GOVERNMENT POLYTECHNIC, BALANGIR

DEPARTMENT OF CIVIL ENGINEERING

LESSION PLAN

SESSION 2023-24

SUBJECT: BUILDING MATERIALS AND CONSTRUCTIONS TECHNOLOGY	BRANCH: CIVIL ENGINEERING
NAME OF THE FACULTY: SOURAV KUMAR BEHERA	SEMESTER: 3rd

PART :A (BUILDING MATERIALS)

SL NO.	CHAPTER	HOURS	LECTURE NO.	TOPIC TO BE COVERED
				STONE
1	CHAPTER 01	05	1	Classification of rock
			2	uses of stone, natural bed of stone
			3	Qualities of good building stone
			4	Dressing of stone
			5	Characteristics of different types of stone and their uses
2	CHAPTER 02	06		**BRICKS**
			1	Brick earth – its composition
			2	Brick making – Preparation of brick earth, Moulding, Drying, Burning in kilns (continuous Process)
			3	Brick making – Preparation of brick earth, Moulding, Drying, Burning in kilns (continuous Process)
			4	Classification of bricks
			5	size of traditional and modular bricks,
			6	qualities of good Building Bricks
3	CHAPTER 03	07		**CEMENT, MORTAR AND CONCRETE**
			1	Cement: Types of cements, Properties of cements
			2	Manufacturing of cement
			3	Importance and application of blended cement with fly ash and blast furnace slag.
			4	Mortar: Definition and types of mortar, Sources and classification of sand, Bulking of sand
			5	Use of gravel, morrum and fly ash as different building material
			6	Concrete: Definition and composition- Water cement ratio- Workability, mechanical properties and grading of aggregates, mixing
			7	placing, compacting and curing of concrete

4	CHAPTER 04	07		**OTHER CONSTRUCTION MATERIALS**
			1	Timber: Classification and Structure of timber.
			2	Timber: Classification and Structure of timber
			3	Seasoning of timber – Importance.
			4	Characteristics of good timber
			5	Clay products and refractory materials – Definition and Classification
			6	Properties and uses of refractory materials- tiles, terracotta, porcelain glazing.
			7	Iron and Steel: Uses of cast iron, wrought iron, mild steel and tor steel
5	CHAPTER 05	05		**SURFACE PROTECTIVE MATERIAL**
			1	Composition of Paints
			2	enamels, varnishes
			3	Types and uses of surface protective materials like Paints
			4	Enamels, Varnishes, Distempers,
			5	Emulsion, French polish and Wax Polish

PART :B (CONSTRUCTION TECHNOLOGY)

SL NO.	CHAPTER	HOURS	LECTURE NO.	TOPIC TO BE COVERED
				INTRODUCTION
1	CHAPTER 01	02	1	Buildings and classification of buildings based on occupancy, Different components of a building.
			2	Site investigation – objectives, site reconnaissance and explorations.
2	CHAPTER 02	04		**FOUNDATIONS**
			1	Concept of foundation and its purpose
			2	Types of foundations – shallow and deep
			3	Shallow foundation-constructional details of Spread foundations for walls, thumb rules for depth and width of foundation and thickness of concrete block.
			4	Deep foundations: Pile foundations-their suitability, classification of piles based on materials, function and method of installation
3	CHAPTER 03	06		**WALLS & MASONRY WORKS**
			1	Purpose of walls, Classification of walls – load bearing, non-load bearing walls, retaining walls
			2	Classification of walls as per materials of construction: brick, stone, reinforced brick, reinforced concrete, precast, hollow and solid concrete block and composite masonry walls (Concept Only).
			3	Partition Walls: Suitability and uses of brick and wooden partition walls, Brick masonry: Definition of different terms
			4	Bond – meaning and necessity: English bond for 1and 1-1/2 Brick thick walls. T, X and right-angled corner junctions. Thickness for 1and 1-1/2 brick square pillars in English bond
			5	Stone Masonry

4	CHAPTER 04	04		**DOORS, WINDOWS AND LINTELS**
			1	Glossary of terms used in doors and windows
			2	Doors – different types of doors
			3	Windows – different types of windows
			4	Purpose of use of arches and lintels
5	CHAPTER 05	05		**FLOORS, ROOFS AND STAIRS**
			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)
			2	Roofs: Glossary of terms, Types of roofs, concept and function of flat, pitched, hipped and Sloped roofs
			3	Stairs: Glossary of terms; Stair case, winder, landing, stringer, newel, baluster, rise, tread, width of stair case, hand rail, nosing, head room, mummy room
			4	Various types of stair case – straight flight, dog legged, open well, quarter turn, half turn (newel and geometrical stairs)
			5	bifurcated stair, spiral stair, cantilever stair, tread riser stairs
6	CHAPTER 6	05		**PROTECTIVE, DECORATIVE FINISHES, DAMP AND TERMITE PROOFING**
			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.
			2	Proportion of mortars used for different plasters, preparation of mortars, techniques of plastering and curing 6.3 Pointing – purpose – Types of pointing
			3	Painting – objectives – method of painting new and old wall surfaces, wood surface and metal surfaces – powder coating and spray painting on metal surfaces
			4	White washing – Colour washing – Distempering – internal and external walls.
			5	Damp and Termite proofing – Materials and Methods.
7	CHAPTER 7	04		**GREEN BUILDINGS, ENERGY MANAGEMENT AND ENERGY AUDIT OF BUILDINGS & PROJECT**
			1	Concept of green building, Introduction to Energy Management and Energy Audit of Buildings.
			2	Aims of energy management of buildings.
			3	Types of energy audit, Response energy audit questionnaire
			4	Energy surveying and audit report.