

SYLLABUS :-

General aspects of deformation in crystalline solids, review of elasticity theory and stress field around stationary and moving dislocation, forces on a dislocation including concepts of self-energy, line tension, chemical forces and forces between dislocations for varied configurations of dislocation, kinetics of dislocation flow, dislocations in fcc structures, dislocations in bcc, hcp, ordered and superlattice structures, jogs and intersection of dislocations incorporating concepts of elementary, composite and extended jogs, dislocations dipoles, attractive and repulsive junctions, origin and multiplication of dislocations, dislocation arrays and crystal boundaries; Interpretation of tensile response of crystalline solids including theories related to yielding, flow stress and work-hardening, dislocations and creations of discontinuities.