

K. Z. S. Science College, Bramhani-Kalmeshwar

DEPARTMENT OF PHYSICS

Department at a Glance

Curriculum, Curricular and Research

SINCE 1992

DEPARTMENT OF PHYSICS

(Established in the Year - 1992)

About the Department

The Department of Physics, of this college established in the year 1993, offers undergraduate leading to the B.Sc. degree, awarded by the RTM Nagpur University. In addition, experienced faculty of the Department is devoted to research in their respective areas of specialization. Research and teaching are given equal importance by the faculty. Extra care is taken to pay individual attention to the students in their laboratory work and tutorial sessions. Project work and problem sessions are encouraged to develop innovative and analytical approach to physics learning. Topical seminars by students are arranged to create study awareness amongst students. Some expert guest teachers are also invited for teaching, examination, and curricular development. The Department has developed a number of experiments for teaching the conceptual features of the subject under. The excellent text books for the B. Sc. course have been written by the faculty members and published by publishing houses. These books are followed and prescribed by institutions affiliated to RTM Nagpur University and other Universities such as SGB Amravati University and Gondwana University Gadchiroli.

The members of the faculty appear to work as a team, thereby providing a healthy academic atmosphere. Some faculty members of the department was visited to abroad such as Dr. U. B. Mahatme visited to Kathmandu, Nepal in 2010 and Dr. S. C. Gedam visited to Bloemfontein, South Africa in 2012 to present their research work in the conferences.

Faculties in the Department

- 1. Dr. U. B. Mahatme (HOD) (Asst. Professor) M. Sc. Ph. D; Specialization: Communication Electronics**
- 2. Dr. S. C. Gedam (Asst. Professor) M. Sc. Ph. D; Specialization: Microprocessor and Digital Electronics**
- 3. Dr. Mrs. A. H. Rangari (Asst. Professor) M. Sc. Ph. D; Specialization: Spectroscopy**

Laboratory Attendant

- 1. Mr. P. N. Mankar (M. Lib)**

Curriculum Planning

Academic session - 2023-24

Department: - PHYSICS

First Term (Odd semester) 16.06.2023 to 31.10.2023

Winter vacation 01.11.2022 to 30.11.2023

Second Term (Even semester) 01.12.2023 to 01.05.2024

A. Curriculum planning					
Sr.No	Class	Semester	Month	Curriculum Planning (Allotment of syllabus, Unit test, Syllabus completion)	
1.	B.Sc.I	Sem. I	16 June to 30 oct.	Paper - I	Paper - II
				Dr. U. B. Mahatme Unit III and IV Dr. S. C. Gedam Unit I and II	Dr. U. B. Mahatme Unit I and II Dr. A. H. Rangari Unit III and IV
		<p>Planning: 1. At least two unit Tests should be taken on the covered Topic/s. 2. After the completion of syllabus One common Test on complete syllabus should be taken before the final exam.</p>		Dr. U. B. Mahatme Unit I and II Dr. S. C. Gedam Unit III and IV	Dr. A. H. Rangari Unit I and II Dr. S. C. Gedam Unit III and IV
		<p>Planning: 1. At least two unit Tests should be taken on the covered Topic/s. 2. After the completion of syllabus One common Test on complete syllabus should be taken before the final exam.</p>			
		Sem. III	23 June to 30 Oct.	Dr. S. C. Gedam Unit I and II Dr. U. B. Mahatme	Dr. A. H. Rangari Unit III and IV Dr. S. C. Gedam

2.	B.Sc.II			Unit III and IV	Unit III and IV
				Planning: 1. At least two unit Tests should be taken on the covered Topic/s. 2. After the completion of syllabus One common Test on complete syllabus should be taken before the final exam.	
		Sem. IV	1 Dec. to 30 April 2024	Dr. S. C. Gedam Unit II and III Dr. A. H. Rangari Unit I and IV	Dr. U. B. Mahatme Unit I and II Dr. A. H. Rangari Unit III and IV
				Planning: 1. At least two unit Tests should be taken on the covered Topic/s. 2. After the completion of syllabus One common Test on complete syllabus should be taken before the final exam.	
3.	B.Sc.III	Sem. V	16 June to 30 oct.	Dr. A. H. Rangari Unit I, II, III and IV	Dr. S. C. Gedam Unit I and II Dr. U. B. Mahatme Unit III and IV
				Planning: 1. At least two unit Tests should be taken on the covered Topic/s. 2. After the completion of syllabus One common Test on complete syllabus should be taken before the final exam.	
		Sem. VI	1 Dec. to 30 April 2024	Dr. U. B. Mahatme Unit I and II Dr. A. H. Rangari Unit III and IV	Dr. A. H. Rangari Unit III and IV Dr. S. C. Gedam Unit III and IV
				Planning: 1. At least two unit Tests should be taken on the covered Topic/s. 2. After the completion of syllabus One common Test on complete syllabus should be taken before the final exam.	

B. Activities related to Curriculum (Student seminars, Student group discussion, and others)		
Sr.No.	Month	Activities
1.	September	Students Seminar
2.	December	Group Discussion
3.	February	Other syllabus related activities such as small projects..... etc.

Teaching of Subject papers and Practicals

Course	Paper - I	Paper - II
B. Sc. SEM I	Properties of Matter and Mechanics	Electrostatics, Time Varying fields and Electric Currents
B. Sc. SEM II	Oscillations, Kinetic Theory of Gasses and Thermodynamics.	Gravitation, Astrophysics, Magnetism and Magnetostatics.
B. Sc. SEM III	Sound Waves, Applied Acoustic, Ultrasonic and Power Supply.	Physical Optics and Electromagnetic Waves.
B. Sc. SEM IV	Solid State Physics, X-Ray and Laser	Solid State Electronics and Molecular Physics.
B. Sc. SEM V	Atomic Physics, Free electron theory and Statistical Physics.	Quantum Mechanics, Nanomaterials and Nanotechnology.
B. Sc. SEM VI	Relativity, Nuclear Physics and Biophysics	Electronics, Fibre optics, Communication and Digital Electronics.

PHYSICS LABORATORY

In the laboratory there are 220 students enrolled this year. Laboratory is well equipped with instruments to carry out experiment in Mechanics, Statistical Physics, Solid State Physics, Digital Electronics, Solid State Electronics, Laser Physics, and Quantum Physics as per the syllabus designed by RTM Nagpur University. There are number of major and minor instruments. Practical's of B. Sc. SEM – I, II, III, IV and V are according to syllabus and students perform 10 experiments for each semester.

Strength of Students in the Department (2023-2024):-

Year	Class	Boys	Girls	Total
2023-24	B. Sc. I Yr.	19	33	52
	B. Sc. II Yr.	17	43	60
	B. Sc. III Yr.	17	27	44
	Total	53	103	156

RESEARCH LABORATORY

The Department is not a recognized centre for research, however faculties from the department have developed research laboratory with their own efforts and by taking research projects grants (Rs. 3, 20,000/-) from UGC. In the solid state Physics laboratory mainly the research is carrying out in the field of Luminescence and conducting polymers. Particularly the students are doing mostly the synthesis work in the laboratory and for characterization of the materials (samples) we prefer nearby research centers such as the laboratories of RTM Nagpur University, VNIT, Institute of Science, and if needed we go to the places such as NPL Delhi, NCL Pune, BARC Mumbai, Indore etc for the characterization purpose. There are 12 research scholars doing Ph. D under the faculty. Out of which 5 students have been submitted their Ph. D theses to the RTM Nagpur University for the award of doctoral degree.

Research Scholars for Ph. D under the faculty of department ---

Name of the Student	Topic of Research	Date of Registration	Name of Guide
1. Arpana C. Bhange (Awarded)	Study on magnetic and Electrical properties of some conducting Polymers composites with Inorganic Compounds	PhD. (Cell)/RRC/743 13/07/2012	Dr. U.B. Mahatme
2. Ganesh D. Tidke (Awarded)	Study on Application oriented Thermal, magnetic and Electrical properties of conducting Copolymers and conducting polymers /Inorganic Compounds composites	PhD. (Cell)/RRC/209 13/07/2012	Dr. U.B. Mahatme
3. Raju D. Utane (Awarded)	Study of Electrical, Optical and optoelectronic properties of PEDOT, Polythiophene, Polindole, CPs and their composites with Inorganic materials.	PhD. (Cell)/RRC/209 13/07/2012	Dr. U.B. Mahatme
4. Swati D. Thakre (Awarded)	Study on Thermal, magnetic and Electrical properties of some nanocomposites of polyaniline with Inorganic Compounds	PhD. (Cell)/RRC/ 15/01/2011	Dr. U.B. Mahatme
5. Mrs. A. R. Poddar (Awarded)	Synthesis route of halophosphors and their applications	Ph.D.(Cell)/RRC/6088 18/07/2011	Dr. S. C. Gedam
6. Mr. G. N. Nikhare (Awarded)	Luminescence Of Ce ³⁺ in Some Sulphate and Aluminate Based Materials	Ph.D.(Cell)/RRC/433 15/01/2012	Dr. S. C. Gedam
7. Ms. U. P. Manik (Awarded)	Study Of Energy Transfer Mechanism In Inorganic Phosphors	Ph.D.(Cell)/RRC/426 15/01/2012	Dr. S. C. Gedam

8. Ms. V. C. Kongre (Awarded)	Photoluminescence and Thermo luminescence Characteristics of Some Mixed Alkaline Earth Sulphates	Ph.D.(Cell)/RRC/442 15/01/2012	Dr. S. C. Gedam
9. Mr. N. M. Khobragade (under work)	Luminescence Characterization Of Some Synthetic Minerals	Ph.D.(Cell)/RRC/835 15/01/2012	Dr. S. C. Gedam
10. Mr. S. R. Choubey (Awarded)	Innovative Synthesis of Some Mixed Anion Sulphate Based Phosphors	Ph.D.(Cell)/RRC/832 13/01/2012	Dr. S. C. Gedam
11. Ms. N.B. Shinde (Awarded)	Synthesis and spectroscopic studies of chlorosulphates	Ph.D.(Cell)/RRC/830 13/01/2012	Dr. S. C. Gedam
12. Mrs. A. S. Deshpande (Awarded)	Thermoluminescence Characteristics of Some Europium and Dysprosium doped Sulphates	Ph.D.(Cell)/RRC/826 13/01/2012	Dr. S. C. Gedam

Various UGC Grants to the Department:

Minor Research Projects: Total UGC Grant (Dr. U. B. Mahatme & Dr. S. C. Gedam) = 3, 20, 000/-

Travel Grant by UGC to visit Abroad (Dr. S. C. Gedam) = 1, 29,000/-

Total Grant = **4, 49, 000/-**

DEPARTMENTAL LIBRARY

There are 100 books in the departmental library through which students and teachers are benefitted. Library includes reference books, text books, practical books, manuals, self-authored books and teaching notes.
