

Lesson plan: Building materials & Construction Technology

Government polytechnic, Malkangiri

Discipline: Civil Engineering	Semester : 3 rd	Name of Teaching faculty: SIMA CHHATRIA (PTGF)
Subject: BMCT	No. of days/ per week class allotted: 5	Semester from Date: 01/08/2023 To Date:
Week	Class Day	Topics
		PART :A (BUILDING MATERIALS)
		1. Stone
1 st	1 ST	1.1 Classification of rock, uses of stone, natural bed of stone
	2 ND	1.1 Classification of rock, uses of stone, natural bed of stone
	3 RD	1.2 Qualities of good building stone
	4 TH	1.3 Dressing of stone
	5 th	1.4 Characteristics of different types of stone and their uses
		2. Bricks
2 nd	1 ST	Brick earth – its composition
	2 ND	Brick making – Preparation of brick earth, Moulding, Drying, Burning in kilns
	3 RD	Brick making – Preparation of brick earth, Moulding, Drying, Burning in kilns
	4 TH	Classification of bricks, size of traditional and modular brick
	5 th	Classification of bricks, size of traditional and modular brick
3 rd	1 st	qualities of good building bricks
		3. Cement, Mortar and Concrete
	2 nd	Cement: Types of cements
	3 rd	Properties of cements,
	4 th	Manufacturing of cement
	5 th	Importance and application of blended cement with fly ash and blast furnace slag.
4 th	1 st	Mortar: Definition and types of mortar
	2 nd	Use of gravel, morrum and fly ash as different building material

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	3 rd	Concrete: Definition and composition- Water cement ratio- Workability, mechanical properties and grading of aggregates, mixing, placing, compacting and curing of concrete.
	4. Other Construction Materials	
	4 th	4.1 Timber: Classification and Structure of timber.
	5 th	4.1 Timber: Classification and Structure of timber.
5 th	1 st	4.2 Seasoning of timber – Importance
	2 nd	4.3 Characteristics of good timber.
	3 rd	4.4 Clay products and refractory materials – Definition and Classification.
	4 th	Properties and uses of refractory materials- tiles, terracotta, porcelain glazing.
	5 th	Iron and Steel: Uses of cast iron, wrought iron, mild steel and tor steel
6 th	5. Surface Protective Materials	
	1 st	Composition of Paints, enamels, varnishes
	2 nd	Composition of Paints, enamels, varnishes
	3 rd	Types and uses of surface protective materials
	4 th	Types and uses of surface protective materials
	5 th	Emulsion, French polish and Wax Polish.
	PART: B (CONSTRUCTIONS TECHNOLOGY)	
	Introduction	
7 th	1st	Buildings and classification of buildings based on occupancy, Different components of a building.
	2 nd	Different components of a building. Site investigation – objectives, site reconnaissance and explorations
	1. Foundation	
	3 rd	2.1 Concept of foundation and its purpose 2.2 Types of foundations – shallow and deep
	4 th	Shallow foundation-constructural details of : Spread foundations for walls, thumb rules for depth and width of foundation and thickness of concrete block
	5 th	Shallow foundation-constructural details of : Spread foundations for walls, thumb rules for depth and width of foundation and thickness of

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Workability,
placing,

		concrete bloc
8 th	1 st	Deep foundations: Pile foundations-their suitability, classification of piles based on materials, function and method of installation.
	2. Walls & Masonry Works	
	2 nd	3.1 Purpose of walls 3.2 Classification of walls – load bearing, non-load bearing walls, retaining walls
	3 rd	Classification of walls as per materials of construction: brick, stone, reinforced brick, reinforced concrete, precast, hollow and solid concrete block and composite masonry walls.
	4 th	3.4 Partition Walls : Suitability and uses of brick and wooden partition walls 3.5 Brick masonry : Definition of different terms
5 th	Bond – meaning and necessity: English bond for 1 and 1-1/2 Brick thick walls. T, X and right angled corner junctions. Thickness for 1 and 1-1/2 brick square pillars in English bond	
9 th	1 st	Stone Masonry : 3.8 Glossary of terms –String course, corbel, cornice, block-in-course, grouting, mouldings, templates, throating, through stones, parapet, coping, pilaster and buttress
	3. Doors, Windows And Lintels	
	2 nd	4.1 Glossary of terms used in doors and window
	3 rd	4.2 Doors – different types of door
	4 th	3.3 Windows – different types of windows
5 th	4.4 Purpose of use of arches and lintels	
4. Floors, Roofs and Stairs		
10 th	1 st	Floors: Glossary of terms
	2 nd	Types of floor finishes – cast-in-situ, concrete flooring(monolithic, bonded), terrazzo tile flooring, cast in situ Terrazzo flooring, timber flooring
	3 rd	Roofs: Glossary of terms, Types of roofs, concept and function of flat, pitched, hipped and Sloped roofs
	4 th	Stairs: Glossary of terms; Stair case, winder, landing, stringer, newel, baluster, rise, tread, width of stair case, hand rail, nosing, head room, mumty room.
	5 th	Various types of stair case – straight flight, dog legged, open well, quarter turn, half turn (newel and geometrical stairs), bifurcated stair, spiral stair, cantilever stair, tread riser stair.
5. Protective, Decorative Finishes, Damp and Termite Proofing		
11 th	1 st	6.1 Plastering – purpose – Types of plastering, Types of plaster finishes – Grit finish, rough cast, smooth cast, sand faced, pebble dash, acoustic plastering and plain plaster etc

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	2 nd	Proportion of mortars used for different plasters, preparation of mortars, techniques of plastering and curing
	3 rd	6.3 Pointing – purpose – Types of pointing
	4 th	Painting – objectives – method of painting new and old wall surfaces, wood surface and metal surfaces – powder coating and spray painting on metal surfaces
	5 th	6.5 White washing – Colour washing – Distemping – internal and external walls. 6.6 Damp and Termite proofing – Materials and Methods.
		6. Green Buildings, Energy Management and Energy Audit Of Buildings & Projec
12 th	1 st	8.1 Concept of green building 8.2 Introduction to Energy Management and Energy Audit of Buildings
	2 nd	8.3 Aims of energy management of building
	3 rd	8.4 Types of energy audit, Response energy audit questionnaire
	4 th	8.5 Energy surveying and audit report

Sima Chhatra
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Principal
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