

KURUKSHETRA UNIVERSITY KURUKSHETRA

INFORMATION ABOUT ACADEMIC DEPARTMENT FOR WEB-PORTAL

(ACADEMIC DEPARTMENTS)

Department Profile

The Kurukshetra University was founded on January 11, 1957. The Department of Physics came into existence in July 1961 with the admission of ten students to B.Sc.(Hons) Ist year class. At that time department functioned from a portion of the University College building. Late Professor K. K. Nagpal was the founder Head of the Department. M.Sc. teaching was introduced in July, 1963. Within a few years the Department was equipped with full-fledged laboratories for teaching and research with Professor H. S. Hans as Head of the Department.

Late Sh. B. N. Chakarvarty, Governor of Haryana and Chancellor of the University laid the foundation stone of the present Physics block on October 27, 1967. It is a three-storey building of 21 bays and is centrally located on the University Campus.

Within next couple of years, research laboratories in fields of Experimental Nuclear Physics, High Energy Physics, Solid State Physics, Spectroscopy, Semiconductor Electronics and Mossbauer Spectroscopy were established. Work in Theoretical Physics was also carried out simultaneously. Subsequently a significant number of students joined various research groups and the first Ph.D. Student from the Department was awarded degree in 1969. Thereafter, the Department never looked back and become an excellent centre for teaching and research in the state of Haryana.

However, after a few years in 1973, B.Sc. (Hons) course was discontinued. The M.Phil course was started in 1977 as a two semester course. When passing of National Eligibility Test (NET) for the post of Lecturers in Colleges/Universities became essential, the M.Phil course was closed as it outlived its importance.

At present the department offers two-year M. Sc. course with annual system of examinations. There are 50 general seats and 10 NRI / Sponsored seats. In the first year, all the students have to take basic courses of Physics and in the second year, they can opt for any two specializations out of eight frontline courses in addition to two compulsory papers.

Chairperson : Dr Shyam Kumar

Contact Information : Department of Physics
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Faculty Information

Faculty	Joining Date	Specialization	Qualification	Contact Information
Dr Shyam Kumar	07-08-	Experimental	M.Sc., Ph.D.	91-1744-238410 Extn. 2130

Professor & Chairperson	1986 (A.N.)	Physics, Nuclear and Particle Physics		profshyam@gmail.com
Dr. Nafa Singh Professor	31-07-1974 (A.N.)	Experimental Physics, Solid State Physics, Material Science	M.Sc., Ph.D.	91-1744-238410 Extn. 2130 nafa_kuk_phy@yahoo.co.in
Dr. S.C. Mishra Professor	12-08-1989 (F.N.)	Theoretical Physics, Non-linear Dynamics	M.Sc., Ph.D.	91-1744-238410 Extn. 2658 scmishra_kuk@yahoo.com
Dr. M.S. Yadav Reader	07-07-1986 (F.N.)	Semiconductor Electronics, Instrumentation	M.Sc.,M.Phil. M.Tech., Ph.D	91-1744-238410 Extn. 2654
Dr. R.K. Moudgil Reader	04-08-1998 (F.N.)	Theoretical Condensed Matter Physics,	M.Sc.,M.Phil. Ph.D.	rkmoudgil13@gmail.com
Mr. Fakir Chand Lecturer	03-08-1998 (A.N.)	Non-linear Dynamics, Electronics	M.Sc.	fchand_kuk@yahoo.com
Dr. Sanjeev Aggarwal Lecturer	11-08-1998 (A.N.)	Experimental Physics, Nuclear Physics Material Science	M.Sc.,M.Phil. Ph.D.	write2sa@gmail.com
Dr. Rajesh Kharab Lecturer	18-08-2004 (A.N.)	Theoretical Nuclear Physics, Computational Physics	M.Sc., PGDCA, Ph.D.	kharabrajes@rediffmail.com
Dr. Annu Sharma Lecturer	24-07-2006 (F.N.)	Experimental Physics Materials Science Spectroscopy	M.Sc., Ph.D.	talk2annu@gmail.com

Courses Offered

Type of Course (Postgraduate & others)

System of Examination

M.Sc. (Physics)

Annual

Profile of Different Courses Offered

Degree Type	Course Duration	No of sanctioned seats	Scheme of Exam.(Annual/Semester)
M.Sc. (Physics)	Two Years	60 in M.Sc. Previous 60 in M.Sc. Final	Annual
Ph.D. (Physics)	3 – 4 Years	15 (registered at present)	

* The department is likely to restart **M.Phil.** Course from the next academic session in view of recent change in the qualifications for the post of Lecturer in colleges by the University Grants Commission.

Semester-wise / Year-wise details

M.Sc. Previous (Annual System)

Paper Code	Paper Name	Paper Type	Paper Remarks	Max. Marks	Internal Marks	External Marks
Paper-IA	Classical Mechanics	Compulsory	1½ Hours	40	-	40
Paper-IB	Mathematical Physics	Compulsory	1½ Hours	40	-	40
Paper-IIA	Nuclear and Particle Physics	Compulsory	1½ Hours	40	-	40
Paper-IIB	Solid State Physics	Compulsory	1½ Hours	40	-	40
Paper-III	Electronic Devices and Circuits	Compulsory	3 Hours	80	-	80
Paper-IV	Quantum Mechanics	Compulsory	3 Hours	80	-	80
Paper-V	Lab. Work	Compulsory	5 Hours	80	20	60
Paper-VI	Lab. Work	Compulsory	5 Hours	80	20	60
SEMINAR				20	20	-

M.Sc. Final (Annual System)

Paper Code	Paper Name	Paper Type	Paper Remarks	Max. Marks	Internal Marks	External Marks
Paper-IA	Statistical Mechanics	Compulsory	1½ Hours	40	-	40
Paper-IB	Electrodynamics and Plasma Physics	Compulsory	1½ Hours	40	-	40
Paper-IIA	Advanced Quantum Mechanics	Compulsory	1½ Hours	40	-	40
Paper-IIB	Atomic and Molecular Physics	Compulsory	1½ Hours	40	-	40
Paper-III	(i) Condensed Matter Physics (ii) Nuclear Physics (iii) Particle Physics	Optional	3 Hours	80	-	80
Paper-IV	(i) Computational Methods and Programming (ii) Electronics (iii) Materials Science	Optional	3 Hours	80	-	80
Paper-V	Lab. Work related to option-I	Practical	5 Hours	80	20	60
Paper-VI	Lab. Work related to option-II	Practical	5 Hours	80	20	60
SEMINAR				20	20	-

*20% internal assessment in theory papers is going to be introduced from session 2007-2008

Facilities

Library: The Department of Physics has one departmental Library having about 4500 books and subscription to 30 Research Journals covering different

fields of specializations like Materials Science, Solid State Physics, Optics & Spectroscopy, Nuclear Physics, Electronics, High Energy Physics etc.

Teaching Labs: The Department of Physics has 10 Teaching Labs for M.Sc. (previous) and M.Sc. (final) year students. In M.Sc. Previous Lab., students perform experiments based on general topics like Optics, Lasers, Electronics, Nuclear Physics, Solid State Physics etc.

In M.Sc. Final Lab., students perform experiments linked to the various specialisations. For each optional paper, a separate Lab is maintained. Some of the facilities of various research labs are also made available to the students for a better exposure of the subject.

Our labs are well modernised through DST/UGC and University grants.

Other facilities: There are 6 Research Labs and one Computer Lab in the Department of Physics.

Major Teaching Lab Equipments:

S. No.	Name of Equipment
1	Alpha Ray Spectrometer (Ortec, USA)
2	Gamma Ray Spectrometer (Nucleonix, India)
3	X-ray Structural Analysis (Lebold, Germany)
4	Compton Scattering (Lebold, Germany)
5	Rutherford Backscattering Setup (Lebold, Germany)
6	High T_C Superconductivity Setup (Lebold, Germany)

Major Research Equipments:

S. No.	Name of Equipment
1	Spex Fluoromax -3 Spectrofluorometer (Jobin Yvon, USA)
2	UV-VIS Spectrophotometer (Shimadzu, Japan)
3	Mossbauer Spectrometer (Austin Scientific, USA)
4	Electrometer (Kiethly, USA)
5	Metallurgical Microscope (Lietz, Germany)
6	Microhardness Tester (UHL, Germany)

Placement cell

Placement information for the year 2005-06:

Although there is no placement cell at the departmental level, but as per the information generally received from the students almost all the students are well absorbed in teaching, research institutes and industries.

The faculty members of the Department help the students in placement in many research institutes through their academic contacts and recommendations. Further the students are regularly updated about the latest scope of the course.

Information on Seminars and Conferences

Department has organized the following National level Conferences/Workshops (2006-2007)

- National Conference on Recent Advances in Material Science (RAMS-2006), Sept. 27-29, 2006, Department of Physics, Kurukshetra University Kurukshetra.
- Awareness Workshop on “The Facilities of UGC-DAE Consortium for Scientific Research”, Dec. 4-5, 2006, Department of Physics, Kurukshetra University Kurukshetra.

Information on Research Activites (Projects)

Topic Name	Incharge	Date From	Date To
Effect of Swift Heavy Ion Irradiation on Nano-phosphors: Luminescence and its related studies	Prof. Nafa Singh	March 2004	March 2007
Energy Loss Stragglng for MeV Heavy Ions in Different Absorber Materials	Prof. Shyam Kumar	Feb. 2004	Feb.2007
Effect of cluster ion interaction in different materials	Prof. Shyam Kumar	Jan. 2007	Jan. 2010
Effect of irradiation on the dielectric properties of polymers	Dr. Sanjeev Aggarwal	Jan. 2007	Dec. 2009
Excitation spectra and cross section for primary electron	Dr. Annu Sharma	October 2006	October 2009

production by swift heavy ions penetrating through solids			
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Information on Achievements

- **International Awards/ Fellowships to the Faculty :**

Name of Awardee	Name of Fellowships/Awards	Year
1. Prof. Shyam Kumar	Awarded UGC Visiting Fellowship under Cultural Exchange Programme of UGC at Institute of Nuclear Research, Debrecen, Hungary	Sept. – Oct. 2002
2. Dr. R. K. Moudgil	Awarded Post Doctoral Fellowship by Ministry of Science & Technology, Govt. of Italy at University of Trieste, Italy	Oct. 2000 - Oct. 2002
3. Dr. Sanjeev Aggarwal	Awarded Commonwealth Post Doctoral Fellowship for a year by Association of Commonwealth Universities & British Council, London, UK. at University of Liverpool, UK	Oct. 2001 – Sept.2002
4. Dr. Annu Sharma	Awarded Post Doctoral Fellowship as an Assistant Professor–Research by Danish Natural Science Research Council, Govt. of Denmark at University of Southern Denmark, Odense, Denmark	Nov. 2002 – Dec. 2004

- **During last five years faculty members have published 56 research papers in national and international journals.**
- **15 – 20 % students clear NET and GATE examinations every year.**
- **Some students of the Physics Department have joined various National Labs and Research institutes.**
- **Department has organized six National/ International level Conferences/Seminars/Workshops by now. Out of this three National level Conferences/Workshops have been organised during 2004-2006.**
- **Major Grants to the Department:**
 1. **FIST (Level – I) by DST**

The Department has been granted Rs. 53 lacs by Department of Science & Technology, New Delhi under its FIST Programme for up-gradation of Teaching and Research Labs during 10th plan. By now, research facilities to the tune of 37 lacs have been installed and the further development is currently in progress.

2. **R & D Grant from Kurukshetra University**

The Department has been provided Rs. 45 lacs by Kurukshetra University, Kurukshetra for up-gradation of Teaching and Research Labs.

3. **UGC Grant**

The Department has been sanctioned Rs. 16 lacs by UGC, New Delhi for development of Teaching Labs and Research Equipments.

Out of the above grants, the Teaching and Research Lab Equipments worth Rs. One crore has been added to the department in the last five years.