| BSP403P | | | | | Material Science Laboratory | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Examination Scheme | | | | | |
| L | T | P | C | Hrs/Week | Theory | | | Practical | | Total Marks |
| | | | | | MS | ES | IA | LW | Viva | |
| 0 | 0 | 2 | 1 | 2 | - | - | - | 50 | 50 | 100 |

**COURSE OBJECTIVES**

1. To develop the fundamental understanding of material sciences.
2. To practice the knowledge of thermal, electric and magnetic properties.
3. To provide the understanding of semiconductor properties.
4. To introduce students to mechanical properties.

**List of experiments (Any 10)**

1. Study of Thermocouple
2. Thermal Conductivity of Metals
3. Study of Solar Cell and its characteristics
4. Crystal Structure analysis
5. Measurement of high resistivity and temperature coefficient using two probes
6. Study of dielectric constant and curie temperature of ferroelectric ceramics ($BaTiO_3$)
7. Measurement of Susceptibility by Quincke's method
8. Band Gap measurement using PN junction diode
9. Synthesis of Material using various techniques
10. To determine particle size using laser beam diffraction
11. Study of Hardness and Toughness

**COURSE OUTCOMES**

On completion of the course, student will be able to

1. Identify and understand the crystal structure.
2. Employ the electrical, thermal and magnetic properties.
3. Identify and utilize the basic synthesis of some materials.
4. Interpret the dielectric properties for potential applications.
5. Review the characteristic mechanical properties of the materials.
6. Apply the knowledge of material sciences in solving day to day problem of life.

**TEXT/REFERENCE BOOKS**


1. Principal of electronic materials and devices, S.O. Kasap
2. Materials Science and Engineering: An Introduction, W. D. Callister, (WILEY)
3. Materials Science by G.K. Narula; K.S. Narula; V.K. Gupta, Tata McGraw-Hill
4. Material Science by O.P. Khanna, Dhanpat Rai Publishing
5. Introduction to Materials Science For Engineers by James F. Shakelford & Madanapalli K. Murlidhara, Pearson Education


**Evaluation**

**Max. Marks: 100**

| | |
|---|---|
| Continuous evaluation | 50 marks |
| End semester examination, Viva-voce & project presentation | 50 marks |