

GOVERNMENT POLYTECHNIC, BALANGIR

DEPARTMENT OF CIVIL ENGINEERING

LESSION PLAN

SESSION 2023-24

SUBJECT: ADVANCED CONSTRUCTION TECHNIQUES & EQUIPMENT	BRANCH: CIVIL ENGINEERING
NAME OF THE FACULTY: PIUS RANJAN TANDI	SEMESTER: 6 TH

SL NO.	CHAPTER	HOURS	LECTURE NO.	TOPIC TO BE COVERED
1	CHAPTER 01	10		ADVANCED CONSTRUCTION MATERIALS
			1	Fibers and Plastics-Types of fibres- Steel, Carbon, glass fibers
			2	Types of fibres- Steel, Carbon, glass fibers
			3	Use of fibers as construction material
			4	properties of Fibers.
			5	Types of plastics- PVC, RPVC, HDPE, FRP, GRP etc.
			6	Coloured plastic sheets. Use of plastic as construction material
			7	Artificial Timbers – Properties and uses of artificial timber
			8	Types of artificial timber available in market, strength of artificial timber.
			9	Miscellaneous materials – Properties and uses of acoustics materials, wall claddings, plaster boards,
			10	micro-silica, artificial sand, bonding agents, adhesives etc.
2	CHAPTER 02	08		PREFABRICATION
			1	Introduction, necessity and scope of prefabrication of buildings, history of prefabrication
			2	Current uses of prefabrication, types of prefabricated systems
			3	Classification of prefabrication, advantages and disadvantages of prefabrication
			4	The theory and process of prefabrication,
			5	Design principle of prefabricated systems, types of prefabricated elements,
			6	Modular coordination
			7	Indian standard recommendation for modular planning.
			8	Indian standard recommendation for modular planning.
3	CHAPTER 03	08		EARTHQUAKE RESISTANT CONSTRUCTION
			1	Building Configuration

			2	Lateral Load resisting structures
			3	Building characteristics
			4	Building characteristics
			5	Effect of structural irregularities-vertical irregularities, plan configuration problems
			6	Safety consideration during additional construction and alteration of existing Buildings
			7	Additional strengthening measures in masonry building-corner reinforcement
			8	lintel band, sill band, plinth band, roof band, gable band etc.
4	CHAPTER 04	08		RETROFITTING OF STRUCTURES
			1	Seismic retrofitting of reinforced concrete buildings
			2	Seismic retrofitting of reinforced concrete buildings
			3	Seismic retrofitting of reinforced concrete buildings
			4	Sources of weakness in RC frame building
			5	Sources of weakness in RC frame building
			6	Classification of retrofitting techniques and their uses
			7	Classification of retrofitting techniques and their uses
			8	Classification of retrofitting techniques and their uses
5	CHAPTER 05	08		BUILDING SERVICES
			1	Cold Water Distribution in high rise building, lay out of installation
			2	Hot water supply – General principles for central plants-layout
			3	Sanitation –soil and waste water installation in high rise buildings
			4	Electrical services – i) requirements in high rise buildings ii) Layout of wiring - types of wiring
			5	iii) Fuses and their types iv) Earthing and their uses
			6	Lighting – Requirement of lighting, Measurement of light intensity
			7	Ventilation - Methods of ventilation (Natural and artificial Systems of ventilation) problems on ventilation
			8	Mechanical Services- Lifts, Escalator, Elevators – types and uses.
6	CHAPTER 06	10		CONSTRUCTION AND EARTH MOVING EQUIPMENTS
			1	Planning and selection of construction equipments

			2	Study on earth moving equipment's like drag line
			3	tractor, bulldozer, Power shovel
			4	Study and uses of compacting equipments like tamping rollers,
			5	Study and uses of compacting equipments like tamping rollers
			6	Smooth wheel rollers
			7	Pneumatic tired rollers and vibrating compactors
			8	Pneumatic tired rollers and vibrating compactors
			9	Owning and operating cost – problems
			10	Owning and operating cost – problems
				SOIL REINFORCING TECHNIQUES
7	CHAPTER 07	08	1	Necessity of soil reinforcing.
			2	Necessity of soil reinforcing.
			3	Use wire mesh and geo-synthetics.
			4	Use wire mesh and geo-synthetics.
			5	Strengthening of embankments
			6	Slope stabilization in cutting and embankments by soil reinforcing techniques
			7	Slope stabilization in cutting and embankments by soil reinforcing techniques
			8	Slope stabilization in cutting and embankments by soil reinforcing techniques