

Syllabus

Metals and alloys, Crystal structures, Imperfection in crystalline solids, Phase Diagrams, Phase Transformation, Conductivity of metals and materials, Magnetic behaviour of materials, Mechanical properties of materials.

Materials Characterization by Optical, XRD, Electron microscopy.

Basics of Thermodynamics and Kinetics.

Ores and minerals, Principles of primary metal extraction (e.g. Fe, Cu, Al and Ti). Casting and solidification. Powder processing of materials. Heat Treatment. Electrochemistry and Corrosion.

Steels, Superalloys and Nanostructured Materials.