



Bangladesh University of Engineering & Technology
Department of Physics

Course Title: Structure of Matter

Course Teacher: **Dr. Mohammad Jellur Rahman**

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Tentative Lecture Plan

Lecture No.	Topics
1-5	<ul style="list-style-type: none">○ <i>Types of Solid: Crystalline and non-crystalline solids, Single crystal and poly-crystal solids</i>○ <i>Crystal Structure: lattice+ basis, Translational vector, unit cell, lattice parameters, lattice constant</i>○ <i>Crystal systems, lattice point per unit cell</i>○ <i>Co-ordinations number, Crystal planes and directions, NaCl and CsCl, Diamond structure</i>
6-9	<ul style="list-style-type: none">○ <i>Density, Packing factor for sc, bcc, fcc, hcp, Problems</i>○ <i>Crystal Planes, Miller indices, Relation between interplanar spacing and Miller indices, Problems</i>○ <i>Bragg's Law, Methods of determination of interplanar spacing from diffraction patterns</i>
10-14	<ul style="list-style-type: none">○ <i>Defects in solids: Point defects, Line defects</i>○ <i>Bonds in solids, Interatomic distances, Calculation of cohesive and bonding energy</i>○ <i>Introduction to band theory: Distinction between metal, Semiconductor and insulator</i>

References:

1. Lecture Notes- <http://mjrahman.buet.ac.bd>
2. Solid State Physics – M A Wahab
3. Introduction to Solid State Physics – Charles Kittel
4. Elementary Solid State Physics – M. Ali Omar
5. Concepts of Modern Physics – Arthur Beiser
6. Principle of Modern Physics- A K Saxena