

**Course Content Proforma**  
**Second year odd semester**

Course No.	CEL201	Open Course (Y/N)	HM Course (Y/N)	Discontinued (Y/N)	
Course Title	<b>Soil Mechanics</b>				
Course Coordinator	Dr. Anirban Mandal				
Slot in which offered. If not offered write N	Odd		Even		
	E				
Structure	Lecture	Tutorial	Practical	Credits	
	3	0	2	8	
Prerequisite Course Codes As per proposed Course Numbers	-	-	-	-	
Prerequisite credits	-Nil -				
Equivalent Course Codes. As per proposed courses and old courses					
Overlap course codes As per proposed Course Numbers	-	-	-	-	
Text Book (Max. 2)	Title	Soil Engineering in Theory & Practice,;			
	Author	Alam Singh			
	Publisher	Asia Publishing House			
	Edition	1975			
	Title	Geotechnical Engineering,			
	Author	S. K. Gulhati & Manoj Dutta:			
	Publisher	Tata McGraw-Hill,			
	Edition	2005.			
Reference Books	Title	Basic & Applied Soil Mechanics			
	Author	Gopal Ranjan & A.S. RAO			
	Publisher	New Age International Ltd,			
	Edition	2004.			
	Title	Geotechnical Engineering			
	Author	C. Venkatramaiah			
	Publisher	New Age Ltd.,			
	Edition	2006			
	Title	Soil Mechanics & Foundation Engg.			
	Author	Arora K.R.			
	Publisher	Standard Publishers Distributors, Delhi,			
	Edition	1989 & later			

	Title	Soil Mechanics & Foundation Engg.
	Author	Garg S.K.
	Publisher	Khanna Publishers, Delhi,
	Edition	1998.
	Title	Soil Mechanics & Foundation Engg.
	Author	Punmia B.C.
	Publisher	Laxmi Publication Pvt. Ltd, New Delhi,
	Edition	2005
Content	<p>Introduction : Formation of soil, residual &amp; transported soils, soil, generally used in practice such as sand, gravel, organic silt, clay, Bentonite, black cotton soil etc.</p> <p>2. Phases of Soil: Various soil weight &amp; volume inter-relationship. Density index. methods of determination of in situ density. Physical &amp; Index Properties of soil- concept &amp; methods determination. Water content, specific gravity, sieve analysis, particle size distribution curve, sedimentation analysis, Differential and free-swell value.Consistency of Soil – Atterberg’s limits, determination, Soil structures and clay minerals.</p> <p>3. Classification of Soil: Criteria of classification, particle size classification, Textural classification, Unified &amp; I.S. classification system, Field identification of Expansive soils their identification and related problems.</p> <p>4 Permeability &amp; Seepage: Darcy’s law &amp; its validity, Discharge &amp; seepage velocity, factors affecting permeability, Determination of coefficients of permeability by laboratory and field methods, permeability of stratified soil. Seepage pressure, quick condition, flow-nets, Laplace’s equation, methods to draw flow-nets, their characteristics &amp; uses of flow-nets, Preliminary problems of discharge estimation of homogeneous soils. Effective, Neural and total stresses in Soil mass.</p> <p>5. Stress Distribution: Stress distribution in soil mass, Boussinesque’s, Theory point &amp; uniformly loaded rectangular &amp; circular areas, Newmark’s charts.</p> <p>6. Consolidation: Compression of laterally confined soil, Terzaghie’s 1-D consolidation theory (formation of differential equation only) determination of coefficient of consolidation, degree of consolidation. Determination of pre-consolidation pressure, settlement, rate of settlement.</p> <p>7. Compaction: Mechanics of compaction factors affecting compaction, standard &amp; modified compaction tests, OMC, Field compaction equipment, quality control. P.I. Concept of blending.</p> <p>8. Shear Strength: Introduction, Mohr’s diagram, Mohr-Coloumb’s theory, Measurement of shear strength by direct shear test, tri-axial test, unconfined compression test, vane shear test, sensitivity.</p> <p>9. Shear Strength: Introduction, Mohr’s diagram, Mohr-Coloumb’s theory, Measurement of shear strength by direct shear test, tri-axial test, unconfined compression test, vane shear test, sensitivity.</p>	
Course No.		

Course No.	CEL204	Open Course (Y/N)	HM Course (Y/N)	Discontinued (Y/N)	
Course Title	<b>Building Materials and Technology</b>				
Course Coordinator	S.R. Dongre				
Slot in which offered. If not offered write N	Odd		Even		
	B				
Structure	Lecture	Tutorial	Practical	Credits	
	3	0	2	8	
Prerequisite Course Codes As per proposed Course Numbers					
Prerequisite credits					
Equivalent Course Codes. As per proposed courses and old courses					
Overlap course codes As per proposed Course Numbers					
Text Book (Max. 2)	Title	Building Construction & Materials			
	Author	Singh Gurcharan			
	Publisher	Standard Publisher & Distributor, 1978			
	Edition	New			
	Title	Building Construction & Materials			
	Author	Laxmi Publication Pvt. Ltd			
	Publisher	Punmia B.C.			
	Edition	Fifth			
Reference Books	Title	Building Construction & Materials			
	Author	Sushil kumar			
	Publisher	Standard Publisher & Distributor, 2003 reprint			
	Edition				
	Title				
	Author				
	Publisher				
	Edition				
	Title				
	Author				
	Publisher				
	Edition				
	Title				
	Author				
Publisher					
Edition					

Content		<ol style="list-style-type: none"> <li>1. Foundations: Necessity and types of foundations. Details of shallow foundations. Bearing capacity of soils and its assessment. Presumptive bearing capacity values from codes. Loads on foundations. Causes of failures of foundations and remedial measures. Foundation on black cotton soil. Setting out foundation trenches, excavation, timbering of trenches. Load bearing and frame structures.</li> <li>2. Brickwork : Qualities of good bricks, classification of bricks, tests on bricks as per as codes. Specification of Mortar for Brick Masonry. Terms used in brickwork, commonly used types of bonds in brickwork such as header, stretcher, English and Flemish bonds, principles of construction. Reinforced brickwork, brick knogging. Parapets, copings, sills and corbels. Masonry construction using cement concrete blocks (solid &amp; hollow) and clay blocks, Walls - Cavity walls, load bearing and partition walls. Precast construction: Introduction to method and materials. Precast elements like poles, cover, jallies, step corbels, Truss element etc.</li> <li>3. Stone Work: Stones cutting and dressing, selection of stone, types of stone masonry, principles of construction, joints in masonry, Specification of Mortar for stone Masonry, Lifting appliances for heavy stones, and common building stones in India.</li> <li>4. Arches and Lintels &amp; Damp Proofing,: Terminology in construction, types, chajjas and canopies, Precast Lintels &amp; Arches. Causes and effect of dampness. Various methods of damp proofing, damp proofing in Plinth protection, New Techniques of Damp Proofing. Epoxy, resins and other modern materials etc.,</li> <li>5. Floors, Roofs, Stairs and Doors &amp; Windows : General principles, types and method of construction, upper floors, finished quality and testing floor tiles, ceramic tiles, Terracotta, Plaster of Paris. Flat and pitched roofs, roof coverings, types and their constructional features. Thermal Insulation. Types of stairs, functional design of stairs. Purpose materials of construction and types.</li> <li>6. Plastering &amp; Pointing, Temporary Timbering and Painting : Necessity, types and methods Centering and formwork shoring, underpinning and scaffolding. White washing, color washing and distempering new materials &amp; techniques. Principle of Acoustics, and Sound insulation.</li> <li>7. Introduction to Principles of Earthquake Resistant Building Construction &amp; materials</li> </ol>
Course No.		

Course No.	CEP204	Open Course (Y/N)	HM Course (Y/N)	Discontinued (Y/N)	
Course Title		<b>Building Materials &amp; Technology Lab</b>			
Course Coordinator		S.R. Dongre			
Slot in which offered. If not offered write N		Odd		Even	
Structure		Lecture	Tutorial	Practical	Credits
		0	0	2	2
Prerequisite Course Codes As per proposed Course Numbers					
Prerequisite credits					
Equivalent Course Codes. As per proposed courses and old courses					
Overlap course codes As per proposed Course Numbers					
Text Book (Max. 2)		Title			
		Author			
		Publisher			
		Edition			
		Title			
		Author			
		Publisher			
		Edition			
Reference Books		Title			
		Author			
		Publisher			
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	Publisher	
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	Title	
	Author	
	Publisher	
	Edition	
Content	<p>1.To determine water absorption of burnt clay building bricks.</p> <p>2. To determine crushing/ compressive strength of burnt clay building bricks.</p> <p>3. To determine efflorescence of burnt clay building bricks.</p> <p>4. To determine water absorption of cement concrete flooring tiles.</p> <p>5. To determine flexural /transverse strength of cement concrete flooring titles.</p> <p>6.To determine water absorption of manalore roofing tiles.</p> <p>7. To determine breaking load of mangalore roofing titles.</p> <p>8. To determine moisture content &amp; specific gravity of timber.</p> <p>9. To determine compressive strength of timber parrallel &amp; perpendicular to grain.</p> <p>10. To determine impact strength of white glazed ceramic tiles.</p>	
Course No.		

Course No.	AML2xx	Open Course (Y/N)	HM Course (Y/N)	Discontinued (Y/N)	
Course Title		Strength of Materials			
Course Coordinator					
Slot in which offered. If not offered write N	Odd		Even		
	C				
Structure	Lecture	Tutorial	Practical	Credits	
Prerequisite Course Codes As per proposed Course Numbers					
Prerequisite credits					
Equivalent Course Codes. As per proposed courses and old courses					
Overlap course codes As per proposed Course Numbers					
Text Book (Max. 2)	Title				
	Author				
	Publisher				
	Edition				
	Title				
	Author				
	Publisher				
	Edition				
Reference Books	Title				
	Author				
	Publisher				
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	Publisher				
	Edition				
	Title				
	Author				
Publisher					

Course No.	CEL207	Open Course (Y/N)	HM Course (Y/N)	Discontinued (Y/N)
Course Title	<b>Surveying I</b>			
Course Coordinator	Dr. Rahul V. Ralegaonkar			
Slot in which Offered	Odd		Even	
	A		Nil	
Structure	Lecture	Tutorial	Practical	Credits
	3	0	2	8
Prerequisite Course Codes				
Prerequisite Credits				
Equivalent course Codes				
Overlap Course Codes				
Text Books	Title	Surveying I		
	Author	B. C. Punmia		
	Publisher	Standard Book-House		
	Edition	Latest		
	Title	Surveying Volume I		
	Author	S. K Duggal		
	Publisher	Tata McGraw Hill		
	Edition	Latest		
Reference Books	Title	Plane Surveying		
	Author	A M Chandra		
	Publisher	New Age International Publication		
	Edition	Latest		
	Title	Surveying & Levelling-Part I		
	Author	T. P. Kanetkar & S. V. Kulkarni		
	Publisher	Pune Vidhyarthi Griha Prakashan, Pune		
	Edition	Latest		
	Title			
	Author			
	Publisher			
	Edition			
	Title			
	Author			
	Publisher			
Edition				

Content	<p><b>Theory:</b></p> <ol style="list-style-type: none"> <li>1. <b>Linear Measurements:</b> Methods, Equipments, Ranging, Chain Surveying, Field Work &amp; Plotting, Obstacles in Chaining, area &amp; Volume Computation</li> <li>2. <b>Compass Surveying:</b> Instrument, Principles, Bearings</li> <li>3. <b>Plane Table:</b> Equipment, Methods, Errors, Adjustment Survey, Traversing &amp; Plotting</li> <li>4. <b>Levelling:</b> Instruments, Collimation Method, Rise-Fall Method, Curvature &amp; Refraction, Contouring</li> <li>5. <b>Theodolite survey</b> – Study of theodolite – Temporary and permanent adjustments – Measurement of horizontal angles – Methods of repetition and reiteration – Measurement of vertical angles</li> <li>6. <b>Tacheometric Surveying:</b> Theory, Instrument Constants, Methods</li> </ol> <p><b>Practicals:</b></p> <ol style="list-style-type: none"> <li>1. Chain survey Traversing and plotting of details-Area Determination.</li> <li>2. Building Lay- out work</li> <li>3. Plane table survey Method of Radiation/ Intersection</li> <li>4. Plane table survey Solving two/ three point problem</li> <li>5. Plane table survey Traverse</li> <li>6. Instrument Constant-Tachometer</li> <li>7. Leveling Fly leveling – Plane of collimation method</li> <li>8. Leveling Fly leveling – Rise and Fall method</li> <li>9. Theodolite surveying Measurement of horizontal angle</li> <li>10. Theodolite surveying Measurement of vertical angle for determination of height of object</li> </ol>
Course No.	