

# ACADEMIC LESSON PLAN FOR SUMMER SEMESTER 2023 .

Department: Civil Engg.

Govt Polytechnic, Balasore

Name of the Faculty: GAYATRI JENA

Sub: Concrete Technology.

Course Code : 1h-4  
Theory : 4 P/W  
Total Periods : 60 P/Sem  
Examination : 3 Hours  
Sem : 6<sup>th</sup> Civil Engg.

Class Test : 20 Marks  
End Semester Exam : 80 marks  
TOTAL MARKS : 100 Marks  
Start : 14<sup>th</sup> FEB 2023

WEEK	PERIOD	TOPIC
1st	1 <sup>st</sup>	CONCRETE AS A CONSTRUCTION MATERIAL: Grades of concrete.
	2 <sup>nd</sup>	Advantages and disadvantages of concrete.
	3 <sup>rd</sup>	CEMENT: Composition, hydration of cement.
	4 <sup>th</sup>	Short revision of previous class. Water cement ratio and compressive strength.
2nd	1 <sup>st</sup>	Fineness of cement, setting time.
	2 <sup>nd</sup>	Soundness, types of cement.
	3 <sup>rd</sup>	AGGREGATE, WATER AND ADMIXTURES: Classification and characteristics of aggregate.
	4 <sup>th</sup>	Short revision of previous class. Fineness modulus, grading of aggregate, I.S.383 .
3rd	1 <sup>st</sup>	Short revision of previous class. Quality of water for mixing and curing.
	2 <sup>nd</sup>	Important functions, classification of admixtures I.S 9103.
	3 <sup>rd</sup>	Accelerating admixtures, retarding Admixtures.
	4 <sup>th</sup>	Short revision of previous class. Water reducing admixtures, air containing admixtures
4th	1 <sup>st</sup>	PROPERTIES OF FRESH CONCRETE: Concept of fresh concrete.
	2 <sup>nd</sup>	Workability, slump test.
	3 <sup>rd</sup>	Compacting factor test.
	4 <sup>th</sup>	Short revision of previous class. V-bee consistency test.
5th	1 <sup>st</sup>	Flow test, requirement of workability I.S.1199
	2 <sup>nd</sup>	Short revision of previous class. Analysis of workability result

	3 <sup>rd</sup>	PROPERTIES OF HARDENED CONCRETE: Cube and cylinder compressive strengths.
	4 <sup>th</sup>	Short revision of previous class. Flexural strength of concrete.
6th	1 <sup>st</sup>	Stress-strain and elasticity.
	2 <sup>nd</sup>	Phenomena of creep and shrinkage.
	3 <sup>rd</sup>	Short revision of previous class. Permeability, durability of concrete.
	4 <sup>th</sup>	Short revision of previous class. Sulphate, chloride and acid attack on concrete.
7 <sup>th</sup>	1 <sup>st</sup>	Efflorescence.
	2 <sup>nd</sup>	CONCRETE MIX DESIGN: Introduction Data or input required for mix design.
8 <sup>th</sup>	3 <sup>rd</sup>	Nominal mix concrete & design mix concrete.
	4 <sup>th</sup>	Basic consideration for concrete mix design.
	1 <sup>st</sup>	Methods of proportioning concrete mix.
	2 <sup>nd</sup>	Grade method of mix design (I.S.10262).
9 <sup>th</sup>	3 <sup>rd</sup>	PRODUCTION OF CONCRETE: Batching of materials.
	4 <sup>th</sup>	Short revision of previous class. Mixing of concrete materials
	1 <sup>st</sup>	Transportation, placing of concrete.
	2 <sup>nd</sup>	Compaction of concrete (vibrators).
10 <sup>th</sup>	3 <sup>rd</sup>	Curing of concrete, Formwork.
	4 <sup>th</sup>	Short revision of previous class. Requirements and types, stripping of forms. (Concepts only).
	1 <sup>st</sup>	INSPECTION AND QUALITY CONTROL OF CONCRETE: Quality control of Concrete as per I.S.456, Factors causing the variations in the quality of Concrete.
	2 <sup>nd</sup>	Mixing, Transporting, Placing of concrete.
11 <sup>th</sup>	3 <sup>rd</sup>	Short revision of previous class. Curing requirements of Concrete as per I.S.456.
	4 <sup>th</sup>	Inspection of concrete.
	1 <sup>st</sup>	Testing as per Clause 17 of IS:456.
	2 <sup>nd</sup>	Short revision of previous class. Quality requirements of Concrete as per I.S:456.
12 <sup>th</sup>	3 <sup>rd</sup>	SPECIAL CONCRETE: Introduction to ready mix concrete.
	4 <sup>th</sup>	Necessity of ready mix concrete.
	1 <sup>st</sup>	Short revision of previous class. High performance concrete.
	2 <sup>nd</sup>	Silica fume concrete.

13 <sup>th</sup>	3 <sup>rd</sup>	Short revision of previous class.
	4 <sup>th</sup>	Shotcrete concrete.
	5 <sup>th</sup>	Guniting (Concepts only).
	6 <sup>th</sup>	DETERIORATION OF CONCRETE AND ITS PREVENTION: Definition of deterioration.
	7 <sup>th</sup>	Short revision of previous class.
		Types of deterioration.
	8 <sup>th</sup>	Prevention of concrete deterioration.
	9 <sup>th</sup>	Short revision of previous class.
14 <sup>th</sup>		Corrosion of reinforcement.
	1 <sup>st</sup>	Effects of corrosion.
	2 <sup>nd</sup>	Short revision of previous class.
		Prevention of corrosion.
	3 <sup>rd</sup>	REPAIR TECHNOLOGY FOR CONCRETE STRUCTURES: Symptom and causes of defects during construction.
	4 <sup>th</sup>	Revision of previous class.
		Prevention and remedy of defects during construction.
	5 <sup>th</sup>	Cracking of concrete due to different reasons.
15 <sup>th</sup>	6 <sup>th</sup>	Repair of cracks for different purposes
	7 <sup>th</sup>	Selection of techniques for repair concrete works
	8 <sup>th</sup>	Common types of repairs.

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14/3/23

15pm