and experimental kits design.

3.5.3 Record of publicizing the expertise of the department for consultancy services:

Website link for consultancy expertise available with faculty.

3.6 Extension Activities and Institutional Social Responsibility (ISR)

3.6.1 A. Department records of sensitization of faculty and students on its Institutional Social Responsibilities

Faculty members and students participated and encouraged in Khan river cleansing, Campus cleaning, Blood donation activities, and University Green Policy released by Bharat Ratna Dr. A. P. J. Abdul Kalam on 12 June 2013.

B. List the social outreach programmes which have created an impact on students' campus experience during the last four years.

Students are environmentally conscious and have learnt ethical and social values.

3.6.2 Promotion of neighborhood network and student engagement and holistic development of students and sustained community development?

Students created a participatory network.

3.6.3 Record of participation of the students and faculty in extension activities including participation in NSS, NCC, YRC and other National/International programme. N. A.

3.6.4 Records of tracking the students' involvement in various social movements/activities which promote citizenship roles. N. A.

3.6.6 Write up of the values inculcated and skills learnt during extension activities.

Students develop qualities like Honesty, Hard work and become environment conscious.

3.6.7 Department community in its outreach activities.

Students are involved in INDIAN PHYSICS ASSOCIATION activities in which lectures are planned on importance of Physics learning.

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

3.7 Collaboration

A. MOU Copies and Record of collaboration with other agencies impacted the visibility, identity and diversity of activities on campus.

(Please see enclosure: File no. 3. 3. 7)

B. Record of benefits academically and financially

Because of collaborations we have publications in journals of International repute during 2008 - 2013 and have successfully completed several research projects during 2008 - 2013.

3.7.2 Records of linkages resulted in

- **Curriculum development.** Yes
- **Internship.** Yes
- **On-the-job training** No
- **Faculty exchange and development.** Yes
- **Research** Yes
- **Publication** Yes
- **Consultancy** Yes

* **Extension** Yes
* **Student placement** Yes
* **Any other (please specify)**

The students carry out projects.

(Please see enclosure: File no. A 31)

3.7.3 A. Copy of MoUs with institutions of national/international importance/other universities/ industries/corporate houses etc.

(Please see enclosure: File no. 3. 3. 7)

B. Record of enhanced research and development activities.

(Please see enclosure: File no. A 30)

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

A task group has been formed at university level.

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

Criterion IV: Infrastructure and Learning Resources

4.1 Physical Facilities

4.1.1 A. Details of Department physical infrastructure.

Equipments: - School of Physics has following equipments for the postgraduate and for research activities: X-ray Diffractometer, X-ray Generator, Mossbauer–Spectrometer, Plasma Processing Chamber, Mass Analyzer, CO2 Laser, Nd: YAG laser, Lock in Amplifier, REB generation facilities, High Voltage Probe, Pulse Power Supply, CRO 60, 100, 500 MHz.

Computer Facilities: - School of Physics has its own computer centre with state-of-the-art computing facilities. The facilities include thirty Pentium's (under LAN and Windows OS), 486-DX Nodes, scanners and printers. CD-ROM facility linkages in association with INSDOC and networking and exchange of information through INFLIB network are proposed. VSAT setup is in process to connect the University and the department globally. The students can also avail the facilities of the University IT Centre.

Library: - School of Physics has a self-sufficient library. At present, it has on its shelves around four thousand volumes and subscribes to one Indian journal. The library and reading room are housed in a spacious hall that is open to members of teaching community and research scholars.

(Please see enclosure: File no. 4. 1. 1)

Laboratories: M.Sc. I Semester → Electronics,
M.Sc. II Semester → Optics,
M.Sc. III semester → Computational Physics,
M.Sc. IV semester → Microprocessor,
M.Tech. I semester → Laser Physics,
M.Tech. II semester → Fiber Optics,
M. Phil. I semester → Numerical Techniques and Computational Physics.

B. Maintenance of Laboratories for its optimal utilization.

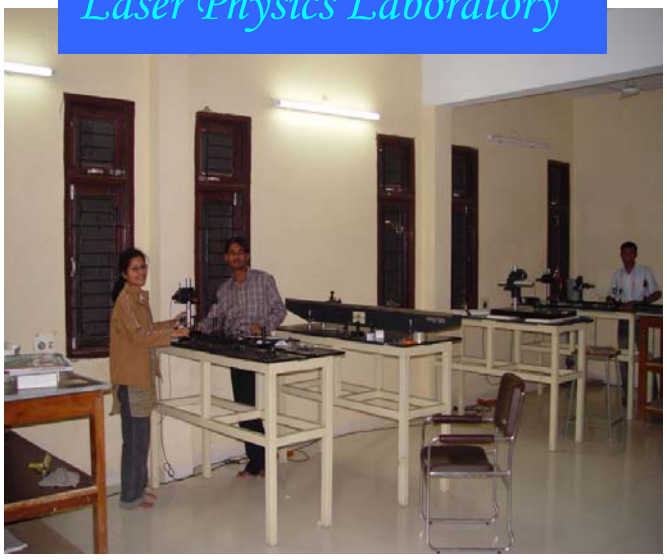
Yes quarterly laboratory maintenance is done.

Electronics Laboratory

Optics Laboratory

Computational Physics Laboratory

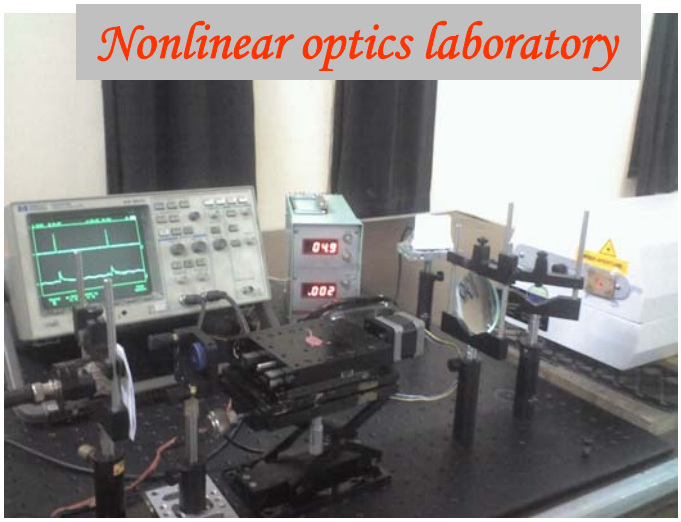
Laser Physics Laboratory



Fiber Optics Laboratory

X-Ray Laboratory

Nonlinear optics laboratory

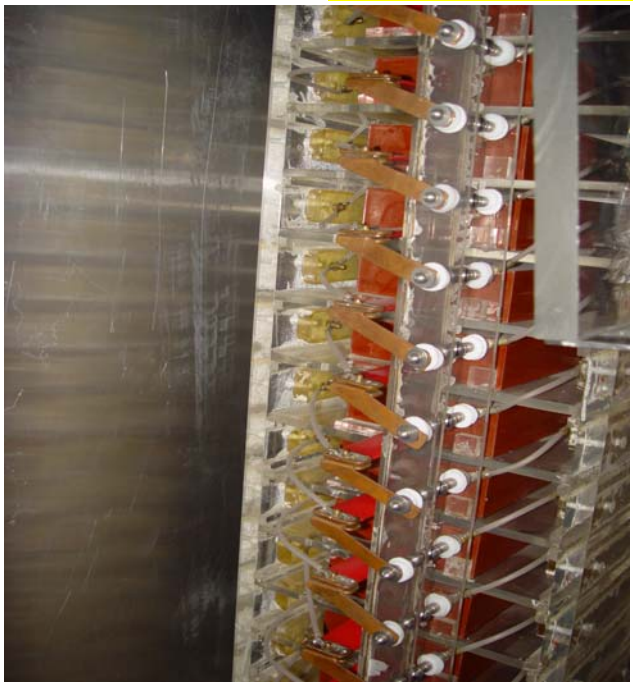


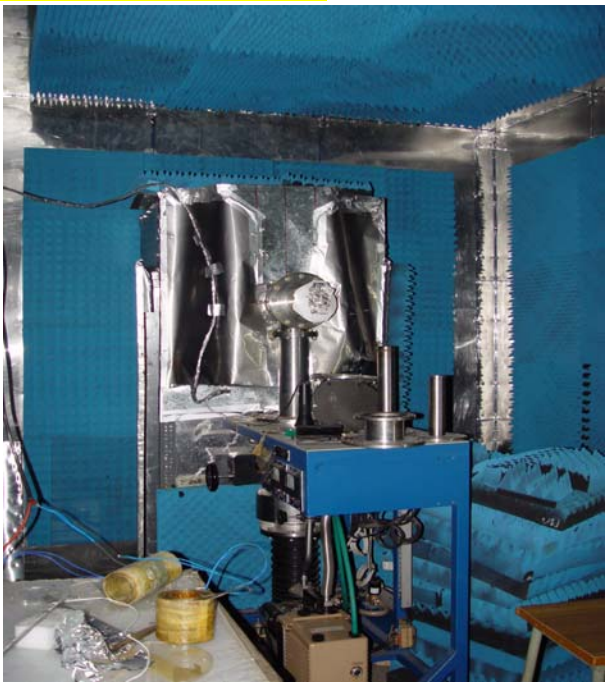
Free electron laser laboratory

Sample prepration, Thin Film laboratory

Polymer and Nano composite Laboratory

High power microwave laboratory:





It has 250 kV, 2 kA, 150 ns electron facility developed locally first time in Indian University. Using this, 2 MW backward wave oscillator is developed for the first time in the country.

Magnetic materials Laboratory

AC Digital Hysteresis Loop Tracer for characterizing - Soft Ferromagnets, Soft Ferrites (RT, F = 50 Hz, Hmax. = ~ ± 1500 Oe / ~ ± 0.15 T / ~ ± 119 kA/m)

Thermal Annealing Furnace (~ 1000 oC) in vacuum (~10^{-3} Torr)

Muffle Furnace (~ 1200 ^{o}C)

Joule heating (Idc up to 4 A)

Library

C. Maintenance of Computers for its optimal utilization

Yes quarterly computer maintenance is done.

D. Maintenance of UPSes, Power Supplies

Yes quarterly UPS maintenance is done.

E. Maintenance of support services, sanitation, first aid boxes

Yes quarterly maintenance is done.

F. Maintenance of building, garden, indoor games structure.

Centrally organized by Physical Education. The students also avail indoor game facilities at Directorate of Physical Education. Engineering section and Department maintains the building and garden.

4.1.2 Record of new initiatives for Infrastructure for promote a good teaching-learning environment- Internet, Wi-fi, Power Point Projectors, Video Equipment.

Three classrooms are well equipped with projectors; Internet and Wi-Fi facilities are available.

4.1.3 Physical ambience for the faculty in terms of adequate research laboratories, computing facilities and allied services.

All faculty members have created research laboratories from the funds generated from National Funding agencies and from the budget of UGC plan schemes.

4.1.4 List of Facilities like office room, common room and separate rest rooms for women students and staff.

Office: Room No 104 (Vigyan Bhawan Ground floor)

Common room: Room No LT 4 (Laser Bhawan First floor)

Separate rest rooms for women students and staff. Room No 133 (Vigyan Bhawan, ground floor).

4.1.5 List of the infrastructure facilities for disabled-friendly:

PWD (Person with Disability) avails ramp facility.

IT center in collaboration with NTPC imparts information and communication technology training programmes for visually impaired students.

4.1.8 **Departmental special facilities are available on campus to promote students' interest in sports and cultural events/activities. Chess, gymnesium, Table Tennis, Badminton facilities and excellent sports fields are available in the campus. Cultural events are organized at departmental and university level.**

4.2 **Library as a Learning Resource**

4.2.1 **Details of departmental library facilities:**

The library has 2965 books. Installed computer and Internet facility in the library which provides access to e journals and books.

4.2.2 **Provide details of the departmental library:**

* **Total area of the library (in Sq. Mts.). :** 55 sq. m.
* **Total seating capacity:** 20
* **Working hours (on working days, on holidays, before examination, during examination, during vacation):**

  Working days 10.00 am – 5:30 pm, Holidays – Nil, Examination timings same as working days.

* **Layout of the library (individual reading carrels, lounge area for browsing and relaxed reading, IT zone for accessing e-resources).**
* **Clear and prominent display of floor plan.** Available
* **Adequate sign boards;** Available
* **Fire alarm;** Planned in 2013-14
* **Mode of access to collection.** N A

4.2.3 **Departmental library holdings:**

a) Print (books, back volumes and theses):

2965 Books;

500 old volumes of Journals;

M. Phil., M. Sc, M. Tech. And Ph. D. Dissertations are available in dept library.

b) Average number of books added during the last three years: 1000

c) Non Print (Audio Video, CDs, Downloaded Articles):

Students, researchers and faculties frequently download the research papers from the facility provided by UGC INFLIBNET as well refrence materials that are available free on various search engines.

DEVI AHILYA UNIVERSITY						
NUMBER OF DOWNLOADS						
S. No.	Resource Name	2009	2010	2011	2012	Total
1	American Chemical Society	10372	8012	4962	4508	27854
2	American Institute of Physics	4589	1692	2124	2395	10800
3	American Physical Society		2437	1812	1978	6227
4	Annual Reviews	730	128	28	224	1110
5	Cambridge University Press	279	544	270	335	1428
6	Elsevier	187	212	35303	53908	89610
7	Project Eculid	7	54	2	49	112
8	Institute of Physics	1529	2169	1630	2494	7822
9	JCCC	10548	13965	8459	18269	51241
10	JSTOR		2642	2098	3696	8436
11	MATHSCINET	33	82	5	9	129
12	Project Muse	83	73	0	24	180
13	Oxford University Press	554	1003	789	0	2346
14	Portland Press	116	0	110	126	352
15	Royal Society of Chemistry	527	751	775	1046	3099
16	SIAM	11	9	7	6	33
17	Springer-Kluwer	3941	5036	6360	4829	20166
18	Taylor And Francis	1380	2224	1367	2192	7163
19	John Wiley	0	1557	3801	3637	8995
20	Web of Science	0	89	348	1039	1476
21	Blackwell	159	0	0	0	159
		2009	2010	2011	2012	8042
	Total	35045	42679	70250	100764	248738
	All India Rank	60	56	55	46	

d) Electronic (e-books, e-journals). Accessible through UGC INFLIBNET.

e) Special collections (e.g. text books, reference books, standards, patents)

300 Reference books, and monographs are available.

4.2.4 Records of tools the library deploys to provide access to the collection

* OPAC: Available at Central Library.
* Electronic Resource Management package for e-journals-: Available at Central Library.
* Federated searching tools to search articles in multiple databases: Available at Central Library.
* Library Website: Functional http://10.0.10.155:8080/index.htm
* In-house/remote access to e-publications: Available through Central Library.

4.2.5 Use of ICT deployed in the library

* Library automation: YES
* Total number of computers for public access: One computer.
* Total numbers of printers for public access: N. A.
* Internet band width speed □ 2mbps □ 10 mbps □√ 1 GB
* Institutional Repository: Available
* Content management system for e-learning- N. A.
* Participation in resource sharing networks/consortia (like INFLIBNET) Yes

4.2.6 Details (per year) with regard to

* Ratio of library books to students enrolled: 50:01 (At departmental library and 2617 books are available with central Library).
* Average number of books added during the last four years- 2100
* Assistance in searching Databases: NOT REQUIRED
* INFLIBNET/INTER UNIVERSITY CONSORTIUM facilities- Available

4.2.8 Annual departmental library budget and the amount spent for purchasing new books and journals.

UGC XI plan grant for books: 5 Lakhs

(Please see enclosure: File no. 4. 2. 8)

4.3 IT Infrastructure

4.3.1 Details of Department IT and ICT Infrastructure

40 computers are connected with INFLIBNET facilty and 02 classrooms and 01 seminar hall is equipped with LCD projector.

4.3.2 Details of the computing facilities i.e., hardware and software.

- **Number of systems with individual configurations:** **60 Computers**
- **Computer-student ratio:** **6:10**
- **Dedicated computing facilities:** **28 computers**
- **LAN facility:** **Available**
- **Proprietary software:** **Available**
- **Number of nodes/ computers with internet facility:** **40 Computers**
- **Any other (please specify)**

4.3.3 Plans and strategies for deploying and upgrading the IT infrastructure and associated facilities.

It depends on the availability of funds in the UGC XIIth plan. It is proposed to have a virtual classroom along with available 24 × 7 learning places and utilize NMICTE project facilities and bandwidth of 1Gbps.

4.3.4 Details on access to on-line teaching and learning resources and other knowledge and information database/packages provided to the staff and students for quality teaching, learning and research.

Internet facility and data base packages are available in the Central Library.

4.3.5 **IT facilities available to individual teachers for effective teaching and quality research.** Available

4.3.8 **A. Details of ICT-enabled classrooms/learning spaces available.** 3 classrooms

B. Record of utilization for enhancing the quality of teaching and learning:

Planned for 2013-14

4.3.9 **Records of Faculty and computer- aided teaching-learning materials.** Yes

4.3.10 **Department availing of the National Knowledge Network connectivity.** Yes

4.3.12 **Record of Availing of web resources such as Wikipedia, dictionary and other education enhancing resources-**

It is proposed to create list of links for the Physics papers in the course and create CD for Wikepedia definitions. (CDs are in departmental library)

4.3.13 **Department budget for the update, deployment and maintenance of computers-**

(Please see enclosure: File no. 4. 2. 8)

4.3.14 **Details of plans envisioned for the gradual transfer of teaching and learning from closed university information network to open environment:**

This facility is made available in the university by providing access to webinars/virtual classess through IT centre.

4.4 **Any other information regarding Infrastructure and Learning Resources which the university would like to include.**

School of Physics established in 1971 is a premier, front line department of physics education and research in the state. The present building is 42 years old and in order to meet the global challenge of quality education and performing cutting edge research a draft proposal for financial assistance for the construction of new building of Vigyan Bhavan within Jubilee Grants scheme of UGC is submitted.

(Please see enclosure: File no. 4. 3)

Criterion V: Student Support and Progression

5.1 Student Mentoring and Support

5.1.1 Department system, structural and functional characteristics for student support and mentoring

Various committees are made to look after these characteristics. Some students are assigned to each faculty member to assist.

5.1.2 Record of 'apart from classroom interaction', the provisions available for academic mentoring.

Various committees are made to look after these characteristics. Faculties interact with students for academic mentoring.

(Please see enclosure: File no. 2. 3. 10)

5.1.3 Record of department students utilization of personal enhancement and development schemes such as career counseling, soft skill development, career-path-identification, and orientation to well-being for its students.

Various committees are made to look after these characteristics. . Faculties interact with students for academic mentoring. Career counseling and opportunity cell and language laboratory facility are also available to students.

(Please see enclosure: File no. 2. 3. 10)

5.1.4 Department publish its updated prospectus and handbook info annually on website and online access of course plans, syllabi and result.

Yes, it is available on university link.

5.1.5 A. Records of the Timely dissipation of financial aid.

(Please see enclosure: File no. 5. 1. 5)

B. Tables for type and number of scholarships/free-ships given to the students during the last four years the following categories: UG /PG /M.Phil /Ph.D. /Diploma/ others.

(Please see enclosure: File no. 5. 1. 5)

5.1.6 Table of percentages of students receive financial assistance from state government, central government and other national agencies (Kishore Vaigyanik Protsahan Yojana (KVPY), SN Bose Fellow, etc.);

(Please see enclosure: File no. 5. 1. 6)

5.1.7 Department use of International Student Cell, number and list of foreign students

N. A.

5.1.8 Department support services available for

* **Students participating in various competitions/conferences in India and abroad from national funding agencies like Department of Science and Technology, India.**
* **IT center in collaboration with NTPC imparts information and communication technology training programmes for visually impaired students. PWD (Person with Disability) avails ramp facility.**
* **SC/ST, OBC and economically weaker sections avails State level and National scholarships.**
* **Health centre, health insurance etc. Health centre is available within 50 m in the campus.**
* **Skill development (spoken English, computer literacy, etc.). Students can avail the facility at language laboratory situated 40m away from the department.**
* **Performance enhancements for slow learners- Faculty members are available for clearing doubts to slow learners after the classes.**
* **Exposure of students to other institutions of higher learning/ corporates/business houses, etc. National laboratories as Physical Research Laboratory Ahmedabad, Institute for Plasma Research, UGC-DAE-CSR, Saha Institute for Nuclear Physics and others impart training (during summer vacation) to selected students.**
* **Publication of student magazines. It is planned for 2013-14.**

* **Record of student participation in sports and extracurricular activities.** Sports department organizes annual sports meet.

5.1.9 Placement Records.

(Please see enclosure: File no. 5. 1. 9)

5.1.10 Number of students selected during campus interviews by different employers (list the employers and the number of companies who visited the campus during the last four years).

Companies and Institutions needing Masters in Physics or Lasers do not recruit in bulk. Hence placements are off campus and the recruiters in their campus hold interviews.

5.1.11 . A. Record of registered Alumni Association

Alumni Association is present.

(Please see enclosure: File no. 5. 1. 11)

B. Record of activities and contributions to the development of the department

(Please see enclosure: File no. 1. 1. 2)

C. Record of alumni meets.

(Please see enclosure: File no. 5. 1. 11)

5.1.12 A. Committee members and record of student grievance redressal.

University level and Dept. level grievance cell is actively working.

(Please see enclosure: File no. 5. 1. 12)

B. Details of the nature of grievances reported and the redressal

No grievances reported.

5.1.13 A. Record of anti-ragging committee

(Please see enclosure: File no. 5. 1. 13)

B. List of instances reported during the last four years and what action has been taken in these cases- No cases reported.

5.1.14 Details of the cooperation rendered by parents, industry and its stakeholders to ensure the overall development of its students-

Parents teacher meetings are periodically organised.

(Please see enclosure: File no. 5. 1. 14 and 1. 1. 2)

5.1.18 A. List of participation of women students in intra- and inter-institutional sports competitions and cultural activities

(Please see enclosure: File no. 5. 1. 18 A)

B. List of participation of women students in intra- and inter-institutional sports competitions and cultural activities: N. A.

5.2 Student Progression

5.2.1 Analysis of progression and trends for the last four years:

Student Progression	%
UG to PG*	N. A.
PG to M.Phil.*	30:4
PG to Ph.D.	30:3
Ph.D. to Post-Doctoral	N. A.
Employed • Campus selection • Other than campus recruitment	 100 % 100 %

5.2.2 Programme-wise pass percentage during the time span stipulated

(Please see enclosure: File no. 2. 5. 3)

5.2.3 Records of Number and percentage of students who appeared/qualified in examinations like UGC-CSIR-NET, UGC-NET, SLET, ATE/CAT/GRE/TOFEL/ GMAT/Central / State services, Defense, Civil Services, etc.

NET: 02; GATE:05; JEST-01.

(Please see enclosure: File no. A 14)

5.2.4 List category-wise with details regarding the number of Ph.D./D.Litt./D.Sc. theses submitted/ accepted/ resubmitted/ rejected in the last four years: 45

Researchers associated with Prof. A. Mishra for Ph. D. degree				
S. No.	**Name of the researcher**	**Title of Ph. D. thesis**	**Year of Submission**	**Year of Award**
1	**Balji Mishra**	X-ray K-absorption spectroscopic studies of copper (ii) and cobalt (ii) inorganic complexes of substituted isonicotionyl hydrazones in near edge and fine structure region.		**2009**
2	**Ruchita Awate**	X-ray spectroscopic studies of transitional metal complexes with arylazopyirimidine as a ligand.		**2009**
3	**Namrata Soni**	Near edge X-ray K-absorption fine structure (NEXAFS) investigation on some (Cu and Co) complexes of Benzelidene phenylthiourea as ligand.		**2010**
4	**Supragya Thakur**	Theoretical approach (studies) and experimental evidences of X-ray K-absorption spectroscopic study of copper and cobalt complexes.		**2012**
5	**Neetu Parsai**	K-absorption spectroscopic studies of some copper and cobalt Complexes by theoretical and experimental approach.		**2012**
6	**Rekha Sharma**	X- ray spectroscopic and Mössbauer studies on copper (Cu) and iron (Fe) complexes of 2-(N-aryl ethanimidoyl) Phenol as ligand.		**2012**
7	**Sushil Phadke**	Study of Ultrasonic Velocity measurement of some binary liquid mixture Borasussus Flabellifier.		**2013**
8	**Anita Yadav**	X-ray K-absorption spectral studies of some copper and cobalt complexes		**2013**
9	**Niyati Mishra**	Optical, Electrical, Magnetic and Ferroelectric properties of undoped $BaTiO_3$ and doped $BaTiO_3$ by iron (Fe), copper (Cu) and cobalt (Co).	**2013**	
10	**Ravindra Barde**	The study of dielectric properties of body tissues at different frequencies various temperatures.		**2013**
11	**Samarath Ninama**	A theoretical and experimental approach for copper complexes: X-ray K-absorption near edge structure (XANES) and extended X-ray absorption fine structure (EXAFS) using IFEFFIT method.		**2013**
12	**Pramod Malviya**	X-ray K-absorption near edge and fine structural studies of copper (II) complexes.		**2013**
13	**Garima Jain**	Theoretical and experimental analysis of EXAFS (Extended X-ray Absorption Fine Structure) and XANES of data of copper complexes.		**2013**
14	**Sweta Mishra**	Theoretical and experimental analysis of EXAFS (Extended X-ray Absorption Fine Structure) and XANES of data of copper complexes.		**2013**

Researchers associated with Prof. A. K. Dutta for Ph. D. degree				
S. No.	**Name of the researcher**	**Title of Ph. D. thesis**	**Year of Submission**	**Year of Award**
1	P. V. Subhash	Computational studies of a magnetized target fusion system **Supervisor: Dr. S. Chaturvedi;** **Co Supervisor: Dr. A. K. Dutta**		**2012**
2	Anand Srivastava	Experimental studies on atmospheric pressure glow discharge plasma **Supervisor: Dr. K. S. Ganeshprasad;** **Co Supervisor: Dr. A. K. Dutta**		**2013**
3	P. N. Prakash	Design of a low beta superconducting resonator for heavy ions **Supervisor: Dr. Amit Roy;** **Co Supervisor: Dr. A. K. Dutta**		**2013**

Researchers associated with Prof. P. Sen for Ph. D. degree				
S. No.	**Name of the researcher**	**Title of Ph. D. thesis**	**Year of Submission**	**Year of Award**
1	**Namita Sisodia**	Theoretical aspects of optical properties of doped ABO_3 type crystals		**2008**
2	**Ravi Kant Choubey**	Synthesis, characterization and Non-linear optical behaviour of some doped ABO_3 crystals		**2008**
3	**Abbas Ali Koser**	Evolution of Femtosecond pulses in Quantum well Waveguide structures		**2010**
4	**Mohd Shakil Qureshi**	Coherent control and quantum entanglement in semiconductor quantum dots		**2010**
5	**Malyaj Das**	Optical Non-linearties in organic materials and nano-particles		**2010**
6	**Shivani Rana**	Optical properties of undoped and magnetic impurity doped semiconductor quantum dots		**2013**
7	**Saikat Chattopadhyay**	Studies optical and electronic properties of core/shell quantum dots	**2013**	
8	**Jitendra Solanki**	Non-Invasive, non contact monitoring of blood glucose using optical coherence tomography	**2013**	

Researchers associated with Prof. D. Varshney for Ph. D. degree				
S. No.	Name of the researcher	Title of Ph. D. thesis	Year of Submission	Year of Award
1	Swarna Shriya	Pressure Induced Structural Phase Transition and Elastic Properties of some Monochalcogenides and Monopnictides Supervisor: Dr. Meenu Varshney; Co Supervisor: Dr. Dinesh Varshney	2013 05 October 2013	
2	Kavita Verma	Investigations on structural and transport properties of some mixed metal oxides Supervisor: Dr. Dinesh Varshney	2013 01 June 2013	
3	Rajendra Jain	Investigation of Phonon dynamics, Transport and Thermodynamical properties of alkali metal doped C_{60} compounds Supervisor: Dr. Dinesh Varshney	2013 04 October 2012	
4	Neha Dodiya	Structural and Transport studies on some doped colossal magnetoresistive manganites Supervisor: Dr. Dinesh Varshney	2013 22 February 2013 Viva held on 31 December 2013	
5	M. W. Sheikh	Investigation of structural and transport properties of colossal magnetoresistive materials Supervisor: Dr. Dinesh Varshney	2013 08 March 2013	2013
6	A. Yogi	Transport properties of some perovskite and spinel structure based metal oxides Supervisor: Dr. Dinesh Varshney	2011 14 April 2011	2012
7	K. A. Qureshi	Study of ultra-short powerful laser- matter interaction with plasmas Supervisor: Dr. Meenu Varshney; Co Supervisor: Dr. Dinesh Varshney	2011 14 January 2011	2011
8	S. Sen	Study of non-linear wave phenomena of a short pulse laser in a self induced plasma channel Supervisor: Dr. Meenu Varshney; Co Supervisor: Dr. Dinesh Varshney	2010 03 December 2010	2011
9	I. Mansuri	Investigations on Structural and Transport Properties of Some Doped Manganites Supervisor: Dr. Dinesh Varshney	2010 05 October 2010	2011
10	G. Joshi	High Pressure and Mechanical Properties of II-VI and III-V Tetrahedral Coordinated Compounds Supervisor: Dr. Dinesh Varshney	2009 16 October 2009	2010
11	U. Sharma	Structural phase transition and elastic properties of rare/alkaline earth and magnetic semiconductors Supervisor: Dr. Dinesh Varshney	2009 03 December 2009	2010
12	V. Rathore	Dynamical and Statical properties of rare earth semiconducting chalcogens Supervisor: Dr. Dinesh Varshney	2009 14 April 2009	2009
13	M. K. Nagar	Pairing mechanism and Physical properties of doped boride superconductors Supervisor: Dr. Dinesh Varshney	2008 11 February 2008	2008
14	A. Gaikwad	Study of air pollutants present in the ambient air of Indore City Supervisor: Dr. R. K. Pathak; Co Supervisor: Dr. Dinesh Varshney Co Supervisor: Dr. S. L. Garg	2007 22 February 2007	2008

Researchers associated with Prof. G. Mishra for Ph. D. degree				
S. No.	**Name of the researcher**	**Title of Ph. D. thesis**	**Year of Submission**	**Year of Award**
1	Deepi Jain	Gain Studies in waveguide Free Electron Laser		**2008**
2	Sumit Tripathi	Undulator field measurement and FEL theory		**2011**
3	Hussain Jeevakhan	Studies on Free Electron Laser		**2012**
4	Mona Gehlot	Undulator characterization and FEL theory	**2013**	**2010**

Researchers associated with Prof. S. N. Kane for Ph. D. degree				
S. No.	**Name of the researcher**	**Title of Ph. D. thesis**	**Year of Submission**	**Year of Award**
1	**Salil Modak**	**Contribution to the study of magnetic properties of Fe-Zr-Nb-B based nano-crystallineribbons and thin films.** The thesis is awarded by SATIE UMR CNRS 8029, Ecole Normale Supérieure de Cachan, Cachan (France.) The student is **working jointly with Indian and French superisors in the framework of a special agreement between DAVV and ENS de Cachan,** France (called "**Ph. D. Co-Tutorship**). Supervisor: Dr. S. N. Kane; Co Supervisor: Prof. S. Mazaleyrat		**2008**
2	**S. S. Khinchi**	**Structural and magnetic investigation of Fe-Co based nanocrystalline alloys** Supervisor: Dr. S. N. Kane; Co Supervisor: Dr. A. Gupta		**2011**

Researchers associated with Dr. Y. Choyal for Ph. D. degree				
S. No.	**Name of the researcher**	**Title of Ph. D. thesis**	**Year of Submission**	**Year of Award**
1	Vasudha Rajput Thakur	A Design study of an electron beam driven helically rippled waveguide	13/08/2012	
2	Nidhi Parmar	A study of high power microwave generation from dielectric loaded slow wave structure	11/108/2013	
3	Prasad Deshpande	The study of Cherenkov cyclotron interaction as a result of passage of intense relativistic electron beam through slow wave structur Supervisor: Dr. B. Kumar; Co Supervisor: Dr. Y. Choyal Co Supervisor: Dr. K. P. Maheshwari		**2013**

5.3 Student Participation and Activities

5.3.1 A. List the range of sports, cultural and extracurricular activities available to students.

1. Cricket
2. Badminton
3. Chess
4. Volleyball
5. Table tennis

B. Sports and extracurricular calendar and details of students' participation.

Available in University sports event calendar.

5.3.2 **Details of the achievements of department students in co-curricular, extracurricular and cultural activities at different levels: University / State / Zonal / National / International, etc. during the last four years.**

(Please see enclosure: File no. 5. 1. 8)

5.3.3 A. Gathered data and feedback from pass-out graduates.

(Please see enclosure: File no. 1. 2/2. 5. 3)

B. Gathered data and feedback from employers: N. A.

C. Use of the data for the growth and development of the department. Yes

5.3.4 Department special drives/campaigns for its faculty and students to promote heritage consciousness.

Kabir Bhajans in Feb 2012 and August 2012.

5.3.5 A. Records of Department involvement and encourage its students to publish materials like catalogues, wall magazines, departmental magazine, and other material. N. A.

B. List the major publications/ materials brought out by the students during the last four academic sessions.

(Please see enclosure: File no. 2. 3. 13)

5.3.6 A. Departmental Student and Alumni association or or any other similar body Alumni association is present.

(Please see enclosure: File no. 5. 1. 11)

B. Details on its constitution, activities and funding. N. A.

5.3.7 Details of student representatives in Board of Studies, various academic and administrative bodies.

Anand Mishra is a student nominee in the Board of studies [2013].

5.3.8 Any other information regarding Student Support and Progression, which the university would like to include.

Day centre facilities for research scholars and faculties.

Criterion VI: Governance, Leadership and Management

6.1 Institutional Vision and Leadership

6.1.1 State the vision and the mission of the department in line with the University

To educate and prepare students to accept the national and global challenges in the emerging areas of Physics and to provide them a knowledge base to serve the society through their active participation in industry, technical institute and educational institutions.

6.1.2 Mission statement definition for the department's distinctive characteristics in terms of addressing the needs of the society, the students it seeks to serve, the institution's tradition and value orientations, its vision for the future,

To develop competitive spirits, nurture individual thinking and groom the students in order to enable them to meet with the scientific and technological challenges in the global arena.

To develop professionally competent, environmentally and socially conscious, value imbibed and ethical students

6.1.3 Write-up of

* **Ensuring the organization's management system development, implementation and continuous improvement**

The management system is developed by systematically distributing the workload to the committees formed by the department. This way all the faculty members share responsibilities. In this respect we have:

1. Departmental IQAC Committee;
2. Purchase Committee;
3. Academic, examination, cultural social and industry coolebrations Committee;
4. Seminar/ visiting lectures organizing Committee;
5. Laboratory upgradation Committee;

6. Library and Internet facilty Committee;
7. Students placement cell Committee;
8. Couse Curriculum upgradetion Committee;
9. Research and Development Committee;
10. Anti ragging committee;
11. Grievance Committee;
12. Methods of effective implementation of course schedule.

(Please see enclosure: File no. 6. 1. 3)

The meetings of the departmental committees are convened on a regular basis.

* **Interacting with its stakeholders.**

From time to time the parent teacher meet as well as discussions with students are arranged in the department.

* **Reinforcing a culture of excellence.**

The culture of excellence is groomed by giving the exposure to the students & research institutions of international repute and by conducting the lectures of the eminent scientists and Professors.

* **Identifying organizational needs and striving to fulfill them.**

The course curriculum is updated regularly with development in the field of Physics. From time to time the research laboratoryoratories and other laboratoryoratories are also modernized.

6.1.4 Records of Departmental and other committees meetings

(Please see enclosure: File no. A 21)

6.1.5 Write-up of a culture of partictive decisions in the department.

Activities related to Indian Physics Association. The major decisions in the department are taken only through the discussions and meeting with the faculty members.

6.1.7 Record of Grooming leadership at various levels. NA

6.1.10 Record of knowledge management strategy. NA

6.1.11 Write up on

⇒ **Contributing to national development**

In the past decade it is evident that around the world higher education is under pressure to change. It is growing fast and its contribution to economic success is seen as vital. The students at School of Physics are imparted knowledge to improve conceptual physics and their applications relevant to research organization (national and international), educational institutes and industry. For the national development, the equity, the access, the student needs, and the efficient growth have always been the indicator and academic staff at School of Physics generates research funds both from the national and international agencies.

⇒ **Fostering global competencies among students**

New approaches for fostering global competencies among students need to be incorporated combining the power of markets and providing greater freedom or autonomy to academic staff and princIndian Physics Associationl investigator of the financed projects in new ways. Administration at School of Physics has made innovative practices to run their own affairs. We aimed at encouraging the students and academic staff to seek research funding availaboratoryle on the basis of students performance and publicly assessing quality.

⇒ **Inculcating a sound value system among students**

A key issue in imparting higher education is the value system that underlies the assessment criteria. Potentially, the values are embedded in internal quality assurance mechanisms. It is deeply routed into the procedures and judgements of the course work its frame, its utility and its future prospects. At School of Physics, the academic staff exercised effectively, the academic autonomy. The research undertaken by various funding agencies are assessed at National level. The quality of research carried is internationally

peer reviewed. The quality assurance of the research improves the teaching methods and may further enhanced by liberal interdepartmental collaboratoryorations for the capacity building of individual academic departments or staff members to enhance value systems among students of the department.

⇒ Promoting use of technology

To promote the findings of research output whether of fundamental or applied in nature, it is indeed demand of time from several decades to create a robust enabling environment for harnessing the rapid usage of technology. This should have a visible impact in improving the quality of life, building an inclusive youth, economically vibrant, enterprising researchers. At School of Physics, academic staff, researchers and students have direct excess with equity to latest technology by way of national and international organizations to pursue excellence in science and technology for global good. Efforts must be made to involve the academic staff, researchers and students in devising new and newer technology as the fundamental science is done primarily to improve the knowledge. The expertise gained by way of science must be properly exercised, as the process of generating ideas to developing a product is complex.

⇒ Quest for excellence

Any educational institute should get to be known for its excellence in science; in terms of global indicator viz the number of research publications among the peer reviewed and cited at the international level, the development of indigenous machines or equipment both for teaching and research level. The academic staff, researchers and students at School of Physics have shown their strength by publishing their research in most prestigious journals with high impact factor and citations in Physics. In order to accomplish this with a greater dimension, pursuit of excellence has to be taken as key of homogenous development. The strong requirement is the will, recognition and incentives from time to time rather than conventional academic position promotions. Youth must be motivated to be leaders in

science, technology and innovation rather than elimination, which is a usual practice in the pyramidal structure of teaching and research organisations.

6.2 Strategy Development and Deployment

6.2.1 Perspective plan for development and write-up of policies and strategies to

* **Work for Vision and for achieving the mission**

  Should be in line with the vision and mission when that gets finalized.

* **Enhancing Teaching and learning**

  Provide reading material to students.

* **Enhancing Research and development**

  Try to get more research projects.

  Try to increase research collaboratoryoration.

* **Enhancing Community engagement**

  Students involved in community services like cleaning of campus, deal with the help age students of poor background providing scholarships to students.

* **Enhancing Human resource planning and development.**

* **Enhancing Industry interaction.**

  Arrange lectures of persons from industry. M.Tech Laser Application is a course dealing with technology and hence feasibility of increasing interaction between students of this course and industry can be explored.

* **Enhancing Internationalisation**

  Increasing International collaboratoryoration.

6.2.2 Departmental organizational structure and decision making processes and their effectiveness.

Regular interactions of faculties regarding the higher education policies, thrust areas in physics, syllabus, new courses, examinations schedule, research activities, consultancy programmes etc.

Regular meeting with non-teaching staff.

Implementation of the guidelines as per the directives of university for utilizing the processes involved in finance, administration.

Regular meeting of the members of committee for issues related to development, discipline, purchase etc.

The effectiveness comes into picture making the results of the students in time and ready to go for future plans.

6.2.3 Write up of functioning independently and autonomously and ensure accountability.

Concerned with University. Implemented as per directives from time to time.

6.2.5 Record of last four years, have there been any instances of court cases filed by and against the department, What were the critical issues and verdicts of the courts on these issues.

No court cases.

6.2.6 Performance audit of the department by external experts.

Already made and is available with university administration. Also planned for 2013-14.

6.3 Faculty Empowerment Strategies

6.3.1 Outcome of the reviews of self-appraisal and PBAS and important decisions taken on that.

It is concerned with University administration.

6.3.3 List of teachers availing welfare schemes for teaching and non-teaching staff.

It is concerned with University administration.

6.3.4 List and number of attracted and retained eminent faculty in last 4 years NA

6.3.5 Gender audit during the last four years of the department achievements and pass percentages and its salient findings.

Categories	Year 1 2009-10		Year 2 2010-11		Year 3 2011-12		Year 4 2012-13	
	Male	Female	Male	Female	Male	Female	Male	Female
SC	3	2	5	2	7	2	3	2
ST	3	0	3	0	4	1	1	1
OBC	20	6	22	10	15	12	12	17
General	17	21	26	23	19	35	17	46
Others	5	0	0	0	0	0	0	0

Last five years the number of female students has increased. All students have passed in all reported years.

6.4 Financial Management and Resource Mobilization

6.4.1 Statements of audited income and expenditure of academic and administrative activities of the last four years.

Available with University administration

6.4.5 Efforts taken by the department for resource mobilization:

Faculty receives funding from different national agencies for running the research projects in the school.

6.4.6 Record of endowment funds created

6.5 Internal Quality Assurance System

6.5.1 Details of department internal quality assurance and sustenance system, give details.

6.5.2 Internal workshops to improve teaching, learning and evaluation.

Regular interactions of faculties regarding the higher education policies, thrust areas in physics, syllabus, new courses, examinations schedule, research activities, consultancy programmes etc.

6.5.3 Record of continuously reviews the teaching learning process:

(Please see enclosure: File no. 2. 5. 3 and 2.3.1)

6.5.4 Any other information regarding Governance, Leadership and Management which the university would like to include:

University as per the policy has created eight task forces created in the university for above-mentioned criteria.

Criteria VII: Innovations and Best Practices

7.1 Environment Consciousness

7.1.1 Department Area Green Audit details open garden space in front of the department

140 × 35 Sqft.

7.1.2 Departmental initiative to make the campus eco-friendly?

* **Energy conservation CFL is installed in place of tubes. Light and fan are switched off while leaving the classroom or office.**
* **Use of renewable energy Solar power plant installation is planned for UGC XII plan.**
* **Water harvesting – Porposal for new building is submitted and it is planned that the water harvesting system will be provided.**
* **The university already adopts efforts for Carbon neutrality within Green policy.**
* **Cleaning drive of the campus has been carried out.**
* **Popular lectures on environment protection are organized and documentaries for the same have been shown to the students and faculty.**

(Please see enclosure: File no. 7. 1. 2)

7.2 Innovations

7.2.1 Give details of innovations introduced during the last four years, which have created a positive impact on the functioning of the department

Workshop on Free electron lasers and International conference (ICRTP) was organized and the proceeding was published in IOP Confrence series, IOP U. K.

7.3 Best Practices:

7.3.1 Give details of any two best practices, which have contributed to better academic and administrative functioning of the department:

1. Expert seminars are arranged.
2. It is a unique feature of the department that selected students undergoes an exhaustive training at national laboratories of international repute.

Best Practices of the department are:

1. **Exposure to National laboratories by sending them for summer programs. This gives an opportunity to advanced learners to know the state of art in the field of research.**
2. **One-year project of M.Tech students is carried out at best national laboratory of lasers.**
3. **Direct accessibility of teachers to the students.**
4. **Yearly organization of International conference in the department.**

1. Title of the Practice

Exposure of students to National Laboratories and Scientific Organizations.

2. Objectives of the Practice

Exposure to National laboratories by sending them for summer programs. This gives an opportunity to advanced learners o know the stake of art in the field of research.

3. The Context

There are mainly two challenging issues. First, the university covers a large tribal area where the knowledge of youngsters about the state of art in science lacks and special efforts are needed to be made to give them the proper exposure. Second, in urban areas majority of the students are attracted towards technological and professional courses and it is necessary that the students should know about the frontiers in science. In view of this MOUs are signed with National level laboratories and scientific organizations where students can be sent.

4. The Practice

The advanced learners in M.Sc are sent for summer training programs in the scientific organizations and National Laboratories. These students carry out a small project in the institutions. After coming back from the institutions they give a presentation, which enables other students to know the ongoing activities at such places.

M.Tech students pursue one-year research and training project at Raja Rammana Centre for Advanced Technology, which is the best centre for

Laser research in the country. Their project work is reveived every six months and presentations are made in the department. This enriches the state of the art activities in the nation and also at international forum.

M. Phil. students avail the advanced level facilities available at UGC-DAE-CSR Indore. All the students get exposure of Cryogenic facilities, High magnetic fields experiments and thin film deposition techniques.

5. Evidence of Success

Such exposure to students enables them to compete at national and international levels and provide them an opportunity to carry out research work in the area of their interest.

The Research students of the department participate in national and international level conferences. Some students of the department are rewarded with best paper/poster presentations.

6. Problems Encountered and Resources Required

There should be a provision for providing financial assistance to students so that they can bear the travelling and lodging expenses. Financial incentives to advanced learners in the form of fellowship will facilitate the present feature.