

GOVERNMENT POLYTECHNIC, BALANGIR

DEPARTMENT OF CIVIL ENGINEERING

LESSION PLAN

SESSION 2023-24

SUBJECT: CONCRETE TECHNOLOGY (ELECTIVE)	BRANCH: CIVIL ENGINEERING
NAME OF THE FACULTY: MANAS MEHER	SEMESTER: 6 th

SL NO.	CHAPTER	HOURS	LECTURE NO.	TOPIC TO BE COVERED
1	CHAPTER 01	02		Concrete as a construction material
			1	Grades of concrete.
			2	Advantages and disadvantages of concrete
2	CHAPTER 02	04		Cement
			1	Composition, hydration of cement
			2	Water cement ratio and compressive strength
			3	Fineness of cement, setting time, soundness.
			4	Types of cement.
3	CHAPTER 03	06		Aggregate, Water and Admixtures
			1	Classification and characteristics of aggregate
			2	Fineness modulus, grading of aggregate, I.S.383
			3	Quality of water for mixing and curing
			4	Important functions
			5	Classification of admixtures, I.S 9103, accelerating admixtures, retarding admixtures
			6	Water reducing admixtures, air containing admixtures
4	CHAPTER 04	06		Properties of fresh concrete
			1	Concept of fresh concrete
			2	Workability
			3	Slump test
			4	compacting factor test
			5	V-bee consistency test and flow test

			6	requirement of workability, I.S.1199.	
5	CHAPTER 05	07		Properties of hardened concrete	
			1	Cube and cylinder compressive strengths	
			2	Flexural strength of concrete	
			3	Stress-strain and elasticity	
			4	Phenomena of creep and shrinkage	
			5	Permeability, durability of concrete	
			6	Sulphate, chloride and acid attack on concrete	
			7	Efflorescence	
6	CHAPTER 06	05		Concrete mix Design	
			1	Introduction	
			2	Data or input required for mix design	
			3	Nominal mix concrete & design mix concrete.	
			4	Basic consideration for concrete mix design, Methods of proportioning concrete mix – I.S Code method of mix design (I.S.10262)	
			5	Basic consideration for concrete mix design, Methods of proportioning concrete mix – I.S Code method of mix design (I.S.10262)	
7	CHAPTER 07	06		Production of concrete	
			1	Batching of materials	
			2	Mixing of concrete materials	
			3	Transportation, placing of concrete	
			4	Compaction of concrete (vibrators)	
			5	Curing of concrete	
			6	Formwork-requirements and types, stripping of forms. (Concepts only)	
8	CHAPTER 08	06		Inspection and Quality Control of Concrete	
			1	Quality control of Concrete as per I.S.456, Factors causing the variations in the quality of concrete.	
			2	Quality control of Concrete as per I.S.456, Factors causing the variations in the quality of concrete.	
			3	Mixing, Transporting, Placing & curing requirements of Concrete as per I.S.456	
			4	Inspection and testing as per Clause 17 of IS:456.	

			5	Inspection and testing as per Clause 17 of IS:456.	
			6	Durability requirements of Concrete as per I.S:456.	

9	CHAPTER 09	06		Special Concrete	
			1	Introduction to ready mix concrete	
			2	Introduction to ready mix concrete	
			3	High performance concrete	
			4	High performance concrete	
			5	Silica fume concrete	
			6	Shot-Crete concrete or gunitting (Concepts only).	
10	CHAPTER 10	06		Deterioration of concrete and its prevention	
			1	Types of deterioration	
			2	Types of deterioration	
			3	Prevention of concrete deterioration	
			4	Prevention of concrete deterioration	
			5	Corrosion of reinforcement	
			6	Effects and prevention	
11	CHAPTER 11	06		Repair technology for concrete structures	
			1	Symptom, cause and prevention and remedy of defects during construction	
			2	Cracking of concrete due to different reasons	
			3	Repair of cracks for different purposes	
			4	Selection of techniques	
			5	Polymer based repairs	
			6	Common types of repairs	