SPINTRONIC TECHNOLOGY AND ADVANCE RESEARCH, BBSR

LESSON PLAN

Name of the Faculty: Ms.Sangita Nayak	
Branch: Civil Engineering (Diploma)	Semester: 5th Semester
Subject: ADVANCED CONSTRUCTION TECHNOLOGY	Theory / Sessional: Theory

Academic Session:	Subject Code:	Total Periods:	Subject Name:
2026–27	CEPE-305A	45	Advanced Construction Technology

Sl. No.	Module	Lecture Topics	Periods	Cumulative Periods	Remarks
1	UNIT–I Advanced Construction Materials (07 Hrs.)	Fibre: Use and properties of steel, polypropylene, carbon and glass fibres.	1	1	
2		Plastics: Use and properties of PVC, RPVC, HDPE, FRP, GRP.	1	2	
3		Miscellaneous materials: Acoustics materials, wall claddings, plaster boards, micro-silica, waterproofing materials, adhesives.	1	3	
4		Use of waste products and industrial by-products in bricks, blocks, concrete and mortar.	1	4	
5		Properties and uses of acoustics materials.	1	5	
6		Waterproofing materials and adhesives.	1	6	
7		Industrial by-products in concrete and mortar.	1	7	
8	UNIT–II Advanced Concreting Methods and Equipment (10 Hrs.)	Ready Mix Concrete: Necessity and use of ready mix concrete.	1	8	
9		Products and equipment for ready mix concrete plant.	1	9	
10		Conveying of ready mix concrete, transit mixers.	1	10	
11		Vibrators for concrete consolidation: Internal, needle, surface, platform and form vibrators.	1	11	
12		Underwater Concreting: Procedure and equipment required.	1	12	
13		Tremie method.	1	13	
14		Drop bucket method.	1	14	
15		Properties of underwater concrete.	1	15	
15		Workability of underwater concrete.	1	15	
17		Water cement ratio of underwater concrete.	1	17	
18	UNIT–III Advanced Technology in Constructions (10 Hrs.)	Construction of bridges and flyovers: Equipment and machineries required for foundation and super structure.	1	18	
19		Construction of multi-storeyed buildings: Equipment and machinery for construction.	1	19	
20		Use of lifts, belt conveyors, pumping of concrete.	1	20	
21		Prefabricated construction: Methods of prefabrication.	1	21	
22		Plant fabrication and site fabrication.	1	22	
23		Prefabricated building elements: wall panels, slab panels, beams, columns, door-window frames etc.	1	23	
24		Equipment and machineries for placing and jointing of prefabricated elements.	1	24	
25		Strengthening of embankments by soil reinforcing techniques.	1	25	
26		Use of geo-synthetics.	1	26	
27		Case studies / examples.	1	27	
28	UNIT–IV Hoisting and Conveying Equipment (08 Hrs.)	Hoisting Equipment: Principles and working of Derrick-Pole, Gin Pole, Crane.	1	28	
29		Power driven scotch derrick crane, Hand operated crane.	1	29	
30		Locomotive crane, Tower crane, Lattice Girder crane.	1	30	
31		Winches, Elevators, Ladders.	1	31	
32		Crawler cranes, Truck mounted cranes, Gantry cranes, Mast cranes.	1	32	
33		Conveying Equipment: Working of belt conveyors.	1	33	
34		Types of belts and conveying mechanism.	1	34	
35		Capacity and use of dumpers, tractors and trucks.	1	35	
36	UNIT–V Miscellaneous Machineries and Equipment (10 Hrs.)	Excavation equipment: Use, working and output of excavators.	1	36	
37		Bulldozers, scrapers, graders, Clam shell, Trenching equipment.	1	37	
38		Tunnel boring machines, Wheel mounted belt loaders.	1	38	
39		Power shovels, JCB and drag lines.	1	39	
40		Compacting equipment: Vibratory rollers, pneumatic rollers, plain rollers, high footed rollers, rammers.	1	40	
41		Miscellaneous equipment: Pile driving equipment.	1	41	
42		Pile hammers, Hot mix bitumen plant, bitumen paver.	1	42	
43		Grouting equipment, floor polishing and cutting machine.	1	43	
44		Explosives for blasting, Dynamite, process of using explosives.	1	44	
45		Safety aspects and case studies.	1	45	
		TOTAL	45	45	

SUGGESTED LEARNING RESOURCES

1. Sharma, S. C. and Poochutar, S. V., Construction Engineering and Management, Khanna Book Publishing, New Delhi.
2. Chudley, R., Construction Technology Vol. I & II, ELBS-Longman Group.
3. Peurifoy, R. L., Construction Planning Equipment and Methods, McGraw Hill Co. Ltd., New York.
4. Seetharaman, S., Construction Engineering and Management, Umesh Publications, New Delhi.
5. Sengupta, B. and Guha, Construction Management and Planning, New Asia Publishing Company, New Delhi.
6. Smith, R. C., Materials of Construction, McGraw Hill Co. Ltd.
7. Satyanarayana, R. and Saxena, S. C., Construction Planning and Equipment, Standard Publication, New Delhi.
8. Rangaiah, S. C., Construction of Structures and Management of works, Charotar Publication, Anand.
9. Ghose, D. N., Materials of Construction, McGraw Hill Publishing Co., New Delhi.