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

M.Sc.-II, Semester-III	L	T	P	C
MS 203: BASIC SCIENCE ELECTIVE (BSE) **MODERN PHYSICS**	3	0	0	3

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- **LIMITATIONS OF CLASSICAL PHYSICS AND INTRODUCION TO QUANTUM PHYSICS** **(08 Hours)**
  Classical physics as an approximate of quantum physics, limitations of classical Physics at microscopic levels

- **BASICS OF QUANTUM PHYSICS AND QUANTUM MECHANICS** **(10 Hours)**
  Black body radiation, Wein's, Rayleigh-Jeans, and Planck's laws, Dual nature, Atomic models, Exclusion principle, and quantum numbers, The wave equation

- **PHOTOELECTRIC EFFECT AND COMPTON EFFECT** **(06 Hours)**
  Photoelectric effect and Einstein's explanation, Compton effect and equation of Wavelength

- **X – RAYS** **(08 Hours)**
  Production and characteristics of X-rays, X-ray diffraction and Bragg's law

- **LASERS ,FIBRE OPTICS & APPLICATIONS** **(12 Hours)**
  Laser fundamentals, types of lasers, Basics of Fibre optics, types of fibres, applications

(Total Contact Hours (Theory) : 44 Hours)

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BOOKS RECOMMENDED:

1. **Beiser A.,** *Concept of the Modern Physics*, TMH, 2008.
2. **Ghatak A.,** *Optics*, Tata McGraw Hill, 2005.
3. **Wehr M. R., Richards J. A. and Adair T. W.,** *Physics of the Atom*, Addison – Wesley, 1984.
4. **Harris R.,** *Modern Physics*, Addison-Wesley/ Pearson,2/E ,2007
5. **Born M. and Wolf E.,** *Principles of Optics*, Cambridge Uni. Press, 2000.