

DEPARTMENT OF CHEMICAL ENGINEERING
National Institute of Technology Srinagar-J&K (190006)

SUBJECT: Material Science and Technology

Semester: 5th Sem.

1. Introduction to Material Science and Technology

- a) Historical perspective and Material Science
- b) Why study Material Science? Interrelation between four components of Material Science.
- c) Classification of Materials.....Metals, Ceramics, Polymers, Composite materials, Biomaterials and advanced materials(Smart materials, non-linear materials)

2. Atomic structure of crystalline solids

- a) Difference between crystalline and non-crystalline solids
- b) Fundamental concepts of Unit cells and lattice structures
(Bravais lattice system and types of unit cells)
- c) Packing efficiency and density computations.
- d) Miller Indices (Crystallographic planes and their representation)

References:

- 1. M. F. Ashby and D. R. H. Jones, Engineering Materials 1, An introduction to Their Properties and Applications, second edition, Butterworth-Heinemann, Woburn, UK, 1996
- 2. William D. Callister, Jr, Materials Science and Engineering – An introduction, sixth edition, John Wiley & Sons, Inc. 2004.
- 3. V. Raghavan, Materials Science and Engineering, third edition, Prentice Hall of India Private Limited, New Delhi, 1990.

Note: The students are advised to go through the topics listed and for any assistance can either mail or call me. The tutorial sheet related to the above topics will be uploaded next.

Teacher In charge

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