LESSON PLAN FOR THE SESSION SEP- DEC 2025-26 (Odd Semester)

FACULTY NAME:
SUBJECT: CONCRETE TECHNOLOGY **SUBJECT CODE:** BCV503
SEMESTER: 5TH **SECTION:** A

Chapter Title	Class No	Date planned	Topics proposed to be covered	Portion to be covered in %	Remarks
INTRODUCTION			**Syllabus & Course Outcomes**		
MODULE 1	1		Cement manufacturing process, chemical composition and their importance	**20%**	
	2		Hydration of cement, types of cement. Testing of cement, steps to reduce carbon footprint		
	3		Fine aggregate: Functions, requirement, Alternatives to River sand, M-sand introduction, and manufacturing		
	4		Coarse aggregate: Importance of size, shape and texture. Grading and blending of aggregate		
	5		Testing on aggregate, requirement. Recycled aggregates, Water – qualities of water		
	6		Chemical admixtures – plasticizers, accelerators, retarders, and air entraining agents		
	7		Mineral admixtures – Pozzolanic and cementitious materials,		
	8		Mineral admixtures – Fly ash, GGBS, silica fumes, Metakaolin and rice husk ash		
MODULE 2	9		Factors affecting workability. Measurement of workability–slump, Compaction factor	**40%**	
	10		Vee-Bee Consistometer tests, flow tests. Segregation and bleeding		
	11		Process of manufacturing of concrete- Batching, Mixing, Transporting		
	12		Process of manufacturing of concrete - Placing and Compaction		
	13		Process of manufacturing of concrete - Curing – Methods of curing – Water curing, membrane curing,		
	14		Steam curing, accelerated curing, self- curing		
	15		Good and Bad practices of making and using fresh concrete		
	16		Effect of heat of hydration during mass concreting at project sites		
MODULE 3	17		Factors influencing strength, W/C ratio, gel/space ratio, Maturity concept	**60%**	
	18		Testing of hardened concrete, Creep – factors affecting creep		
	19		Shrinkage of concrete – plastic shrinking and drying shrinkage, Factors affecting shrinkage		
	20		Definition and significance of durability. Internal and external factors influencing durability		
	21		Mechanisms- Sulphate attack – chloride attack		
	22		Carbonation, freezing and thawing. Corrosion Durability requirements as per IS-456		
	23		In situ testing of concrete- Penetration and pull-out test, rebound hammer test		
	24		Ultrasonic pulse velocity, core extraction – Principal, applications and limitations		

MODULE 4	25		Principles of concrete mix design, Parameters and factors influencing mix design	**80%**	
	26		Concept of Mix Design with and without admixtures, variables in proportioning and Exposure conditions		
	27		Selection criteria of ingredients used for mix design, Procedure of mix proportioning		
	28		Numerical Examples of Mix Proportioning using IS: 10262:2019 - 1		
	29		Numerical Examples of Mix Proportioning using IS: 10262:2019 - 2		
	30		Numerical Examples of Mix Proportioning using IS: 10262:2019 - 3		
	31		Numerical Examples of Mix Proportioning using IS: 10262:2019 - 4		
	32		Numerical Examples of Mix Proportioning using IS: 10262:2019 - 5		
MODULE 5	33		RMC-manufacture and requirement as per QCI-RMCPCS	**100%**	
	34		Properties, advantages, and disadvantages		
	35		Self-Compacting concrete- concept, materials, tests, properties, application		
	36		Typical mix Fiber reinforced concrete - types of fibres, properties, application of FRC		
	37		Light weight concrete-material properties and types. Typical light weight concrete mix proportion and applications		
	38		Materials, requirements, mix proportion and properties of Geo polymer Concrete		
	39		High Strength Concrete - Materials, requirements and applications		
	40		High-Performance Concrete - Materials, requirements and applications		

LIST OF TEXT BOOKS

1. Neville A.M. “Properties of Concrete”-4th Ed., Longman.
2. M.S. Shetty, Concrete Technology - Theory and Practice Published by S. Chand and Company, New Delhi.

LIST OF REFERENCE BOOKS

1. Kumar Mehta. P and Paulo J.M. Monteiro “Concrete-Microstructure, Property and Materials”, 4th Edition, McGraw Hill Education, 2014
2. A.R. Santha Kumar, “Concrete Technology”, Oxford University Press, New Delhi (New Edition).