

**(C) Multidisciplinary Courses to be offered**

Sl. No.	Sem	Type of Course	Name of Course	Credits	Marks
1.	I	MDC-1	To be selected from the basket	3	100
2.	II	MDC-2	To be selected from the basket	3	100
3.	III	MDC-3	To be selected from the basket	3	100

**Sub Total = 09****Multidisciplinary Course (3 Credit)**

Course Title	Credit	Credit Distribution	
		Theory	Practical
Crystallography	3	3	0

**(03 Credit)****Course Outcomes****After completion of the course, the student will be able to-****CO 1-**understand the structure of various crystal**CO2-** know the theoretical framework like symmetry and space groups**CO3-**know characterization of crystal using diffraction technique**CO4-**know the analysis of collected diffraction data**Crystallography****Unit I****01 Credit (15 hrs)**

Elements of Crystallography

Unit cell, Lattice and Basis, Symmetry operation for a two dimensional crystal, Two and Three dimensional Bravais lattice. Reciprocal lattice, Lattice constant crystal plane and Miller indices, Inter planar spacing, Simple crystal structure - hcp, fcc, bcc SC diamond and Cesium Chloride Structure.

**Unit II****01 Credit (15 hrs)**

Crystal Type and Crystal Binding

Ionic Crystal. Covalent crystal, Metal crystal, Molecular crystal. Hydrogen bonded crystal, Calculation of BE in different type of crystals, Crystal of inert gases.

**Unit III****01 Credit (15 hrs)**

XRay Diffraction

Diffraction, Braggs law, Diffraction methods, Scattering by electrons, atoms. Laue, Bragg and Ewald Work on X-ray diffraction, Indexing of X-ray diffraction

Shankar  
14-06  
APd  
14.6.23.

Adhwa  
14/6/23  
B  
14-6-2023