21GGE502T - SOIL AND ROCK MECHANICS										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hours/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	1	0	4	4	25	50	25	-	-	100

Unit I **Hours: 08**

Fundamental definitions, origin and formation of soil. Phase Diagram, Water content, Specific Gravity of soil solids and soil mass, Densities and Unit weights, Bulk, Dry, Saturated & submerged unit weight. Grain Size, Consistency limits and indices, Compaction, Standard and Modified proctor's compaction tests, factors affecting compaction, effect of compaction on soil properties.

Unit II **Hours: 12**

Concept of shear strength, Mohr-coulomb theory, conventional and modified failure envelops, Effective stress concept total stress, effective stress and Neutral stress, Concept of pore pressure, Total and effective shear strength parameters, factors affecting shear strength of soils. Soil strength testing: direct shear, tri-axial compressive testing. Consolidation: Definition, Terzaghi's one dimensional consolidation theory-assumption and limitations, normally consolidated, under consolidated and over consolidated soils, Consolidation characteristics of soil.

Unit III **Hours: 10**

Development of rock mechanics, applications and scope of rock mechanics. Geological classification of rocks, Index engineering properties of rocks, Rock Mass Classification, Permeability of soils and rocks, engineering classification of rocks, Construction Uses of rocks and soils, Characterization of rock discontinuities and their fundamental properties. In-situ stresses in rocks.

Unit IV **Hours: 10**

Laboratory testing for the measurement of strength and deformation behaviour of rocks under uniaxial compression, triaxial compression. Determination of elastic parameters, Tensile strength, Shear Strength, Flexural strength, Strength criterion in rocks, Swelling and slake durability, permeability, point load strength, Factors affecting strength of rocks. Methods of Improving Rock Mass properties.

MAX <40 Hrs>

TEXT / REFERENCE BOOKS

1. Basic and Applied Soil Mechanics by Gopal Ranjan, and A.S.R. Rao, New Age International Publishers
2. Geotechnical Engineering by C. Venkataramiah, New Age International Publishers
3. Introduction to Rock Mechanics by Richard E Goodman, Wiley Publishers