CE(PC)504	**Soil Mechanics – II**	2L + 1T	3 Credits
Course Outcome	After going through this course, the students will be able to: **1.** Assess the compaction and consolidation characteristics of soil for solving geotechnical problems. **2.** Calculate earth pressure on rigid retaining walls on the basis of classical earth pressure theories. **3.** Analyze and design rigid retaining walls (cantilever types) from geotechnical engineering consideration. **4.** Evaluate the bearing capacity of shallow foundation by applying established theory. **5.** Estimate settlement in soils by different methods. **6.** Compute safety of dams and embankments on the basis of various methods of slope stability analysis.		
Prerequisite	Soil Mechanics – I (CE(PC)401)		
Module 1	**Consolidation of Soil** Terzaghi's theory of one dimensional consolidation, Compressibility characteristics of soils, Compression index, Coefficient of compressibility and volume change, Coefficient of consolidation, Degree and rate of consolidation, Time factor, Settlement computation, Consolidometer and laboratory one dimensional consolidation test as per latest IS Code, Determination of consolidation parameters.		5L+3T
Module 2	**Compaction of Soil** Principles of compaction, Standard and modified proctor compaction test, Field compaction methods, Field compaction control, Factors affecting compaction, Effect of compaction on soil properties.		3L+1T
Module 3	**Earth Pressure Theories** Plastic equilibrium of soil, Earth pressure at rest, Active and passive earth pressures, Rankine's and Coulomb's earth pressure theories, Different types of backfill, Wedge method of analysis. Analytical and graphical methods for determination of earth pressure against various earth retaining structures. **Stability of retaining walls:** Cantilever retaining wall.		7L+3T
Module 4	**Bearing capacity of shallow foundations** Bearing capacity, Definition, Factors affecting bearing capacity, Modes of failures, Methods of determining bearing capacity of soils. Terzaghi's bearing capacity theory, Effect of depth of embedment, Eccentricity of load, Foundation shape on bearing capacity, Effect of 11 water table and eccentric loads. Isolated footings with combined action of loads and moments, Bearing capacity as per IS: 6403.		7L+4T
Module 5	**Settlement** Allowable bearing pressure and settlement analysis (as per IS: 8009), Immediate and consolidation settlements, Rigidity and depth factor corrections, Settlement values as per IS: 1904 recommendations.		2L+1T
Module 6	**Stability of slopes** Types of failure, Analysis of finite and infinite slopes, Swedish and friction circle method, Ordinary method of slices, Factor of safety, Taylor's stability number, Bishop's simplified method of stability analysis.		3L+2T

Reference	**Sl.**	**Book Name**	**Author**	**Publishing House**
	1	Textbook of Soil Mechanics and Foundation Engineering (Geotechnical Engineering Series)	V.N.S. Murthy	CBS Publishers
	2	Soil Mechanics and Foundations	Punmia, B.C. and Jain A. K	Laxmi Publications (P) Ltd
	3	Basic and Applied Soil Mechanics	Gopal Ranjan & A.S.R. Rao	New Age International Pvt.Ltd, Publishers
	4	Principles of Geotechnical Engineering	B.M. Das	Thomson Brooks / Cole