



GOVERNMENT POLYTECHNIC, BOLANGIR

DEPARTMENT OF CIVIL ENGINEERING

Discipline: CIVIL ENGG.	Semester: 3 RD	Name of the Teaching Faculty: - Guest Faculty [Civil Engg.] - <u>1</u>
Subject: BUILDING CONSTRUCTION (TH:1)	No. of days/week class allotted: 03	Total contact Hours-45Hrs Total Marks-100 Assessment: Internal Assessment -30, End term-70
COURSE OUTCOMES	CO1: Explain different components of a building, types of foundations, and their significance. CO2: Compare different types of masonry and explain their construction techniques. CO3: Explain different construction techniques used in building construction. CO4: Explain the importance of communication systems in building planning.	

Class day	Main Topic	Sub-Topics	Teaching Aids / Activities	Course Outcomes
1.	Overview of Building Components	- Classification of Buildings (NBC Group A to I) - Types of Construction: Load Bearing, Framed, Composite	PPT on NBC classification, charts of building types, real site photos	CO1
2.	Building Components	- Functions of Building Components - Substructure: Foundation, Plinth	Diagrams, cross-sections, models	CO1
3.	Superstructure – Part 1	- Walls, Partition wall, Cavity wall, Sill, Lintel - Doors & Windows, Floor, Mezzanine Floor, Roof, Columns, Beams, Parapet	Building component models, photographs, samples	CO1
4.	Superstructure – Part 2	Continuation of above (Walls, Doors, Roof, Beams, Parapet)	Charts, case examples	CO1
5.	Construction of Substructure – Job Layout	- Site clearance - Layout for load bearing structure - Layout for framed structure (Center line & Face line method) - Precautions	Demonstration with lime powder/threads on ground, field video	CO1
6.	Earthwork	- Excavation for foundation - Timbering & Strutting - Embankment earthwork	Field demo, excavation tools, models	CO1
7.	Plinth Filling	- Materials for plinth filling - Tools & plants used in earthwork	Sample materials, tool display	CO1
8.	Foundation – Functions	- Purpose & necessity of foundation	PPT, case study examples	CO1
9.	Types of Foundation – Part 1	- Shallow foundation - Stepped footing - Wall footing - Column footing	Models, diagrams, construction video	CO1
10.	Types of	- Isolated footing - Combined	3D cut-section models, animations	CO1

	Foundation – Part 2	footing - Raft foundation - Grillage foundation		
11.	Deep Foundation – Part 1	- Pile foundation - Well foundation - Caissons	Animated videos, field photographs	CO1
12.	Deep Foundation – Part 2	- Dewatering methods - Deep wells, well points - Cofferdams (Introduction)	Field visit photos, short video demo	CO1
13.	Stone Masonry – Part 1	- Terms used in stone masonry: facing, backing, hearting, through stone, corner stone, cornice	Stone samples, site photographs	CO2
14.	Stone Masonry – Part 2	- Types: Rubble, Ashlar - Joints in stone masonry & their purpose	Models, charts, PPT	CO2
15.	Stone Masonry – Part 3	- Selection criteria - Precautions in stone masonry construction	Site case studies, photographs	CO2
16.	Brick Masonry – Part 1	- Terms in brick masonry: header, stretcher, closer, quoin, course, face, back, hearting, bat bond, joints, lap, frog, line, level, plumb	Brick samples, diagrams	CO2
17.	Brick Masonry – Part 2 (Bonds)	- Header bond - Stretcher bond - English bond - Flemish bond	Bond models, brick arrangement activity	CO2
18.	Brick Masonry – Part 3	- Requirements of good brick masonry - Junctions in brick masonry - Procedure	Charts, demo model	CO2
19.	Brick Masonry – Precautions & Tools	- Safety precautions - Comparison between stone & brick masonry - Tools for masonry	Tool kit demo, site images	CO2
20.	Concrete Block Masonry	- Hollow concrete block masonry - Composite masonry	Block samples, comparison chart	CO2
21.	Scaffolding & Shoring	- Purpose and types - Process of erection and dismantling	Videos, models, photographs	CO2
22.	Underpinning	- Purpose - Types of shoring - Underpinning methods	Case studies, animations	CO3
23.	Formwork	- Definition - Requirements - Materials used - Types of formworks - Removal of formwork	Formwork samples, photos from site	CO3
24.	Building Communication – Horizontal (Doors)	- Components of doors - Types: fully panelled, glazed, flush doors - Sizes (BIS)	Door models, BIS chart	CO4
25.	Doors – Part 2	- Collapsible doors - Rolling shutters - Revolving doors - Glazed doors - BIS	Animated video, catalogues	CO4

		recommendations		
26.	Windows – Part 1	- Components of windows - Types: paneled, glazed, wooden, steel	Models, diagrams	CO4
27.	Windows – Part 2	- Aluminium, sliding, louvered, bay, corner, dormer, skylight - BIS sizes, ventilators	Product catalogues, BIS chart	CO4
28.	Fixtures & Fastenings	- Materials and functions - Window sills, lintels, chajja	Actual samples, PPT	CO4
29.	Vertical Communication – Part 1	- Means of vertical communication: staircase, ramps, lifts, escalators - Terms used in staircases (tread, riser, nosing, newel, baluster, landing, etc.)	Staircase models, site images	CO4
30.	Vertical Communication – Part 2	- Types of staircases (Straight, dog-legged, open well, spiral, quarter turn, half turn, etc.)	3D models, videos	CO4
31.	Materials for Stairs	- Stone, brick, RCC, wood, metal	Samples, comparison chart	CO4
32.	Building Finishes – Floors & Roofs	- Floor finishes - Types of floors - Suitability of Kota, Marble, Granite	Samples of flooring, photographs	CO3
33.	Building Finishes – Tiles	- Ceramic tiles, vitrified, chequered, paver blocks	Tile samples, demo laying activity	CO3
34.	Concrete Floors & Skirting	- Wooden flooring - Skirting, dado - Process of laying - Polishing & finishing	Floor models, video demo	CO3
35.	Building Finishes – Tiles	- Ceramic tiles, vitrified, chequered, paver blocks	Tile samples, demo laying activity	CO3
36.	Concrete Floors & Skirting	- Wooden flooring - Skirting, dado - Process of laying - Polishing & finishing	Floor models, video demo	CO3
37.	Roofing Materials	- RCC roof - Mangalore tiles - AC sheets - G.I. sheets, Corrugated G.I. sheets - Plastic & Fibre sheets	Actual samples of tiles/sheets, catalogues, photos of buildings with different roofing	CO3
38.	Types of Roofs	- Flat roof - Pitched roof: King Post truss, Queen Post truss - Terms used in roofs	Roof truss models, site photographs, PPT	CO3
39.	Wall Finishes – Plastering (Part 1)	- Necessity of plastering - Procedure of plastering - Single coat plaster - Double coat plaster - Rough finish	Live demo video, plastering tools display, wall section models	CO3

40.	Wall Finishes – Plastering (Part 2)	- Neeru finishing - Plaster of Paris (POP)	Samples of POP, demo of mixing & application, case study photographs	CO3
41.	Special Plasters	- Stucco plaster - Sponge finish plaster - Pebble finish plaster - Plaster board & wall claddings	Wall finish samples, photographs, hands-on demo	CO3
42.	Precautions in Plastering	- Defects in plastering - Preventive measures	Defect photographs, real-life failure cases	CO3
43.	Painting – Part 1	- Necessity of painting - Types of paints - Procedure of painting	Paint shade cards, sample boards, demo video	CO3
44.	Painting – Part 2	- Necessity of surface preparation - Methods of surface preparation	Sandpaper, brushes, demo boards, activity on surface prep	CO3
45.	Painting – Part 3	- Methods of application of paint	Demonstration of brush, roller, spray application	CO3

LEARNING RESOURCES:

1. Rangwala, S.C., Engineering Materials.
2. Punmia B. C., and Jain A. K., Building Construction.
3. Ghose, D. N., Construction Materials.

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