

GOVERNMENT POLYTECHNIC, SAMBALPUR (RENGALI)

DEPARTMENT OF CIVIL ENGINEERING

NAME OF THE FACULTY: Shri. DEBASHISH MEHER , (PTGF, Civil Engineering)

LESSON PLAN OF SUBJECT- Th 3. ADVANCED CONSTRUCTION TECHNIQUES & EQUIPMENT , 6TH SEM, SUMMER-24 w.e.f. 16.01.2024

WEEK NO.	TOPIC	PERIODS ASSIGNED PER TOPIC	PERIODS AVAILABLE PER WEEK
W-1	1 Advanced construction materials 1.1 Fibers and Plastics- Types of fibers- Steel, Carbon, glass fibers, Use of fibers as construction material, properties of Fibers. Types of plastics- PVC, RPVC, HDPE, FRP, GRP etc. Colored plastic sheets. Use of plastic as construction material. 1.2 Artificial Timbers – Properties and uses of artificial timber. Types of artificial timber available in market, strength of artificial timber. 1.3 Miscellaneous materials – Properties and uses of acoustics materials, wall claddings, plaster boards, micro-silica, artificial sand, bonding agents, adhesives etc.	10	2
W-2			4
W-3			4
W-4	2 Prefabrication 2.1 Introduction, necessity and scope of prefabrication of buildings, history of prefabrication, current uses of prefabrication , types of prefabricated systems, classification of prefabrication, advantages and disadvantages of prefabrication, 2.2 The theory and process of prefabrication, design principle of prefabricated systems, types of prefabricated elements, modular coordination 2.3 Indian standard recommendation for modular planning.	8	4
W-5			4
W-6	3 Earthquake Resistant Construction 3.1 Building Configuration 3.2 Lateral Load resisting structures 3.3 Building characteristics 3.4 Effect of structural irregularities-vertical irregularities, plan configuration problems. 3.5 Safety consideration during additional construction and alteration of existing Buildings. 3.6 Additional strengthening measures in masonry building- corner reinforcement, lintel band, sill band, parapet band, roof band, gable band etc.	8	4
W-7			4

W-8	4. Retrofitting of Structures 4.1 Seismic retrofitting of reinforced concrete buildings : 4.2 -Sources of weakness in RC frame building	8	4
W-9	4.3 -Classification of retrofitting techniques and their uses		4
W-10	5 Building Services 5.1 Cold Water Distribution in high rise building, lay out of installation 5.2 Hot water supply – General principles for central plants-layout 5.3 Sanitation –soil and waste water installation in high rise buildings	8	4
W-11	5.4 Electrical services – i) requirements in high rise buildings ii) Layout of wiring - types of wiring iii) Fuses and their types iv) Earthing and their uses 5.5 Lighting – Requirement of lighting, Measurement of light intensity 5.6 Ventilation - Methods of ventilation (Natural and artificial Systems of ventilation) problems on ventilation 5.7 Mechanical Services- Lifts, Escalator, Elevators – types and uses.		4
W-12	6 Construction and earth moving equipments – 6.1 Planning and selection of construction equipments 6.2 Study on earth moving equipments like drag line, tractor, bulldozer, Power shovel 6.3 Study and uses of compacting equipments like tamping rollers, Smooth wheel rollers, Pneumatic tired rollers and vibrating compactors	10	4+1
W-13	6.4 Owring and operating cost – problems		4+1
W-14	7. Soil reinforcing techniques 7.1 Necessity of soil reinforcing. 7.2 Use wire mesh and geo-synthetics.	8	4

4. Retrofitting of Structures			
W-8	4.1 Seismic retrofitting of reinforced concrete buildings :	8	4
	4.2 -Sources of weakness in RC frame building		
W-9	4.3 -Classification of retrofitting techniques and their uses		4
5 Building Services			
W-10	5.1 Cold Water Distribution in high rise building, lay out of installation	8	4
	5.2 Hot water supply – General principles for central plants-layout		
	5.3 Sanitation –soil and waste water installation in high rise buildings		
W-11	5.4 Electrical services – i) requirements in high rise buildings ii) Layout of wiring - types of wiring iii) Fuses and their types iv) Earthing and their uses		4
	5.5 Lighting – Requirement of lighting, Measurement of light intensity		
	5.6 Ventilation - Methods of ventilation (Natural and artificial Systems of ventilation) problems on ventilation		
	5.7 Mechanical Services- Lifts, Escalator, Elevators – types and uses.		
6 Construction and earth moving equipments –			
W-12	6.1 Planning and selection of construction equipments	10	4+1
	6.2 Study on earth moving equipments like drag line, tractor, bulldozer, Power shovel		
	6.3 Study and uses of compacting equipments like tamping rollers, Smooth wheel rollers, Pneumatic tired rollers and vibrating compactors		
W-13	6.4 Owning and operating cost – problems		4+1
7. Soil reinforcing techniques			
W-14	7.1 Necessity of soil reinforcing.	8	4
	7.2 Use wire mesh and geo-synthetics.		

W-15	7.3 Strengthening of embankments, Slope stabilization in cutting and embankments by soil reinforcing techniques.	4
W-16	REVISION AND DISCUSS ON PREVIOUS YEAR QUESTION PAPER	4

[Signature]
16/01/24

Signature of Concerned Faculty
Department of Civil Engineering

[Signature]
16/01/24

C/S Signature of Sr. Lect./ HOD
Department of Civil Engineering