

<b>Name of the Faculty</b>	:	Mr. Ankit Sharma
<b>Discipline</b>	:	Civil Engineering
<b>Semester</b>	:	4 <sup>TH</sup>
<b>Subject</b>	:	MTE PCC-CE-210-G
<b>Lesson Plan Duration</b>	:	15 Weeks (From May 2021 to July 2021)
<b>Work load (Lectures/Practical)</b>		
<b>Per week (in hours)</b>	:	Lectures-04 + 02 Lab

**LECTURE PLAN**

WEEK	LECTURE	TOPIC	LAB	EXPERIMENT TITLE
1 <sup>st</sup>	1 <sup>st</sup>	<b>Introduction to Engineering Materials</b> Cements, M-Sand	1 <sup>st</sup>	Standard consistency of cement using Vicat's apparatus.
	2 <sup>nd</sup>	Concrete (plain, reinforced and steel fibre/glass fibre-reinforced, light-weight concrete, High Performance Concrete, Polymer Concrete)		
	3 <sup>rd</sup>	Ceramics and Refractories		
	4 <sup>th</sup>	Bitumen and asphaltic materials, Glass and Plastics		
2 <sup>nd</sup>	1 <sup>st</sup>	Structural Steel and other Metals	2 <sup>nd</sup>	Fineness of cement by Sieve analysis and Blaine's air permeability method.
	2 <sup>nd</sup>	Lime: classification of lime, manufacturing, testing of lime, storage of lime		
	3 <sup>rd</sup>	Cement: cements composition, types of cement		
	4 <sup>th</sup>	manufacturing of ordinary portland cement, special types of cement, storage of cement		
3 <sup>rd</sup>	1 <sup>st</sup>	testing of cement	3 <sup>rd</sup>	Fineness modulus of coarse and fine aggregates.
	2 <sup>nd</sup>	Mortars: Proportions of lime and cement mortars, mortars for masonry and plastering.		
	3 <sup>rd</sup>	Assignment 1		
	4 <sup>th</sup>	Proportions of cements, aggregates, water and admixtures		
4 <sup>th</sup>	1 <sup>st</sup>	properties of fresh and hardened concrete	4 <sup>th</sup>	Soundness of cement by Le-Chatelier's apparatus.
	2 <sup>nd</sup>	variability of concrete strength, extreme weather concreting		
	3 <sup>rd</sup>	prestressed concrete		

	4 <sup>th</sup>	Durability of concrete - alkali aggregate reaction, reinforcement corrosion, freezing and thawing, etc.		
5 <sup>th</sup>	1 <sup>st</sup>	Principles of concrete mix design, basic considerations	5 <sup>th</sup>	Setting time of cement, initial and final of cement
	2 <sup>nd</sup>	Factors in the choice of mix design, outline of mix design procedure		
	3 <sup>rd</sup>	ACI mix design practice		
	4 <sup>th</sup>	USBR method		
6 <sup>th</sup>	1 <sup>st</sup>	British mix design method	6 <sup>th</sup>	Compressive strength of cement
	2 <sup>nd</sup>	IS guidelines for concrete mix design		
	3 <sup>rd</sup>	Assignment 2		
	4 <sup>th</sup>	Design Problems		
7 <sup>th</sup>	1 <sup>st</sup>	Design Problems	7 <sup>th</sup>	Measurement of specific gravity of cement
	2 <sup>nd</sup>	Types of steel, mechanical behaviour and mechanical characteristics		
	3 <sup>rd</sup>	Elasticity – principle and characteristics; Plastic deformation of metals		
	4 <sup>th</sup>	tensile test – standards for different material (brittle, quasi-brittle, elastic and so on)		
8 <sup>th</sup>	1 <sup>st</sup>	Bending and torsion test, procedure and standards	8 <sup>th</sup>	Measurement of Heat of Hydration of cement
	2 <sup>nd</sup>	Strength of ceramic, Internal friction		
	3 <sup>rd</sup>	creep – fundamentals and characteristics		
	4 <sup>th</sup>	Brittle fracture of steel – temperature transition approach		
9 <sup>th</sup>	1 <sup>st</sup>	concept of fracture mechanics; fracture toughness testing.	9 <sup>th</sup>	Moisture content and bulking of fine aggregate
	2 <sup>nd</sup>	Assignment 3		
	3 <sup>rd</sup>	Testing of concrete mixes		
	4 <sup>th</sup>	description for various concrete, steels, aggregates		
10 <sup>th</sup>	1 <sup>st</sup>	Elastic deformation; Plastic deformation	10 <sup>th</sup>	Workability of cement concrete by Slump test
	2 <sup>nd</sup>	Impact test and transition temperatures		
	3 <sup>rd</sup>	Fracture mechanics – background		
	4 <sup>th</sup>	Fracture toughness – different materials; Fatigue of material		
11 <sup>th</sup>	1 <sup>st</sup>	Shrinkage, Creep	11 <sup>th</sup>	Workability of cement concrete by Compaction factor test
	2 <sup>nd</sup>	Assignment 4		
	3 <sup>rd</sup>	Construction of large structures		
	4 <sup>th</sup>	Construction of dams		
12 <sup>th</sup>	1 <sup>st</sup>	Construction of bridges	12 <sup>th</sup>	Workability of cement concrete by
	2 <sup>nd</sup>	Construction of multi storeyed buildings		

	3 <sup>rd</sup>	Construction of multi storeyed buildings		Flow table test
	4 <sup>th</sup>	Construction Equipments - crushers		
13 <sup>th</sup>	1 <sup>st</sup>	Construction Equipments - hot mix plants	13 <sup>th</sup>	Compressive strength of concrete by Cube test
	2 <sup>nd</sup>	Construction Equipments – dozers		
	3 <sup>rd</sup>	Construction Equipments – mixers		
	4 <sup>th</sup>	Introduction to heavy construction equipment		
14 <sup>th</sup>	1 <sup>st</sup>	Introduction to heavy construction equipment	14 <sup>th</sup>	Modules of rupture of concrete by flexure test
	2 <sup>nd</sup>	Assignment 5		
	3 <sup>rd</sup>	Revision & Previous year papers solving		
	4 <sup>th</sup>	Revision & Previous year papers solving		
15 <sup>th</sup>	1 <sup>st</sup>	Revision & Previous year papers solving	15 <sup>th</sup>	Bond strength between steel bar and concrete by pull-out test
	2 <sup>nd</sup>	Revision & Previous year papers solving		
	3 <sup>rd</sup>	Revision & Previous year papers solving		
	4 <sup>th</sup>	Revision & Previous year papers solving		