Second year of Five Years integrated M.Sc. (Physics)

M.Sc.- II, Semester – IV		**L**	**T**	**P**	**C**
MP 204 :	**Condensed matter Physics**	**3**	**1**	**2**	**5**

- **CRYSTAL GEOMETRY** **(08 Hours)**
  Basics of crystal structure, classifications of crystals, Lattices, Miller Indices, Unit cell, Directions And Planes etc.

- **CRYSTALLOGRAPHY** **(10 Hours)**
  Symmetry elements in crystals, Single crystals and usage, Defects in crystals, techniques Of growing, and studying different crystals

- **LATTICE VIBRATIONS** **(08 Hours)**
  Classical and Quantum theory of harmonic crystals, Anharmonic effects in crystals, Phonons

- **ELECTRIC & MAGNETIC PROPERTIES OF MATERIALS, CONDUCTION IN SEMICONDUCTORS, BAND THEORY** **(10 Hours)**

  Electrical conduction in metals, alloys, Band theory and conduction in Semiconductors, Basic concept of magnetism, Dia, Para, ferro, antiferro, and ferri magnetism

- **SUPERCONDUCTIVITY** **(06 Hours)**
  Critical temperature, Meissner effect, types of superconductors, Introduction to BCS theory

(Total Contact Time (Theory) : 42 Hours)

BOOKS RECOMMENDED :

1. **Marder M. P**., *Condensed Matter Physics*, John Wiley, 2000.
2. **Kittle, C**., *Introduction to Solid State Physics*, John Willey, 1976.
3. **Omar, M.A**. *Elementary Solid State physics* –, Addison-Wesley Pvt.Ltd, New Delhi,2000.
4. **Azaroff L. V**.,*Introduction to solids*, Tata McGraw Hill, 1990.
5. **Dekker, A.J**., *Solid State Physics* , Macmillan India Ltd, 2000.