



GOVT. POLYTECHNIC KORAPUT

ACADEMIC SESSION 2020-2021

SEMESTER- 3<sup>rd</sup>

BRANCH - CIVIL ENGINEERING

SUBJECT – BUILDING MATERIALS AND CONSTRUCTION  
TECHNOLOGY

FACULTY NAME – AKHIL KUMAR SAHU

Week No	Topic to be covered
1	<b>Stone</b> 1.1 Classification of rock, uses of stone, natural bed of stone, 1.2 Qualities of good building stone, 1.3 Dressing of stone 1.4 Characteristics of different types of stone and their uses
2	<b>Bricks</b> 2.1 Brick earth – its composition 2.2 Brick making – Preparation of brick earth, Moulding, Drying, Burning in kilns (continuous Process) 2.3 Classification of bricks, size of traditional and modular bricks, qualities of good building bricks
3	<b>Cement, Mortar and Concrete</b> 3.1 Cement: Types of cements, Properties of cements, Manufacturing of cement 3.2 Importance and application of blended cement with fly ash and blast furnace slag. 3.3 Mortar: Definition and types of mortar 3.4 Sources and classification of sand, Bulking of sand 3.5 Use of gravel, morrum and fly ash as different building material
4	Concrete: Definition and composition- Water cement ratio- Workability, mechanical properties and grading of aggregates, mixing, placing, compacting and curing of concrete.
5	<b>Other Construction Materials</b>  4.1 Timber: Classification and Structure of timber. 4.2 Seasoning of timber – Importance. 4.3 Characteristics of good timber.
6	4.3 Clay products and refractory materials – Definition and Classification. 4.4 Properties and uses of refractory materials- tiles, terracotta, porcelain glazing. 4.5 Iron and Steel: Uses of cast iron, wrought iron, mild steel and tor steel
7	<b>Surface Protective Materials</b> 5.1 Composition of Paints, enamels, varnishes. 5.2 Types and uses of surface protective materials like Paints, Enamels, Varnishes, Distempers, Emulsion, French polish and Wax Polish.
8	<b>PART: B (CONSTRUCTIONS TECHNOLOGY Introduction</b> 1.1 Buildings and classification of buildings based on occupancy 1.2 Different components of a building. 1.3 Site investigation – objectives, site reconnaissance and explorations.

9	<p><b>Foundations</b></p> <p>2.1 Concept of foundation and its purpose</p> <p>2.2 Types of foundations – shallow and deep</p> <p>2.3 Shallow foundation-constructural details of : Spread foundations for walls, thumb rules for depth and width of foundation and thickness of concrete block</p> <p>2.4 Deep foundations: Pile foundations-their suitability, classification of piles based on materials, function and method of installation</p>
10	<p><b>Walls &amp; Masonry Works :</b></p> <p>3.1 Purpose of walls</p> <p>3.2 Classification of walls – load bearing, non-load bearing walls, retaining walls.</p> <p>3.3 Classification of walls as per materials of construction: brick, stone, reinforced concrete, precast, hollow and solid concrete block and composite masonry walls (Concept Only).</p>
11	<p>3.4 Partition Walls : Suitability and uses of brick and wooden partition walls</p> <p>3.5 Brick masonry : Definition of different terms</p> <p>3.6 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</p> <p>3.7 Stone Masonry :</p> <p>3.8 Glossary of terms –String course, corbel, cornice, block-in-course, grouting, mouldings, templates, throating, through stones, parapet, coping, pilaster and buttress</p>
12	<p><b>Doors, Windows And Lintels</b></p> <p>4.1 Glossary of terms used in doors and windows</p> <p>4.2 Doors – different types of doors</p> <p>4.3 Windows – different types of windows</p> <p>4.4 Purpose of use of arches and lintels</p>
13	<p><b>Floors, Roofs and Stairs</b></p> <p>5.1 Floors: Glossary of terms ,Types of floor finishes – cast-in-situ, concrete flooring(monolithic, bonded), terrazzo tile flooring, cast in situ Terrazzo flooring, timber flooring (Concept only)</p> <p>5.2 Roofs: Glossary of terms, Types of roofs, concept and function of flat, pitched, hipped and Sloped roofs</p> <p>5.3 Stairs: Glossary of terms; Stair case, winder, landing, stringer, newel, baluster, rise, tread, width of stair case, hand rail, nosing, head room, mumty room.</p> <p>5.4 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.</p>
14	<p><b>Protective, Decorative Finishes, Damp and Termite Proofing</b></p>

	<p>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.</p> <p>6.2 Proportion of mortars used for different plasters, preparation of mortars, techniques</p>
15	<p><b>Green Buildings, Energy Management and Energy Audit Of Buildings &amp; Project</b></p> <p>8.1 Concept of green building</p> <p>8.2 Introduction to Energy Management and Energy Audit of Buildings.</p> <p>8.3 Aims of energy management of buildings.</p> <p>8.4 Types of energy audit, Response energy audit questionnaire</p> <p>8.5 Energy surveying and audit report.</p>