# Internal Quality Assurance Cell ( IQAC)
# SGT University

## Annual Report (Aug 2016- July 2017)
## Department of Physics

**Edited by: Dr. Ram Chhavi Sharma**
**Professor & Head**
**Department of Physics**

The department of physics ever since its inception has always given immense importance to students teaching learning process and has emerged as an excellent centre for teaching and research. Equipped with modern infrastructure & laboratory facilities with qualified lab staff, the department takes utmost care to give its students exposure to the latest research & development in physics. Every year the department arranges for its students educational and Industrial trips to various research centers and Industries all over the country to acquaint them with the latest research and development activities and to inspire in them a love of knowledge and to instil in them a passion for physics. The teachers in the department are highly qualified and experienced, all with Ph.D. from renowned institutions such as National physical Laboratory, Indian Institute of Technology, Reputed Indian & Foreign Universities.

The department offers four- semester M.Sc. (Physics) and Ph.D. (Physics) programmes in addition to regular B.Sc. programme. In M.Sc. there are 30 seats. In the 1st and 2nd semesters, all the students have to take basic courses of Physics while in the 3rd and 4th semesters, they can opt for any two specializations out of three frontline courses (Condensed Matter, Electronics & Nuclear Physics) in addition to two compulsory papers.

## Department at a Glance (2016-17)

Name of the Department: Physics

Year of establishment: UG: 2014, PG: 2015.

1. List of Faculty with designations

| S.N | Name of Faculty | Designation | Educational Qualifications | Area of specialization | Exp | Publications/ Books (Total) |
|---|---|---|---|---|---|---|
| 1 | **Dr. Amal Kumar Shah** | Professor& Dean, FPS | Ph.D. (TIFR) | Experimental Physics, Information Technology, Cyber-security | 23 Years | 13 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | **Dr. R.C. Sharma** | Professor & HOD | M.Phil. (Kurukshetra Univ.)<br>Ph.D. (NPL,Delhi) | Solid State Electronics & Infrared Spectroscopy | 40 Years | 30 |
| 3 | **Dr. Sunanda** | Asst. Professor | Ph.D<br>Jaypee Uni., Solan | Material science Chalcogenide Glasses | 02 Years | 21 |
| 4 | **Dr. Pooja Rana** | Asst. Professor | PhD<br>Jiwaji Uni., Gwalior | Computational Physics (Lanthanoids Intermetallics) | 03 years | 13 |
| 5 | **Dr. Dhirendra Mishra** | Asst. Professor | Ph.D. (IIT Delhi) | Statistical and Computational Modelling | 01 year | 15 |
| 6 | **Dr. Mukesh Kumar** | Assistant Professor | M.Tech.,Ph.D. (IIT Kharagpur) | Condensed Matter Physics | 2.5 years Teaching & 7years | 04 |
| 7 | **Dr. Sanjeev Chauhan** | Assistant Professor | Ph.D. (Univ. of Maryland, US) | Statistical Physics | 03 | 03 |
| 8 | Mr. Mukesh | Assistant Professor | M.Phil. (CJM Univ. Meghalaya) | Solid State Physics | 08 years | |
| 9 | Ms. Vandana Kaushik | Assistant Professor | M.Phil. (Vinayak Mission Univ. Tamilnaru) | Applied Physics | 4.5 years | |

2. Names of programmes offered

| Course | Program | Duration | Intake | Specialization |
|---|---|---|---|---|
| **UG** | B.Sc-NM | 3 years (6 sem.) | 50 | Mathematics<br>Physics<br>Chemistry |
| | B.Sc-Hons. | 3 years (6 sem.) | 30 | Mathematics |

| | | | | |
|---|---|---|---|---|
| PG | M.Sc-Physics | 2 years<br>(4 sem.) | 30 | 1. Electronics<br>2. Condensed Matter<br>3. Nuclear Physics |

3. Education:

a). Hours of teaching in each subject

Under graduation: 35 Hours/Semester
Post graduation: 45 Hours/Semester
Other trainings:
1.Educational Visit to Inter University Accelerator Centre, New Delhi.
2. Guest Lecture by Dr. Vepa Kameswara Rao, DRDO Gwalior.

b). Continued Education (workshop, seminar, symposium, conferences)

i) Summary of the above, department wise (Total No.)

| Event | Attended | Organized | Paper / poster presented | Guest lectures delivered | Key notes delivered |
|---|---|---|---|---|---|
| Conference national | | | | | |
| Conference international | 03 | | 03 | | |
| Conventions | 05 | | | 05 | |
| Symposium | | | | | |
| Workshops | 01 | | | | |
| Others | | | | | |
| Total | 09 | | 03 | 05 | |

ii). Details of above, Faculty member wise.

**Dr. Ram Chhavi Sharma:**

1. International Conference on **"Innovative Approach in Applied Physical, Mathematical/ Statistical, Chemical Sciences and Emerging Energy Technology for Sustainable Development"** Jawaharlal Nehru University (JNU), New Delhi (January 15, 2017).

2. IMS Lecture on **" Advances and Challenges in Tropical Cyclone Track, Intensity and Structure Prediction"** delivered by **Dr. Sundararajan Gopalakrishnan from NOAA, USA** on July 05, 2016 in DGM Conference Room, Mausam Bhavan, IMD, Lodhi Road New Delhi.

3. **24th National Children's Science Congress-2016, A program of National Council for Science and Technology Communication, Department of Science and Technology, Government of India** held on November 14-15, 2016 at **Maharishi Markandeshwar Universty** Mullana, Ambala (Haryana)**.**

**4. Pedagogic and Personal Effectiveness workshop,** under Faculty Development Program, **Shri Guru Gobind Singh Tricentenary University Gurgaon,** Haryana, India (January 10-12, 2017)

5. IMS Diamond Jubilee Lecture on **"From Weather Prediction to Climate Prediction- A 50 years Retrospective for India"** delivered by **Padam Shri Dr. Jagadish Shukla Distinguished Professor, George Mason University (USA),** on February 20, 2017 in Vrishti Auditorium,, Mausam Bhavan Complex, IMD, Lodhi Road New Delhi.

6. Visited **Indian Institute of Technology Delhi** on April 22, 2017 in Open House Techno-fest organized by IIT Delhi.

7. Headed a educational visit to **Inter University Accelerator Centre New Delhi** on March 09, 2017. Thirty students of M.Sc. participated in this visit. Our students benefitted a lot by seeing the Accelerator labs and interacting with the renowned scientists in the field of Nuclear Physics and Material Sciences.

**Dr. Pooja Rana:**.(1) International Conference, ICRCS, at Bikaner 12-13 Jan, 2017. Paper is presented which will be published in next AIP conference proceeding. (2). Pedagogic and Personal Effectiveness workshop, under Faculty Development Program, Shri Guru Gobind Singh Tricentenary University Gurgaon, Haryana, India (January 10-12, 2017).

**Dr. Sunanda: (1)** International Conference on Materials, Alloys and Experimental Mechanics (July 3 to 4, 2017, NRCE, Hyderabad). Paper to appear in IOP Conference Series: Materials Science and Engineering (ISSN: 1757-8981). (2). Pedagogic and Personal Effectiveness workshop, under Faculty Development Program, Shri Guru Gobind Singh Tricentenary University Gurgaon, Haryana, India (January 10-12, 2017)

**Dr. Dhirendra Mishra:** Pedagogic and Personal Effectiveness workshop, under Faculty Development Program, Shri Guru Gobind Singh Tricentenary University Gurgaon, Haryana, India (January 10-12, 2017)

**Dr. Mukesh Kumar:** Pedagogic and Personal Effectiveness workshop, under Faculty Development Program, Shri Guru Gobind Singh Tricentenary University Gurgaon, Haryana, India (January 10-12, 2017)

## 4. Publications:

i) Journal articles

a). Summary of publication department wise (Total No.=09):

| S. no. | Type | Total no. Of Articles | National | International | others |
|---|---|---|---|---|---|
| 1 | Indexed | 9 | 1 | 8 | |
| 2 | Non indexed | | | | |
| 3 | Peer reviewed | 9 | 1 | 8 | |
| 4 | Non peer reviewed | | | | |

b) Details of the above (to be furnished faculty member wise).

- papers published in peer reviewed journals (national / international, listed in National/International Database (For *e.g.* Web of Science, Scopus, Humanities International Complete, Dare Database, International Social Sciences Directory, EBSCO or any other indexing agency,Citation Index (source)google scholar, Research Gate, Scopus,SNIP, SJR Impact Factor … range / average, h-index)

| S. no. | Article in Vancouver style | National/ international | Database | Citation index Range/ average | SJR/ SNIP | h-index | Impact factor |
|---|---|---|---|---|---|---|---|
| 1 | **Ram Chhavi Sharma & Niharika Sharma,** Influence of Oxides of Nitrogen, Carbon Monoxide & Sulpher Dioxide on Ozone Level in different Meteorological Seasons in Haryana State, Northern India, published in **American Journal of Environmental Protection (ISSN: 2328-7233)**, Vol. 5, No. 1, 2017, pp 1-8 (Available online at http://pubs.sciepub.com/env/5/1/1 ) DOI:10.12691/env-5-1-1. | International | Google Scholar<br>Open Access Journals Search Engine<br>Elektronische Zeitschriftenbibliothek (EZB)<br>Genamics JournalSeek<br>Directory of Research Journals Indexing<br>J-Gate<br>JournalTOCs | | | Google Scholar<br>WorldCat<br>CrossRef<br>CNKI SCHOLAR<br>Bielefeld Academic Search Engine(BASE)<br>AcademicKeys<br>Academia<br>Geneva Foundation for Medical Education and Research(GFMER)<br>Computer Literature Index<br>Zeitschriftendatenbank (ZDB)<br>Open Access Journals Search Engine | 1.31 |
| 2 | **Ram Chhavi Sharma**, A Study of Estimation of Sea Level Variations using GNSS Technology and GPS Observation published in **Journal of Agro ecology and Natural Resource Management ( p-ISSN: 2394-0786)**, Vol. 3, Issue 2; July-September 2016, pp 200-205. | International | | | | **p-ISSN: 2394-0786 Online ISSN: 2394-0794** | COSMOS 4.235 |
| 3 | **Ram Chhavi Sharma**,Technical | International | | | | ISBN:978-93-85822-39-1 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Advancement in Organic Solar Cells – a Critical Analysis published in **"Innovative Approach in Applied Physical, Mathematical/ Statistical, Chemical Sciences and Emerging Energy Technology for Sustainable Development" pp 12-17, 2017 (ISBN: 978-93-85822-39-1)** | | | | | | |
| 4 | Sharma P, Sharma N, Sharda S, Katyal SC, Sharma V. Recent developments on the optical properties of thin films of chalcogenide glasses. Prog. Solid State Chem. 2016; 44(4): 131-41 | International | Chemical Abstracts, Index to Scientific Reviews, MSCI, Engineering Index, INSPEC, Research Alert, SCISEARCH, Science Citation Index, Scopus | 5.75 | 1.523/2.710 | 40 | 4.087 |
| 5 | Mishra D., and Goyal P., (2016). Neuro-Fuzzy approach to Forecast $NO_2$ pollutants addressed to Air Quality Dispersion model over Delhi, India. Aerosol and Air Quality Research, 16(1), 166-174. | International | Chinese Association for Aerosol Research in Taiwan | 07 | 0.970 | 34 | 2.754 |
| 6. | Mishra D., and Goyal P., (2016). Neuro-Fuzzy approach to forecasting Ozone Episodes over the urban area of Delhi, India. Environmental Technology & Innovation, 5, 83-94. | International | Elsevier | 3 | 0.719 | 6 | 1.62 |
| 7. | Mishra, D. and Shukla, A. (2017). Air Quality due to Day wise Odd-Even Vehicle Movement in Delhi, India. International Journal of Earth and Atmospheric Science, 3(4), 73-81. | National | Jakraya Publications, India | Nil | Nil | Nil | Nil |
| 8 | **Mukesh Kumar**, and Rahul Mitra; Thin **Solid Films, 624 (2017) 70-82**. | International | Cambridge Scientific Abstracts<br><br>Chemical Abstracts<br><br>Current Contents<br><br>Metals | 1.88 | 0.64 | 162 | 1.879 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Abstracts<br><br>Engineering Index<br><br>FIZ Karlsruhe<br><br>INSPEC - Physics Abstracts<br><br>PASCAL/CNRS<br><br>PhysikalischeBerichte<br><br>Research Alert<br><br>Science Citation Index<br><br>Scopus | | | | |
| 9 | Chauhan SK, Discrete-time dynamic network model for the spread of susceptible infective recovered diseases. Phys Rev. E, 2017, 96:012305. | International | Current physics index, INSPEC, medline, physics abstracts | | 0.993/0.896 | | 2.366 |
| | | | | | | | |

ii) Abstracts published in conference proceedings. (faculty member wise)

1. A Study of Thermal Stability and Crystallization Kinetics of SbSeGe Glassy Alloys.
Sunanda Sharda, Pankaj Sharma and Vineet Sharma.
International Conference on Materials, Alloys and Experimental Mechanics (July 3 to 4, 2017, NRCE, Hyderabad). Paper to appear in *IOP Conference Series: Materials Science and Engineering* (ISSN: 1757-8981).

. 2. International Conference on Advances in Metallurgy, Materials and Manufacturing (ICAMMM-2017) during 6-8, March, 2017, Mukesh kumar.

iii) Books with ISBN with details (faculty member wise): Nil

a) Chapters in Books
b) Edited Books
c) Books publishers
d) Monographs

5. Details of patents and income generated: Nil

6. Awards and Honours

Awards / recognitions received at the national and international level by (in Table. format...)

- **Dr. Ram Chhavi Sharma**

**1. Chairperson**, Technical Poster Session in International Conference on " Recent Advances in Agriculture, Food Science, Forestry, Horticulture, Animal Sciences, Biodiversity, Environmental Engineering and Climate Change, Jawaharlal Nehru University(JNU), new Delhi (July 10, 2016).

**2. Awarded Certificate of Appreciation** for services rendered as **Judge in 24th National Children's Science Congress-2016, A program of National Council for Science and Technology Communication, Department of Science and Technology, Government of India** held on November 14-15, 2016 at **Maharishi Markandeshwar Universty** Mullana, Ambala (Haryana).

3. **Chairperson, Technical Session in International Conference on" Innovative Approach in Applied Physical, Mathematical/ Statistical, Chemical Sciences and Emerging Energy Technology for Sustainable Development"** Jawaharlal Nehru University (JNU), New Delhi (January 15, 2017).

**4.** Invited as **Resource Person** by the Director, **State Council of Education Research &Training Haryana (SCERT)** in Capacity Building Program for Physics lecturers (Haryana State), January 23-24, 2017.

**5**. **Member Board of Studies, Department of Forensic Science & Faculty of Physical Sciences,** SGT University Gurugram, Haryana

**6.** Invited as **Resource Person** by the Director, **State Council of Education Research &Training Haryana (SCERT)** Haryana in Capacity Building Program for Physics lecturers (Haryana State), May 23-24, 2017.

- Others
- Doctoral / post doctoral fellows
- Students

7. Consultancy and Participation as expert , income generated, (brief note on each): Nil

8. Research

i). Details of the Funded projects department wise:

| S.No. | Name of the faculty/ department | Name of PI | Funding agency | Indian agency / WHO / International / SGT University | Project title | Grants received | Completed/ ongoing/ new project submitted |
|---|---|---|---|---|---|---|---|
| 1 | Physical Sciences | Dr. Ram Chhavi Sharma | SERB, DST | Indian Govt | Evaluation of health impact | 26,47000.00 | Submitted |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | through modeling of gas and aerosol with WRF-Chem over National Capital Region, India | | |
| 2 | Physical Sciences | Dr. Dhirendra Mishra | SERB, DST | Indian Govt | Evaluation of health impact through modeling of gas and aerosol with WRF-Chem and sensitivity analysis over National Capital Region, India | 19,26000.00 | Submitted |
| 3. | Physical Sciences | Dr. Dhirendra Mishra | SERB, DST | Indian Govt | Evaluation of health impact through modeling of gas and aerosol with WRF-Chem over National Capital Region, India | 26,47000.00 | Submitted |

ii) Details of other non funded / self funded projects: department wise ( list only): Nil

iii) Student projects: Nil

| Sno. | Name of the student | Name of Guide | Course PhD, MD, MDS, MSc, JRF, SRF | Funded/ self funded | Indian agency / WHO / International / SGT University | Project title | Grants received | Completed/ ongoing |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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

9. Patient Care, please provide detail in enumerative figures during the year of consideration. ( write NA if not applicable)

| | |
|---|---|
| Facilities available | NA |
| Operations / procedures | NA |
| ICU details | NA |
| Emergency Duties | NA |
| OPD clinics | NA |

10. Other Significant Events:

1. **TRIP TO SURAJKUND MELA (Faridabad)**
   The Undergraduate and Postgraduate students of Faculty of Physical Sciences visited **SURAJKUND MELA** on 14.02.2017. The 31st Surajkund International Crafts Mela-2017 is organized by the Authority & Haryana Tourism in collaboration with Union Ministries of Tourism, Textiles, Culture and External Affairs. The students met a number of renowned national and international folk artistes and cultural groups and enjoyed their performances. The Mela is a custodian of a large number of heritage crafts involving use of traditional skills. The multi-cuisine Food Court at mela provides ethnic cuisines from all over the world, which provided culinary excitement to the students.
2. **TRIP TO CHAMBA HILL STATION**

   A trip to Chamba Hill Station for the scholars students of undergraduate was organized by the SGT University from **6th April to 9th April 2017**. The main aim of the trip was to motivate and encourage each and every student towards study and to give the chance to build closer bonds with their collegemate. During the trip, students and faculty Ms. Minni Ruhil visited Tehri dam,Surkhanda Mata ka Mandir, Dhanaulti Eco Park and the DJ night. The three day trip tend to be the most memorable moments of a student's career. Since the trip was organized after the exams it helped them to experience new environments and enjoy day away from the classroom.

3. **GOLD MEDAL AWARDS TO MERITORIOUS STUDENTS**

The university organized its 4th Convocation on 18.03.17 to provide the degrees to the students of different courses, during this program our students awarded with the Gold Medals. This is one of the best moment for the students, in such away the management encouraging the students to achieve their goals.

**4. FAREWELL PARTY - "LAMHE"**

Faculty of Physical Sciences, SGT University organized a farewell party "LAMHE" on 16th May, 2017 at TV Studio, 3rd Floor, Dental building. The Farewell began with Lamp lighting by the Dean, Dr Ravi Rana, and all HOD's. The dance performances of Ms Deepshikha, Ms Kritika and Mr Deepak and the songs sung by Ms Anju and Ms Meenaz were much appreciated. Titles were given to the outgoing students of B Sc and M Sc by their juniors. Students of final year participated in **Ramp Walk** and Question round which was judged by Mr Harsh Upreti (FHTM), Dr Ruchika Yadav (Forensic Sciences) & Ms Shivani Yadav (FPS). The Batch was presented mementos by the faculty members and wished them good luck for their future. Some exciting games were also arranged for the students and were enjoyed by all.

Different tags were awarded to the students. **Ms Chetna (M Sc Physics)** was crowned with the title of **Ms. Farewell** and **Mr. Rajat (M Sc Physics)** was awarded the title of **Mr. Farewell. There was a tie for the title of Mr Handsome and Ms Candy Crush. Mr. Raman (M Sc Physics) and Mr Prateek (BSc Non-Medical) won the title of Mr Handsome and Ms Drishty (M Sc Physics) and Ms Nitika (M Sc Chemistry) were given the title Ms Candy Crush. The function was concluded with cake cutting ceremony followed by lunch.**

11. Courses in collaboration with other universities, industries, foreign institutions etc. Nil

12. Details of programmes discontinued, if any, with reasons: Nil

13. Examination System: Semester
14. Choice Based Credit System – In session 2016-17, Credit based system was not introduced.

15. Participation of the department in the courses offered by other departments, courses in collaboration with other universities, industries, foreign institutions, etc.
    1. Forensic Science
    2. Faculty of Engineering
    3. Department of Professional communication.
    4. **Pedagogic and Personal Effectiveness workshop,** under Faculty Development Program, **Shri Guru Gobind Singh Tricentenary University Gurgaon,** Haryana, India (January 10-12, 2017)

16. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad ( eg. Commonwealth fellowships, WHO fellowships, UNESCO fellowships etc): Nil

17. Faculty serving in
    a) National committees b) International committees c) Editorial Boards d) any other (please specify)

**Dr. Ram Chhavi Sharma**

1. Member Editorial Board, **American Journal of Environmental Protection (Science and Education Publishing US)**.
2. Member, International Society for Environmental Information Sciences.
3. Member, International Association of engineers (IAENG). [member Number 140912]
4. Life Member, **Indian Physics Association, Bhabha Atomic Research Center Bombay, India.** (ID GL / LM / 13035).
5. Life Member, **Indian Metrological Society, Mausam Bhawan Lodhi Road, New Delhi, India** (ID IMD LM-3001).
6. Reviewer, **International Journal of Atmospheric Pollution** (Science and Education Publishing US)
7. Peer Reviewer, **Global Journals Inc. (US). [Id: 681YX8ZQ]**
8. Member IMets Google Group
9. Member IUCEE Virtual Academy.

### Dr. Pooja Rana

1. Asian Journal of Physical Sciences,
2. Asian Journal of Chemical Sciences,
3. Journal of Physical Sciences International, 4. Journal of Chemical Sciences International

### Dr. Sunanda

1. Journal of Forensic Biomechanics, OMICS Group – Engineering Journals
2. Dalton Transactions & RSC Advances, Royal Society of Chemistry.
3. Journal of Alloys and Compounds, Elsevier.

18. Faculty recharging strategies ( Capacity Building programmes) (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs). (give details)

### Dr. Ram Chhavi Sharma

1. IMS Lecture on **" Advances and Challenges in Tropical Cyclone Track, Intensity and Structure Prediction"** delivered by **Dr. Sundararajan Gopalakrishnan from NOAA, USA** on July 05, 2016 in DGM Conference Room, Mausam Bhavan, IMD, Lodhi Road New Delhi.
2. **24th National Children's Science Congress-2016, A program of National Council for Science and Technology Communication, Department of Science and Technology, Government of India** held on November 14-15, 2016 at **Maharishi Markandeshwar Universty** Mullana, Ambala (Haryana)**.**
**3. Pedagogic and Personal Effectiveness workshop,** under Faculty Development Program, **Shri Guru Gobind Singh Tricentenary University Gurgaon,** Haryana, India (January 10-12, 2017)
4. IMS Diamond Jubilee Lecture on **"From Weather Prediction to Climate Prediction- A 50 years Retrospective for India"** delivered by **Padam Shri Dr. Jagadish Shukla Distinguished Professor, George Mason University (USA),** on February 20, 2017 in Vrishti Auditorium,, Mausam Bhavan Complex, IMD, Lodhi Road New Delhi.
5. Visited **Indian Institute of Technology Delhi** on April 22, 2017 in Open House Techno-fest organized by IIT Delhi.

### Dr. Pooja Rana:

1. FDP Program at SGT University during 10-12, Jan 2017.
2. International Conference, ICRCS, at Bikaner 12-13 Jan, 2017. Paper is presented which will be published in next AIP conference proceeding.

19. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance ( updated till date)

| Name | Qualification | Designation | Specialization | No. of Years of Experience | No. Of thesis/ dissertations guided till now ( Ph.D. / M.Phil./ PG/ UG/Students) |
|---|---|---|---|---|---|
| Dr. Amal Kumar Saha | M.Sc., Ph.D. | Professor | Experimental Physics, Information Technology, Cyber- | 23 | None (first time in academics after Ph.D. at Tata Institute of |

| | | | | | |
|---|---|---|---|---|---|
| | | | security | | Fundamental Research, 1994-1999 and Postdoctoral research at Max Planck Institute, Germany, 1999-2000 and work in industry thereafter in senior roles) |
| Dr. Ram Chhavi Sharma | M.Sc., M.Phil. Ph.D (Physics) | Professor & Head | Electronics & Infra red Spectroscopy | 40 | 01(M.Phil student) & a no. Of UG students |
| Dr. C.M. Singal | M.Sc., Ph.D | Professor | Solar Energy | 40 | |
| Dr. Pooja Rana | M.Sc. Ph.D. (Physics) | Assistant Professor | Condensed matter Physics | 7.5 | 03 (PG students) |
| Dr Sunanda | M.Sc.,Ph D (Physics ) | Assistant Professor | Materials Science | 6 Years 2 Months | Nil |
| Dr. Dhirendra Mishra | M.Sc., Ph.D. (Physics) | Assistant Professor | Modelling, Air Quality, Human Health | 01 | Nil |
| Dr Mukesh Kumar | M.Sc., M.Tech., Ph.D. | Assistant Professor | Material Science | 2.5 years(Teaching) | Nil |
| Dr. Sanjeev Chauhan | M.S., Ph.D | Assistant Professor | Statistical Physics | | Nil |
| Mr. Mukesh | M.Sc., M.Pil | Assistant Professor | Solid State Physics | 08 years | Nil |
| Ms. Vandana Kaushik | M.Sc., M.Phil. | Assistant Professor | Applied Physics | 4.5 years | Nil |

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

1. Guest Lecture by Dr. J.K.Chhabra, Ex – consultant Professor, IIIT Allahabad, Ex – Scientist F and Deputy Director, Photonics Group, Central Scientific Instruments Organisation on topic Fibre Optics (27-28 March 2017)
2. Guest Lecture by Dr. Vepa Kameswara Rao, DRDO Gwalior on topic Fundamental and Applications of Bio sensors (March 15, 2017).

21. Programme-wise Student Teacher Ratio (Table)

| Sr. No. | Programme | No. of Students | No. of Teachers | Student Teacher Ratio |
|---|---|---|---|---|
| 1 | B.Sc. NM | 42 | 09 | 21 |
| 2 | PG (M.Sc. Physics) | 28 | | |
| 3 | B.Tech. (Applied Physics) | 286<br>Total = 286 | | |

22. Number of academic support staff (technical) and administrative staff:

Physics Lab. Technician: 02

1. Mr Neeraj Gulia

2. Mr. K.C. Gupta

23. Establishment of Research facility / centre (during the year of consideration)

Research facility in Theoretical Physics

24. Student profile programme-wise ( No. only):

| Name of the Programme | Applications Received wherever known | Selected | | Pass percentage | |
|---|---|---|---|---|---|
| | | Male | Female | Male | Female |
| B.Sc.(NM) 1st Semester | 32 | 23 | 09 | 3 (13%) | 3 (33%) |
| B.Sc.(NM) 2nd Semester | 10 | 6 | 4 | 0 | 04(100%) |
| B.Sc (NM)3rd semester | 9 | 05 | 04 | 0 | 02(50%) |
| B.Sc.(NM)4rth Sem. | 8 | 03 | 05 | 1(33%) | 03(60%) |
| B.Sc.(NM)5th Sem | 8 | 3 | 5 | 1(33%) | 5(100%) |
| B.Sc.(NM)6rth Sem | 8 | 3 | 5 | 1(33%) | 5(100%) |
| | | | | | |
| **M.Sc. Physics 3rd Semester** | **24** | **07** | **17** | **04 (57%)** | **15 (88.2%)** |

25. Diversity of Students ( No. only):

| Name of the Programme | % 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 |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

26. Student progression **(First batch of UG and PG will pass out after July 2017)**

| Student progression | Percentage against enrolled |
|---|---|
| UG to PG | |
| PG to M.Phil. | |

| | | |
|---|---|---|
| PG to Ph.D. | | |
| Ph.D. to Post-Doctoral | | |
| Employed | | |
| □ | Campus selection | |
| □ | Other than campus recruitment | |
| Entrepreneurs | | |

27. Diversity of staff ( No. Only):

| Percentage of faculty who are graduates of the | | |
|---|---|---|
| same university | Nil | |
| From other universities within the State | 01 | |
| From universities from other States | 06 | |
| From universities outside the country | 01 | |

28. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. - Nil

29. Present details of departmental infrastructural facilities regarding

a) Library ( No. of Books= 600,
b) Internet facilities for staff and students : Wi-Fi and Excellent computer Lab.Facilities.
c) Total number of class rooms: 09
d) Class rooms with ICT facility : 09
e) Students' laboratories: 04
f) Research laboratories: Research facilities are available in Theoretical and computational Physics

30. List of doctoral, post-doctoral students and Research Associates

a) from the host institution/university Nil
b) from other institutions/universities: One student is admitted for Ph.D. Programme.

31. Number of post graduate students getting financial assistance from the university.

32. FEEDBACK System (Brief note)

Students are encouraged to talk to batch-in-charges and mentors to address the issues.

The faculty provides feedback to student directly through faculty member dealing with them in the class, through the mentors and HoD and the Dean.

IQAC of the SGT University started auditing lectures and providing direct feedback to the faculty member without involving the management.

33. Student enrichment programmes [give details of (special lectures / workshops / seminar) involving external experts.]

A number of scientific visits and industry visits were arranged. Some outlines here.
Extension lectures were also arranged in that period.

1. **EDUCATIONAL VISIT TO INTER UNIVERSITY ACCELERATOR CENTRE (New Delhi)**

   An Educational visit of M.Sc. (Physics & Chemistry) students was organized by Faculty of Physical Sciences, SGT University Gurugram to Inter University Accelerator Centre (IUAC), Aruna Asaf Ali Marg, New Delhi on 09 March, 2017. IUAC is a renowned research center in Nuclear Physics and Physics of Materials. Thirty students participated in the visit. Dr. R.C.Sharma, Professor headed the visit and Dr. Pooja Rana, Assistant Professor, Department of Physics, Coordinated the visit.

   Educational session start with presentation by Sh. Rajveer Sharma Scientist - C He presented in brief, the research activities taking place in IUAC in an excellent way. He also discussed the basic concepts and applications of accelerators facilities. Our students actively participated in the discussion. The presentation was followed by visit to accelerator units.

   In Pelletron unit, Sh. Saneesh Scientist C explained the working of Tandem Accelerator and its various components in an excellent way. He discussed with the students about the scintillation counter and how the ion beams are made negative so that they can be accelerated first by attraction and than by repulsion.

   In PARAS Lab. Sh. Umapati Scientist –C, explained the working of accelerator up to energy 50 KeV. He pointed out that ions beam produced by accelerator are used in different research fields such as Nuclear reactions, ion Implantation etc.

   The real visualization of research labs Pelletron Laboratory, Gamma ray detector and Low ion Energy Laboratory make the students more curious about the future scopes in research. IUAC also imparts its contribution in Health Sciences and Biosciences. This

excursion with knowledge not only benefits the students of Physics but also opens the door for new opportunities to the students of Chemistry and Allied Sciences.

2. **GUEST LECTURE BY Dr.Vepa Kameswara Rao, DRDE,Gwalior on "Fundamental and Applications of Biosensors**"

   Biosensors nowadays are ubiquitous in biomedical diagnosis as well as wide range application in Disease progression, Environmental monitoring, Food control, Drug discovery and Biomedical research. **Dr. V. K. Rao Scientist-G, DRDE, Gwalior**, discussed elaborately the use of electrochemical techniques to develop new biosensors and the role of nanotechnology in developing Biosensors. Besides he emphasised on Bioreceptors that interacts with analyte through biological and chemical reaction to produce signals which ultimately got transformed by the Transducer. There was also discussion on Antibody/Antigen interactions and how the biosensor works on the detection of different kind of diseases. The Lecture was scheduled from 10:30-12:30 in TV studio on 15.03.2017.

3. **TRAINING @ CENTRAL FORENSIC SCIENCES LABORATORY (HYDERABAD)**

   The PG students of FPS had two weeks intensive training program on **"Spectroscopic and Chromatographic Techniques"** at Central Forensic Sciences Laboratory (CFSL, Hyderabad) in March,2017 (20.03.17-30..3.17). CFSL established in 1967 is one of the Six Central Forensic Science Laboratories in India. The laboratory is under the administrative control of the Directorate of Forensic Science Services, Ministry of Home Affairs (India), Government of India. It provides the facilities for Explosives, Ballistics, Narcotics, Physics, Toxicology, Biology, Chemistry, Documents DNA examination and Cyber Forensics. Students were trained in different spectroscopic techniques like UV, IR, FTIR and Chromatographic techniques like TLC, Column Chromatography, GC, HPLC and GCMS. During the training students visited different labs namely Ballistic Lab, Toxicology Lab, Lab of Explosives and Instrumentation labs in chemistry division. The two weeks training program provided the insights of research in the area of Forensic Science through Physics and Chemistry.

4. **VISIT TO SPHAERA PHARMA. PVT. LTD**

   An Industrial visit of Postgraduate Chemistry students was organized by Faculty of Physical Sciences, SGT University Gurugram to Sphaera Pharma. Pvt. Ltd., IMT

Manesar, Haryana on 19 April, 2017. Sphaera Pharma. is a global drug discovery and development organization. **Dr. Nisha and Dr. Anjali Gupta from Department of Chemistry coordinated the visit**. Students visit the Medicinal Organic synthesis lab, research scientists at Sphaera Pharma explain the basic techniques and principles used in synthesis. Followed by the visit to analytical section where students witness the HPLC, LCMS, NMR, IR, and officials of the company explain the working and principle of these instruments to the students. This made our students to know the importance of Chemistry in the pharma industry and also help them to understand the correlation between theory and practical application. The student were very happy and felt enriched after visiting Sphaera Pharma pvt. Ltd.

**5. EDUCATIONAL VISIT TO ASOLA WILD LIFE SANCTUARY (New Delhi)**

On 21st February, 2017, UG and PG students of the Faculty of Physical Sciences were taken on an educational tour to Asola Bhatti **Wildlife Sanctuary**, which lies at the southern edge of Delhi at **Asola** near **Tughlakabad** in the Delhi National Capital Region. There has been a history of **illegal mining** within the sanctuary for **red badarpur sand** and **stone**. The surrounding area is also known as **Bhatti mines**. There are large open and deep pits in the ground all over the sanctuary, lying abandoned for years. It is a very good centre for **conservation education** and **nature interpretation programs**.

34. Changes in Teaching Guidelines. (List the teaching methods adopted by the faculty for different programmes.)

1. Problem based learning.
2. Power point Presentation
3. Student seminars
4. Conventional Method (White Board)

In the reported period, faculty members had undergone training in new andragogic methods, but they are supposed to be tried in new academic semesters starting in July 2017. They have been adopted now.

A demo lecture series was arranged where faculty members were asked to provide model lecture with emphasis on interactive delivery, adoption of new teaching methodologies and use of technologies in teaching.

35. Changes adopted in monitoring learning outcomes

1.Formative assessment techniques have been adopted .
2.Lot of emphasis on internal assessment and non-didactic teaching.

36. Extension activities.

The following new courses are initiated and their curriculum, ordinance, scheme of examination and syllabus were formulated.

- M.Sc ( Nano Science & Nano Tchnology) – 2 Years (4 Semesters)
- B.Sc ( Forensic Sciences) - 3 Years (6 Semesters)
- PhD ( Physics & Forensic Sciences)

37. "Beyond syllabus scholarly activities" of the department

Conducting FDP within Faculty of Physical Sciences.

Submitted two research proposals in the reported period to DST for funding and are still submitting new proposals.

In-house computational research facility was explored and solution for theoretical, computational work has been proposed and is being implemented.

38. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

Strengths:

1. faculty with good academic background
2. commitment for delivery
3. teamwork
4. research mindset
5. availability of multi-disciplinary skills

Weaknesses:

1. lack of access to reputed scientific journals for research
2. lack of adequate number of copies of text and reference books in the library
3. lack of computational facilities and lack of adequate support from ICT
4. lack of opportunities among faculty members for attending academic/administrative trainings
5. no internal grant for supporting research

Opportunities:

1. Research output improvement
2. Teaching quality improvement
3. Streamlining of departmental activities and admin processes

4. Bringing in meritocracy
5. Excellence in execution

Challenges:

1. Funding of research labs
2. 6-day-work-week not conducive to research
3. Complying with resolution of 50% weightage on practicals/additional paper would imply additional laboratory resources
4. Increasing strength of students
5. Attracting bright students

39. Best Practices of the department

1. Audit of lectures by HoD and senior faculty members for ensuring quality.

2. Enforcement of IQAC advocated andragogic methods.

3.Encouragement for using technology for improving quality of teaching delivery.

4.Reaserch-oriented mindset.

40. Future plans for the department

1.Encouraging UG & PG students to attend summer and winter schools.

2.Encouraging students to participate in Technofest projects.

3.Submission of research proposals for funding.

4.Emphasis on quality of teaching delivery.