

LESSON PLAN OF 3 rd SEMESTER CIVIL ENGINEERING(2026-27)		
Discipline: CE	Semester:3 rd	Name of the Teaching Faculty: PRABHUJIT SETHY
Subject: BUILDING MATERIAL & CONCRETE TECHNOLOGY	No. of Days/per week class allotted: 03	AY 2026-2027(W) Semester W.E.F: 01/07/2026
Week	Class Day	Theory Topics
1st	01	Unit- 1:Overview of Construction Materials Scope of construction materials in Building Construction,Transportation Engineering, Environmental Engineering, and Irrigation Engineering (applications only).
	02	Selection of materials for different civil engineering structures on the basis of strength, durability, Eco friendly and economy. Broad classification of materials – Natural, Artificial, special, finishing and recycled.
	03	Unit-2:Natural Construction Materials- Requirements of good building stone; general characteristics of stone; quarrying and dressing methods and tools for stone.
2nd	01	Structure of timber, general properties and uses of good timber, different methods of seasoning for preservation of timber.
	02	Defects in timber, use of bamboo in construction. Asphalt, bitumen and tar used in construction, properties and uses.
	03	Properties of lime, its types and uses. Types of soil and its suitability in construction.
3rd	01	REVISIOIN, Properties of sand and uses Classification of coarse aggregate according to size
	02	UNIT-3: Artificial Construction Materials Constituents of brick earth, Conventional / Traditional bricks, Modular and Standard bricks, Special bricks –fly ash bricks,

		Characteristics of good brick, Field tests on Bricks, Classification of burnt clay bricks and their suitability, Manufacturing process of burnt clay brick, fly ash bricks, Aerated concrete blocks.
	03	Flooring tiles – Types, uses. Pre-cast concrete blocks- hollow, solid, pavement blocks, and their uses.
4th	01	Plywood, particle board, Veneers, laminated board and their uses.
	02	Types of glass: soda lime glass, lead glass and borosilicate glass and their uses.
	03	REVISORIN, Ferrous and non-ferrous metals and their uses.
5th	01	UNIT-4: Cement, Aggregates , Water and Admixture Composition of Cement. Manufacturing process of Cement –dry and wet (only flow chart), types of cement and its uses. Field tests on cement.
	02	Physical properties of OPC and PPC: fineness, standard consistency, setting time, soundness, compressive strength. Different grades of OPC and relevant BIS codes.
	03	Testing of cement: Laboratory tests-fineness, standard consistency, setting time, soundness, compressive strength. Storage of cement and effect of storage on properties of cement.
6th	01	BIS Specifications and field applications of different types 10 of cements: Rapid hardening, Lowheat, Portland pozzolana, Sulphate resisting, Blast furnace slag, High Alumina and White cement.
	02	Aggregates: Requirements of good aggregate, Classification according to size

		and shape.
	03	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.
7th	01	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.
	02	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.
	03	Water: Quality of water, impurities in mixing water and permissible limits for solids as per IS: 456.
8th	01	REVISION, 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)
	02	UNIT-5: Concrete Concrete: Different grades of concrete, provisions of IS 456 (Latest).
	03	Duff Abraham water cement (w/c) ratio law,

		significance of w/c ratio, selection of w/c ratio for different grades	
9 th	01	maximum w/c ratio for different grades of concrete for different exposure conditions as per IS 456	
	02	Properties of fresh concrete: Workability: Factors affecting workability of concrete.	
	03	Determination of workability of concrete by slump cone, compaction factor, Vee-Bee Consistometer.	
10 th	01	Value of workability requirement for different types of concrete works. Segregation, bleeding and preventive measures.	
	02	Properties of Hardened concrete: Strength, Durability, Impermeability.	
	03	REVISION, Properties of Hardened concrete: Strength, Durability, Impermeability.	
11 th	01	UNIT-6: Concrete Mix Design and Testing of Concrete Concrete mix design: Objectives, methods of mix design, study of mix design as per IS 10262 (only procedural steps).	
	02	Concrete mix design: Objectives, methods of mix design, study of mix design as per IS 10262 (only procedural steps).	
	03	Non- destructive testing of concrete: Rebound hammer test, working principle of rebound hammer.	
12 th	01	factor affecting the rebound index, Ultrasonic pulse velocity test as per IS13311 (part 1 and 2), Importance of NDT tests.	
	02	REVISION, factor affecting the rebound index, Ultrasonic pulse velocity test as per IS13311 (part 1 and 2), Importance of NDT tests.	

	03	UNIT-7: Quality Control of Concrete Concreting Operations: Batching, Mixing, Transportation, Placing, Compaction, Curing and Finishing of concrete.	
13 th	01	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 removal of form works per IS 456.	
	02	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 removal of form works per IS 456.	
	03	Waterproofing: Importance and need of waterproofing, methods of waterproofing and materials used for waterproofing.	
14 th	01	REVISION, Joints in concrete construction: Types of joints, methods for joining old and new concrete, materials used for filling joints.	
	02	UNIT-8: Special Concrete and Extreme Weather concreting Special Concrete: Properties, advantages and limitation of following types of Special concrete: Ready mix Concrete, Fiber Reinforced Concrete,	
	03	High performance Concrete, Self-compacting concrete and light weight concrete.	
15 th	01	Cold weather concreting: effect of cold weather on concrete, precautions to be taken while concreting in cold weather condition. (only concepts)	
	02	Cold weather concreting: effect of cold weather on concrete, precautions to be taken	

		while concreting in cold weather condition. (only concepts)	
	03	REVISION, Hot weather concreting: effect of hot weather on concrete, precautions to be taken while concreting in hot weather condition. (only concepts)	

Prabhujit Sethy
03/08/28

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LESSON PLAN OF 5 th SEMESTER CIVIL ENGINEERING(2026-27)		
Discipline: CE	Semester:5 th	Name of the Teaching Faculty: PRABHUJIT SETHI
Subject: LEADERSHIP AND MANAGEMENT SKILLS	No. of Days/per week class allotted: 03	AY 2026-2027(W) Semester W.E.F: 01/07/2026
Week	Class Day	Theory Topics
1st	01	UNIT-1: Leadership & Management, concept, principles. Definition of leadership, management.
	02	Leadership theories.
	03	Leadership characteristics.
2nd	01	Principles of management
	02	Managerial functions.
	03	Managerial functions.
3rd	01	Leader v/s Manager, Leader/Manager traits and character.
	02	Leader v/s Manager, Leader/Manager traits and character.
	03	Leadership Styles.
4th	01	Leadership Styles.
	02	UNIT-2: Human Resource Management in Organizations Human Resource Management: Meaning ,Nature, Objectives, Scope.
	03	Human Resource Management: Meaning ,Nature, Objectives, Scope.
5th	01	Job & Job analysis.
	02	Staff Development: Need and Objectives of Staff Development, Approaches.
	03	Staff Development: Need and Objectives of Staff Development, Approaches.
6th	01	Training & development.
	02	Organizational Development: Components of OD process.
	03	Organizational Development: Components of OD process.
7th	01	Learning organization.
	02	Learning organization.
	03	UNIT-3: Personal disposition, skills & abilities of leaders Self-awareness
8th	01	Leadership characteristics, traits.
	02	Leadership characteristics, traits.
	03	Leadership skills & abilities.
9 th	01	Emotional intelligence & its components, importance in leadership.
	02	Emotional intelligence & its components, importance in leadership.
	03	Communication skills for effective leadership, barriers to effective communication, Active Listening, Mindful listening.

10 th	01	Communication skills for effective leadership, barriers to effective communication, Active Listening, Mindful listening.	
	02	Leading & Mentorship – Influencing & mentoring.	
	03	UNIT-4: Leader's role in Motivating, Inspiring and Transformative leadership, nurturing team-work . Goal setting & leadership.	
11 th	01	Transformative Leadership, vision & envisioning.	
	02	Transformative Leadership, vision & envisioning.	
	03	Motivational role of leader in people management.	
12 th	01	Motivational role of leader in people management.	
	02	Group & team.	
	03	Team dynamics.	
13 th	01	Conflict management, strategies in managing conflicts.	
	02	UNIT-5: Change Management & Leadership Models of change	
	03	Forces driving change.	
14 th	01	Change Management – process, goal, importance.	
	02	Change Management – process, goal, importance.	
	03	The process of change happening in an organization.	
15 th	01	The process of change happening in an organization.	
	02	Key aspects of leadership in change management – responsibilities of a change leader.	
	03	Key aspects of leadership in change management – responsibilities of a change leader.	

Prabhujit
03/08/2025

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