

Session: 2020-2021
 Department: Civil Engineering
 Subject: H.E. 2 , PCC-CE-306-G

Course: B.Tech.
 Semester: 6th
 Faculty name: Er. Amit Kaushik

Name of the Faculty : Er. Amit Kaushik
Discipline : CivilEngineering
Semester : 6TH
Subject : H.E - 2, PCC-CE-306-G
LessonPlanDuration : 15 Weeks (From May to August 2021)
Work load (Lectures/Practical)
Per week(inhours) : Lectures-03 + 01 Lab

WEEK	LECTURE	TOPIC	LAB	EXPERIMENT TITLE
1 st	1 st	Types of pavements. Flexible and rigid pavements. Components of a pavement and their functions	1 st	Aggregate Impact Test.
	2 nd	Factors affecting design of pavements. Design of thickness of a flexible pavement by Group Index method		
	3 rd	CBR method (including latest IRC guidelines), Triaxial method and Burmister's method		
2 nd	1 st	Numerical Problems	2 nd	Los-Angeles Abrasion Test on Aggregates.
	2 nd	Numerical Problems		
	3 rd	Westergaard's theory, critical locations of loading, load and temperature stresses		
3 rd	1 st	Critical combination of stresses. IRC guidelines for determination of thickness of a rigid pavement.	3 rd	Dorry's Abrasion Test on Aggregates.
	2 nd	Joints: requirements, types, patterns.		
	3 rd	Spacing of expansion and contraction joints		
4 th	1 st	Functions of dowel and tie bars.	4 th	Deval Attrition Test on Aggregates.
	2 nd	Brief introduction to earthwork machinery: shovel, hoe, clamshell, dragline, bulldozers. Principles of field compaction		

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		of subgrade.		
	3 rd	Compacting equipments. Granular roads. Construction steps of WBM. WMM		
5 th	1 st	Construction of cement concrete pavements, Slip-form pavers	5 th	Crushing Strength Test on Aggregates.
	2 nd	Basic concepts of the following: soil stabilized roads, use of geo-synthetics, reinforced cement concrete pavements,		
	3 rd	prestress concrete pavements, roller compacted concrete pavements and fibre reinforced concrete pavements.		
6 th	1 st	Various types of bituminous constructions. Prime coat, tack coat, seal coat and surface dressing	6 th	Penetration Test on Bitumen.
	2 nd	Construction of BUSG, Premix carpet, BM, DBM and AC		
	3 rd	Brief coverage of machinery for construction of bituminous roads: bitumen boiler, sprayer, pressure distributor, hot-mix plant		
7 th	1 st	Cold mix plant, tipper trucks, mechanical paver or finisher, rollers. Mastic asphalt	7 th	Ductility Test on Bitumen.
	2 nd	Introduction to various IRC and MOST specifications.		
	3 rd	Pavement failures. Maintenance operations. Maintenance of WBM,		
8 th	1 st	bituminous surfaces and cement concrete pavements. Pavement evaluation	8 th	Viscosity Test on Bituminous Material
	2 nd	Benkleman beam		
	3 rd	Introduction to various types of overlays.		
9 th	1 st	Surface drainage: types, brief design. Types of sub-surface drainage	9 th	Softening Point Test on Bitumen.
	2 nd	Special characteristics of hill roads: geometrics, hair pin bends, construction of hill roads		
	3 rd	drainage of hill roads, maintenance problems of hill roads.		

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10 th	1 st	Need of economic evaluation. Highway user benefits and costs	10 th	Flash Point Test on Bitumen.
	2 nd	Methods of economic evaluation: benefit cost ratio method, net present value method		
	3 rd	internal rate of return method, comparison		
11 th	1 st	Highway finance	11 th	Fire Point Test on Bitumen
	2 nd	Sections of tunnels: advantages, limitations and suitability of each section		
	3 rd	Sections of tunnels: advantages, limitations and suitability of each section		
12 th	1 st	Shaft. Pilot tunnel. Driving tunnel in rocks	12 th	Problem Solving Class
	2 nd	sequence of construction operations, full-face method		
	3 rd	heading and bench method,		
13 th	1 st	drift method. Driving tunnels in soft ground	13 th	Problem Solving Class
	2 nd	sequence of construction operations, needle beam method		
	3 rd	shield tunneling		
14 th	1 st	compressed air tunneling	14 th	Problem Solving Class
	2 nd	Numerical Problems		
	3 rd	Numerical Problems		
15 th	1 st	Numerical Problems	15 th	Problem Solving Class
	2 nd	Problem Solving Class		
	3 rd	Problem Solving Class		