

**Physics Department**

| Sr. No. | Name of the Department | Total No. of Labs | Equipment Cost (Rs. in Lakhs) |
|---------|------------------------|---|----------------------------------|
| 1 | Physics | One - F. Y. B. tech One Research lab | 35.28 |

Information about Lab



| Space | No. of Students | Software used | Type of Experiments | Quality of Instruments | Lab manuals |
|--------------|--|---------------|---|--|--|
| 3000 Sq. ft. | Batch size 18 Total 750 students per semester | - | Hands on experiments. Go well with theory. Sequence is matched with the ongoing topic in theory class | Good quality equipments in working condition. 2-3 students per one experiment set ups. | Printed manuals are available for students |
| 1800 Sq. ft. | | | | | |

Instruction for students in lab

- Attendance is compulsory. The absentee of students for genuine reasons like validate medical or serious personal reasons will only be considered and only those students will be allowed to make up the missed experiments. Students will be detained if they have poor attendance. Instructor will decide whether student will be permitted to do a make up or he/she will be graded on the remaining experiments.
- Before each laboratory class, students are expected to read the description of the experiments and read the theory related to it (prelab).The advance preparation is essential for successful completion of laboratory session.
- Students should be present in the laboratory at right time. The laboratory manual will be provided to the students at the beginning. Experiments should be performed system-ethically. First fill up the observation table. Then draw related graphs, do the calculations, write results and conclusions. Write answers of the given questions. Manual should be submitted to the teacher after completion of each laboratory class.
- The students should return all the equipments to the laboratory assistant or keep them in their proper places before they leave the laboratory.
- Students should keep discipline during the laboratory courses.



Equipment Details

| F. Y. B. Tech. Physics I Laboratory | | Cost (Rs in Lakhs) |
|--|--|--|
|    | | |
| <ul style="list-style-type: none"> • Fiber Optics Trainer & Multimeter • Law Of Malus • Digital Polarimeter • Spectrometer • Laser Expt. Setup • Electron Diffraction • Frank-Hertz Expt • G M Counter • Hysteresis Loop Tracer • Newton's ring set-up • Brewster's angle set-up • Four probe Setup • Hall Effect Setup • Thomsons Tube • Planks Constant Experimental Model • P-N Junction characteristics measurement setup • Dielectric constant measurement kit for solids • Electromagnets with power supply • Centrifuge Machine • Magnetic stirrer • Sonicator • Magnetometer • Faraday effect Experiment kit • Biot Savarts Law • High Temperature Programmable furnace • Spin coating unit • Electric mass balance | | 1.00 0.93 1.04 0.36 .973 3.59 2.88 .87 2.28 1.36 0.27 2.08 2.07 .61 2.95 1.58 2.23 1.53 0.78 0.10 0.28 0.74 6.93 3.27 4.50 1.05 |



| | |
|--|--------------|
| | 1.00 |
| Total | 35.28 |
| Funded Research Project | |
| UGC Major Research Project entitled "Grain size effects on transport, magnetic and magnetoresistance properties in manganites" | |
| (i) Amount sanctioned | 14.00 |
| (ii) Nonrecurring amount | 6.00 |
| (iii) Recurring grant | 8.00 |

Lab Time Table

| F Y B TECH SPE/SSPST Lab TIME TABLE | | | | | | |
|-------------------------------------|------------------|---------|-------------------|----------------|------------|----------|
| ACADEMIC YEAR - 2020-2021(SEM II) | | | | | | |
| CLASS /DIVISION : Div I to X | | | | | | |
| WITH EFFECT FROM : 28/06/2021 | | | | | | |
| DAY/TIME | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY |
| 8.40 - 10.40 | A3+B3 | A4+B4 | A5+B5 | C4+D4 C5+D5 | C1+D1(RBK) | |
| 10.40-11.100 | | | | | | |
| 11.10 - 1.10 | A1+B1 | C3+D3 | A2+B2 | C2+D2 | | |
| 1.10 - 1.40 | | | | | | |
| 1.40 - 3.40 | A7+B7 C9 + D9 | C7+D7 | C8+D8 A10 +B10 | A9+B9 C6+D6 | | A6+B6 |
| 4.00 - 6.00 | | C10+D10 | | A8+B8 | | |



AS 105 – LABORATORY I – PHYSICS – I

Teaching Scheme

Practical: 2-hrs/week

Examination Scheme

Oral +Practical Exam: 50 Marks

Term work: 50 mark

Objectives:

To develop experimental skills and understand the principles in Physics and their applications in the field of Engineering.

List of Experiments:

1. Cosine square law of Malus
2. Brewster's Law
3. Polarimeter
4. Wave length by Diffraction Grating
5. Newtons Rings
6. Diffraction experiment with Laser
7. Frank and Hertz
8. Planks Constant
9. Characteristic of GM counter
10. Numerical Aperture of Optical fibre

Course Outcomes

1. Hands on experience over basic optical instruments
2. Verification of Laws of optics
3. Analyze interference pattern
4. Measurement of Wavelength
5. A basic foundation over quantum theory



AS 106 – LABORATORY II – PHYSICS – II

Teaching Scheme

Practical: 2-hrs/week

Examination Scheme

Oral +Practical Exam: 50 Marks

Term work: 50 marks

Objectives:

To develop experimental skills and understand the principles in Physics and their applications in the field of Engineering.

List of Experiments:

- 1 Measurement of e/m of an electron by Thomson's method
- 2 Band gap of a semiconductor by four probe methods
- 3 Structural study of crystalline material
- 4 Hall effect in Semiconductor
- 5 Magnetoresistance measurement of semiconductor
- 6 Linear or mass attenuation coefficient by GM counter
- 7 Measurement of magnetic susceptibility by Quinke's method
- 8 Hysteresis loop tracer
- 9 Study of Biot-Savart's law
- 10 Faraday Effect

Course Outcomes:

1. Measurement of resistivity and band gap of Semiconductors
2. Measurement of linear attenuation coefficient
3. Parameters for classification of magnetic materials
4. Basic understanding of electromagnetic force