FILE NUMBERS AND LIST OF FILES TO BE MAINTAINED IN HARD AND SOFT COPY OF EACH FILE BY EACH DEPARTMENT

1. Name of the Department   School of Instrumentation

2.   Faculty of Engineering Sciences

3. Year of establishment: 1991

A.1 Academic programmes offered by the department at present, under the following categories and Sanctions Pertaining to each of the Courses.

Programmes	Number	Course/Subjects
UG	--------	------------
PG	01: 20 Seats 02: 30 Seats	1. M. Tech. (Instrumentation) 2. M.Sc. (Instrumentation)
Integrated Masters	----	-----
M.Phil.	--------------	-----------
Ph.D.	01: 05 Candidates	Instrumentation
Any other (please specify)	--------------	------------
Total	Seats: 55	

A.1.1 Details approval/recognition and recommendations issued by the statutory body (for example, (UGC, AICTE, NCTE, PCI, MCI, DCI) governing the programme in case of Professional Programmes letters for the <u>first time</u> and <u>Last Academic Year</u> recognitions : **M.Tech. course is recognized by AICTE in 1998.**

Programme	Approved by	First Approval	Last Academic Year Approval
M.Tech. in Instrumentation	AICTE	F. No. LOA/F.No.441/Mp-07/BOS(PG)/90 dated June 18, 1998	F.No. Central/1-834921361/2012/EOA dated 06/05/2013

(Copies of approval letters are available in File-A.1)

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

   (i) M.Tech. : Ordinance No. 54

   (ii) M.Sc.: Ordinance No. 155

(Copies Enclosed Attached A.2)

A.3 Number of working days during the last academic year. : 240

      Number of teaching days during the past four academic years.

234	238	232	232

('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	01	01	03	02	10
Recruited	01	VACANT	01	VACANT	
Yet to recruit	00	01	02		
Number of persons working on contract basis	00	000	00	00	00

A.4.1 Qualifications of the teaching staff

Highest qualification	Professor		Associate Professor		Assistant Professor		Total
	Male	Female	Male	Female	Male	Female	
Permanent teachers							
D.Sc./D.Litt.	---	---	---	---	---	----	---
Ph.D.	01	----	-----	-----	01	-----	02
M.Phil.	---	---	---	---	---	---	--
PG	---	---	---	---	---	----	---
Temporary teachers							
Ph.D.	---	---	---	---	---	----	---
M.Phil.	---	---	---	---	---	----	---
PG	---	---	---	---	---	----	---
Part-time teachers (Courses Visiting Faculty)							
Ph.D.	---	---	----	----	----	----	----
M.Phil. /M.Tech./ME	----	---	----	----	----	----	-----
PG	---	----	----	----	----	-----	-----

Emeritus, Adjunct and Visiting Professors and their sanctions.

	Emeritus	Adjunct	Visiting
Number	--	---	04

Semester-wise Record of Courses Visiting Faculty and their Sanctions
(Sanction letters of visiting faculty are enclosed in file A.4)

S. No.	Academic Session	Semester	Course	Name	Qualification	Teaching/ Research/ Industry Experience	Number of Hours in the Semester
1	2013-14	Odd	IS703	Mr. R. Agrawal, Senior Scientist, RRCAT, Indore	M.E.	15 Years	03
2	2013-14	Odd	IS709	Mr. K. Saifi, Senior Scientist, RRCAT, Indore	M.E.	12 Years	03
3	2013-14	Odd	IS711	Dr. D.M. Phase Senior Scientist, UGC-DAE CSR, Indore	Ph.D.	20 Years	03
4	2013-14	Odd	IS711	Dr. R.J. Choudhary Senior Scientist, UGC-DAE CSR, Indore	Ph.D.	10 Years	03
5	2013-14	Odd	IS711	Prof. A.L. Sharma, Retd. Prof., DAVV, Indore	Ph.D.	35 Years	01
6	2012-13	Odd	IS703	Mr. R. Agrawal, Senior Scientist, RRCAT, Indore	M.E.	15 Years	03
7	2012-13	Odd	IS709	Mr. K. Saifi, Senior Scientist, RRCAT, Indore	M.E.	12 Years	03
8	2012-13	Odd	IS711	Dr. D.M. Phase Senior Scientist, UGC-DAE CSR, Indore	Ph.D.	20 Years	03
9	2012-13	Odd	IS713	Dr. A. Pimpale, Retd. Centre Director, UGC DAE CSR Bombay Centre.	Ph.D.	30 Years	03
10	2011-12	Even	IS702	Mr. A. Purkaystha, Director, Gen. Carbon Credit Sys. Pvt. Ltd.	M.E.	20 Years	03
11	2011-12	Even	IS704	Mr. K. Saifi, Senior Scientist, RRCAT, Indore	M.E.	12 Years	03
12	2011-12	Even	IS706	Dr. D.M. Phase, Senior Scientist, RRCAT, Indore	Ph.D.	20 Years	03

A.6 Copies of Latest Biodata of Faculty in positions in the Department : Biodata of regular faculty are attached in file A.6.

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

Copies of yearly Performance Based Assessment Records are enclosed in File A.7.

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

	Sanctioned	Filled
Professor	**01**	**01**
Associate Professors	01	00 (01 CAS)
Asst. Professors	03	01 (00 promoted under CAS)

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. A.L. Sharma	Ph.D.	Professor	Bio-Medical Instrumentation	>30 years	Completed :01 Onoging:04
Dr. Ratnesh Gupta	Ph.D.	Reader	Nanotechnology, Magnetic Thin film, Analytical Instrumentation, Embedded System	>20 years	Completed :02 Onoging:02

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

6. Percentage of classes taken by temporary faculty – programme-wise information each semester wise information : **NIL**

Percentage of classes taken by visiting faculty – programme-wise each semester wise information: 30%

7. Programme-wise Student Teacher Ratio:

No.	Programme	Student Teacher Ratio
1.	M.Tech. in Instrumentation	18:1
2.	Ph.D.	2:1

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

Technical Staff:

S. No.	Name	Qualification	Designation	Specialization	No. of Years of Experience
1	Mr. D.V. Dhanotkar	Dip. Mech. Engg.	Senior Technician	Mechanical	35 years
2	Mr. S.N. Srivastava	B.Sc., Dip. In Electrical Engg.	Technician Grade-V	Electronics	25 years
3	Mrs. M. Saraph	B.Sc.	Technician Grade-IV	Electronics	20 years
4	Mr. P.D Vyas	B.A., ITI (Turner)	Senior Mechanic	Mechanical	24 Years
5	Mr. O.P. Pandit	ITI(machinist), B.A.	Technician	Mechanical	24 Years
6	Mr. V.K. Namdeo	ITI(Electrical)	Mechanic (Electrical)	Electrical	24 Years
7	Mr. H.O.P. Chourasiya	ITI(carpenter), B.Com.	Mechanic (Carpenter)	Carpenter	24 Years
8.	Mr. R.K. Trivedi	ITI(draftsman)	Draftsman	Mechanical	24 years
9.	Mr. A. Vyas	Wireman	Wireman	Electrical	24 years
10.	Mr. Bhanwar Lal	8th Pass	MetalMan		

S.No.	Sanctioned Post	Sanctioned	Vacancy
1	Technical Post	14	04

Administrative Staff:

S.No.	Sanctioned Post	Vacancy
1	Upper Divison Clerk-I	01
2	Lower Divison Clerk	01
3.	Peon	01

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

Students	UG	M.Tech.	Integrated Masters	M.Phil.	Ph.D.	D.Litt. / D.Sc.
	*M *F	*M *F	*M *F	*M *F	*M *F	*M *F
From the state where the university is located	NA	10/07	NA	NA	04/02	NA
From other states of India	NA	02/01	NA	NA	02/01	NA
NRI students	NA	NA	NA	NA	NA	NA
Foreign students	NA	NA	NA	NA	NA	NA
Total	NA	12/08	NA	NA	06/03	NA

*M-Male *F-Female

Externally registered students?

Yes ☐   No √

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

A.7 Calculation of 'Unit cost' of education

(Unit cost = total annual recurring expenditure (actual) divided by total number of students enrolled)

(a) including the salary component = Rs. 13,040.00.

(b) excluding the salary component = Rs. 1000.00

A.8 A. Faculty recharging strategies

B. Number and list of faculty with course details of faculty development

programmes, academic staff college programs or other faculty recharge programs

Participated several International and National Conferences

Dr. Ratnesh Gupta

A. *Invited Speaker:*

1. National Workshop on Nano-Technology by Ion Beam, Univ. of Allahabad, India (Oct. 2011).

Title: "Tailoring of Magnetic Structures by Low and High Energy Ion Beam Irradiation"

2. National Workshop on Applications of ion Beam on Device Fabrication and Nano-Technology, Devi Ahilya University, Indore (March 2012).
Title: "Influence of Nitrogen ions on Structural and Magnetic Properties of Nanoscale Exchange coupled Fe/Co Bilayers"

3. Hindi Divas Lecture at UGC DAE CSR Indore Centre in the month of Sept. 2012
"पदार्थों के चुम्बकीय गुणों पर आयन प्रतिरोपण का प्रभाव"

4. Recent Developments in Magnetic Materials and Thin Films (RDMMTF) - 2013, UGC DAE CSR Indore Centre, Indore. (May 2013)
Title: "Enhancement in Positive Exchange Bias in Fe/Co Bilayers After Ion Implantation"

B. Oral Presentation:
1. Sheetal Soni, D.M. Phase, Ratnesh Gupta
6th DAE-BRNS National Symposium on Pulsed Laser Deposition of Thin Films and Nanostructured Materials (PLD-2011) , IISC BANGLORE, INDIA (Nov. 2011)
Title: Electronic structure of laser treated TiC_xN_y Thick Films.

2. Ratnesh Gupta, A. Khandelwal, D.K. Avasthi, A. Gupta
International Conference on Swift Heavy Ions in Material Engineering and Characterization (SHIMEC 2012), New Delhi, India. (Oct. 2012).
Title: Influence of Swift Heavy ions on magnetic properties of nanoscale Fe/Co bilayers

C. Poster Presentation:

1. Sheetal Soni, K.G.M. Nair, D.M. Phase and Ratnesh Gupta
Solid State Physics Symposium (DAE), SRM University, Tamilnadu. (Dec. 2011).
Title: Structural Characterization and Electronic Structure of Laser Treated TiN thin film.

2. Sheetal Soni, K.G.M Nair, D. M. Phase ,Ratnesh Gupta
International Conference on Recent Trends in Physics, D.A.V.V., Indore (Feb. 2012)
Title: Resonance Photoemission of Ti 3d states in TiN thick film by laser surface nitriding.

3. Sheetal Soni, K.G.M Nair, D. M. Phase ,Ratnesh Gupta
National workshop on "Applications of Ion Beam in Device Fabrication and Nanotechnology" , D.A.V.V., Indore (March 2012)
Title: Study of Structural and Compositional depth profile of laser treated TiN and TiCN by non-Rutherford Backscattering Technique

4. Ratnesh Gupta, Sheetal Soni, D.M. Phase, A.K. Sinha
12th International Conference on Surface X-ray and Neutron Scattering (SXNS-12), Kolkata, INDIA (July 2012)
Title:Study of Electronic Structure of TiCN films prepared by Laser Irradiation

5. Sheetal Soni, D.M. Phase, Ratnesh Gupta,
Recent Development in Magnetic and Thin Films, UGC-DAE,CSR Indore (May 2013)
Title: Electronic Structure of TiN Thick films prepared by Laser Treatment

A.9 Student projects

- percentage of students who have done in-house projects including inter-departmental projects : **25%**
- percentage of students doing projects in collaboration with other universities / industry / institute :**75%**

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

- Faculty:

  1. Prof. A.l. Sharma, Head, School of Instrumentation.

     - Dr. A.L. Sharma is Chairperson of Board of Studies of Instrumentation, Devi Ahilya University, Indore.
     - Dr. A.L. Sharma is the member of the Executive Council of Devi Ahilya University, Indore.
     - Dr. A.L. Sharma has been an awardee of National Associateship of UGC, New Delhi.
     - Dr. A.L. Sharma has worked at Liverpool University, Liverpool (UK) as a Commonwealth Academic Staff Fellow and worked at Bremen University, Bremen (Germany) under the Sandwich programme of DAAD, Germany.
     - Dr. A.L. Sharma is the former Vice-Chancellor , Devi Ahilya Univ., Indore.
     - Dr. A.L. Sharma is the former Director General, Dr. Babasaheb Ambedkar National Institute of Social Sciences, Mhow

  2. Dr. Ratnesh Gupta, Reader/Assoc. Prof.

     - Dr. Ratnesh Gupta TRIL Associate Fellow (2002-2009) from International center for Theoretical Physics, (UNO Funded Organization), Trieste, Italy.
     - Dr. Ratnesh Gupta name has been included in Marquis Who's Who.

- Doctoral / post doctoral fellows :

  Dr. Ashish Khandelwal awarded prestigious K.S. Krishnan Research Associate ship at RR Centre for Advanced Technology, Indore.

- Students: NIL

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. **15th July 2013 : National Workshop held on Instrumentation Total Outside Participant: 25**
2. **5-6th March 2012 : National Workshop held on Applications of Ion beam in Device Fabrication and Nanotechnology.**

Total Outside Participant: 55

3. **17-19 July 2012 Co-organized National Workshop of Shanti Swarup Bhatnagar Awardees in Physical, Earth, Engineering, Mathematical and Biological Sciences. No. of outstanding awardees = 23.**

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

1. **Respect for intellectual copyrights of individuals and institutions**
2. **Follow principles of ethics and social responsibility**
3. **Open Access for laboratory instruments for users (other university and national laboratories)**

A.12 Student profile course-wise:

Name of the Course (refer to question no. 4)	Applications received	Selected Male	Female	Pass percentage Male	Female
Ph.D. (Instrumentation)	08	01	00	12%	00
M.Tech. (Instrumentation)	230	12	08	55% Marks in B.E. / M.Sc. in relevant field	
M.Sc. (instrumentation)	10	00	00		

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	% of students from other countries
Ph.D.	100%	00%	00%	00%
M.Tech.	05%	80%	15%	00%

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.

Two students have cleared NET after M.Tech.

1. Mohan Patel: UGC NET December-2012.

A.15 Record of Student progression

Student progression	Percentage against enrolled

Student progression	Percentage against enrolled
UG to PG	Not applicable
PG to M.Phil.	Not applicable
PG to Ph.D.	**40%**
Ph.D. to Post-Doctoral	30%
Employed • Campus selection • Other than campus recruitment	NA 100%
Entrepreneurs	10%

A.16 Record of Diversity of staff

Percentage of faculty who are graduates	
of the same university	**50%**
from other universities within the State	00
from universities from other States	50%
from universities outside the country	00

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

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

 a) Library   :No. of Books : 932: Title: 300

 b) Internet facilities for staff and students : 100%

 c) Total number of class rooms   : 02 (capacity 40 Seats in each room)

 d) Class rooms with ICT facility   : 100%

 e) Students' laboratories   : Very well equipped expenses in last one year Rs. 05 Lacs

 f) Research laboratories :   :Very well Equipped in last One year cost of Equipments purchased Rs. 20 lacs

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

 a) from the host university :

1. Dr. Ashish Khandelwal

2. Dr. R. Ansari

3. Dr. Shobhit S. Chouhan

4. Mr. Rajendra Sharma

5. Ms. Sheetal Soni

6. Mr. Sagar Sen

7. Mr. Ashish Gupta

    b) from other universities

1. Mr. Santosh Kumar

2. Ms. A.H. Kiranmayee

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

Scholarships	2010-11	2011-12	2012-13	2013-14
Research Scholarships under the Research project	1	1	2	2
AICTE Scholarships	4	8	11	13
SC/ST Scholarships	1	1	4	0
OBC Scholarships	0	0	7	0

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

Employability

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?

        1. **Faculty feedback on curriculum is duly taken care for framing course plan and syllabus each year.**

        2. **Statistical analysis of faculty has been done for teaching for every semesters and informed to the concerned faculty in the meeting. Accordingly, suggestions and discussions have been made.**

    b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?

      Statistical analysis has been done and informed to the concerned faculty.

    c. alumni and employers on the programmes offered and how does the department utilize the feedback? **Yes called meeting for the purpose.**

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

1. Dr. Ashish Khandelwal, Scientist 'D', R.R. Centre for Advanced Technology, Indore. **(Awarded in Feb. 2010)**

2. Dr. P.C. Pancharia, Senior Scientist, CEERI, Pilani (Rajasthan). **(Awarded in March 2003)**

3. Dr. Shobhit Singh Chouhan, Senior Scientist, Central Salt and Marine Chemical Research Inst. Bhavnagar. **(Awarded in Aug. 2012)**

4. Mr. Manish Kothari, Entrepreneur, Cardicomm, Indore. (specialized in BioMedical Instrumentation) **(in May 1994)**

5. Mr. O.P. Patel, Entrepreneur, MAP embedded solutions, Indore. (specialized in Embedded Systems) **(in July 2006)**

6. Mr. Ankit Soni, Project Engineer, SUNPHARMA, Mumbai. **(in July 2012)**

7. Ms. Apeksha Jain, Project Engineer, SUNPHARMA, Mumbai. **(in July 2012)**

8. Mr. K. Chandrashekhar, PRICOL, Limited, Coimbatore. **(in May 1994)**

9. Mr. Sandeep Chaturvedi, Head (design), Gallium Arsenide Enabling Technology, Centre, Hyderabad. (DRDO lab) **(in May 1999)**

10. Mr. Ravi Sindal, Inst. Of Engg. And Technology, DAVV, Indore. **(in May 2000)**

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

(i) National Workshop :

1. National Workshop on Applications of Ion Beam on Device Fabrication and Nano-Technology (March 2012)

2. National Workshop on Instrumentation (July 2013)

(ii) Special Lecture:

1. **During Shanti Sawrup Bhatnagar Award 2009**
2. **Prof. C.N. Murthy, Applied Chemistry Dept., M.S. Univ. Vadodara. (Augug. 2012).**
3. **Prof. Ramsagar, Director, ARIES, Nainital. (Jan. 2013).**
4. **Prof. K. Rama Reddy, Retd. Professor, Osmania Univ., Hyderabad. (March 2012).**
5. **Mr. G. Verma, Senior Manager, ARCON, Wind Energy, Dewas. (June 2013)**
6. **Prof. R.C Verma, Professor, Univ. of Patiala, Punjab (July 2013)**

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

Using Microsoft Power Point Presentation (LCD projector), group discussion and use of conventional White and black board.

A.25 Record of Monitoring by the department ensure that programme objectives are constantly met and learning outcomes are monitored :

Programme Objectives and Learning Outcomes:

Programme	M.Tech. (Instrumentation)
Objectives	The programme is designed to educate in the field of Instrumentation. Our strength is in the field of Embedded system, Automation and Signal processing. The programme trains students to become professionals who are competent to choose from various methods when facing a particular problem in the field of Instrumentation.
Learning Outcomes	**(i)** **Fundamental knowledge in –** Programming Skills, Embedded Systems, Process Control and Signal processing, Mathematical Modeling. **(ii)** **Advanced knowledge in** Embedded Systems and Image Processing. **(iii)** **Ability for employment in** Engineer, Maintenance Engineer Higher education as teacher, and scientist. Govt. jobs. **(iv)** **Ability for higher education and research in the areas of** Nanotechnology and Sensor Development

The school has constituted following monitoring committee to ensure that objectives of the programmes are met:

1.Prof. A.L. Sharma   Head & Chairman

2.Dr. Ratnesh Gupta   Co-ordinator & Faculty member

3.Mr. Amit Pandey   Student Representative-M.Tech.

4.Ms. Sharda Gupta   Student Representative-M.Tech.

5.Mr. O.P. Patel   Industrialist and Alumini

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

Our students give us their suggestions to design syllabus, time table and examinations schedule.

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

a. **Participation in various conferences, seminars and lectures.**

b. Hands on training in the Mechanical workshop.

c. Students counseling on the personal problems, life style, career and to teach them to become good human being.

d. M.Tech. student publish the research articles in the regular international journal in 2012-13.

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

M.Tech (Instrumentation) programme accredited by AICTE New Delhi. (copy enclosed inA.1)

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

Faculty members are involved in publishing their research contribution to the journals of international repute. Faculty members continuously writing projects to upgrade the research laboratory in the front line area of research. The members are continuously participating in the International/National conferences and workshops as Invited Speaker also. Faculty also involve in conducting the training in the form of refresher course organized for teachers of affiliated colleges , and other universities of India.

Several in-house laboratory Equipments has been designed and fabricated for the training of students.

Students have been educated in M. Tech. in four years (2009-2013) and also are serving the instrument industry and organizations.

A. Book Chapters

1. "Photofunctions of dye encapsulated nanostructured silica films suitable for optical filter applications"; Shobhit Singh Chauhan, A L Sharma, R V Jasra; Engineering Applications of Nanoscience and Nanomaterials, Material Science Forum, Eds. Ajay Bansal and R J Tayade, Trans Tech Publications, Switzerland (in Press).

2. "Artificial Neural Networks based Biomimetic Systems for Classification and Authentication of beverages/foods/drinks applications"
A L Sharma et al to be published in International Frequency Sensor Association (IFSA) Publishing, Barcelona, Spain, 2013 (In Press).

B. Research Publication in International Journals:

1. Shobhit singh Chauhan, R V Jasra, **A L Sharma,** "Phenol red dye functionalized nanostructured silica films as optical filters and pH sensors",
Industrial & Engineering Chemistry Research, 2012, 51, 10381−10389.

2. Shobhit Singh Chauhan, R V Jasra**, A L Sharma**, "Dye immobilized mesoporous silica thin films as optical pH sensor",
International Journal of Nanoscience 11(3), 2012, 120001-1-120001-5.

3. AH Kiranmayee, PC Panchariya & **AL Sharma**, "New data reduction algorithm for voltammetric signals of electronic tongue for discrimination of liquids", Sensors and Actuators A 187(2012) 154-161.

4. Hepsiba K. Anga, P C Panchariya & **AL Sharma**, "Authentication of Indian Wines Using Voltammetric Electronic Tongue Coupled with Artificial Neural Networks", Sensors and Transducers Journal, Vol. 145, Issue 10, October 2012, pp. 65-76.

5. S. Kumar, PC Panchariya, Bhanu Prasad P. and **A L Sharma**, "Non Destructive Classification of Himalayan Orthodox Black Teas", Sensors and Transducers Journal, Vol. 145, Issue 10, October 2012, pp. 77-85.

6. "Phase Transitions in Co Thin Film Induced by Low Energy and High Energy Ion Beam Irradiation", Ratnesh Gupta, A. Khandel**w**al, D.K. Avasthi, K.G.M. Nair, and A.Gupta, J. Appl. Physics **107** (2010) 033902.

7. "Characterizations of iron oxide films prepared by laser irradiation in oxygen atmosphere", Ratnesh Gupta, A. Khandelwal, Ajay Gupta, and Peter Schaaf, J. Physics D: Applied Physics **42** (2009) 185305.

8. "Investigation of structural and magnetic properties of nanoscale Fe/Co bilayers", Ratnesh Gupta, AshishKhandelwal, Raisa Ansari, Ajay Gupta, K.G.M. Nair, Surf.and Coatings Tech. **203** (2009) 2717.

9. "Argon and krypton ion-induced changes in permalloy thin films", Ratnesh Gupta, K. P. Lieb, Y. Luo, G. A. Müller, P. Schaaf and K. Zhang, Euro.Phys. J. B **63** (2008) 501.

10. "Influence of Cr-ions on the magnetic behaviour of FeCo film", Ratnesh Gupta, Raisa Ansari, AshishKhandelwal, J. Fassbender, Ajay Gupta, Nuclear Instru.and Methods B **266** (2008) 1407.

11. "Evolution of nano-crystalline phases with post-annealing of nitrogen irradiated Fe/Co bilayers", Ratnesh Gupta, AshishKhandelwal, Raisa Ansari, K.G.M. Nair, W. Leitenberger, U. Pietsch, D.M. Phase, Ajay Gupta Nuclear Instru.and Methods B **266** (2008) 1705.

12. " Structure and hydrogen storage properties of MgH$_2$catalysed with La$_2$O$_3$", Ratnesh Gupta, F. Agresti, S. Lo Russo, A. Maddalena, P. Palade, G. Principi, J. Alloys & Compd. **450** (2008) 310.

C. In Conference Proceedings:

1. "Structural Characterization and Electronic Structure of Laser Treated TiN Thin Film",

SheetalSoni, K.G.M. Nair, D.M. Phase, Ratnesh Gupta,
AIP 1477 (2012) 677.

2. " Effect of low energy ion on Magnetic and Structural properties of FeCo alloy thin film",
   Ratnesh Gupta, Raisa Ansari, AshishKhandelwal, A. Gupta, A. Tripathi, K.G.M. Nair,
   J. Scientific Conference Proceedings **1** (2008) 59.

3. Panchariya PC, Palit AK, Popovic D & **Sharma AL**, "Simple fuzzy rule generation for fuzzy modelling and identification", *1ˢᵗ Indian International Conference on Artificial Intelligent*, Hydrabad, India, Dec. 18-20, 2003.

4. Panchariya PC, Palit AK, Popovic D & **Sharma AL,** "A Simple and Fast Complete Fuzzy Modelling Scheme for Takagi-Sugeno fuzzy Models using Genetic Algorithms" *1ˢᵗ Indian International Conference on Artificial Intelligent*, Hydrabad, India, Dec. 18-20, 2003.

5. Panchariya PC, Palit AK, Popovic D & **Sharma AL,** "Structure Identificationfor Neuro-fuzzy Models" *IEEE international conference on Intelligent Systems*, Verna, Bulgaria, June 22-23, 2004.

6. Panchariya PC, Palit AK, Popovic D & **Sharma AL**, "An Automated Approach for Extracting Fuzzy rules from data" *World Congress on Lateral Computing*, 17-19ᵗʰ Dec., Bangalore, India, 2004. **(Best paper award)**

7. Panchariya PC, Sharma R., **Sharma AL** & Popovic D. "Clustering approaches for Fuzzy modelling" *International Conference on Instrumentation*, 17-19ᵗʰ Dec., Pune, India, 2004.

8. Panchariya PC, & **Sharma AL,** "Generating fuzzy rules from data" *Intelligent signal processing and robotics (ISPR)*, Allahabad, India , Feb. 20-23, 2004.

9. Panchariya PC, Shekhawat RS & **Sharma AL**, "Simple, transparent and yet accurate fuzzy modelling" *Intelligent signal processing and robotics (ISPR),* Allahabad, India, Feb.20-23, 2004.

10. Panchariya PC, Sharma R**, Sharma AL** & Popovic D. "Water Adsorption isotherms of tea materials during withering" *International workshop and symposium on industrial drying*, IWSID-2004, 20-23 Dec., Mumbai, India, 2004.

11. Shobhit Singh Chauhan, R V Jasra, **A L Sharma**, Mesoporous Silica Thin Films - A Reliable Sensor for Measuring pH of Water, International Conference on Recent Trends in Materials Science and Technology, (ICMST-2010), October, 29-31, 2010, Trivandrum, Kerala.

12. Shobhit Singh Chauhan, R V Jasra, **A L Sharma**, Dye immobilized mesoporous silica thin film as optical pH sensor, International Conference on Nanoscience, Nanotechnology and Advanced Materials (NANOS-2010), December, 17-19, 2010, Visakhapatnam, Andhra Pradesh.

13. Shobhit Singh Chauhan, R V Jasra, **A L Sharma**, Optical functions of nanostructured silica films for pH sensing Third International Conference on Frontiers in Nanoscience and Technology, (COCHIN NANO2011), August 14-17, 2011, Kochi, Kerala.
14. AH Kiranmayee, PC Pancharia, P. Bhanu Prasad and **A L Sharma**, "Biomimetic Classification of Juices", IEEE, ICST- Dec., 2012, Kolkata.
15. Santosh Kumar, PC Pancharia, Ashu Gulati and **A L Sharma**, " Classification of Himalayan Teas Using Vis-NIR Spectroscopy", IEEE, ICST-Dec., 2012, Kolkata.

D. In National conferences:

1. Panchariya PC, Sharma R & **Sharma AL**, "Dual frequency based novel on-line lossy dielectric parameters (R_x, C_x) measurement system", *National Symposium on Instrumentation*, Pantnagar, India, Nov. 2003 .
2. Panchariya PC, Sharma R & **Sharma AL**, "A Microcontroller based moisture measurement system" *National Symposium on Instrumentation*, Pantnagar, India, Nov. 2003 .
3. Panchariya PC, Shekhawat RS & **Sharma AL**, "Forecasting time series using fuzzy models" *National Seminar on Emerging Trends in Soft Computing Based Artificial Intelligence*, Jodhpur, India, Feb. 27-29, 2004.
4. Panchariya PC, Shekhawat RS & **Sharma AL**, "Identification of fuzzy models using clustering" *National Seminar on Emerging Trends in Soft Computing Based Artificial Intelligence*, Jodhpur, India, Feb. 27-29, 2004.
5. Shobhit Singh Chauhan, R V Jasra, **A L Sharma**, Optical sensor for pH measurement, 6th All Gujarat Research Scholars Meet (AGRSM-VI), January 31, 2010, M. S. University, Vadodara, Gujarat.
6. Rajendra Sharma, Santosh Kumar, P C Panchariya & **A L Sharma**, "Application of spectroscopy for identification of counterfeit drug", March 5-6, 2012, School of Instrumentation, DAVV, Indore, Madhya Pradesh.
7. Santosh Kumar, Rajendra Sharma, P C Panchariya & **A L Sharma**, "Assessment of the quality of Indian tea using spectroscopy", March 5-6, 2012, School of Instrumentation, DAVV, Indore, Madhya Pradesh.
8. Shobhit Singh Chauhan, R V Jasra, **A L Sharma**, Study of physical and optical pH sensing characteristics of functionalized nanostructured silica thin films Applications of Ion Beam in Device Fabrication and Nanotechnology, March 5-6, 2012, School of Instrumentation, DAVV, Indore, Madhya Pradesh.
9. Shobhit Singh Chauhan, R V Jasra, **A L Sharma**,Soft Sensors: "A New Measurement Tool for Complex Experimental Conditions", , March 5-6, 2012, School of Instrumentation, DAVV, Indore, Madhya Pradesh.

A.30 Write up of Future plans of the department.

I. New Courses
Planning a new M. Tech. course in Nanotechnology for obtaining the funds in the XIIth Five Year Plan.

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

Strengths:

- **Long time International collaborations and National Collaborations**
- **Continuous Academic exchange among the School, UGC DAE CSR Indore Centre and R.R. Centre for Advanced Technology, Indore.**
- **Students placement (National and International)**
- **Renowned faculty**
- **Access of every laboratory to everyone.**

Weaknesses
- **Need of additional faculty.**
- **Decreasing supporting and administrative staff.**
- **Need of additional industry in the area of instrumentation.**

Opportunities

- **New International and National collaborations will improve research standards and opportunities to students.**
- **Improvement in Research skills and aptitude of faculty and students to further improve the quality of teaching and research.**
- **Adjunct faculty positions of funding agencies like DST for raising teaching standards.**
- **International fellowships for faculty will enhance the communication and research skills further.**

Challenges:

- **National and global level laboratories and professional competences in the field of instrumentation.**
- **Recruitment of permanent faculties is an urgent need of the department.**
- **Procedural delay should be improved.**
- **Improper implementation of leave rules for faculties to avail research fellowships.**
- **Institutional subscription must be there to access National and International research journals.**

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

School of Instrumentation is continuously putting efforts towards maintaining the quality. Continuously putting efforts to write the projects and the research funds by promoting research and quality of teaching. Besides, during student and teacher meetings we aware them to study, strategies to crack competitive examinations including NET and specific exams for premier research institutes.

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

Whether uploaded on website

Yes | √ | No | | Course plan and syllabus are available at http://inst.dauniv.ac.in

 1.1.1.A Eligibility for admission to each course : Preferred GATE Qualified in case of M. Tech. and 55% in B.E./ B. Tech/M.Sc. in relevant field.
55% in UG for M.Sc.

1.1.1.B   Whether reflects Vision and mission reflection

Yes | √ | No | |

The basic objectives of our syllabi are to enhance the theoretical and practical understanding as well as skills of students in the area of advance instrumentation. We are shaping the career of students by which after the completion of their course they absorb in higher education, government and corporate sectors. It is also noteworthy that we are not only developing professional competencies, but also shape overall personality of students to become a responsible citizen of country.

Vision:
To develop globally competent professionals.
To shape the crude ideas into refined scientific/engineering approach.
To fulfill the scientific and social needs of the nation.

1.1.1C Write on reflection of vision and mission
        Mission:
   To generate intellectual and socially responsible manpower.
To develop curiosity and thirst of knowledge among students.
To develop not only good scientists but also good human being.
Constant academic excellence.

1.1.2   Details of process followed in last revision of Curriculum

A. Need Assessment

Need assessment was based on the student feedback, advice of external experts and faculty members of the department.

B. Faculty involved in curriculum design (List of members)
   1. Prof. A.L. Sharma
   2. Dr. Ratnesh Gupta

3. Dr. M.P.S chawla, Faculty in SGSITS, Indore
4. Dr. D.M. Phase, UGC DAE CSR, Indore.
5. Mr. R.K. Agrawal, RRCAT, Indore.
6. Mr. K. Saiffee, RRCAT, Indore
7. Mr. O.P. Patel, Industrialist and Alumini
8. Mr. Manish Kothari, Industrialist and Alumini

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

The new curriculum was approved by the Board of Studies of Instrumentation. Minutes of Board of Studies are available with Academic Section of the University.

D. Records of External Experts Opinion of the designed curriculum: **Yes**

An external expert is invited in each semester for conducting the comprehensive viva voce of each programme being offered. After conducting the viva voce the expert gives his/her opinion and recommendation on the course and its syllabus.

E. Records of External Experts Feedback of the designed curriculum: **Yes**

Records are available in the form of report of comprehensive viva voce for each semester and each programme.

F. Records of Student Feedback opinion on the existing curriculum: **Yes**

The students' feedback is taken at the end of each semester. Records of students' feedback are available.

G. Records of Syllabi of National tests, Eligibility Tests and Examinations for example, GATE, NET, Service Commissions, National Councils, for the each curriculum, if any,: **Yes Only for the NET.**

1.1.3   Detailed write up out each course in reference to

* Employability
  * **M.Tech. syllabus contains number of components encompassing the syllabi as per the need of Industries in the field of instrumentation. Also advance subjects including embedded systems, Nanotechnology and Image These subjects provide fair chances to get opportunities in corporate sector.**
* *Innovation
  * **Two semesters of M.Tech. program is completely dedicated for research / dissertation work. The work should be novel, therefore, it provide opportunity to enhance practical and experimental skills among students to make them able for innovation.**
* Research
  * **M.Tech. students are associate with several national Research institutions.**

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

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

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

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

On the regular basis opinions and feedbacks from industrial experts, academicians, alumni and consultants are collected for the design of curriculum of the M.Tech. programmes.

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

D. Records of Alumni opinion on the existing curriculum (may be taken in an Alumni Register).

The syllabus is discussed with the eminent personalities who visit department. It is also discussed with the students and scientists from RRCAT, Indore. Their suggestions are incorporated in the next revision.

1.1.6   List of Department Courses which are also introduced in University affiliated colleges also. **No**

1.1.7   Details of additional skill-oriented programmes designed for the colleges, Employees, Faculty relevant to regional needs: **No**

The alumni who are in contact always provide their views on the syllabus through emails. Their suggestions are also incorporated in the revision of the curriculum.

1.2   Academic Flexibility

1.2.1   List of Courses taught in Department on campus

* Overseas programmes offered on campus **NO**
* Programmes available for colleges to choose from NO

1.2.2   Records on the following provisions with reference to academic flexibility

a. List of Core/ Elective options : Given Below

SCHEME OF EXAMINATION: TWO-YEAR (4 SEMESTER) COURSE
FIRST SEMESTER

IS-701 Computer Programming and Numerical Techniques   3
IS-703 Process Control and Automation   4
IS-705 Analytical Instrumentation   4

IS-707 Microcontroller Based System Design-I	4
IS-709 Industrial Electronics	4
IS-711 Industrial Transducer	3
IS-715 Minor Project	2
IS-717 Instrument Technology Lab-I	8
IS-719 Comprehensive Viva-Voce	4
Total Credits:	**36**

SECOND SEMESTER

IS-702 Computer Networks	3
IS-704 Computer Controlled and SCADA Systems	4
IS-706 VLSI Design	4
IS-708 Micro-controller based system design -II	4
IS-710 Bio-Medical Instrumentation	4
IS-712 Digital Control Systems	4
IS-714 Computer Graphics and Computer aided Instrument design	3
IS-716 Digital Signal Processing	3
IS-718 Instrument Technology Lab-II	8
IS-720 Seminar	2
IS-722 Comprehensive Viva-Voce	4
Total Credits:	**36**

ELECTIVES: One from each group: IS- 710 or IS-712 and IS-714 or IS -716

THIRD and Fourth Semester

IS801 Project cum Training

(i)	Mid term evaluation	08
(ii)	Comprehensive Viva voce – III	04
(iii)	Final Project evaluation	20
(iv)	Final Project presentation	12
(v)	Comprehensive Viva voce – IV	04
	Total Credits:	**48**

    b. List of Enrichment courses : Attached as above

    c. List of Courses offered in modular form : Not Available

    d. List of courses/papers with Credit accumulation and transfer facility :
       Not Available

    e. Details of Lateral and vertical mobility within and across programmes, courses and disciplines
       Not Available

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 :
         Attached

Admission Procedure:

GATE qualified candidates are preferred for admission. Admissions are given as per
Rank in the GATE (80% weightage) and the performance in the interview (20%
weightage) . However, if seats are vacant due to non-availability of the GATE qualified
/ sponsored candidates, then NON-GATE candidates are also admitted on the basis of
screening test (80% weightage)   and the performance in the interview (20%
weightage).

The sponsored candidates are admitted as per the screening test (70%)   + interview
(20%) and experience (5 marks per year limited to max. 20 marks).

Scholarships:

The scholarships are provided to GATE qualified candidates subject to approval from
AICTE.

M.Tech. (Instrumentation):
Fee Structure:

Semester	Academic Fee	Development & Maintenance Fee	Students' Services Fee		Examination Fee	Total (Rs.)	
			Boys	Girls		Boys	Girls
First	7140	1050	2260	2071	1050	11500	11311
Second	7140	1050	1472	1283	1050	10712	10523
Third	7140	1050	2260	2071	1050	11500	11311
Fourth	7140	1050	1472	1283	1050	10712	10523

Caution money (Refundable) of Rs. 3000/- is charged additionally in the first semester.
An additional fee of Rs. 3150/- per semester is charged from sponsored candidates.
Fee Concession to SC/ST/OBC candidates as per M.P.State Govt. rules.

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

All permanent faculty getting salaries as per UGC VIth pay scale along with the grade pay.

Allowances are given as per state government rules.

Both are Doctorate.

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

1.2.8 Details of Choice Based Credit System (CBCS)

Yes, but only provided with few options due to crisis of faculties.

1.2.9 Records of Departmental Academic Calendars of each semester

Available at our website http://inst.dauniv.ac.in

S.No.	First Semester (July2012)		Second semester (Jan2013)	
	Event	Date	Event	Date
1.	Registration	15th July 2012	Class Start	1st Jan 2013
2.	Class Start	15th July 2012	Cultural program	1st Jan 2013
3.	1st internal	27th Aug.-30th Aug.	UTD Sports	6th feb.-8th Feb
4.	2nd internal	17 Oct-20th Oct	1st internal	17th March-23rd March
5.	3rd internal	22nd Nov-26-Nov	2nd internal	25th Apr. -28th April
6.	End Sem. Exam	1st Dec- 20Dec.	3rd internal	1st May-20th May
7.	Semester Break	21 Dec.-31st Dec. 2012	End Sem. Exam	21st May- 30th June

1.2.10 Records of Inter-disciplinary programmes, Name of interdisciplinary program and details of students undertaken those programmes. **NA**

1.3   Curriculum Enrichment

1.3.1   A. Record of academic years in which each of the courses was revised: 2012, Feb. 2013

B. Records of review, up-gradation, **YES**

C. Records of social relevancy Instruments are required in every walk of industry and scientific activity. These activities have social relevance in terms contributions towards the development of society.

D. Records of job orientation **Yes, Attached**

E. Records of knowledge intensive nature of each course **NA**

F. Records of meeting the emerging need of students **NA**

G. Records of meeting the emerging need of stakeholders **NA**

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

* Inter-disciplinary **NA**
* programmes in emerging areas **NA**

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

Placement profile, assessment of emerging trends and AICTE guidelines.

B. Percentage of courses underwent a syllabus revision in last four years :
30%

1.3.4   A. Details of Value-added courses offered

B. Details of these courses access to students : 100% seats are filled

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

We have proposed a New M. Tech. (Nanotechnology) under the 12th Five Year Plan of UGC, New Delhi. Expertise is available in the school . A research laboratory which can be used for the students exists.

1.4   Feedback System

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

B. Details of action and use of on feedback from students: **Feedback was on an average Good. However, strategies to further improving our programmes are made through Departmental Committee meetings..**

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

B. Conducting webinars : **Planned in 2013-14**

C. Curriculum development Workshops : **Planned in 2013-14**

D. Curriculum development online discussions **Planned in 2013-15**

E. Impact of Workshop and discussions

Concentrated on word method.

We have taken feedback from various nationally recognized experts from academia and corporate sector.

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.

It required as no affiliated institutions run the course.

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

Continuous curriculum revision and taking care of emerging needs and use of the quality sustenance and enhancement.

We discussed in the departmental meeting and discuss it with related faculties available in RRCAT, Indore and UGC DAE CSR, Indore.

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

Ordinance 31 provides academic flexibility in the curriculum design by faculty and school.

2.1   Student Enrolment and Profile

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

A common advertisement for admission in M.E./ M.Tech./ M.Pharm. programmes of DAVV is published in local and national newspapers including Employment News and also published on website each year.

Copy of advertisement is available in File 2.1.1.

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

M.Tech. Admission Procedure:

1. GATE qualified candidates are preferred for admission. Admissions are given as per Rank in the GATE (80% weightage) and the performance in the interview (20% weightage) . However, if seats are vacant due to non-availability of the GATE qualified / sponsored candidates, then NON-GATE candidates are also admitted on the basis of screening test (80% weightage) and the performance in the interview (20% weightage).

2. The sponsored candidates are admitted as per the screening test (70%) + interview (20%) and experience (5 marks per year limited to max. 20 marks).

Ph.D. Admission Procedure:

3. As per Ordinance 18 and UGC Regulations, 2009.

. 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

For Ph.D. Admissions:

As per Ordinance 18 and UGC Regulations, 2009. An entrance test is conducted. Admissions are done on the basis of merit developed as per marks in the entrance test plus marks in the interview conducted by RDC.

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

2.1.4 Student profile analysis

Admitting Year	Programme		GATE % of Admitted Students	
			Min.	**Max.**
2012	M.Tech. (Instrumentation)	Gen.	26.0	30.33
		OBC	23.00	25.33
		SC	19.67	35.00
		ST	0	0
2013	M.Tech. (Instrumentation)	Gen.	25.00	30.67
		SC	18.33	22.33
		ST	0	0

Programme	M.Tech. (Instrumentation)	
	2012	2013
Gender:		
Male	12 (60%)	13 (77%)
Female	8 (40%)	4(23%)
Category:		
General	10 (52%)	11(65%)
SC/ST	3 (16%)	2 (12%)
OBC	6 (32%)	4 (23%)
Persons with varied disabilities (PD)	0 (0%)	0 (0%)
State:		
M.P.	16(84%)	11 (65%)
Other states	3(16%)	6(35%)

2.1.5   Strategies adopted to increase/improve access for students belonging to the following categories: **We are following the rules of State Government to facilitate the access of the following sections.**

* **SC/ST : State Government free-ship and scholarship**
* **OBC: State Government free-ship**
* **Women : No Age limit in admission**
* **Persons with varied disabilities : Financial assistance from Student welfare funds**
* **Economically weaker sections**
* **Outstanding achievers in sports and other extracurricular activities**

Weightage in marks for admission, separate examination in case of overlapping of dates.

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

Categories	2010		2011		2012		2013	
	Male	Female	Male	Female	Male	Female	Male	Female
SC	2	1	2	2	2	1	2	0
ST	0	0	0	0	0	0	0	0
OBC	3	3	4	0	4	2	4	0
General	5	3	7	4	6	5	7	4
Others	0	0	0	0	0	0	0	0

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

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

Programmes	Number of applications	Number of students admitted	Demand Ratio
UG	NA	NA	NA
PG	234	20	1:23
Integrated Masters	NA	NA	NA
M.Phil.	NA	NA	NA
Ph.D.	DET 2012: 08	01	8:1
Integrated Ph.D.	NA	NA	NA
Certificate	NA	NA	NA
Diploma	NA	NA	NA
PG Diploma	NA	NA	NA
Any other (please specify)	NA	NA	NA

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

NO

B. If yes, write-up of the reasons.

2.1.9   **Record of Admissions**

Programmes	Total Number of admissions	Number of 1st division pass students in qualifying	Number of 2nd division pass students in qualifying	Entrance test Marks% (Min)
UG	**NA**	**NA**	**NA**	**NA**

PG	**20**	**17**	**03**	**Not Known**
Integrated Masters	**NA**	**NA**	**NA**	**NA**
M.Phil.	**NA**	**NA**	**NA**	**NA**
Ph.D.	01	01	00	Not Known
Integrated Ph.D.	**NA**	**NA**	**NA**	**NA**
Certificate	**NA**	**NA**	**NA**	**NA**
Diploma	**NA**	**NA**	**NA**	**NA**
PG Diploma	**NA**	**NA**	**NA**	**NA**
Any other (please specify)	**NA**	**NA**	**NA**	**NA**

2.2 Catering to Diverse Needs of Students

2.2.1 A. Record of organization of orientation/ induction programme for freshers:
Induction programa was conducted at university level.

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

04 hrs long Induction programme was held where the issues of ragging, study, career prospects, information about the departments and psycho-social aspects being covered.

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

B. Record of key issues identified and addressed: **Communication skills, scientific interests and inclination towards diversified areas of science, career prospects and financial problems.**

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

B. Time table and details of the courses offered in the department-wise for all courses: **Copies of time tables along with academic calendar is available on the website http://inst.dauniv.ac.in**

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

Batch Year	Programme	% of Pass-outs out of admitted students			% of Pass-outs with First Division
		SC	ST	OBC	
2008-10	M.Tech. (Instrumentation)	100	NA	100	89
2009-11	M.Tech. (Instrumentation)	100	NA	100	100
2010-12	M.Tech. (Instrumentation)	100	NA	100	100
2011-13	M.Tech. (Instrumentation)	100	NA	100	100

NA: No Admission in the category.

B. Main findings?

More attention is given to students who are slow learners and students from disadvantaged sections. It was observed that these students gained more confidence during the course and their performance also improved.

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

A grade was the major criterion. We have provided additional emphasis on How to crack competitive examinations and help them to identify the appropriate examination and support them by the required study materials? How to write SOP? What are the features required to enter in corporate sector? How to think, write and communicate research proposals and papers? etc.

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, etc.)

* Teaching plan and schedule of examinations being provided in the time table itself (available at website).

* Faculty check the copies within the 07 days of the commencement of the examination.

* It is compulsory for the students to see their evaluation and can discuss as well as they can also see copies of the other students and best answers.

2.3.2   A. Record and website info of providing course outlines and course schedules prior to the commencement of the academic session : Attached A23

B. Methods used for effective implementation

Necessary information has been provided on the website without any delay.

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

We are taking extra classes and tutorials for this purposes regularly.

B. Write up of the challenges encountered and the departmental measures to overcome these.

Extra classes and to provide freedom to ask any query after class to any teacher during working hours.

2.3.4   A. Record of student-centric learning activities

B. List of participatory learning activities which are adopted by the faculty

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that contributes to holistic development and improved student learning, besides facilitating life-long learning and knowledge management.

We have formed several departmental committees, in which students participate actively. Following are the event where these committees were also involved.

1. **Induction programme of fresher students (25. 08.2012).**
2. **A lecture has been organized on 2nd Feb. 2013. Prof. Ramsagar, Director, ARIES, Nainital has delivered it and a session has been organized with the students to interact with him.**
3. **Plantation has been done on 5th Sept. 2013 (Teacher's Day).**
4. **Interdepartmental games (from February 28 to March 02, 2013).**
5. **Convocation ceremony of University (19.02.2013).**

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

Attached

S.No.	Year	Events
1	**March 2012**	National Workshop on Applications of Ion Beams in Device Fabrication and Nanotechnology
2	**Aug. 2012**	A lecture has been organized on Nanotechnology
3	**Feb. 2013**	A lecture has been organized on Optical Instrumentation
4	**June 2013**	Celebrated Wind Energy Day on 15 June 2013 and an expert has delivered a lecture.
5	**July 2013**	National workshop on Instrumentation

2.3.6 Record of Encouragement to blended learning by using e-learning resources
Teaching using online literature and along with power-point presentation is very commonly used in the department. Every lecture room, seminar room and tutorial room are very well equipped with hi –tech Equipments for this purpose.

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
Many M. Tech. students are doing their minor and major projects in the school. School has very well equipped laser processing laboratory where, we are monitoring online physical measurement, it has been developed by the M. Tech. students.
School has well equipped computer labs, Digital Signal Processing and Embedded System laboratory.
Students used Sci lab, MATLAB, KIEL, LabView Scirus, Google scholar and e-learning.

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

It is planned in XII plan to host faculty lectures at website and from open source.

2.3.9   Record of steps taken to convert traditional classrooms into 24x7 learning places

Class rooms and tutorial rooms are equipped with LCD projectors, wi-fi etc. 24X7 learning is planned in 2013-14.

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 refer conference/ seminar file-**enclosed**).

Dr. Ratnesh Gupta also acts as counselor / mentor/ advisor for all the students of M.Tech. (Instrumentation).

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

Students benefitted by learning technology and research strategies which are used in corporate sector, and in higher education.

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

* Advanced topics with additional details using research articles.

*Used e-books and videos to teach a specialized courses on Instrumentation. The faculty members use ICT based teaching. The student-centric teaching is also being practiced.

B. Write up of improvement in learning by innovative methods

It is an urgent need of time that the students are equipped with advanced methods. Number of advance topics being added in course curricula in recent past. Major concern is the unavailability of these topics in the text books which certainly enhanced their innovative skills such as searching and referring the research articles. Number of aspects including but not limited to writing SOP, concept notes, research proposals are explained using advanced innovative methods.

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

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

- How to design an experiment?-- Lectures are delivered to students
- How to decide research problem? -- Lectures are delivered to students
- What are the steps involved in drug designing and development? Lectures are delivered to students
- How to write Scientific papers, technical notes, research proposals and SOPs. Lectures are delivered to students

The curriculum includes papers for example embedded systems, Digital Signal Processing, etc. where students' creativity and scientific thinking is useful. The faculty members develop such problems where involvement of the students is increased that is helpful in developing creativity and scientific temper among the students.

2.3.13   A. Record of student projects (if mandatory in each of the learning programme) : **Yes, copy enclosed.**

Year	No. of the projects with external institutions	No. of the projects within the university	Total no. of the projects
2008-10	3	0	13
2009-11	5	0	14
2010-12	3	0	12
2011-13	14	5	19
Total	**18**	**36**	**54**

B. Number of projects executed within the university (department): **3**

C. Names of external institutions associated with the University for Student Project Work: **Number of institutes including RRCAT, Indore, UGC DAE CSR Indore Centre, CEERI, Pilani etc. Besides many Universities and institutes across the country.**

D. Role of faculty in facilitating such projects

Almost every faculty is actively engaged in guiding M.Tech. projects.

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

B. Record of actions for shortfall supplementation : **NA.**

2.3.15   Number of percentage of faculty enabled to prepare computer-aided teaching/ learning materials: **100 % (02).**

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

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

C. Methods used and Impact of the evaluation feedback used to improve the quality of the teaching-learning process: Evaluation is discussed **We discuss these issues in departmental committees and solve (Minutes of committee enclosed).**

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: **Presently 2 faculties are working in permanent capacity. Most of the faculty work under pressure therefore, they are equipped to deal with the increased amount of work assignments and thus meet the changing need of requirement.**

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
Instrumentation	50	Nil	50	Nil

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

1. **Dr. Ratnesh Gupta Nano-materials and Nano-Technology, Magnetic Multilayers, Thin Film and Ion Beam Applications**

B. Number of faculty members appointed to teach new programmes during the last four years:00 **.**

2.4.5   List of academic recharge and rejuvenation of teachers:

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

B. List of faculty availed and on study leave: **Nil (2009-13)**

C. List of faculty nominated to national/international conferences/seminars, in-service training, organizing national/international conferences etc.: **Invited /nominated by several Conference Organizers. Dr. Ratnesh Gupta has delivered several lectures in International/ National Conferences and in Foreign universities (such as Univ. of Geneo, Italy, Univ. of Salerno, Italy, Inst. Of Ion Beam Physics, Dresden, Germany, Univ. of Paodva, Italy.) during his visit to Europe under the TRIL program of ICTP, Trieste, Italy.**

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)? **NIL**

2.4.9   Percentage of the faculty have

* 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 = **NIL**

* industrial engagement = **Nil**

* international experience in teaching = **from 2001-2003 at Univ. Of Goettingen, Germany (by Dr. Ratnesh Gupta)**

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: **Board of Studies (Chairman: Dr. A.L. Sharma).**

2.4.11   A. List of faculty encouraged: **Nil**

* Mobility of faculty between universities for teaching

* Faculty exchange programmes with national and international bodies

B. Record of schemes helping in enriching the quality of the faculty by such mobility and faculty exchanges **Nil.**

2.5   **Evaluation Process and Reforms**

2.5.3   A. Record of time taken by the department for declaration of examination results each semester: **One week**

B. Record of means adopted for the mode / media adopted for the publication of examination results (Website, SMS, email, etc.): **Telephone and E-mail., Notice Board**

2.5.4   A. Record of ensuring transparency in the evaluation process: **Students are shown the evaluated answer sheets and also discuss with concerned faculty. They can also compare with best answers and other student's copies.**

B. Measures taken to ensure confidentiality: **We have separate room with restricted entry for examination related issues.**

C. Record of the Pre-examination processes – Examination Time table generation, student list generation, Invigilators, Attendance sheet, :

First discuss and decide all the issues in Departmental Committee and to decide time table and schedule students also suggest their ease on time table (Copies of minutes enclosed).

D. Results of students course wise and its analysis: **Copies available in department record.**

2.6.   **Student Performance and Learning Outcomes**

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

Our students guided by faculties in such a way that they can utilize their soft and hard skills to perform good research and quality publications. We provide theoretical concepts and practical skills to students and that is the reason that fair number of students crack various national/ international examinations.

B. Record of facilitation of monitor the implementation and outcome

2.6.2   A. Record of learning outcomes for its academic programmes: **Placement profile of M. Tech. students enclosed.**

B. Record of making students and staff are made aware of these: **Placement profile is available on website.**

2.6.3   Write up of department teaching, learning and assessment strategies structured to facilitate the achievement of the intended learning outcomes:

We have designed our syllabus to target three aspects one is the basic concepts second is advance course and subjects components and third is the employability. We access our students in form of examination, scientific discussions and power point based presentations delivered by students (especially on advance topics preferably not part of syllabus). To access scientific temperament, practical and theoretical skills, fourth semester is completely dedicated to research work followed by presentation and viva-voce. These criteria provide overall personality and intellectual assessment of the students. We are success on the intended outcomes, as most of our students pursuing higher education and research and few are serving corporate sector and public services.

2.6.4   Record of collection and analysis of data on student learning outcomes and use it to overcome the barriers to learning: **Student placement profile enclosed.**

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

We have established a new teaching laboratories in the field of Digital Signal Processing, Embedded Systems. Presently, we have laser processing laboratory and nano technology research lab, where we are conducting the experiments with High Power Nd-YAG laser and monitor online physical and magnetic changes under ultra high vacuum conditions at low and high temperature.

We also provide assignments to students related to research articles published in International journals of repute to enhance learning of current research areas and to prepare them for future challenges.

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

CRITERION III: RESEARCH, CONSULTANCY AND EXTENSION

III.1 Year-wises Publications in the department:

more than 10 research papers have been published (list of publications enclosed).

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

more than 10.

Monographs

Chapters in Books: **02**

Edited Books: **00**

Books with ISBN with details of publishers

Number listed in International Database (For *e.g.* Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.): **All the documents listed in International databases such as Websiris, Google Scholar, Web of Knowledge**

Citation Index – range / average   **Dr. Ratnesh Gupta H-index-10**

SNIP

SJR

Impact Factor – range / average :   **Dr. Ratnesh Gupta 2.5**

h-index: **Dr. Ratnesh Gupta H-index-10**

III.3 List and Records and Details of patents and income generated: **Nil.**

III.4 List and Record of Areas of consultancy and income generated: **Nil**

III.6 List and Record of Faculty selected nationally/internationally to visit other laboratories in India and abroad: **Dr. Ratnesh Gupta Awarded ICTP TRIL Associates ship from 2002 to 2009. He availed the associates ship three times during this period and visited several research laboratories in Europe.**

III.6 List and Record of Faculty serving in National committees b) International committees c)

Editorial Boards d) any other (please specify):

Dr. Ratnesh Gupta (Reviewer of many International journals especially of Elsevier publishers).

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

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.

Details of Inter-institutional collaborative projects and grants received

All India collaboration b) International

Sponsoring Agency	Title of Project	Amount of grant (in Rs.)	Period & Year of Funding
Board of research In Nuclear Sciences, Dept. of Atomic Energy, Mumbai, **NATIONAL**	"Laser nitriding and carburization of metals and steels and their photoelectrons studies on INDUS-I"	14,91,000/-	Initialy 3 years (extended to 4 years) (2006)
DST-DAAD India- Germany. **INTERNATIONAL**	"Synthesis of Nano-composite Materials for Application of High Performance Permanent Magnets",	3,38,000/-	2 Years (2008)
UGC-DAE CSR , Indore. **NATIONAL**	"To investigate the electronic structure of Nitride and Carburized of thick films using AIPES beamline of Indus-I"	7,10,000/-	3 Years (2010)
Inter-University Accelerator Centre, New Delhi. **NATIONAL**	"To study shape transformation of magnetic nanoparticles induced by Swift Heavy Ions"	6,03,000/-	Three Years (2012)

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

III.11 List and Details of Research facility / centre with **NIL**

- state recognition
- national recognition
- international recognition

III.12 List and details of Special research laboratories sponsored by / created by industry or corporate bodies: **NIL.**

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

The following Departmental Research Committee for School of Instrumentation was constituted by the university.

1. Dr. Abhay Kumar   chairman   Dean Faculty of Engg. Science
2. Dr. A.L. Sharma   Member   Chairman, Board of Studies
3. Dr. Ratnesh Gupta   Member   Research Supervisor

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

The meeting of the Departmental Research Committee was held on 24/11/20102. The committee recommended the selection of the following candidates for Ph.D. course work:

Centre of Course Work: School Of Instrumentation, DAVV Indore

S.No.	Name	Category	Name of Supervisor & Co-Supervisor(if any)
1.	Sagar Sen	OBC	Dr. Ratnesh Gupta

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

The candidates recommended by the DRC were allowed to do Ph.D. course work. All recommended students have passed the course work.

3.1.2 Information of research centers in its affiliated / constituent colleges which are monitored by the DRC of the department: **N/A**

3.1.3 Details of the: **N/A**

* advanced funds for the sanctioned projects   NIL
* providing seed money   NIL
* Simplification of procedures related to sanctions / purchases to be made by the investigators   No simplification for the projects
* Autonomy to the principal investigator/coordinator for utilizing overhead charges   Yes, for 85% of overhead grant
* Timely release of grants   Timely
* Timely auditing   Always delayed
* Submitted utilization certificates to the funding authorities- Delayed by

six months.

3.1.4 Record of interdisciplinary research promoted

∗ With other departments /schools of the university and: **USIC is an integrated part of our school. School supports departments in the need of repair and maintenance of the instruments.**

∗ collaboration with national/international institutes/industries:

List of National/international collaborations

S.No.	Name of Institute	Starting Year
National		
1	Center for Advance Technology, (RRCAT), Indore	Since 1992
2	UGC DAE CSR Indore Centre, Indore	Since 1994
3	Inter-University Accelerator Centre, New Delhi.	Since 1996
4	Indira Gandhi Centre for Atomic Research, Kalpakkam, Tamilnadu.	Since 2004
5	CEERI, Pilani	Since 2001
International		
6	Material Section, Dept. of Mechanical Engg., Univ. of Padova, Italy.	Since 1994
7	Inst. of Physics-II, Univ. of Goettingen, Germany	Since 2001
8	Inst. of Ion Beam Physics, Dresden, Germany.	Since 2006
9	Inst. of , Univ. of Ilmenau, Germany	Since 2007

3.1.5 Details of workshops/ training programs/ sensitization programs conducted by the department to promote a research culture on campus: **Organized two national workshop and Conference on the recent topics of instrumentation and nanotechnology.**

3.1.6 A. Details of visits of researchers of eminence to visit the campus as adjunct professors: **NIL**
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 earmarked for research:
About 25 lakhs

B. Details of heads of expenditure, financial allocation and actual utilization:
Document enclosed.

3.1.8 A. Details of University funded research and awarded Post-Doctoral Fellowships/Research Associate ships: **NIL.**

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

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: **NIL**

B. Record of the output of these scholars: **NIL**

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

S.No.	Year	Events
1	**March 2012**	National Workshop on Applications of Ion Beams in Device Fabrication and Nanotechnology
2	**July 2013**	National workshop on Instrumentation

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

S.No.	Name of Speakers	Affiliation
	In "National Workshop on Applications of Ion Beams in Device Fabrication and Nanotechnology" 5th-6th March 2012	
1	Prof. K. RamaReddy	Univ. of Osmania, Hyderabad
2	Dr. B. K. Panigrahi	IGCAR, Kalpakkam
3.	Prof. Ajay Gupta	UGC DAE CSR Indore
4.	Dr. P. Sahoo	NISER, Bhubneshwar
5.	Dr. S.K. Deb	RRCAT, Indore
6.	Prof. D.C. Kothari	Univ. of Mumbai, Mumbai
7.	Prof. S. Patil	Univ. of Pune, Pune
8.	Dr. M. Gupta	UGC DAE CSR Indore
9.	Dr. N.P. Lalla	UGC DAE CSR Indore
	In "National workshop on Instrumentation" 15th July 2013	
1	Prof. K. RamaReddy	Univ. of Osmania, Hyderabad
2	Prof. RamSagar	ARIES, Nainital
3.	Prof. R.C. Verma	Univ. of Patiala, Punjab.
5.	Dr. P. Pancharia	CEERI, Pilani, Rajasthan
6.	Dr. S. Chouhan	CSMCRI, Bhavnagar, Gujrat

7.	Dr. Vipul Arora	RRCAT, Indore
8.	Dr. Vishal Dhamgaye	RRCAT, Indore

3.2 Resource Mobilization for Research

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

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

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

3.2.3 Details of ongoing research projects of faculty:

Sponsoring Agency	Title of Project	Amount of grant (in Rs.)	Period & Year of Funding
UGC-DAE CSR , Indore. **NATIONAL**	"To investigate the electronic structure of Nitride and Carburized of thick films using AIPES beamline of Indus-I"	7,10,000/-	3 Years (2010)
Inter-University Accelerator Centre, New Delhi. **NATIONAL**	"To study shape transformation of magnetic nanoparticles induced by Swift Heavy Ions"	6,03,000/-	Three Years (2012)

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. **NA**

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 the quantum of assistance received: **NIL**

B. Record of any two significant outcomes or breakthroughs achieved by this recognition: **NA**

3.2.6 List details of

  a. research projects completed and grants received (funded by National/International agencies):

Sponsoring Agency	Title of Project	Amount of grant (in Rs.)	Period & Year of Funding
Board of research In Nuclear Sciences, Dept. of Atomic Energy, Mumbai, **NATIONAL**	"Laser nitriding and carburization of metals and steels and their photoelectrons studies on INDUS-I"	14,91,000/-	Initially 3 years (extended to 4 years) (2006)
DST-DAAD India- Germany. **INTERNATIONAL**	"Synthesis of Nano-composite Materials for Application of High Performance Permanent Magnets",	3,38,000/-	2 Years (2008)

b. Inter-institutional collaborative projects and grants received: **As above**

i) All India collaboration

ii) International

3.3 Research Facilities

3.3.1 A. Infrastructure in the department to facilitate research: **List of equipments and laboratories as follows.**

S.No.	Name of Equipments
1	High Power Nd-YAG Laser (purchased from Europe)
2	Indigenously designed Ultra High Vacuum Chamber (From Mumbai) (vacuum pressure ($>10^{-6}$ torr)
3	Turbo-Molecular Pump and accessories (from USA)
4.	High Resolution Electrometer(from USA)
5.	Nanovoltmeter (from USA)
6.	Constant Current Source meter (from USA)
7.	Lock-in Amplifier (from USA)
8	Digital Storage Oscilloscope 200 MHz (from USA)
9	DSP Processor ((from USA)
10	Function Generator (from USA)
11	Mössbauer Spectrometer (partially from Europe)

B. Strategies have been evolved to meet the needs of researchers in emerging disciplines: **Our faculties supervising the M.Tech projects that are mainly funded through various funding agencies and with close collaboration with RRCAT, Indore, UGC DAE CSR, Indore, IUAC, New Delhi and IGCAR, Kalpakkam.**

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

School has well-furnished laboratories and computer labs.

B. Details of the facility.

S.No.	Name of Laboratory	List of Major Equipment
1	Embedded System	Microcontroller kits from 8-bit to 32-bit and related accessories
2	Process Control Lab	Siemens PLC, Indigenous equipment
3	Digital Signal Processing	Texas 16-bit DSP processors, Digital Storage Oscilloscopes, Arbitrary Function Generator
4	VLSI Lab	Universal Development Platform with Spartan 3, FPGA Daughter card and CPLD card, Spartan 6 card
5	Bio-Medical	Detailed ECG machine interfaced with PC, Oxymeter etc.
6	Sensor and Transducer	Thermal, Position, Level and Optical sensors are available
7	Computer Lab	15 number of PCs well connected with Internet

3.3.3 Record of University Science Instrumentation Centre (USIC) facilities been made available to research scholars: **Yes, USIC provides help to repair instrument and glasswares.**

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

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): **Our campus is Wi-Fi.**

3.3.5 Details of Uses of the Facilities of IUC, CAT, NRCS, IIT Indore and other specialized Research Centers for research: **Many facilities are used and collaboration in research programs with RRCAT, Indore and UGC DAE CSR Indore Centre (Formerly IUC). Exist many research papers have been published and research projects have been carried in close collaboration with them.**

3.4 Research Publications and Awards

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. **No research journal is published**.

3.4.2   Details of publications by the faculty: **List enclosed for each faculty individually.**

*   Number of papers published in peer reviewed journals (national / international) : 80

*   Monographs :0

*   Chapters in Books :02

*   Books edited :0

*   Books with ISBN with details of publishers:0

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

*   Citation Index – range / average : **varied from 0 to 80**

*   SNIP

*   SJR

*   Impact Factor – range / average : 1.0 – 4.0/2.5

*   h-index :10 (Dr. R. Gupta)

3.4.3   Details of

*   faculty serving on the editorial boards of national and international journals

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

     Dr. Ratnesh Gupta awardee ASSOCIATE MEMBERship   (2002-09)   of International Centre for Theoretical Physics, (ICTP) Trieste, Italy.

3.4.4   Details of

*   research awards received by the faculty and students

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

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

Year	No of faculty	No of Ph.Ds. awarded
2012-13	**01**	**01**
2011-12	**01**	**01**
2010-11	**01**	**00**
2009-10	**01**	**01**

 B. University participate in *Shodhganga* by depositing the Ph.D. theses with INFLIBNET for electronic dissemination through open access: **Service through central library.**

3.4.6   A. Record of Promotion e interdisciplinary research

B. Number of interdepartmental / interdisciplinary research projects undertaken: **NIL**.
Mention the number of departments involved in such endeavours: **NIL**

3.4.8   List of University instituted research awards to the faculty of the Department
NIL

3.4.9   Details of incentives given to the faculty for receiving state, national and international recognition for research contributions: **Appreciation in department committee meeting & departmental functions. Appreciation award planned for 2013-14**.

3.5   Consultancy : NIL

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

3.5.2   A. Department participation in university-industry cell: **A task force on university Industry Co-operation is working on increasing department participation for 2013-14.**

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

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

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:

1. Madam Mohan Malviya Lecture series.
2. Dr. A.P.J Abdul Kalam message.
3. Swami Vivekanand Lecture Series
4. Global Wind Mill Day celebration

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

Cleaning of Khan river

Tree plantation

Cleaning of campus

Blood donation camps

3.6.2   Promotion of neighborhood network and student engagement and holistic development of students and sustained community development?
Campus cleanliness drive, campus green drive, Khan river cleaning awareness march, blood donation camp, eye checkup camp.

We have discussed about the good life style, how to bear work and other pressures without affecting health? How to be happy? What are our social responsibilities? How to become a good human being besides a successful person? These discussions were made on several occasions such as fresher's party, farewell etc. No documentary record available till to date.

3.6.3   Record of participation of the students and faculty in extension activities including participation in NSS, NCC, YRC and other National/ International programs: **NIL**

3.6.4   Records of tracking the students' involvement in various social movements / activities which promote citizenship roles: **Celebrated the following events this year:**

   1. **Shramdan in Garden dated 02.10.2012.**

   2. **Interdepartmental games (from February 28 to March 02, 2013).**

   3. **Deptt. is participating in University Green calendar.**

3.6.6   Write up of the values inculcated and skills learnt during extension activities.
         Events inspired them to work for every small aspects without any hesitation such as cleaning and beautification of our institute, what are the challenges of climate change, what is Nations social and cultural flavors and how to retain it etc.

3.6.7   Department community in its outreach activities: Deptt. functions as one community in all outreach programs.

   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:
   File

B.   Record of benefits academically and financially because of collaborations:
   A DST-DAAD project resulted in one research publication.

3.7.2   Records of linkages resulted in
   * Curriculum development: **No documentary proof.**
   * Internship: **Students carried out dissertation work at CEERI, Pilani, RRCAT, Indore and several other reputed organizations.**
   * On-the-job training: **Nil.**
   * Faculty exchange and development: **Yes**

Faculty and Research students visited Univ. of Padova, Italy.

∗ Research: Publication: **Yes, number of publications in good journals are the outcome of our collaborations (please refer publication list).**

∗ Consultancy: **Nil.**

∗ Extension: **Nil.**

 Student placement: **01**

∗ Any other (please specify): **Nil.**

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

B. Record of enhanced the research and development activities: **Publications reflect the enhanced research and development activities with collaborative institute.**

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

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

4.1   Physical Facilities

4.1.1   A. Details of Department physical infrastructure:

S.No.	Facility	Location
1	Office	AX01
2	Stores	AX02
3	Glass Blowing Workshop	AX03
4	Research Lab.	AX04
5	Boys Common Room	AX05
6	Placement Office and Exam Office	AX06
7	HOD Office	03
8	Seminar Room	01
9	Research lab.	02
10	Research lab.	04
11	Class Room	05
12	Girls Common Room	06
13	Computer Lab.	07
14	Process Control Lab	08
15	Class Room/Tutorial Room	11
16	Embedded System Lab	12
17	Dept. Library	13
18	DSP Lab	14
19	Bio-Medical, Sensor Transducer and Analog/Digital Lab.	15

B. Maintenance of Laboratories for its optimal utilization: **Committees of faculties constituted to look after different labs (Please refer minutes of departmental committee).**

C. Maintenance of Computers for its optimal utilization: **regular maintenance done through outsource.**

D. Maintenance of UPSes, Power Supplies: **Yes.**

E. Maintenance of support services, sanitation, first aid boxes**: Yes, university utilizing contract services for the same.**

F. Maintenance of building, garden, indoor games structure: **university staff does maintenance. Contract services of cleaning.**

4.1.2 Record of new initiatives for Infrastructure for promote a good teaching-learning environment- Internet, Wi-fi, Power Point Projectors, Video Equipment: **Projectors and computers in each classroom and also having computer lab to students and faculties.**

4.1.3 Physical ambience for the faculty in terms of adequate research laboratories, computing facilities and allied services: **Very good ambience to conduct research work sufficient no. of labs and facilities required to perform quality work (Please refer infrastructure and equipment's file).**

4.1.4 List of Facilities like office room, common room and separate rest rooms for women students and staff: **List enclosed in 4.1.1**

4.1.5 List of the infrastructure facilities are disabled-friendly: **No separate arrangements, but the every facility is available at each floor so in this particular condition ground floor may be used. Ramps are planned in 2013-14. Internet for blind is available at I.T centre.**

4.1.8 Departmental special facilities are available on campus to promote students' interest in sports and cultural events/activities: **Gymnasium and National standard play grounds and excellent Auditorium at University level for faculty, staff and students.**

4.2 Library as a Learning Resource

4.2.1 Details of departmental library facilities: **We have 900 books on various topics.**

4.2.2 Provide details of the departmental library:

* Total area of the library (in Sq. Mts.): ~ 100 Sq. mts.
* Total seating capacity: **10**
* Working hours (on working days, on holidays, before examination, during examination, during vacation): **During working days 10 AM to-5 AM.**
* Layout of the library (individual reading carrels, lounge area for browsing and relaxed reading, IT zone for accessing e-resources): **We have garden space near to library and also somehow isolated to provide peaceful atmosphere.**
* Clear and prominent display of floor plan:
* Adequate sign boards; **Yes**
* Fire alarm.; **No, FIRE Extinguishers are available at every floor and in every building**
* Access to differently-abled users and : **NA**
* Mode of access to collection: **Physical**

4.2.3 Departmental library holdings:

    a) Print (books, back volumes and theses): **900 print books, 1000 journals, 4 Ph.D. theses and 200 M.Tech. dissertation theses**

    b) Average number of books added during the last three years: **100**

    c) Non Print (Audio Video, CDs, Downloaded Articles): **We have CDs of some books (around 50 in Nos.).**

    d) Electronic (e-books, e-journals): **Nil.**

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

4.2.4 Records of tools the library deploys to provide access to the collection: Through central library.

* OPAC
* Electronic Resource Management package for e-journals
* Federated searching tools to search articles in multiple databases
* Library Website
* In-house/remote access to e-publications

4.2.5 Use of ICT deployed in the library: **Nil.**

* Library automation
* Total number of computers for public access
* Total numbers of printers for public access
* Internet band width speed   □ 2mbps □ 10 mbps ☒ 1 GB
* Institutional Repository –through central library
* Content management system for e-learning
* Participation in resource sharing networks/consortia (like INFLIBNET)- through central library

4.2.6 Details (per year) with regard to

* Ratio of library books to students enrolled: **45:1**
* Average number of books added during the last four years: **100**
* Assistance in searching Databases: **Nil**
* INFLIBNET/IUC facilities: **Nil.**

4.2.7 Annual departmental library budget and the amount spent for purchasing new books and journals:

4.3   IT Infrastructure

4.3.1   Details of Department IT and ICT Infrastructure :

1. LCD projectors-3

2. PCs -20.

3. Internet switches-1

4. UPS (online)-1x 5 KVA; 2x 1 KVA, Printers (9)

Computer Labs and related laboratories:05

Faculty Rooms having IT facility

Wi-Fi Campus

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

- Number of systems with individual configurations :

P4 System : 10

Dual Core : 5

Core 2 Duo: 5

I5 processor: 05

- Computer-student ratio: **1:1**

- Dedicated computing facilities:

- LAN facility: **IT centre is providing LAN facility with 1GBPS speed.**

- Proprietary software :

MS Office 2003, Quick Heal Pro Antivirus 2013, Operating Sytem,

Operating System software:

❖ **WINDOWS Server 2003**

❖ **Windows Vista**

❖ **Linux 7.0, 8.0**

❖ **WINDOWS XP, NT, 98.**

Trend MICRO Office Scan (from IT centre), MATLAB, KIEL, LABVIEW XILINX, and software from Texas Instruments

- Number of nodes/ computers with internet facility: **28**

- Any other (please specify)

4.3.3   Plans and strategies for deploying and upgrading the IT infrastructure and associated facilities: **Another new computer lab and up gradation of softwares are planned in 2013-14.**

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,

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learning and research. : **Our classroom projectors are also connected with Internet.**

4.3.5   IT facilities available to individual teachers for effective teaching and quality research: **Every Faculty has allotted with a system with Internet facility.**

4.3.8   A. Details of ICT-enabled classrooms/learning spaces available : **All class rooms /Seminar Hall (05) are ICT enabled giving 24×7 learning place.**

B. Record of utilization for enhancing the quality of teaching and learning: **Power point presentations are available as record. Also student feedback copies and analysis available.**

4.3.9   Records of Faculty and computer- aided teaching-learning materials: **Yes school has copies of PPTs and research articles.**

4.3.10 Department availing of the National Knowledge Network connectivity: **Using various interactive sites and also accessing journals such as NATURE, affiliated to IFLIBNET through MHRD programme established in 2012.**

4.3.11 Record of Availing of web resources such as Wikipedia, dictionary and other education enhancing resources: **The Presentations of classes are available in library.**

4.3.12 Department budget for the update, deployment and maintenance of computers: **File**

4.3.13 Details of plans envisioned for the gradual transfer of teaching and learning from closed university information network to open environment: **Using ICTs we are gradually progressing towards information to open environment.**

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

5.1   Student Mentoring and Support

5.1.1 Department system, structural and functional characteristics for student support and mentoring: **Accessibility of all the faculty during all working hours.**

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

The school structure is as follows:
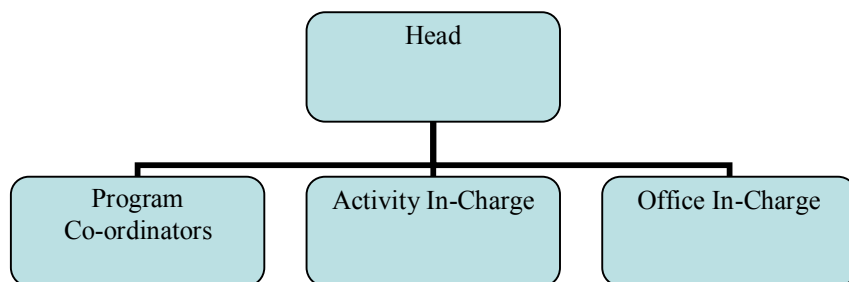
Besides this the school has following functional Committees:

- Departmental Committee
- Placement Cell
- Anti Ragging Committee
- Anti Ragging Squad
- Students' Grievance Cell
- Purchase Committee

Functional characteristics for student support and mentoring:

Faculty members encourage the students to clear their doubts.

There is a strong student-mentor relationship, and students are free to discuss about their problems with the faculty member.

Anti-Ragging committee monitors the welfare of the students.

Orientation programme helps the new students to get familiar with the department and the University.

Mentors are allotted for a group of 18 students each.

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

a. Tutorials are delivered to the slow learners.
b. Assignments have been given and discussed with the students.
c. The students can clear their doubts with the faculty members outside the class room.
d. Students have to present a seminar on published research work, for which they are given marks and they have to implement in the laboratory also, if it is feasible.
e. Students have to complete a project work in different R&D national labs/ in the industry during final year.
f. Students are given a real problem to work on during a project, so that they can use theoretical knowledge in solving the problem.
g. We monitor the progress of the students during the project work and suggest them for the future work. We are doing to by putting some experts from the R&D labs.
h. The students have to submit the dissertation and present their project work upon its completion.
i. Experts are invited to deliver talks in various seminars.

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:

- An orientation programme for fresher's is organized every year at university level. Classes for personality development are conducted as a part of the curriculum to promote the overall development of the students.
- University Career Counseling Cell organizes the lectures time to time.
- A language laboratory is setup for all students from UGC grant at School of Computer Science and Information technology.
- The classes are arranged for soft skills at school.
- Students get advice from the faculty members from time to time to enhance their learning, thinking, and presentation skills.
- Faculty and alumni also suggest the current students about various academic, research and industry based job opportunities.
- Students get chance to interact with experts when seminars are organized.

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

5.1.5

A. Records of the Timely dissipation of financial aid: **Yes.**

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: **P.G. Students of Instrumentation: GATE qualified students (total number 13, every year) received scholarship from**

AICTE, MHRD, New Delhi. SC/ST/OBC students are getting the University fees from M.P. Govt., if they fulfill the criterion.

• Scholarships	2009-2010	2010-11	2011-12	2012-13	2013-14
AICTE (GATE) Scholarships	4	8	10	16	24
SC/ST Scholarships	1	4	2	3	0
OBC Scholarships	0	0	0	2	4

Details of the scholarships/ assistant ship given to Ph.D. students:

Scholarships/ Free-ships	2010-11	2011-12	2012-13	2013-14
Project Assistant in different projects	1	1	2	2

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.): NIL**

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

No foreign student has been registered in the school during the assessment period.

5.1.8   Department support services available for:
   ∗ Students participating in various competitions/conferences in India and abroad
   o Students avail railway fare concessions certificates to the students for participating in various competitions/conferences in India.
   o School provides leave for participating in various competitions/conferences in India/ abroad.
   o Tutorials are conducted for such students who participate in competitions/ conferences.

   ∗ Physically challenged / differently-abled students
   o Internet facility for blind students is available at I.T. Centre.
   o Ramp will be constructed in the year 2013-14 to help physically

challenged / differently-abled students.

* SC/ST, OBC and economically weaker sections
o Fellowship from M.P. Government is provided to SC, ST and OBC candidates.
o There is a separate coaching cell for minorities and SC/ST/OBC.
o Tutorials along with classes are conducted for weak students.
o Counseling sessions are conducted.

* Health centre, health insurance etc.
   1. University Health Centre provides necessary medical care to the students.
   2. Health file of each student is maintained from 2013-14.

* Skill development (spoken English, computer literacy, etc.)
o The classes are conducted for students to upgrade their language skills, confidence level, and mass appearance etc.
o Student presentations are conducted in each course for concept presentation ability, handling queries, realization of self worth, confidence generation etc.
o Language laboratory facilities are available to improve spoken English.

* performance enhancement for slow learners
o Remedial classes are conducted for slow learners.

* exposure of students to other institutions of higher learning/ corporate/business houses, etc.
o The students undergo training-cum-project work during third and fourth semesters in different industrial / academic / research organizations.

* publication of student magazines: Planned in 2013-14
* Record of student participation in sports and extracurricular activities Students participate in annual UTD sports competitions.

5.1.9 Placement Records:

The students have been placed in different organizations. Examples are as follows: HCL, SunPharma, Tata Honewell and in various teaching institutions.

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). **NIL.**

5.1.11 A. Record of registered Alumni Association: **University registered alumni association exists, department alumni association functions as online group.**

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

Alumni provide intellectual support and sometimes financial support to juniors for their placements.

C. Record of alumni meets: **Planned in 2013-14.**

5.1.12 A. Committee members and record of student grievance redressal: **Usually we solve such problems during teachers student meeting. Besides we have University as well as departmental redressal cell.**

B. Details of the nature of grievances reported and the redressal: **No official complaint being received till to date.**

5.1.13 A. Record of anti-ragging committee: **Anti-ragging committee (document enclosed in various committee file).**

Anti-ragging Committee:

No.	Name	Committee Member
1.	Dr. A.L. Sharma	Chairman
2.	Dr. Ratnesh Gupta	Member, Faculty
3.	Mr. P.D. Vyas	Member, Non-Teaching Staff
4.	Mrs. M Saraf	Member, Non-Teaching Staff
4.	Mr. Baburam	Member, Parents
5.	Mr. Somtiya	Member, Parents

Anti-ragging Squad:

No.	Name	Squad Member
1.	Dr. Ratnesh Gupta	Member, Faculty
2.	Dr. D.M. Phase	Member, Visiting Faculty
3.	Prof. R.B. Ghodgaonkar	Member, Retd. Prof., MANIT , Bhopal.

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

- Industries permit the students for industrial visit.
- Training and jobs are provided to students with the cooperation of Stakeholders.
- Industrial experts and Stakeholders cooperate also in modifications in curriculum by providing their suggestions and expert opinion.

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

Women students also participate in the annual sports activity, intra- and inter-institutional sports competitions, and cultural activities. List of the participants (2012-13) is as follows:

1. Pooja Dabhowale
2. Sharda Gupta
3. Swati Dewliya

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

5.2   Student Progression

5.2.1   Analysis of progression and trends for the last four years.
         M.Tech. and Ph.D. Instrumentation

Student Progression	%
UG to PG*	**NA**
PG to M.Phil.*	**NA**
M.Tech. to Ph.D.	**10%**
Ph.D. to Post-Doctoral	50%
Employed • Campus selection • Other than campus recruitment	**90%**

5.2.2   Programme-wise pass percentage during the time span stipulated: ~**100 % in all the programs except one student got failed in 2012 (M.Tech. Instrumentation) out of 20.**

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.

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

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Year	Thesis submitted			Thesis awarded			Thesis rejected			Resubmitted
	SC/ST	OBC	GEN	SC/ST	OBC	GEN	SC/ST	OBC	GEN	
2009-10	0	1	0	0	0	0	0	0	0	0
2010-11	0	0	0	0	1	0	0	0	0	0
2011-12	0	0	1	0	0	1	0	0	0	0
2012-13	0	0	1	0	0	0	0	0	0	0

5.3   Student Participation and Activities

5.3.1   A. List the range of sports, cultural and extracurricular activities available to students
          B. Sports and extracurricular calendar and details of students' participation.
              Sports: Badminton, Football, Volleyball, Cricket, Table Tennis, Chess.

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. None

5.3.3   A. Gathered data and feedback from pass-out graduates
          The feedback from pass-outs was taken and data were analyzed.
          B. Gathered data and feedback from employers
          Feedback from some employers was taken.

          C. Use of the data for the growth and development of the department
          Feedback is used in revising the syllabi.

5.3.4   Department special drives / campaigns for its faculty and students to promote heritage consciousness
          1. The school organized visits of faculty members and students to promote heritage consciousness. The following places were visited:
              Lalbagh Palace, Ralamandal, and Central Museum.
          2. Videos or CDs on heritage places are shown to the students to create heritage awareness.

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

Planned in 2013-14

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

Advanced learners of M.Tech. programmes have published one research papers in the year 2012-13. Ph.D. students published no. of research papers with their supervisors.

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

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

The students' representatives are members in Board of Studies, Anti-ragging committee, placement cell, sports and cultural cell.

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

Nil

6.1   Institutional Vision and Leadership

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

Vision Statement:

School of Instrumentation has a mission to become a globally reputed academic and research center in the areas of instrumentation, especially in the field of magnetic sensors, vacuum techniques, methodologies by offering excellent interdisciplinary academic and research programmes applicable to diverse systems.

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,

The vision statement of the department is to become a highly technical education which would inculcate the students with potential towards excellence and also would impart strong character and competence. Our objectives are :

- To disseminate information on new trends, techniques, opportunities for students and teachers,
- To save time, money, and human resources,
- To strengthen research and teaching collaborations with other scientific organizations for the transfer of knowledge,
- To provide technology and technological service, and
- To check the accountability and auditing of existing resources.

6.1.3   Write-up of

∗ ensuring the organization's management system development, implementation and continuous improvement

School as an organizational unit undertakes management of academic affairs, administrative affairs and other support affairs.

For smooth functions of the school, we have several committees, in which we take the help from other institutions like RRCAT, Indore and UGC DAE CSR Indore centre, Indore to achieve tour academic and research objectives. Participation of the technical and administrative staff is encouraged for the development of the school and for the proper functioning of the school.

To become paperless, our most of the work has been done on computers and excel sheets. Administrative staff has also use the internet facility for the internal as well as external communication.

* interacting with its stakeholders

    The course content, results and other major developments are updated on the university website, as that forms the main means for us to reach the larger stakeholders community. We maintains an open environment and encourages direct formal and informal interaction with faculty members, students and staff members.

* Reinforcing a culture of excellence
    To reinforce culture of excellence, the school does the following;
    We provide personal attention to the slow learners by organizing tutorials and problem oriented sessions.
    For advanced learners opportunity to work on research oriented problems and interact with other R&D groups nearby.

* identifying organizational needs and striving to fulfill them
    Identification happens through feedback and discussions with student, staff and faculty members.

    The Head of the Department after screening the list of requirements draws up a priority list and fulfills them subject to availability of funds and other resources. [Short term].

    The Head of the Department pursues with the University for Increased Fund Allocation or work towards mobilization of resources for fulfilling needs. [Long Term]

6.1.4   Records of Departmental and other committees meetings
    Meetings of Departmental Committee are held monthly and record is maintained with the office.
    Records of meetings of Purchase Committee, Board of Studies, Anti Ragging Committee, Sports and Cultural Committee are maintained.

6.1.6   Write-up of a culture of participative decisions in the department

The school functions through highly participative decision making process. Daily informal meetings between faculty members and staff members allow free exchange of ideas and thoughts leading to decisions.

6.1.7   Record of grooming leadership at various levels
The responsibilities are assigned at different levels and guidance is provided.

6.1.10   Record of knowledge management strategy:
Project reports and dissertations are main repositories of knowledge created in the department. These are maintained in the departmental library for ready reference.

6.1.11   Write up on
*   Contributing to national development
The curriculum offers scientific and technological principles which are of direct relevance in systems development and planning. A good number of the students trained from this department are engaged in providing services leading to national development e.g. industries, as entrepreneur, and as an academician etc.

The school has produced following students since 1991 who are serving the nation:

M.Tech. (Instrumentation)   360

M.Sc. (Instrumentation)   15

Ph.D.   05

* Fostering global competencies among students
Exposure to new world mechanisms like Clean Development Mechanism (CDM) of United Nations given to students in the department have resulted in students acquiring competencies which have been valued at global level.

* Inculcating a sound value system among students

Fairness and transparency are the corner stones of the department's functioning. The students are groomed in this atmosphere which helps them inculcate these values.

* Promoting use of technology

Use of computer based systems including internet, PC interfacing are widely used in teaching. The students are required to use such tools in their assignments. Further, there are social groups created for sharing of knowledge among students and faculty members. These promotes the use of technology among students.

* Quest for excellence

The curriculum of the courses are evaluated annually and benchmarked with those offered in reputed national and international institutes. Appropriate updates to the curriculum are carried out. This helps the department strive for excellence.

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**

<u>Work for Vision:</u>

As human societies strive for growth, preparedness to deal with the future in the face of changes which come with time (in diverse aspects of national/corporate/other systems), becomes an important determinant in sustainable development (of nations/corporate/societies). School strives to become a pioneer in teaching, research and development of scientific principles, technological capabilities and systems principles to efficiently and effectively plan as well as manage in the face of such changes.

<u>Work for Achieving Mission:</u>

School functions and strives for excellence in teaching by methodical course and curriculum development, continuous improvement in course delivery and setting appropriate learning outcomes.

School targets increased impact from research outcomes. School developed new system insights, new scientific techniques and new framework needed for

innovative policies. These actions enable futurists and planners to perform with increased effectiveness.

School strives for active collaboration with world renowned institutes, industries and government planning bodies thereby giving faculty and students opportunity to work on contemporary challenges.

School creates and maintain an environment of participatory involvement wherein staff members continually support the School in its striving for continual improvement.

* **Enhancing Teaching and learning**

School strives to bring in excellence in teaching by methodical course and curriculum development, continuous improvement in course delivery and setting appropriate learning outcomes. School enriches students with a set of skills, knowledge and attitudes that permits them to succeed and thrive as futurists and systems engineers. School takes care to connect research activities to teaching and thereby enlarge domain of students understanding and applicability of knowledge.

* **Enhancing Research and development**

Research: School engages students in knowledge search, develop new system insights, develop new scientific techniques and programs with increased effectiveness. School targets increased impact from research outcomes. School strives to improve quality of research work undertaken by students. We have established two R&D laboratories in the school.

* **Enhancing Community engagement**

School would like to start activities to develop scientific temper in the society.

* **Enhancing Human resource planning and development**

Faculty development: School designs programs for continuous development of knowledge of faculty members by encouraging them to undertake collaborative research work with world renowned institutes and to perform experimental R&D work in RRCAT, Indore. We are actively engaged in the collaboration in the field of Synchrotron Radiation facilities available at RRCAT, Indore. We are participating in the development program also.

Staff development: Some of our employee are attending course work specially for the Computer operation and in the use of internet.

* **Enhancing Industry interaction**

We are planning to interact in an official manner.

∗ **Enhancing Internationalisation**

The school intends to collaborate with reputed international institutes for research. This can be very well shown below by the following activities:

Sponsoring Agency	Title of Project	Amount of grant (in Rs.)	Period & Year of Funding
DST-DAAD India- Germany. **INTERNATIONAL**	"Synthesis of Nano-composite Materials for Application of High Performance Permanent Magnets",	3,38,000/-	2 Years (2008)

S.No.	Name of Institute	Starting Year
1	Material Section, Dept. of Mechanical Engg., Univ. of Padova, Italy.	Since 1994
2	Inst. of Physics-II, Univ. of Goettingen, Germany	Since 2001
3	Inst. of Ion Beam Physics, Dresden, Germany.	Since 2006
4	Inst. of , Univ. of Ilmenau, Germany	Since 2007

We have published several joint research publications.

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

The organizational structure is as follows:
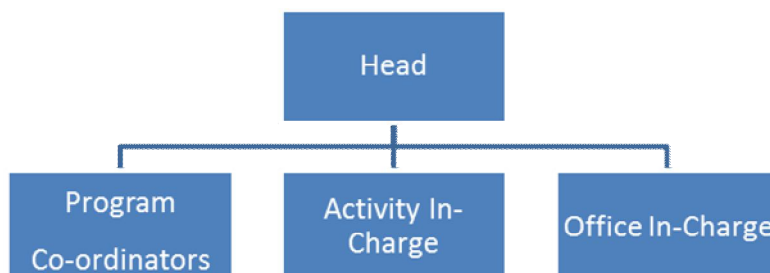
Decisions are taken through Departmental Committee. Decisions are thereafter implemented by the relevant persons like-program co-ordinators, activity in-charge,

office in-charge, etc. Progress is monitored by the Head of the school and corrective actions, wherever required, are taken.

6.2.3 Write up of functioning independently and autonomously and ensure accountability

The School takes its decisions, including preparation of time table, conduct of examination and purchases up to a limited amount, in the meetings of the Departmental committee. The departmental committee consists of all regular faculty members of the school. The decisions are implemented at different levels and accountability is fixed with the implementing persons.

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 case has been filed against the school during last four years.

6.2.6 Performance audit of the department by external experts

1. IQAC cell does yearly quality audit of annual report of the school.

2. Performance audit of the school is planned to conduct in the year 2013-2014.

6.3 Faculty Empowerment Strategies

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

All regular faculty members fill self appraisal and PBAS annually. Filled self appraisal and PBAS reports are sent to the university. The decisions on these reports are taken by the University.

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

Available Welfare scheme	Name of the availing teachers
University Quarters	Nil
Community Centre	Nil

Health Centre	All teachers
University Society-Pedi	Nil
Admissions of employee's wards in university's programs	Dr. Ratensh Gupta
Day care centre	Nil

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

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

Batch Year	Programme	Percentage of students passed with GGPA ≥ 8		Percentage of students passed with 6.20 ≤ GGPA < 8		Percentage of students failed	
		Male	Female	Male	Female	Male	Female
2009-11	M.Tech. (Instrumentation)	30%	0%	70%	86%	0%	0%
2010-12	M.Tech. (Instrumentation)	40%	20%	60%	80%	0%	0%
2011-13	M.Tech. (Instrumentation)	33%	20%	67%	80%	0%	0%

Year	Ph.D. Awarded	
	Male	Female
2009	0	0
2010	1	0
2011	0	2
2012	1	0

Salient Findings:
It is clear from the above mentioned tables that female candidates have performed better than male candidates during last four 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.

The university does not provide statement of audited income and expenditure at school level for its academic and administrative activities.

6.4.5 Efforts taken by the department for resource mobilization.

The school approached different funding agencies for resource mobilization. The following resources were mobilized during last four years:

Name of the Faculty	Project Title	Funding Agency	Grant Received (Rs.)
Dr. Ratnesh Gupta	"Laser nitriding and carburization of metals and steels and their photoelectrons studies on INDUS-I"	Board of research In Nuclear Sciences, Dept. of Atomic Energy, Mumbai, **NATIONAL**	14,91,000/-
Dr. Ratnesh Gupta	"Synthesis of Nano-composite Materials for Application of High Performance Permanent Magnets",	DST-DAAD India- Germany. **INTERNATIONAL**	3,38,000/-
Dr. Ratnesh Gupta	"To investigate the electronic structure of Nitride and Carburized of thick films using AIPES beamline of Indus-I"	UGC-DAE CSR , Indore. **NATIONAL**	7,10,000/-
Dr. Ratnesh Gupta	"To study shape transformation of magnetic nanoparticles induced by Swift Heavy Ions"	Inter-University Accelerator Centre, New Delhi. **NATIONAL**	6,03,000/-

Fees Collected from Students:

Year	Fees collected from the students of M.Tech. (Instrumentation)	Total
2009-10	680714	680714
2010-11	680714	680714
2011-12	720756	720756

2012-13		700737	700737

6.4.6   Record of endowment funds created

 Endowment funds are created at the University level and records are maintained by the University.

6.5   Internal Quality Assurance System

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

The school has an Internal IQAC cell that is responsible for Internal Quality assessment. Feedback from the students and stakeholders are taken on regular basis. The feedbacks are analysed and follow-ups for quality sustenance and assurance are taken. Students are shown the evaluated examination answer books and correct answers are discussed in the class.

6.5.2   Internal workshops to improve teaching, learning and evaluation

Seminars and workshops on internal quality assurance are held at the University level.

6.5.3   Record of continuously review the teaching learning process

All the issues related to teaching learning process are discussed during meetings of the departmental committee.

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

Nil

CRITERIA VII: INNOVATIONS AND BEST PRACTICES

7.1   Environment Consciousness

7.1.1   Department Area Green Audit details

Large green area is available in all the sides of the school. The school is covered by several trees.

7.1.2   Departmental initiative to make the campus eco-friendly?

* Energy conservation:
   Faculty members, students, and staff switch off computers, tube lights, fan, when not in use.
   Use of energy efficient devices.

* Use of renewable energy:
   No use of lighting devices when sufficient sun light is available.

* Water harvesting: Not available

* Check dam construction: Not applicable

* Efforts for Carbon neutrality: Trees plantation

* Plantation: Trees are planted in each year. Green University Policy is in force since 12/06/2013.

* Hazardous waste management: No hazardous waste is generated.

* e-waste management: e-waste is disposed off as per IMC/ state policy each year.

* any other (please specify): Nil

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

1. Maintaining the records in e-form.
2. Availability of the results, notices, assignments, syllabi, course material on-line.
3. Use of ICT in teaching.

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. **Suggestions from senior alumni on job requirements**
2. **Keeping the records in e-form.**