

ACADEMIC SESSION: WINTER-2025

Discipline : Civil engg	Semester: 3rd	Name of the Teaching Faculty : RITWIK PATNAIK Lecturer Stage I
Subject: BMCT Course Code: CEPC 207	No. of Days / Week class allotted: 3	Semester Duration: 14/07/2025 to 15/11/2025 No. of Weeks : 18
Week	Class day	Theory/Practical Topics:
1 st	1 st	Scope of construction materials in Building Construction
	2 nd	Transportation Engineering, Environmental Engineering, and Irrigation Engineering (applications only)
	3 rd	Selection of materials for different civil engineering structures on the basis of strength, durability, Eco friendly and economy.
2 nd	1 st	Broad classification of materials –, Natural, Artificial, special, finishing and recycled.
	2 nd	Requirements of good building stone, characteristics of stone;
	3 rd	Quarrying and dressing methods for stone.
3 rd	1 st	Structure of timber, general properties and uses of good timber
	2 nd	Different methods of seasoning for preservation of timber, defects in timber
	3 rd	Use of bamboo in construction
4 th	1 st	Properties and uses of Asphalt, bitumen and tar used in construction
	2 nd	Properties of lime, its types and uses.
	3 rd	Types of soil and its suitability in construction.
5 th	1 st	Properties of sand and uses
	2 nd	Classification of coarse aggregate according to size
	3 rd	Constituents of brick earth, Conventional / Traditional bricks, Modular and Standard bricks
6 th	1 st	Special bricks –fly ash bricks, Characteristics of good brick
	2 nd	Field tests on Bricks, Classification of burnt clay bricks and their suitability
	3 rd	Manufacturing process of burnt clay brick, fly ash bricks
7 th	1 st	Types of Flooring tiles and their uses
	2 nd	Pre-cast concrete blocks- hollow, solid, pavement blocks, and their uses.
	3 rd	Plywood, particle board, Veneers, laminated board and their uses.
8 th	1 st	Types of glass: soda lime glass, lead glass and borosilicate glass and their uses.
	2 nd	Ferrous and non-ferrous metals and their uses.
	3 rd	Composition of Cement, Manufacturing process of Cement – dry and wet
9 th	1 st	Types of cement and its uses
	2 nd	Physical properties of OPC and PPC: fineness, standard consistency, setting time, soundness, compressive strength. Different grades of OPC
	3 rd	Fineness, Standard consistency, Setting time of cement
10 th	1 st	Soundness and compressive strength of cement
	2 nd	Storage of cement and effect of storage on properties of cement.
	3 rd	Rapid hardening, Lowheat, Portland pozzolana, Sulphate resisting, Blast furnace slag, High Alumina and White cement.
	1 st	Requirements of good aggregate and classification according to size and

11 th		shape.
	2 nd	Properties, size, specific gravity, bulk density, water absorption and bulking, fineness modulus and grading zone of sand
	3 rd	Properties, size, shape, surface texture, water absorption, soundness, specific gravity and bulk density of coarse aggregates
12 th	1 st	Fineness modulus, grading of coarse aggregates, crushing value, impact value and abrasion value of coarse aggregates
	2 nd	Quality of water, impurities in mixing water and permissible limits for solids
	3 rd	Purpose, properties and application for different types of admixture such as accelerating admixtures, retarding admixtures, water reducing admixtures, air entraining admixtures and super plasticizers
13 th	1 st	Different grades of concrete, provisions of IS 456
	2 nd	Duff Abraham water cement (w/c) ratio law, significance of w/c ratio, selection of w/c ratio for different grades, maximum w/c ratio for different grades of concrete for different exposure conditions as per IS 456.
	3 rd	Properties of fresh concrete: Workability: Factors affecting workability of concrete
14 th	1 st	Determination of workability of concrete by slump cone, compaction factor, Vee-Bee Consistometer. Value of workability requirement for different types of concrete works
	2 nd	Segregation, bleeding and preventive measures.
	3 rd	Properties of Hardened concrete: Strength, Durability, Impermeability.
15 th	1 st	Concrete mix design: Objectives, methods of mix design, study of mix design as per IS 10262
	2 nd	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
	3 rd	Concreting Operations: Batching, Mixing, Transportation, Placing, Compaction, Curing and Finishing of concrete.
16 th	1 st	Importance and need of waterproofing, methods of waterproofing and materials used for waterproofing.
	2 nd	Types of joints, methods for joining old and new concrete, materials used for filling joints.
	3 rd	Properties, advantages and limitation of following types of Special concrete: Ready mix Concrete, Fiber Reinforced Concrete, High performance Concrete, Self-compacting and light weight concrete
17 th	1 st	Effect of cold weather on concrete, precautions to be taken while concreting in cold weather condition
	2 nd	Hot weather concreting: effect of hot weather on concrete, precautions to be taken while concreting in hot weather condition
	3 rd	Revision
18 th	1 st	Revision
	2 nd	Revision
	3 rd	Revision

Prepared By :

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14/7/25

Approved By:

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