

Course No.	CE 225008
Course Title	Rock Mechanics
Credits	L T P Cr 3 0 0 3
Prerequisites	Geotechnical Engineering
<p>Course content:</p> <ul style="list-style-type: none"> • Introduction: Origin of rock, Rock cycle, Geological classification of rock and rock mass, Need and application of Rock Mechanics • Physical properties of rock: Specific gravity, Abrasivity, Hardness, Porosity, Moisture content, Swell index, Slake durability, Thermal conductivity • Stress and Strain in rock: Analysis of stress, strain and constitutive relations in isotropic and anisotropic rock under static and dynamic loading • Engineering Properties of rock: Laboratory and field testing, Strength, Strength indices and static elastic constants, Parameters influencing strength, Permeability • Properties of rockmass: Behaviour of rockmass, Rockmass structure, Joints and discontinuities in rockmass, Openings in rockmass, Rock quality designation (RQD), Rock mass rating (RMR), Insitu elastic properties and strength determination, Influence of water on rockmass behavior, Ground water flow in rockmass, Measurement of water pressure • Stability of rock slopes, tunnels and foundations on rock: Mechanics of rock failure, Failure criteria for Rock: Mohr-Coulomb, Griffith and Hoek-Brown failure criteria, Evaluation of bearing capacity of shallow and deep foundations on rock, Improvement of in-situ properties of rock masses, General Principles of tunneling in rocks, Reinforcement of fractured and jointed rocks by different methods: Shotcreting, bolting, Anchoring. 	
<p>Text/Reference Books:</p> <ol style="list-style-type: none"> 1. Leonard O., Wilbur I. D. (1967), Rock Mechanics and the Design of Structures in Rock, John Wiley & Sons, US. 2. Jaeger J. C., Cook N. G. W., and Zimmerman R. W. (2007), Fundamentals of Rock Mechanics, Blackwell Publishing, UK. 3. William G. P. (2006), Design Analysis in Rock Mechanics, Taylor and Francis, London, UK. 4. Ramamurthy T. (2014), Engineering in Rocks for Slopes, Foundations and Tunnels, PHI Learning Pvt. Ltd. Delhi, India 5. Hudson J. A. (2014), Rock Testing and Site Characterization: Comprehensive Rock Engineering: Principles, Practice and Projects; Pergamon Press, Oxford 6. Relevant Indian Standard codes and recent publications 	