NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

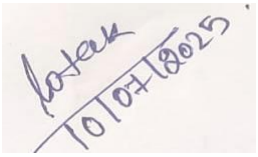
LESSON PLAN

SUBJECT: CEPC207 TH-5 (BUILDING MATERIAL & CONCRETE TECHNOLOGY)

Name Of The Faculty :- Er. Lotak kumar Mohapatra
Branch :- Civil Engineering **Semester :-** 3rd
Academic Year : 2025-26 **Examination :-** 2025 (w)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Overview of Construction Materials	2	4
2	Natural Construction Materials	5	8
3	Artificial Construction Materials	5	8
4	Cement, Aggregates , Water and Admixture	10	12
5	Concrete	8	12
6	Concrete Mix Design and Testing of Concrete	5	8
7	Special Concrete and Extreme Weather concreting	5	8
	Total Period:	45	60



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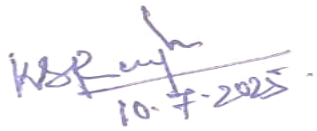

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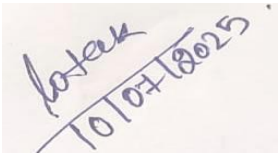
Name of the programme: Diploma in CIVIL ENGINEERING	Semester: 3rd	**Name of the Teaching Faculty:** Er. LOTAK KUMAR MOHAPATRA	
		Academic Year : 2025-26 **Examination :** 2025 (W)	
Course Code: CEPC207 TH-5	**Course Year:** Second Year	**No. of Classes Alloted Per Week :**	4
		Planned Classes Required to Complete the Course	60

Week	Class Day	Topics to be Covered
1st	1st	**Overview of Construction:** MaterialsScopeofconstructionmaterialsinBuildingConstruction.
	2nd	TransportationEngineering, Environmental Engineering, and Irrigation Engineering (applications only).
	3rd	Selectionofmaterialsfordifferentcivilengineeringstructuresonthebasisofstrength, durability, Eco friendly and economy.
	4th	Broad classification of materials –, Natural, Artificial, special, finishing andrecycled.
2nd	1st	**Natural Construction Materials**-Requirements of good building stone;general characteristics of stone; quarrying anddressing methods and tools for stone.
	2nd	Structure of timber, general properties and uses of good timber, different methods of seasoning
	3rd	Preservation of timber, defects in timber, use of bamboo in construction.
	4th	Asphalt, bitumen and tar used in construction, properties and uses.
3rd	1st	Properties of lime, its types and uses.
	2nd	Types of soil and its suitability in construction.
	3rd	Properties of sand and uses
	4th	Classification of coarse aggregate according to size
4th	1st	**Artificial Construction Materials:** Constituents of brick earth, Conventional / Traditional bricks, Modular and Standard bricks.
	2nd	Special bricks –fly ash bricks, Characteristics of good brick, Field tests on bricks, Classification of burnt clay bricks and their suitability
	3rd	Manufacturing process of burnt clay brick, fly ash bricks, Aerated concrete blocks.
	4th	Flooring tiles – Types, uses
5th	1st	Pre-cast concrete blocks- hollow, solid, pavement blocks, and their uses.
	2nd	Plywood, particle board, Veneers, laminated board and their uses
	3rd	Types of glass: soda lime glass, lead glass and borosilicate glass and their uses.
	4th	Ferrous and non-ferrous metals and their uses.
6th	1st	**Cement, Aggregates , Water and Admixture:** Composition of Cement
	2nd	Manufacturing process of Cement – dry and wet (only flow chart), types of cement and its uses. Field tests on cement.

Week	Class Day	Topics to be Covered
6th	3rd	Physical properties of OPC and PPC: fineness, standard consistency, setting time, soundness, compressive strength.
	4th	Different grades of OPC and relevant BIS codes.
7th	1st	Testing of cement: Laboratory tests-fineness, standard consistency, setting time, soundness, compressive strength.
	2nd	Storage of cement and effect of storage on properties of cement.
	3rd	BIS Specifications and field applications ofdifferent type ofcements:Rapidhardening, Lowheat, Portland pozzolana, Sulphate resisting, Blast furnace slag, High Alumina and White cement.
	4th	Aggregates: Requirements of good aggregate, Classification according to size and shape.
8th	1st	Fine aggregates: Properties, size, specific gravity, bulk density, water absorption and bulking, fineness modulus and grading zone of sand, silt content and their specification as per IS 383.Concept of crushed Sand.
	2nd	Coarse aggregates: Properties, size, shape, surface texture, water absorption, soundness, specific gravity and bulk density, fineness modulus of coarse aggregate, grading of coarse aggregates, crushing value, impact value and abrasion value of coarse aggregates with specifications.
	3rd	Water: Quality of water, impurities in mixing water and permissible limits for solids as per IS: 456.Admixtures in concrete: Purpose, properties and application for different types of admixture such as accelerating admixtures, retarding admixtures, water reducing admixtures, air entraining admixtures and super plasticizers. (concepts only)
	4th	Revision of Cement, Aggregates , Water and Admixture
9th	1st	**Concrete:** Different grades of concrete, provisions of IS 456 (Latest).
	2nd	Duff Abraham water cement (w/c) ratio law, significance of w/c ratio, selection of w/c ratio for different grades,
	3rd	Maximum w/c ratio for different grades of concrete for different exposureconditions as per IS 456.
	4th	Properties of fresh concrete: Workability: Factors affecting workability of concrete.
10th	1st	Determination of workability of concrete by slump cone, compaction factor, Vee-Bee Consistometer
	2nd	Value of workability requirement for different types of concrete works.
	3rd	Segregation, bleeding and preventive measures.
	4th	Properties of Hardened concrete: Strength, Durability, Impermeability.
11th	1st	**Concrete Mix Design and Testing of Concrete:** Introduction of Contrete mix Design and testing of concrete.
	2nd	**Concrete mix design**: Objectives, methods of mix design, study of mix design as per IS 10262 (only procedural steps).
	3rd	Methods of mix design, study of mix design as per IS 10262 (only procedural steps).
	4th	Methods of mix design, study of mix design as per IS 10262 (only procedural steps).

Week	Class Day	Topics to be Covered
12th	1st	**Non- destructive testing of concrete**: Rebound hammer test, working principle of rebound hammer and factor affecting the rebound index, Ultrasonic pulse velocity test as per IS13311 (part 1 and 2), Importance of NDT tests.
	2nd	Rebound hammer test, working principle of rebound hammer and factor affecting the rebound index.
	3rd	Ultrasonic pulse velocity test as per IS13311 (part 1 and 2), Importance of NDTtests.
	4th	Revision of Concrete Mix Design and Testing of Concrete
13th	1st	Quality Control of Concrete
	2nd	**Concreting Operations**: Batching, Mixing, Transportation, Placing, Compaction, Curing and Finishing of concrete.
	3rd	**Concreting Operations**: Batching, Mixing, Transportation, Placing, Compaction, Curing and Finishing of concrete.
	4th	**Forms for concreting**: Different types of form works for beams, slabs, columns, materials used for form work, requirement of good form work. Stripping time for
14th	1st	**Waterproofing**: Importance and need of waterproofing, methods of waterproofing and materials used for waterproofing.
	2nd	**Joints in concrete construction**: Types of joints, methods for joining old and new concrete, materials used for filling joints.
	3rd	**Special Concrete and Extreme Weather concretingSpecial Concrete:** Properties, advantages and limitation of following types of Special
	4th	Special Concrete: Properties, advantages and limitation of following types of Special concrete.
15th	1st	Ready mix Concrete, Fiber Reinforced Concrete, High performanceConcrete, Self-com pacting concrete and light weight concrete.
	2nd	**Cold weather concreting**: effect of cold weather on concrete, precautions to be taken while concreting in cold weather condition. (only concepts)
	3rd	**Hot weather concreting:** effect of hot weather on concrete, precautions to be taken while concreting in hot weather condition. (only concepts)
	4th	Revision of Special Concrete and Extreme Weather concreting



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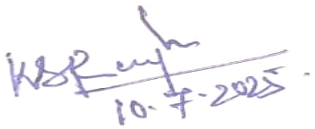

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